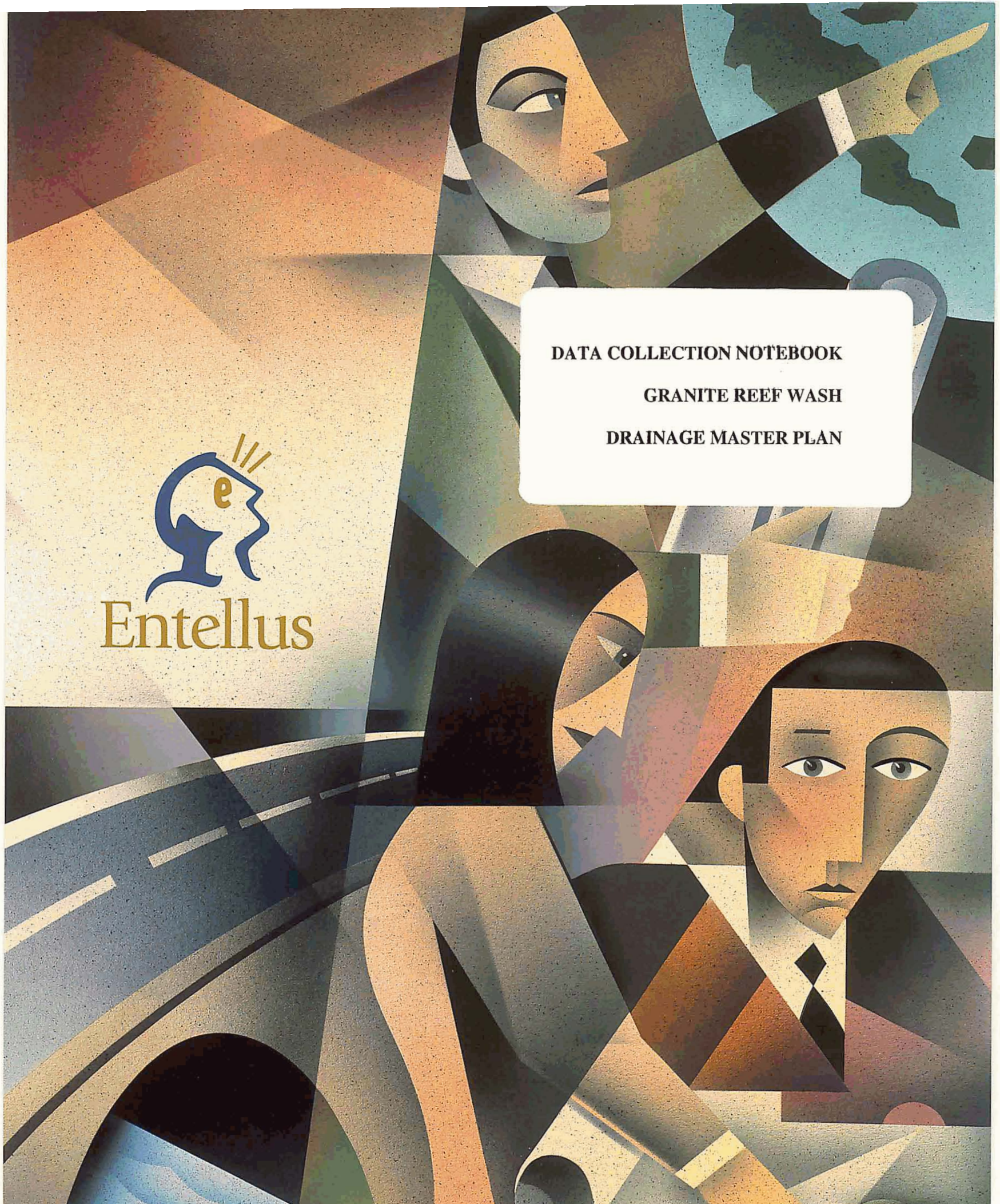
DATA COLLECTION NOTEBOOK
GRANITE REEF WASH
DRAINAGE MASTER PLAN
Entellus

DATA COLLECTION NOTEBOOK

GRANITE REEF WASH

DRAINAGE MASTER PLAN

Contract FCD 2000CO38

APRIL 30, 2002

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GRANITE REEF DRAINAGE MASTER PLAN

FCD –2000CO38

TECHNICAL DATA NOTEBOOK

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LIST OF FIGURES

LIST OF PLATES

SECTION 1: INTRODUCTION

This study was initiated by the Flood Control District of Maricopa County (District) in 2000 to identify flooding potential along the Granite Reef Wash from Thomas Road to its confluence with the Salt River by developing new hydrology and making recommendations for improvements. The study was conducted in coordination with the District, The City of Scottsdale (City) and the Salt River-Pima Maricopa Indian Community (SRPMIC).

The area of study for the Granite Reef Drainage Master Plan (DMP) falls within the City of Scottsdale and the SRPMIC as presented in **Figure 1**. The Granite Reef watershed is bounded in the north by the Arizona Canal, in the south by the Salt River, on the east by the Loop 101 Freeway and in the west by the Indian Bend Wash watershed. The west boundary meanders along the watershed following the divider between the two watersheds but it is generally located between Granite Reef Road and Hayden Road. The total study area is approximately six square miles.

The storm water conveyance system within the Granite Reef Wash drainage area has insufficient capacity to collect and convey major storm events, in particular, the 100-year flood event as defined in the *Granite Reef Wash Floodplain Delineation Study* **(Reference 1)**. Additionally, the wash does not have an adequate outfall to the Salt River through the SRPMIC land south of McKellips Road.

Several hydrologic studies had been performed in this watershed. The first study was the *Flood Insurance Study for the City of Scottsdale* **(Reference 2),** which was completed in 1984. There were two studies done in 1995, one was the *Granite Reef Wash Drainage Study* **(Reference 3)**, and the other was the *Report on Granite Reef Wash Drainage Study* **(Reference 4)**. The last study for this area was the *Granite Reef Watershed Flood Mitigation Candidate Assessment Report* **(Reference 5)**, which was done in 1999. The results of these reports vary significantly and none of these studies contain procedures and assumptions that are acceptable to all interested parties. **Table 1** shows the flows from these reports at the three relevant locations.

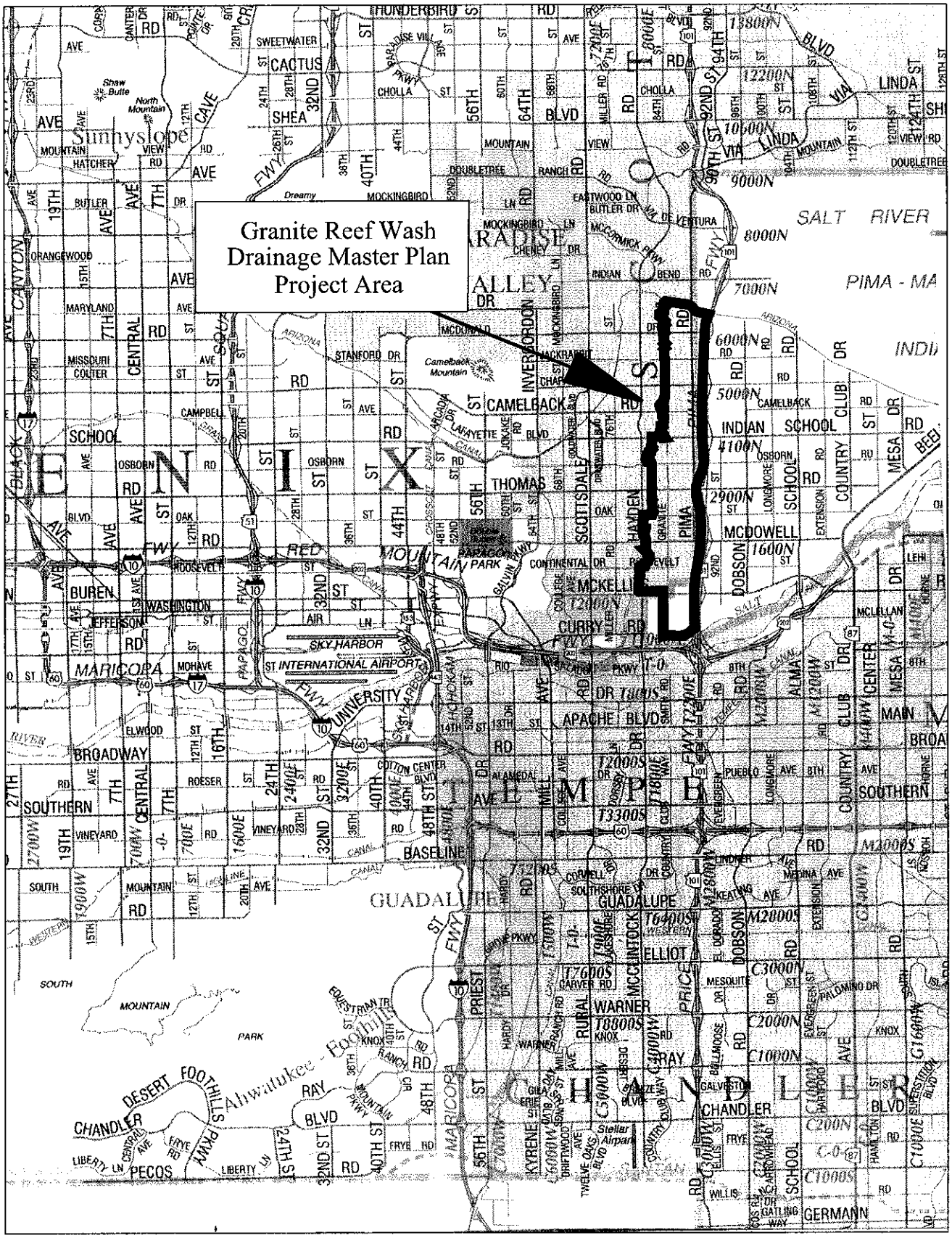


Figure 1.
Vicinity Map

TABLE 1

Summary of 100-year Discharges from Current Hydrology Studies

Model *	100-yr Flows (cfs)		
	Granite Reef Wash at:		
	Indian School Road	*Thomas Road*	*McKellips Road*
FEMA	644	1,240	1,417
SLA	-	2,050	4,160
KVL	1,590	3,387	5,205

*FEMA = *Flood Insurance Study for the City of Scottsdale* **(Reference 2)**

*SLA = *Granite Reef Wash Drainage Study* **(Reference 3)**

*KVL = *Report on Granite Reef Wash Drainage Study* **(Reference 4)**

SECTION 2: ADWR/FEMA FORMS

These forms are not required for this project.

SECTION 3: MAPPING AND SURVEY INFORMATION

3.1 Field Survey Information

Field surveys were conducted, mainly, at roadway intersections to supplement aerial topographic mapping. Results of the field survey are documented in **Appendix C**.

3.2 Mapping

Topographic mapping and aerial photography used in this study were provided by the City. The SRPMIC provided more recent aerial photography for the study area with the Indian Community. The topographic mapping furnished by the City consisted of a 100-scale, 1-foot topographic map provided in digital format **(Reference 6)**. The SRPMIC aerial photography consisted of a 2-foot pixel resolution digital image **(Reference 7)**. Vertical and horizontal controls tied into the State Plane Coordinate System (1983 NAD) and the elevations are based on the North American Vertical Datum of 1988 (NAVD 88).

3.2.1 Watershed Map

Watershed boundaries and hydrologic parameters were determined primarily from the City of Scottsdale topographic mapping **(Reference 6)**. Additionally, aerial photography provided by the City and the SRPMIC **(References 7 and 8)** was overlaid with the watershed map to verify the basin boundaries.

3.2.2 Floodplain Maps

The 100-scale, 1-foot contour interval mapping provided by the City was used to delineate the floodplain boundaries. The cross-section information was obtained from the *Granite Reef Wash Floodplain Delineation Study* **(Reference 1)**.

3.2.3 Soils Map

Electronic soils maps were furnished by the District's GIS Department. This mapping is a digital version of the Natural Resources Conservation Service NRCS (formerly SCS) *Soil Survey of Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, Arizona* **(Reference 9)** and *Soil Survey of Eastern Maricopa County and Northern Pinal Counties, Arizona* **(Reference 10)**. The soils map is presented on **Plate 4-3**.

3.2.4 Land Use Map

The land use information within the City was developed based on Aerial photography provided by the City. This portion of the watershed is fully developed and recent photography provided the most accurate information on the type of development within the study area. However, an impervious area study conducted by the City **(Reference 11)** was used to adjust the percentage of impervious area for each type of land use identified from the aerial photography. Results of the impervious study indicated a much higher impervious percentage than the standard land use guidelines provided in *The Flood Control District of Maricopa County Drainage Manual – Volume I-Hydrology* (hereinafter referred as *FCDMC Drainage Manual*) **(Reference 12)**. To verify the accuracy of the impervious area study, some areas were measured from the aerial photographs to check the impervious area. These checks came within five percent of the results provided by the impervious study.

Land use for the SRPMIC portion of the watershed was assumed to be commercial. Under current conditions, this portion of the watershed is either vacant or agricultural. However, the area is at a prime commercial location and it is expected to be developed in the near future. The Land Use Map is presented on **Plate 4-4**.

SECTION 4: HYDROLOGY

4.1 Method Description

The peak flows in this study area were obtained through precipitation/runoff modeling. The hydrologic modeling was performed by means of the 1991 version of the HEC-1 computer program as developed by the U.S. Army Corps of Engineers **(Reference 13)**. The models were developed using Green and Ampt methodology to estimate the rainfall losses. Excess rainfall was then routed to the concentration points using the Clark Unit Hydrograph. The estimation procedures for model parameters and components were based on the *FCDMC Drainage Manual* **(Reference 12)**.

Schematic flow routing diagrams for runoff modeling are presented on **Plate 4-2.** A six-hour duration storm was used as the base model for this study because it produced higher peak flows than the 24-hour storm. However, the 24-hour storm was used to analyze storage requirements. Flow through regional detention basins was modeled by diverting the flow out of the model up to the capacity of the basin. The Normal-Depth routing method was predominantly utilized for routing hydrographs from one concentration point to the next. However, the Muskingum-Cunge methodology was used at locations with normal depth methodology became numerically unstable. Kinematic Wave methodology was used to route the storm drain routing reaches.

4.2 Parameter Estimation

4.2.1 Drainage Area Boundary

Based on the topographic mapping provided and the aerial photography provided by the City and the SRP-MIC, Entellus developed a preliminary set of basin boundaries. These boundaries were generated considering the existing infrastructure, which included roadway layout, storm drain and other

features affecting the flow patterns through the watershed. Basin Boundaries are shown in **Plate 4-1**.

4.2.2 Watershed Work Map

The watershed maps were based on a 100 scale, 1 feet contour interval topographic mapping provide by the City. Mapping outside the City boundaries was not available. In these areas, The USGS 7.5 minutes Quadrangle maps in combination with the aerial photography provided by the SRP-MIC were used.

4.2.3 Gage Data

Most of the conveyance in the watershed is through the roadways. This type of flow is not suited for gauging. No gauging stations are located within the study area.

4.2.4 Statistical Parameters

The Arizona Department of Water Resources (ADWR) State Standard Attachment SSA 2-96 **(Reference 14)**, documents regional regression equations developed for the State of Arizona. The project area is located within Region 12, which includes most of the central portion of the state. This equation is shown in **Figure 3**. The ADWR regression equations were developed based on gauge data across the entire region and better represent a much larger, better-defined watercourse.

4.2.5 Precipitation

Precipitation data was obtained from the isopluvial maps contained in the NOAA Atlas of Arizona **(Reference 15)**. Selected isopluvial maps used for Maricopa County are also encountered in *FCDMC Drainage Manual (Figures 2.1 through 2.13)* **(Reference 12)**. Copies of these figures, as well as the precipitation frequency (PreFre) output, are included in **Appendix D**.

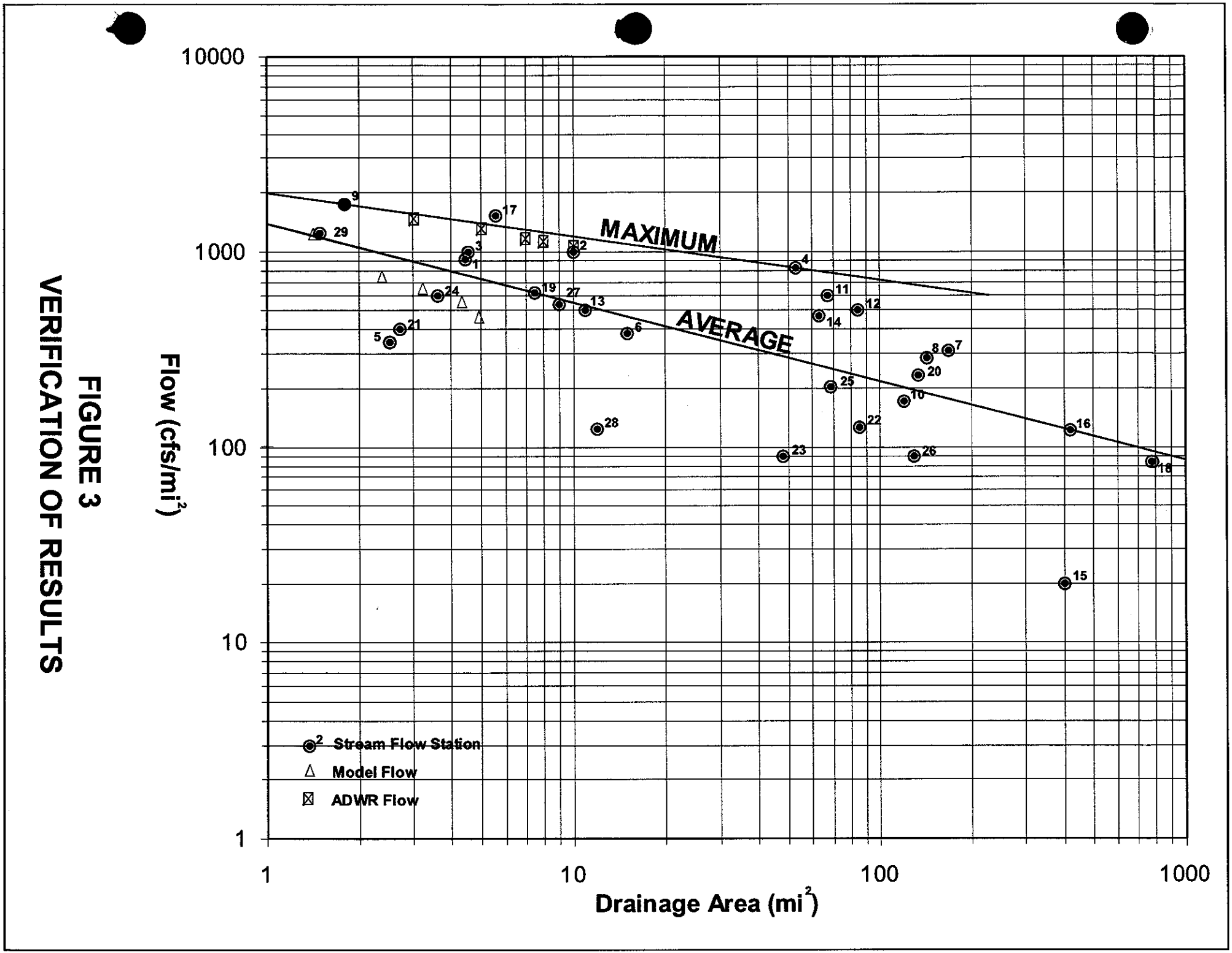


FIGURE 3
VERIFICATION OF RESULTS

4.2.6 Physical Parameters

4.2.6.1 Watershed parameters (HEC-1 Model)

Soils and land use percentages were estimated using the District's Geographic Information System (GIS) database. The land use type was determined from recent aerial photography. The percentage of impervious area for each land use type was estimated using the *City of Scottsdale Impervious Study* **(Reference 11)**. This information, as well as other physical parameters estimated from the work maps, was entered into the *Drainage Design Menu System* (DDMS) **(Reference 16)** to obtain the Green and Ampt rainfall loss parameters.

The Clark Unit Hydrograph was used in the computation of peak discharges in this study because the average subbasin area is less than five square miles. Clark Unit Hydrograph parameters were estimated using the MCUHP1 module of the DDMS software **(Reference 16)**. Supporting documentation and DDMS reports are included in **Appendix D.**

4.2.6.2 Storage routing parameters

Storage for regional basins identified from contours and aerial photographs were included in the development of the HEC-1 model.

Storage volumes were obtained from the contour maps. The storage was modeled as a diversion where all the flow entering the basin, up to the capacity of the basin, is diverted out of the model. Once the basin is full, no more flow is diverted. Detailed calculations are also included in **Appendix E.**

The basins located in the SRPMIC were modeled assuming they were completely developed with a commercial land use and retained the 100-year, 2-hour storm. There were three basins in the project area that had schools with a large playground area. These playground areas are bermed so that they are self-detained. The playground areas were subtracted from the basin calculations to account for the storage.

4.3 Problems Encountered During the Study

4.3.1 Special Problems and Solutions

4.3.1.1 Storm Drain

There are several existing storm drains within the study are **(Figure 2)**. They range in size from 18 inches to 72 inches. The total capacity of the storm drains was calculated for each reach and the results and detailed calculation are included in **Appendix E.** The amount of flow entering the storm drain at each concentration point was estimated by prorating the capacity of the storm drain between the different concentration points. The length of storm drain (number of catch basins within a reach) as well as the contributing area was used to determine the percentage of the storm drain capacity that could be taken at each concentration point (see **Appendix D**). These flows were then diverted out of the model and routed to Indian Bend Wash.

A sensitivity analysis was performed to determine if a more detailed analysis of the storm drains is needed to accurately estimate the flows at Granite Reef Wash. This sensitivity analysis shows that the storm drains have an insignificant effect on the flows at Granite Reef Wash. Therefore, a more detailed analysis

of the storm drain system was not performed. **Table 2** shows the results of this analysis at some key locations.

TABLE 2

Storm Drain Sensitivity Analysis Results

Location	Flow (cfs)	
	100-year, 6-hour Model	Sensitivity Model *
Thomas Road & Granite Reef Wash	1766	1958
McDowell Road & Granite Reef Wash	2203	2388
McKellips Road & Granite Reef Wash	2347	2550

* No storm drains included in the model.

4.3.1.2 Flow Splits

The study area is very flat and each roadway intersection has a potential flow split. Particular attention was given to flow splits where the flow exits the watershed. Several of these splits were identified along Granite Reef Road where split flows to the west exit the watershed and flow into the Indian Bend Wash watershed. Split flows within the watershed were also modeled to insure flow estimates at relevant concentration points are as accurate as possible. The detailed split flow calculations are included in **Appendix E**.

4.3.1.3 Area Reduction

The upstream contributing area, for both surface diversions and storm drain diversions, was divided between the main path and the diverted path proportionately to the amount of flow estimated for each path. These values were hard-coded into the models to accurately reflect the upstream contributing area.

4.3.2 Modeling Warning and Error Messages

There were no ERROR messages in the HEC-1 models. Warning messages generated by the HEC-1 were examined to ensure that the models were not adversely affected.

The warning message encountered for the 10-year, 6-hour HEC-1 model is as follows:

- WARNING --- MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR FLOWS BETWEEN (*Value*) TO (*Value*).

This warning specified a range of flows at which routing might be numerically unstable. This warning occurred in three routing reaches. The hydrographs of all three routing reaches were within the range of the specified flows, and these routing reaches were examined. These hydrographs showed no signs of instability and the warning was considered inconsequential.

The warning message encountered for the 100-year, 6-hour HEC-1 model is as follows:

- WARNING --- MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR FLOWS BETWEEN (*Value*) TO (*Value*).

This warning specified a range of flows at which routing might be numerically unstable. This warning occurred in three routing reaches. One of them became unstable at a range specified by the program that was lower than the flow being routed and the warning was ignored. The hydrographs of the other two that were within the range of specified flows were examined. These hydrographs

4.3.2 Modeling Warning and Error Messages

There were no ERROR messages in the HEC-1 models. Warning messages generated by the HEC-1 were examined to ensure that the models were not adversely affected.

The warning message encountered for the 10-year, 6-hour HEC-1 model is as follows:

- WARNING --- *MODIFIED PULS ROUTING MAY BE* NUMERICALLY UNSTABLE FOR FLOWS BETWEEN (*Value*) TO (*Value*).

This warning specified a range of flows at which routing might be numerically unstable. This warning occurred in three routing reaches. The hydrographs of all three routing reaches were within the range of the specified flows, and these routing reaches were examined. These hydrographs showed no signs of instability and the warning was considered inconsequential.

The warning message encountered for the 100-year, 6-hour HEC-1 model is as follows:

- WARNING --- MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR FLOWS BETWEEN (*Value*) TO (*Value*).

This warning specified a range of flows at which routing might be numerically unstable. This warning occurred in three routing reaches. One of them became unstable at a range specified by the program that was lower than the flow being routed and the warning was ignored. The hydrographs of the other two that were within the range of specified flows were examined. These hydrographs

for the routes showed no signs of instability, and the warning was considered inconsequential.

The warning message encountered for the 100-year, 24-hour HEC-1 model is as follows:

- WARNING --- MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR FLOWS BETWEEN (*Value*) TO (*Value*).
- WARNING --- TIME STEP FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

The first warning specified a range of flows at which routing might be numerically unstable. This warning occurs in two routing reaches. The hydrographs were within the range of specified flows, and were examined. These hydrographs for the routes showed no signs of instability, and the warning was considered inconsequential.

The last warning message occurred in routing reach RF02W and RE02W. These routing reaches are storm sewers that are under capacity for the 100-year, 24-hour storm. This warning was considered inconsequential because the hydrograph showed no signs of irregularity and the results appear to be reasonable.

4.4 Calibration

Flows estimated for this project were based on a precipitation/runoff model using HEC-1 software and the methodology and procedures outlined by *The FCDMC Drainage Manual*. The result obtained during this study were plotted and compared with gage data collected by the Flood Control District of Maricopa County **(Reference 17)**. These results were also compared with regional regression

equations. **Figure 3** shows that the flows estimated by the model are generally below the average values estimated from other means, but within the data envelope. This is to be expected because the shape of the watershed. The Granite Reef watershed is long (approximately 6 miles in length) and narrow (1/2 to 1 mile wide). This type of watershed tends to produce hydrographs that have a longer timeframe with lower peaks than the more conventional watersheds.

4.5 Final Results

4.5.1 Hydrologic Analysis

Results of the hydrologic analysis including the HEC-1 input files are presented in **Appendices F, G, and H. Table 3** shows the flow from the hydrology models at some key locations.

TABLE 3

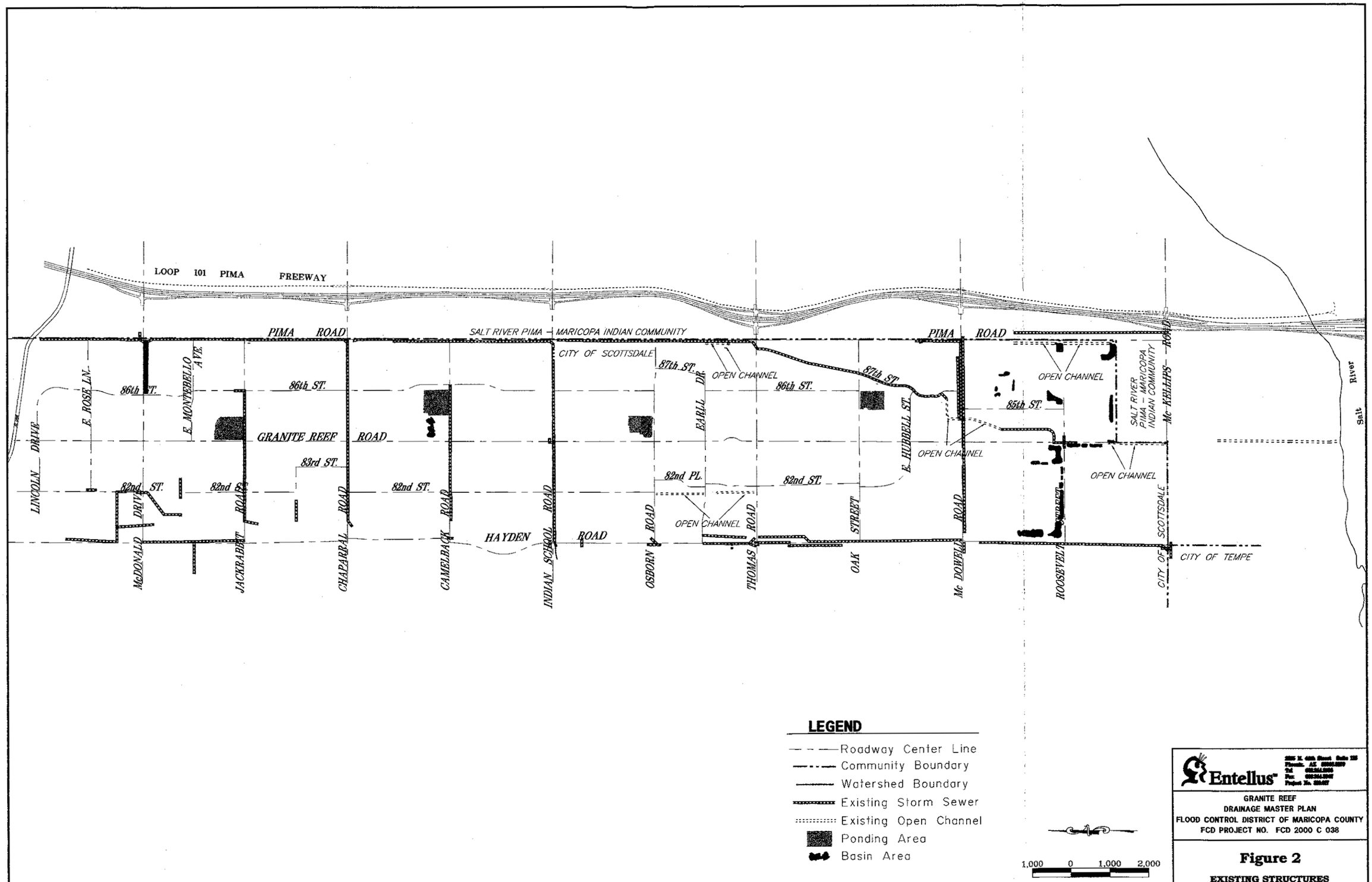
Summary of Discharges at Key Locations

Location	Flow (cfs)		
	100-year, 6-hour	10-year, 6-hour	100-year, 24-hour
Camelback Road & 86th Street	803	289	554
Thomas Road & Granite Reef Road	265	119	179
Thomas Road & Granite Reef Wash	1766	538	1484
McDowell Road & Granite Reef Wash	2203	739	1899
McKellips Road & Granite Reef Wash	2347	743	2122

4.5.2 Verification of Results

The results of the Hydrology analysis were plotted and compared with the Flood Control District gauge data **(Figure 3)** shows the data is within the lower portion of the data envelope as expected considering the physical

characteristics of the watershed. The flows are also consistent with flows estimated by other studies within the same general area.



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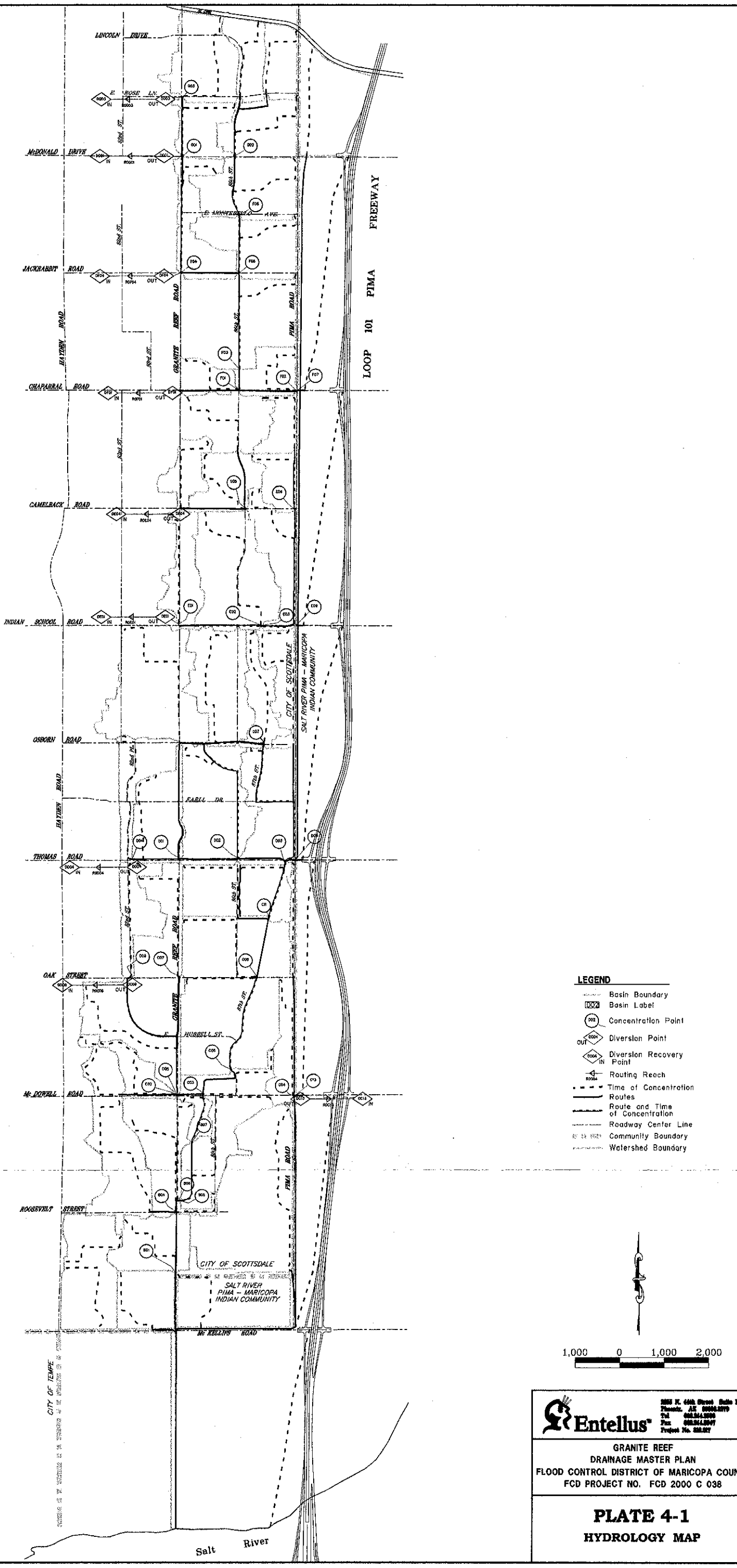
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

Figure 2

EXISTING STRUCTURES



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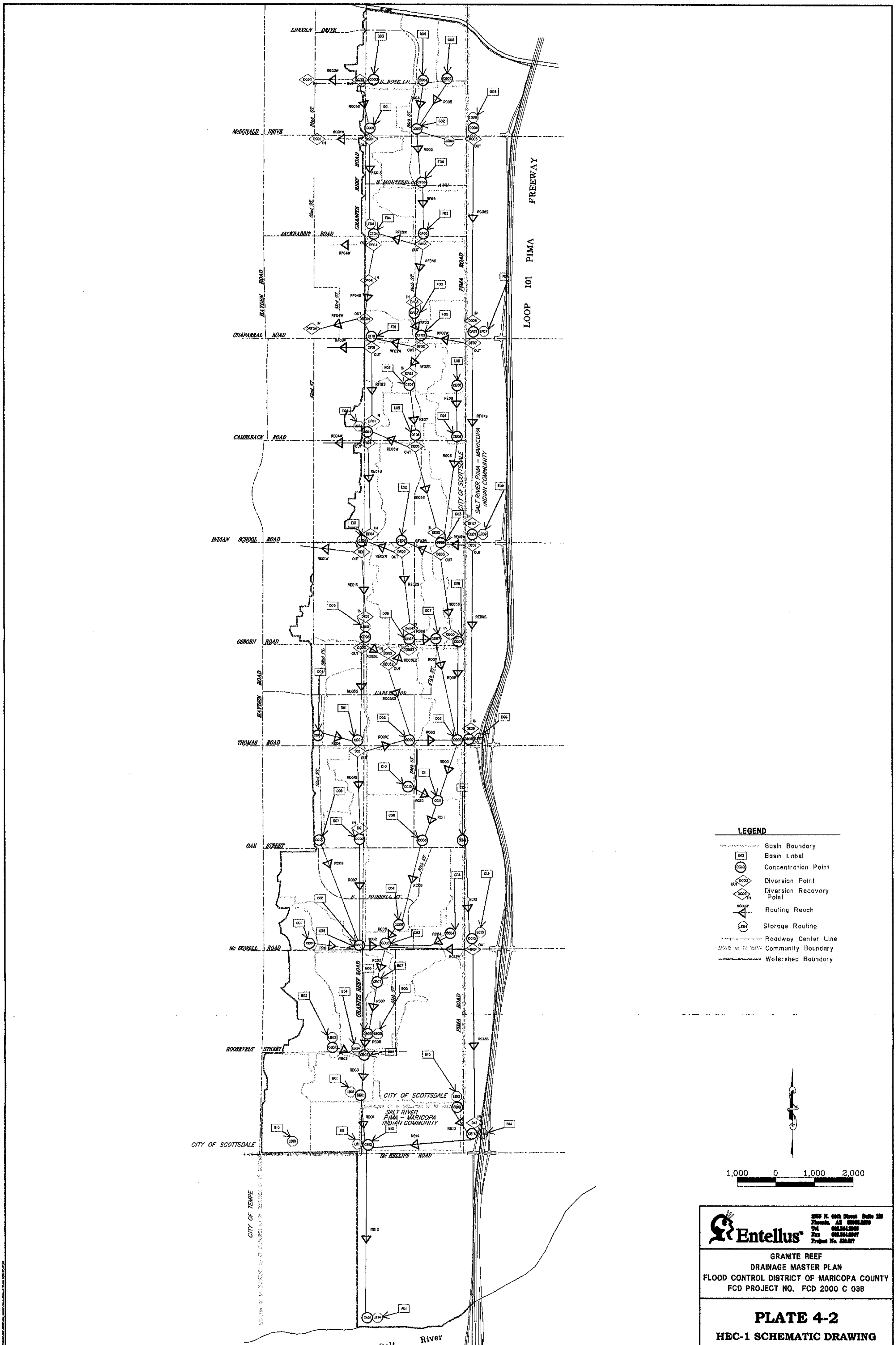
FCD PROJECT NO. FCD 2000 C 038

PLATE 4-1
HYDROLOGY MAP



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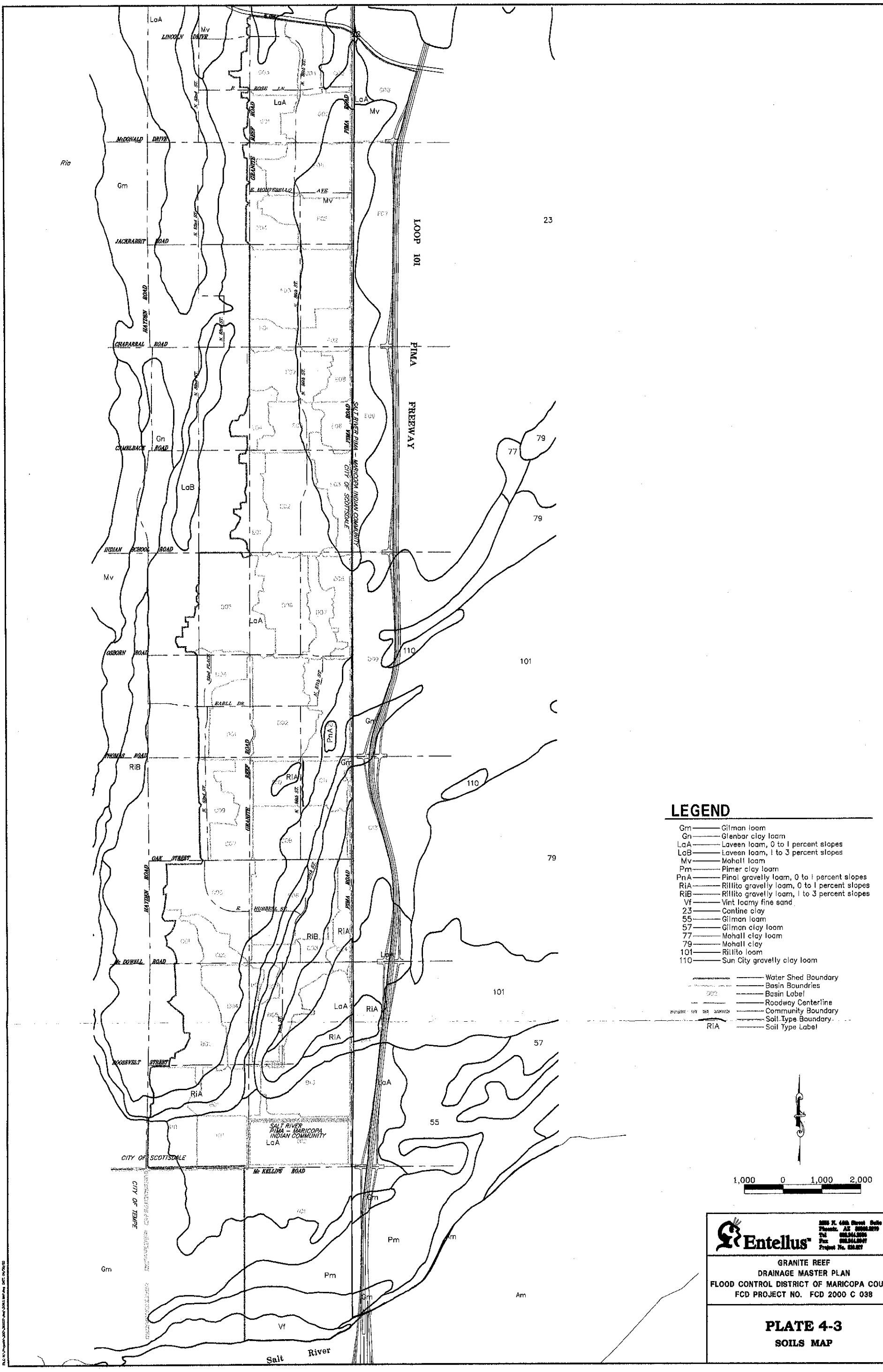
FCD PROJECT NO. FCD 2000 C 038

PLATE 4-2

HEC-1 SCHEMATIC DRAWING



LEGEND

- Gm — Gilman loam
- Gn — Glenbar clay loam
- LaA — Laveen loam, 0 to 1 percent slopes
- LaB — Laveen loam, 1 to 3 percent slopes
- Mv — Mohall loam
- Pm — Pimer clay loam
- PnA — Pinal gravelly loam, 0 to 1 percent slopes
- RiA — Rillito gravelly loam, 0 to 1 percent slopes
- RiB — Rillito gravelly loam, 1 to 3 percent slopes
- Vf — Vint loamy fine sand
- 23 — Contine clay
- 55 — Gilman loam
- 57 — Gilman clay loam
- 77 — Mohall clay loam
- 79 — Mohall clay
- 101 — Rillito loam
- 110 — Sun City gravelly clay loam

- Water Shed Boundary
- Basin Boundries
- Basin Label
- Roadway Centerline
- Community Boundary
- Soil Type Boundary
- RiA — Soil Type Label

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
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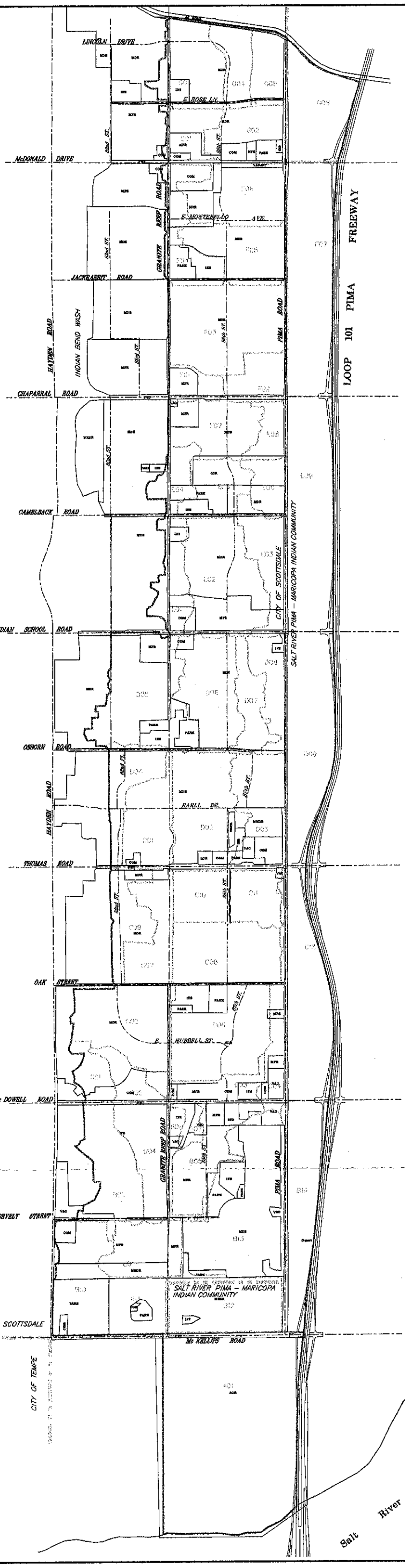
PLATE 4-3
SOILS MAP



LEGEND

- LDR — Low Density Residential
- MDR — Medium Density Residential
- MHDR — Medium High Density Residential
- HDR — High Density Residential
- MFR — Multi-Family Residential
- COM — Commercial
- FWY — Freeway / Roadway
- IND — Industrial
- INS — Institutional
- PARK — Park
- VAC — Vacant

- Water Shed Boundary
- Basin Boundries
- Basin Label
- Roadway Centerline
- Community Boundary
- Land Use Boundary

1,000 0 1,000 2,000

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PLATE 4-4
LAND USE MAP

APPENDIX A REFERENCES

A.1 Data Collection Summary

The Data Collection summary is included in the *Granite Reef Wash Drainage Master Plan Part One* **(Reference 18)**.

A.2 Reference Documents

The following is a list of the references used during the course of this study:

1. Flood Control District of Maricopa County, *Granite Reef Wash Floodplain Delineation Study*, May 1997.
2. *Flood Insurance Study for the City of Scottsdale*, Federal Emergency Management Association, June 1984.
3. *Granite Reef Wash Drainage Study*, Simons, Li and Associates, Jan. 1995.
4. *Report on Granite Reef Wash Drainage Study*, KVL Consultants Inc., Feb 1995.
5. *Granite Reef Watershed Flood Mitigation Candidate Assessment Report*, Primatech Engineers and Consultants, Oct 1999.
6. City of Scottsdale 100 scale, 1 foot contour mapping
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8. City of Scottsdale, Aerial Photography
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11. City of Scottsdale, *Impervious Study*
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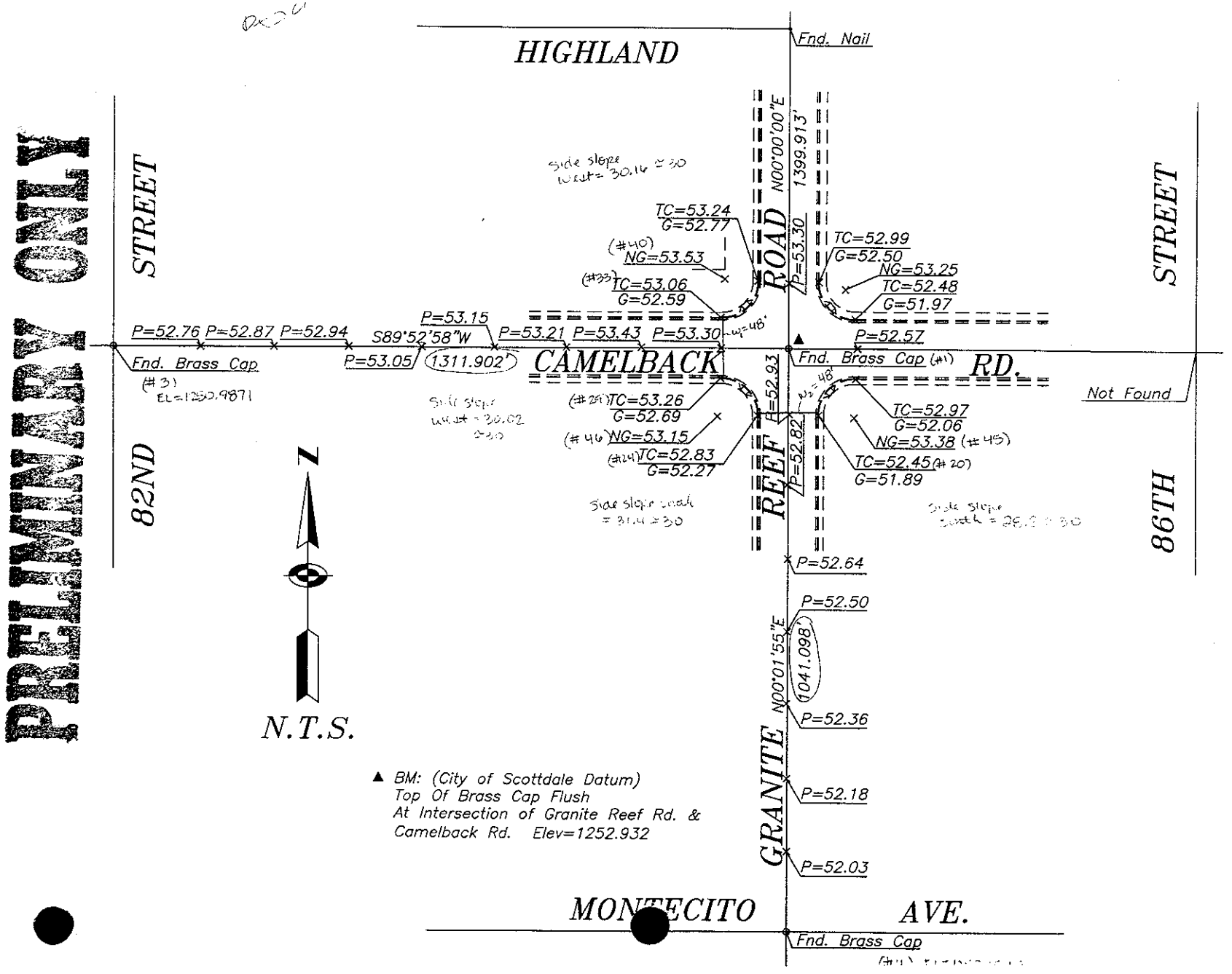
25. Flood Control District of Maricopa County, December 1992. *Luke Wash Flood Insurance Study – Between the Gila River Floodplain and the Southern Pacific Railroad.* FCD contract 90-68. Prepared by Coe & Van Loo Consultants, Inc.
26. Arizona Department of Water Resources, Flood Warning and Dam Safety Section, *Delineation of Riverine Floodplains in Arizona*

APPENDIX B GENERAL DOCUMENTATION AND CORRESPONDANCE

This will be included at the end of the project.

APPENDIX C SURVEY FIELD NOTES


PRELIMINARY ONLY
HIGHLAND
Fnd. Nail
STREET
82ND
86TH
ROAD
GRANITE REEF
CAMELBACK
RD.
MONTECITO
AVE.
N00°00'00"E
1399.913'
N00°01'55"E
1041.098'
S89°52'58"W
1311.902'
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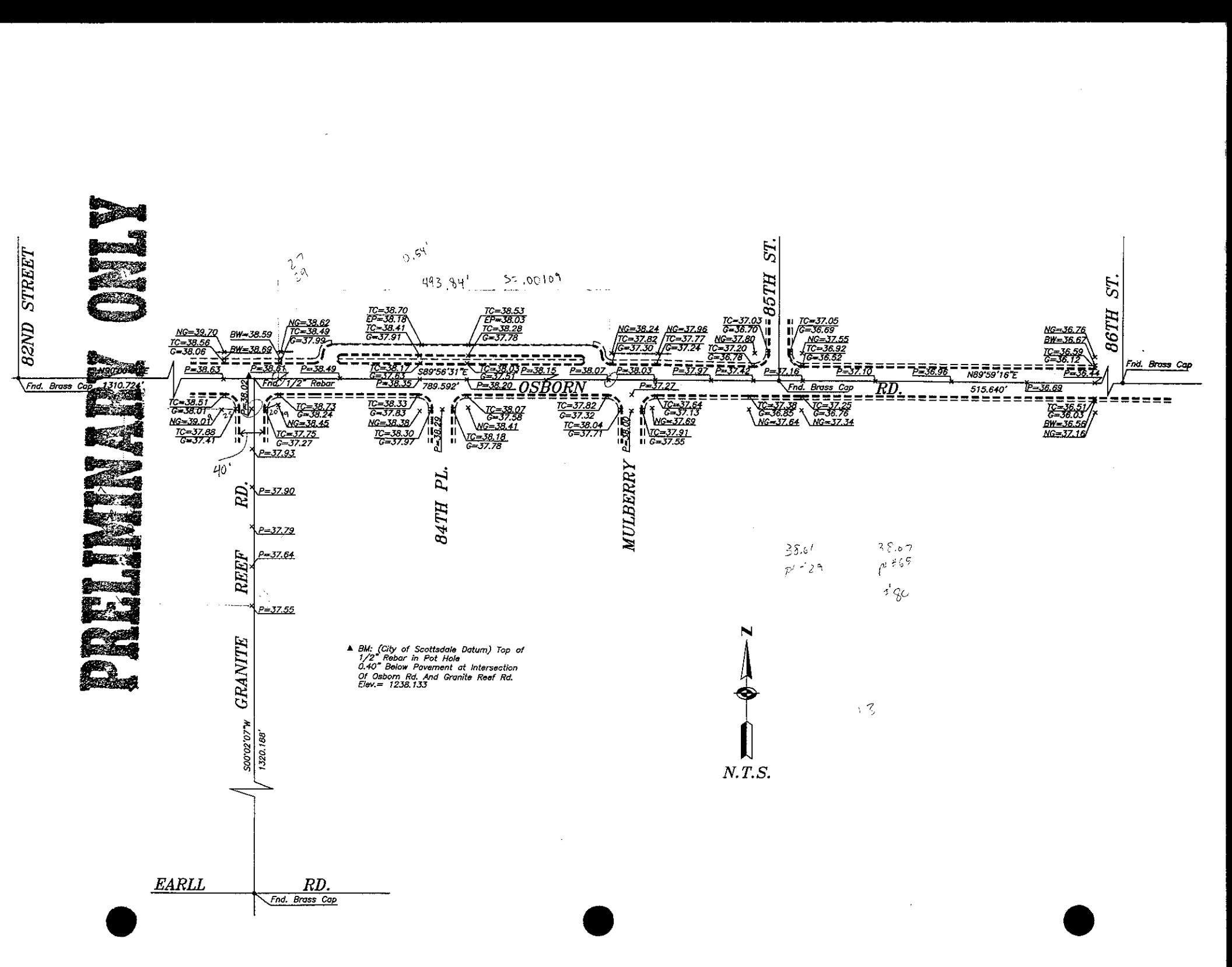
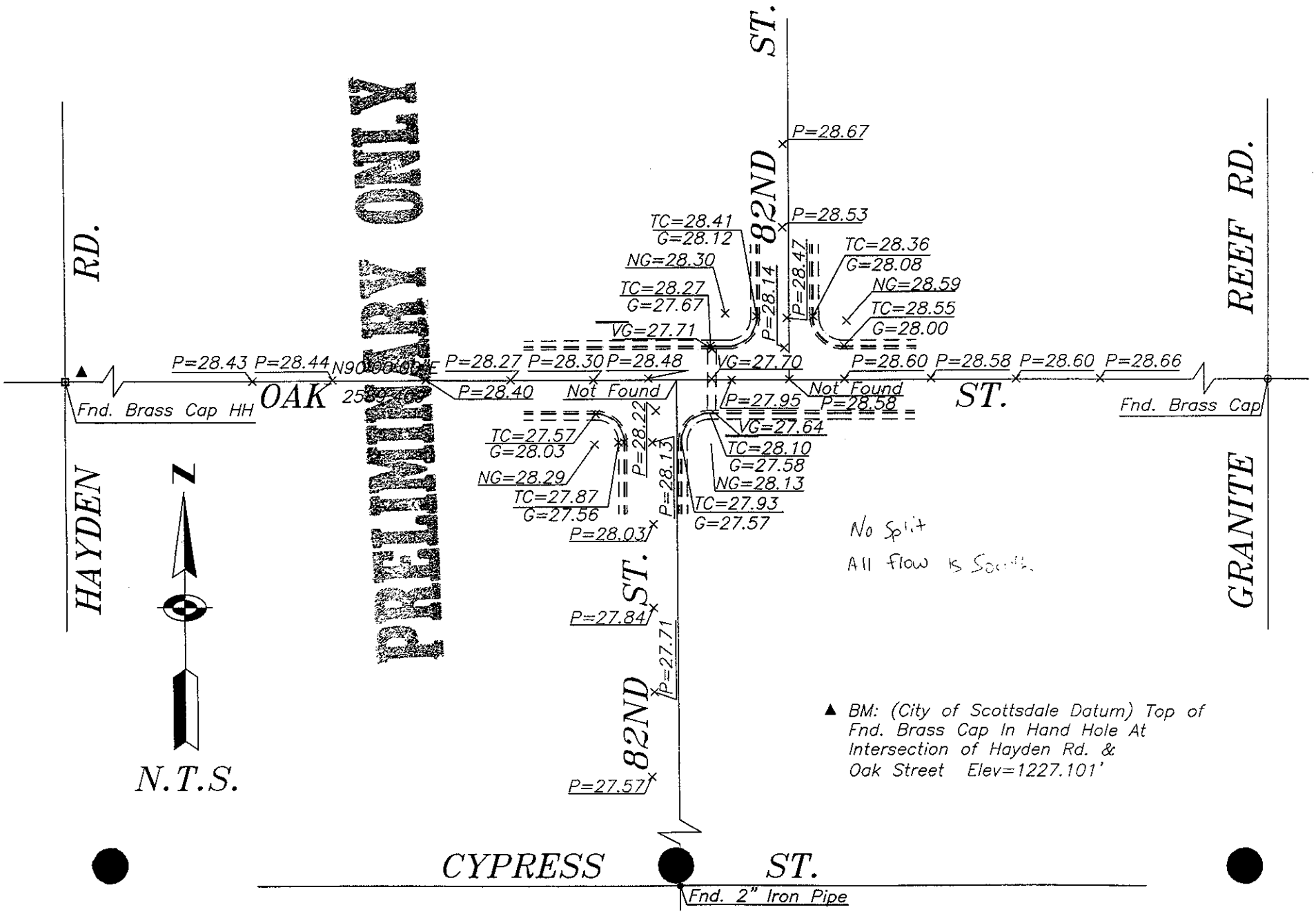
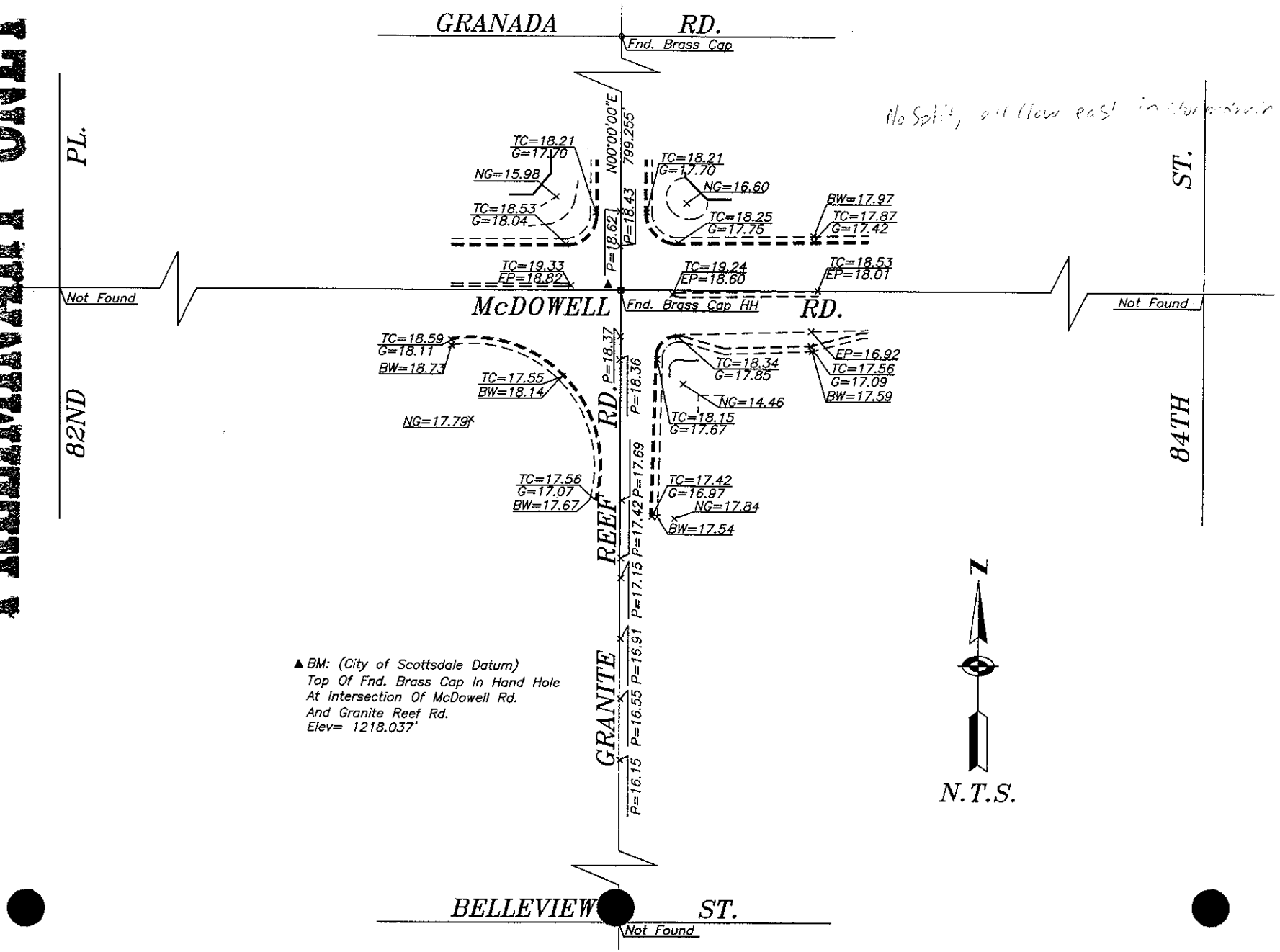
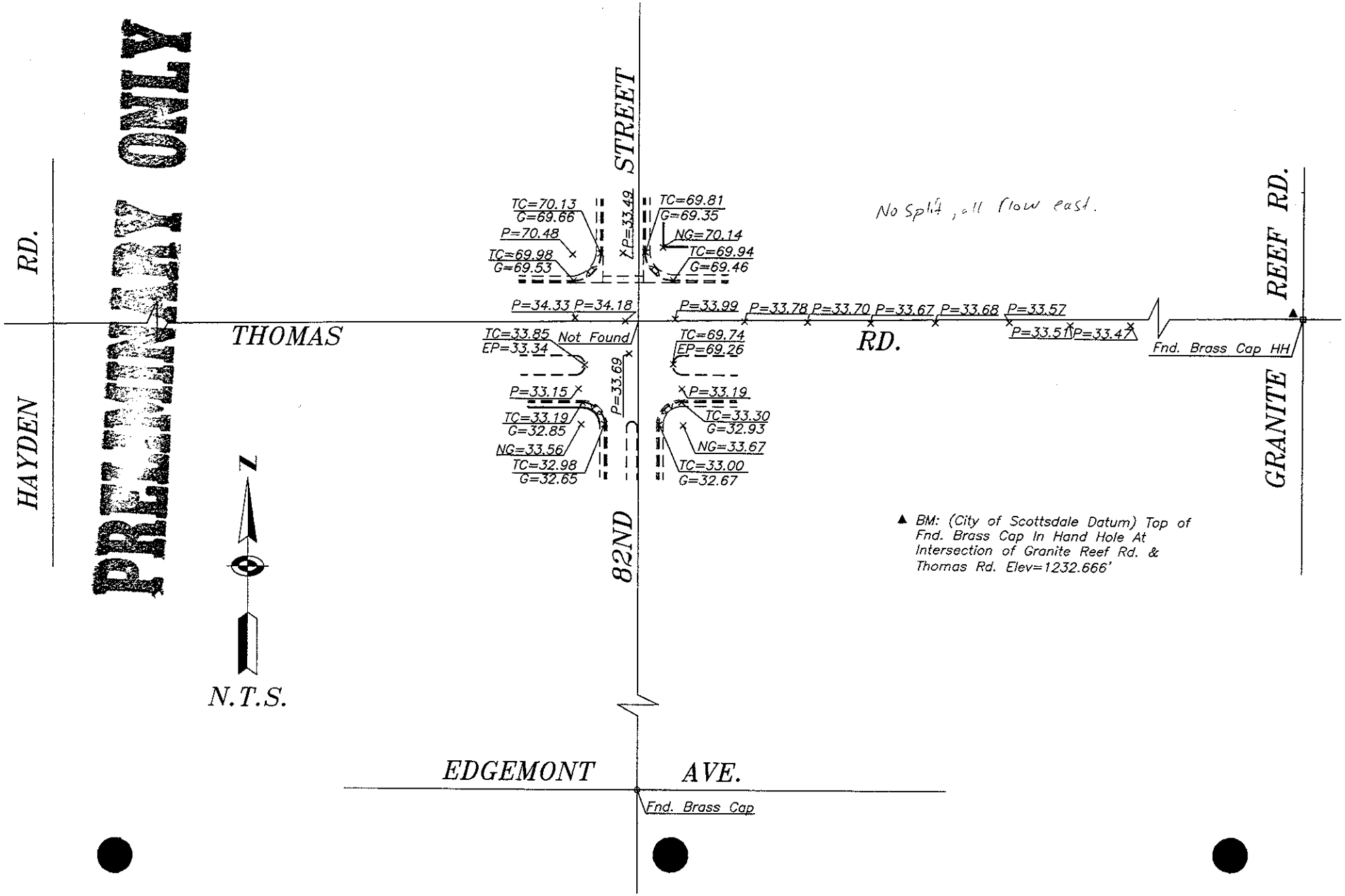
W=48'
Side slope west = 30.16 ≈ 30
Side slope west = 30.02 ≈ 30
Side slope south = 31.4 ≈ 30
Side slope south = 28.2 ≈ 30
N
N.T.S.
▲ BM: (City of Scottdale Datum)
Top Of Brass Cap Flush
At Intersection of Granite Reef Rd. &
Camelback Rd. Elev=1252.932

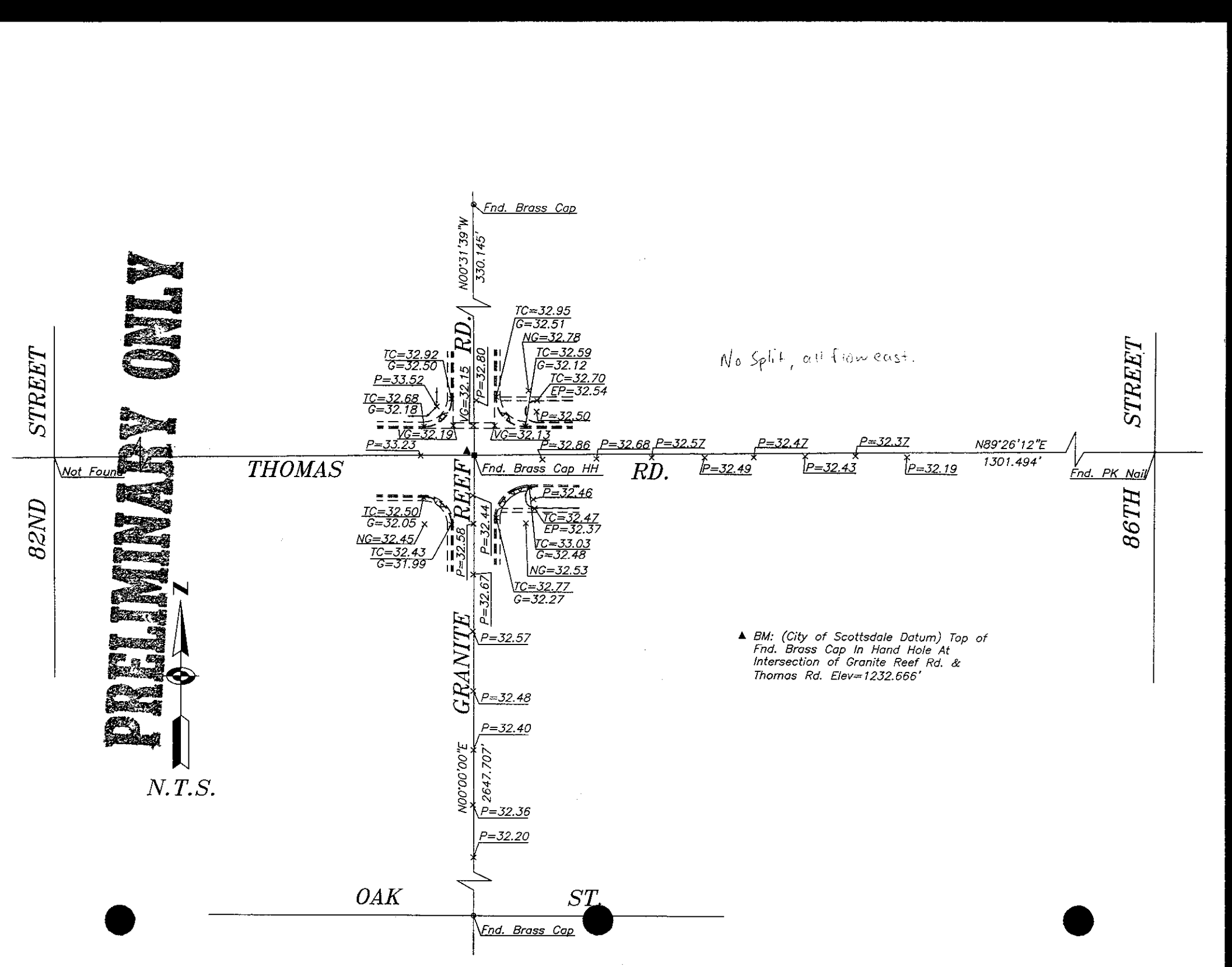

PRELIMINARY ONLY
82ND STREET
85TH ST.
86TH ST.
OSBORN RD.
84TH PL.
MULBERRY
GRANITE REEF RD.
EARLL RD.
Fnd. Brass Cap
Fnd. 1/2" Rebar
S89°56'31"E
789.592'
N89°59'16"E
515.640'
S00°02'07"W
1320.188'
493.84'
S=.00109
N.T.S.
▲ BM: (City of Scottsdale Datum) Top of 1/2" Rebar in Pot Hole 0.40" Below Pavement at Intersection Of Osborn Rd. And Granite Reef Rd. Elev.= 1238.133

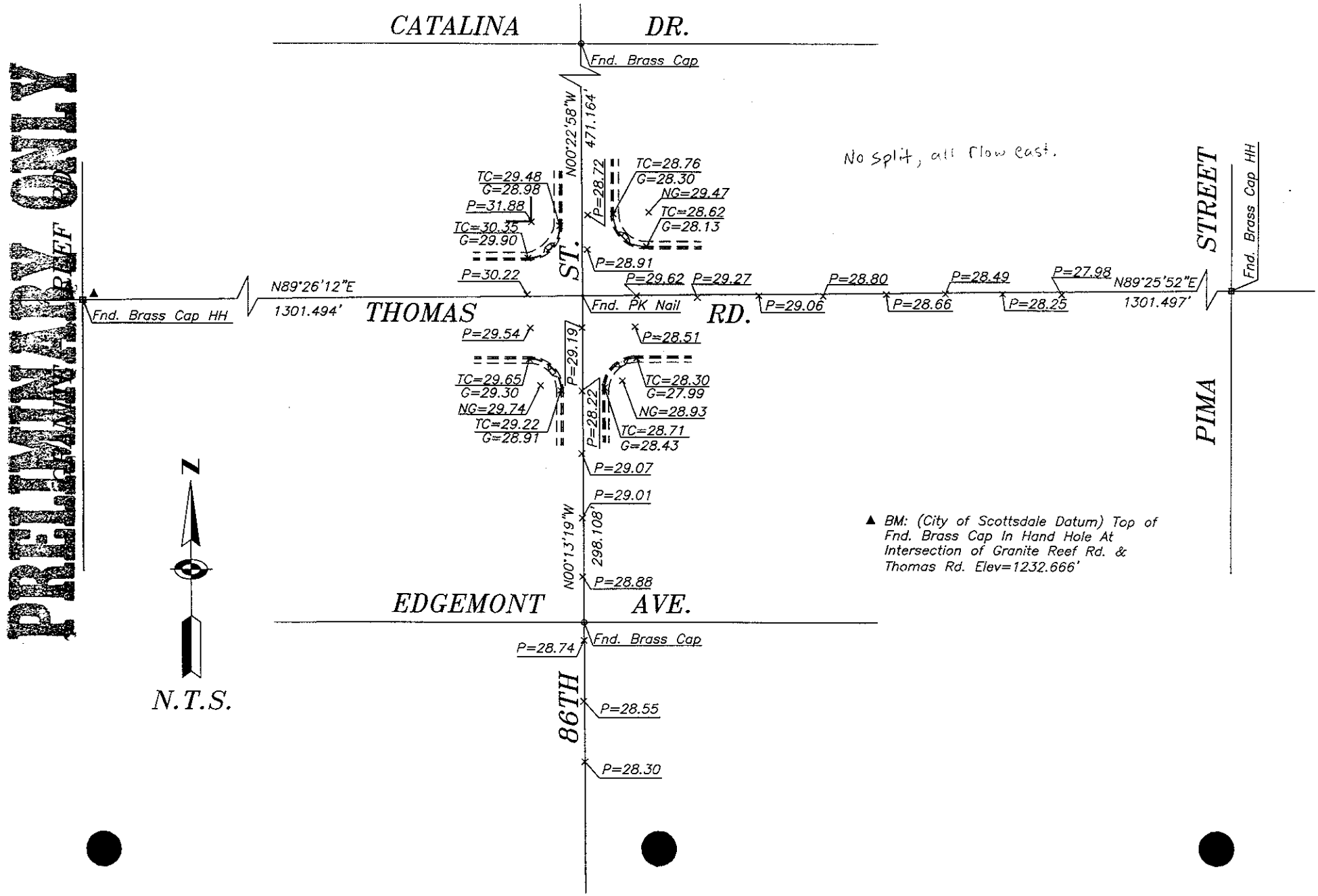

PRELIMINARY ONLY
HAYDEN RD.
OAK ST.
82ND ST.
REEF RD.
GRANITE
CYPRESS ST.
Fnd. Brass Cap HH
Fnd. Brass Cap
Fnd. 2" Iron Pipe
P=28.43
P=28.44
P=28.27
P=28.30
P=28.48
P=28.40
Not Found
VG=27.70
P=28.60
P=28.58
P=28.60
P=28.66
P=28.67
P=28.53
P=28.47
P=28.14
TC=28.41
G=28.12
NG=28.30
TC=28.27
G=27.67
VG=27.71
TC=28.36
G=28.08
NG=28.59
TC=28.55
G=28.00
P=27.95
Not Found
P=28.58
VG=27.64
TC=28.10
G=27.58
NG=28.13
TC=27.93
G=27.57
P=28.22
P=28.13
TC=27.57
G=28.03
NG=28.29
TC=27.87
G=27.56
P=28.03
P=27.84
P=27.71
P=27.57
N
N.T.S.
No Split
All flow is South
▲ BM: (City of Scottsdale Datum) Top of Fnd. Brass Cap In Hand Hole At Intersection of Hayden Rd. & Oak Street Elev=1227.101'

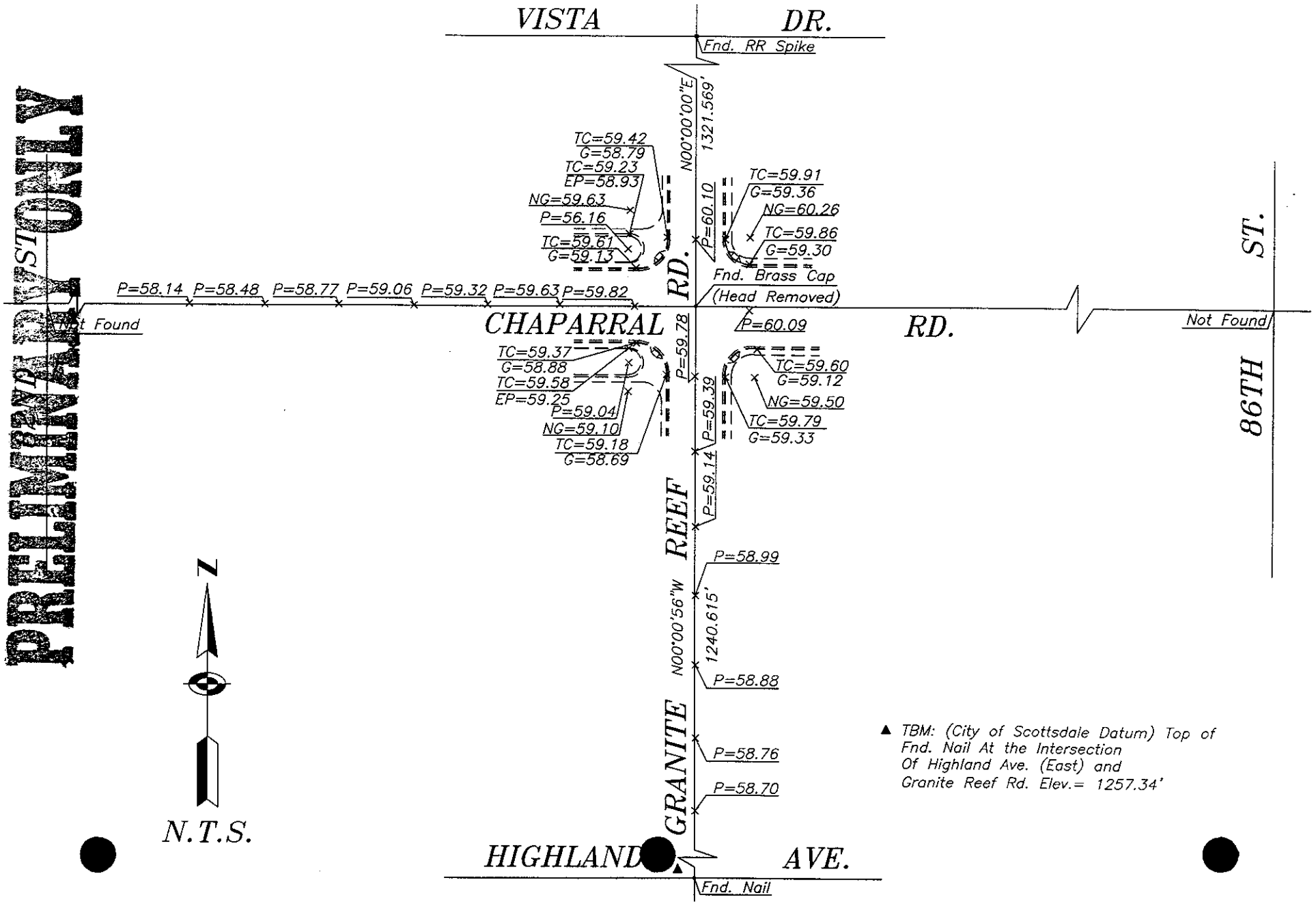
PRELIMINARY ONLY



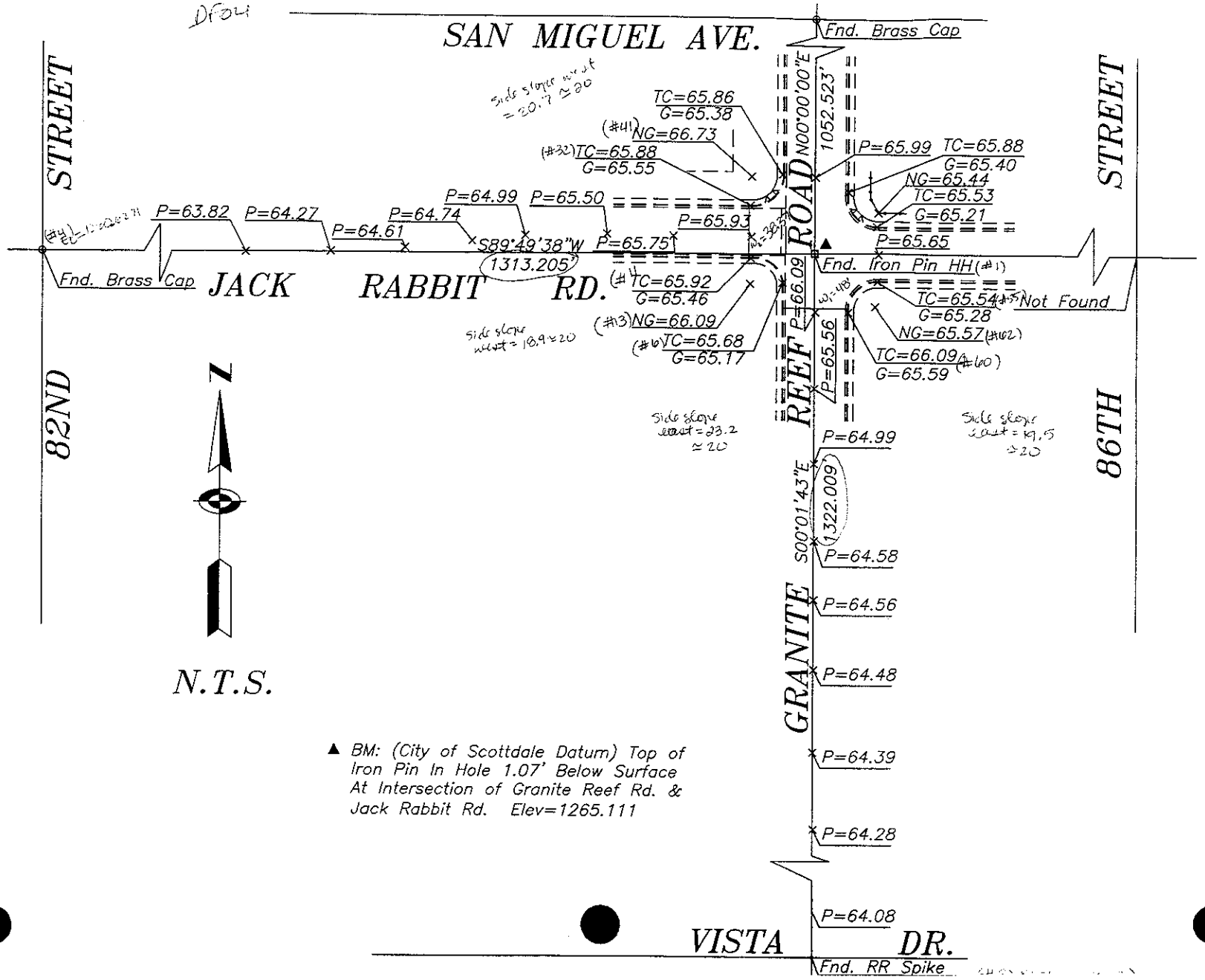

PRELIMINARY ONLY
HAYDEN RD.
THOMAS RD.
82ND STREET
GRANITE REEF RD.
EDGEMONT AVE.
N
N.T.S.
TC=70.13
G=69.66
P=70.48
TC=69.98
G=69.53
XP=33.49
TC=69.81
G=69.35
NG=70.14
TC=69.94
G=69.46
No Split, all flow east.
P=34.33
P=34.18
P=33.99
P=33.78
P=33.70
P=33.67
P=33.68
P=33.57
P=33.51
P=33.47
Fnd. Brass Cap HH
TC=33.85
EP=33.34
Not Found
TC=69.74
EP=69.26
P=33.69
P=33.15
TC=33.19
G=32.85
NG=33.56
TC=32.98
G=32.65
P=33.19
TC=33.30
G=32.93
NG=33.67
TC=33.00
G=32.67
▲ BM: (City of Scottsdale Datum) Top of Fnd. Brass Cap In Hand Hole At Intersection of Granite Reef Rd. & Thomas Rd. Elev=1232.666'
Fnd. Brass Cap


PRELIMINARY ONLY
N
N.T.S.
82ND STREET
86TH STREET
THOMAS RD.
GRANITE REEF
OAK ST.
Not Found
Fnd. Brass Cap HH
Fnd. PK Nail
Fnd. Brass Cap
Fnd. Brass Cap
N00°31'39"W
330.145'
N89°26'12"E
1301.494'
N00°00'00"E
2647.707'
No Split, all flow east.
TC=32.95
G=32.51
NG=32.78
TC=32.59
G=32.12
TC=32.70
EP=32.54
P=32.50
TC=32.92
G=32.50
P=33.52
TC=32.68
G=32.18
VG=32.19
VG=32.15
P=32.80
VG=32.13
P=33.23
P=32.86
P=32.68
P=32.57
P=32.47
P=32.37
P=32.49
P=32.43
P=32.19
P=32.46
TC=32.47
EP=32.37
TC=33.03
G=32.48
NG=32.53
TC=32.77
G=32.27
TC=32.50
G=32.05
NG=32.45
TC=32.43
G=31.99
P=32.44
P=32.58
P=32.67
P=32.57
P=32.48
P=32.40
P=32.36
P=32.20
▲ BM: (City of Scottsdale Datum) Top of Fnd. Brass Cap In Hand Hole At Intersection of Granite Reef Rd. & Thomas Rd. Elev=1232.666'


PRELIMINARY ONLY
CATALINA DR.
Fnd. Brass Cap
N00°22'58"W
471.164'
No Split, all flow east.
TC=29.48
G=28.98
P=31.88
TC=30.35
G=29.90
P=30.22
P=28.72
TC=28.76
G=28.30
NG=29.47
TC=28.62
G=28.13
P=28.91
ST.
STREET
Fnd. Brass Cap HH
N89°26'12"E
1301.494'
Fnd. Brass Cap HH
THOMAS
Fnd. PK Nail
RD.
P=29.62
P=29.27
P=28.80
P=28.49
P=27.98
N89°25'52"E
1301.497'
P=29.06
P=28.66
P=28.25
P=29.54
TC=29.65
G=29.30
NG=29.74
TC=29.22
G=28.91
P=29.19
P=28.22
P=28.51
TC=28.30
G=27.99
NG=28.93
TC=28.71
G=28.43
PIMA
P=29.07
P=29.01
N00°13'19"W
298.108'
P=28.88
EDGEMONT
AVE.
Fnd. Brass Cap
P=28.74
86TH
P=28.55
P=28.30
N
N.T.S.
▲ BM: (City of Scottsdale Datum) Top of Fnd. Brass Cap In Hand Hole At Intersection of Granite Reef Rd. & Thomas Rd. Elev=1232.666'

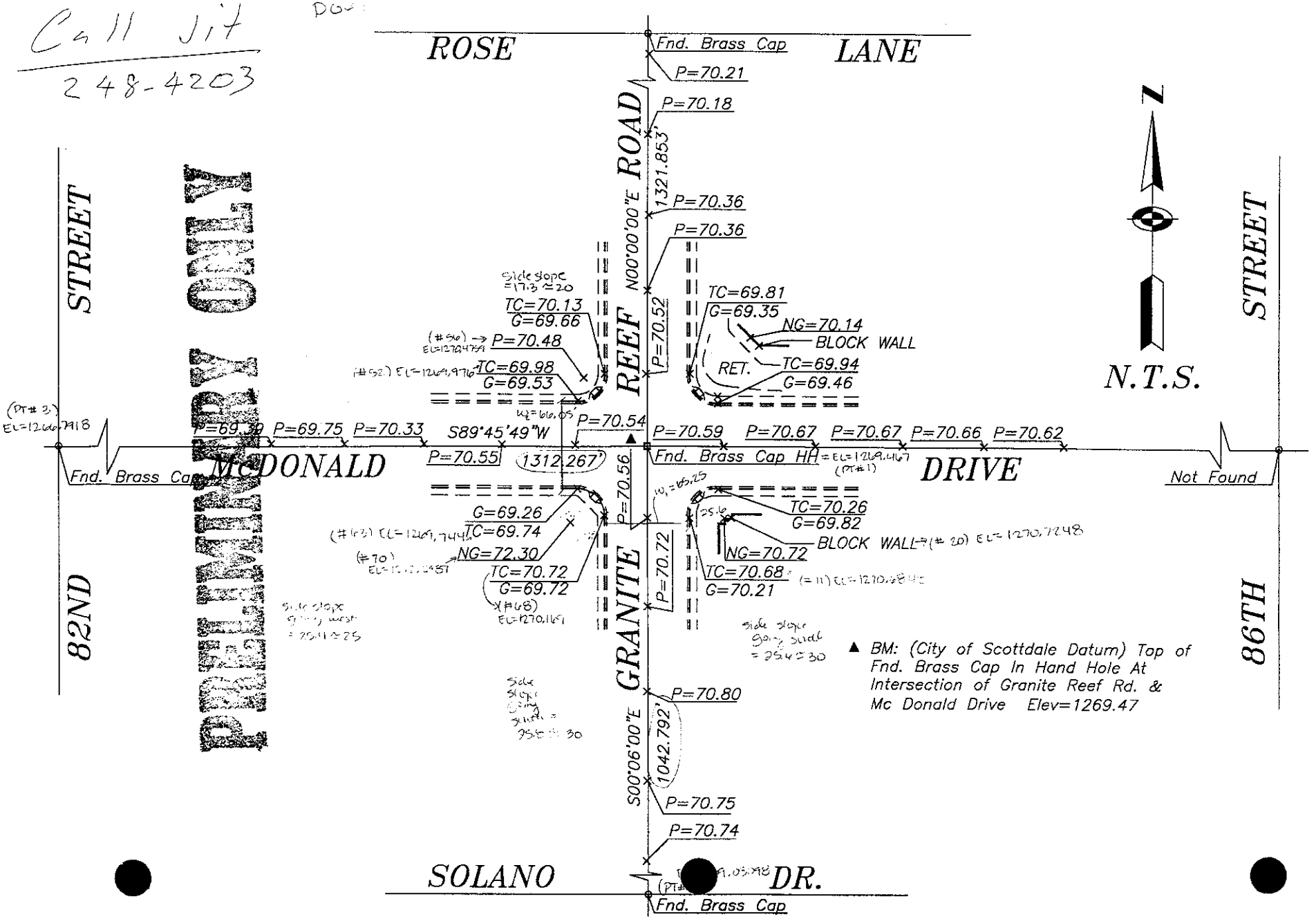


PRELIMINARY ONLY



▲ BM: (City of Scottdale Datum) Top of Iron Pin In Hole 1.07' Below Surface At Intersection of Granite Reef Rd. & Jack Rabbit Rd. Elev=1265.111

Call Jit
248-4203



APPENDIX D HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION

D.1 Precipitation Data

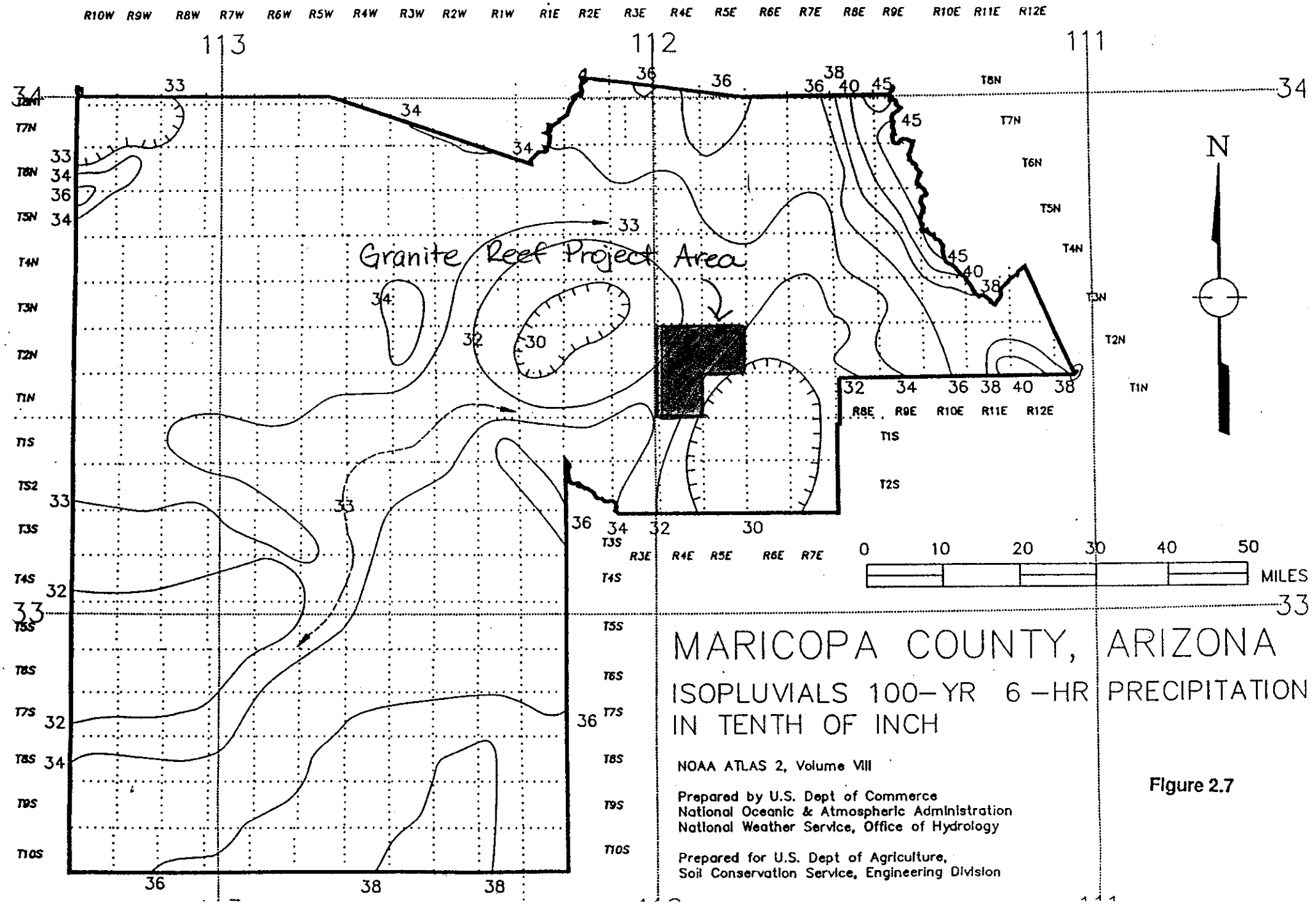
D.2 Physical Parameters Calculations

D.3 Hydrograph Routing Data

D.4 Storage Routing Data

D.5 Flow Splits and Diversions Data

D.1 Precipitation Data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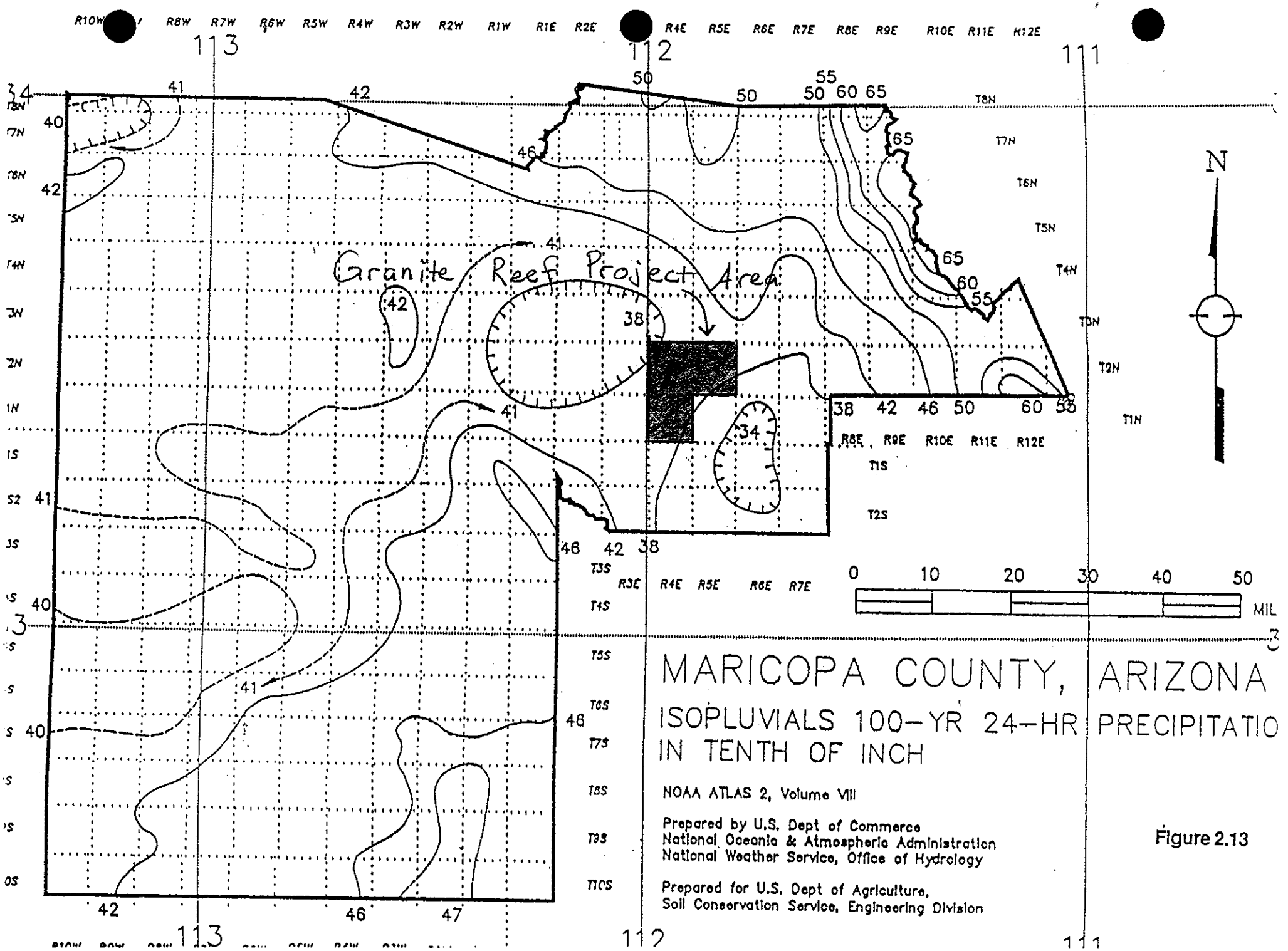
113
112
111
Granite Reef Project Area
N
0 10 20 30 40 50
MILES
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 100-YR 6-HR PRECIPITATION
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.7


Granite Reef Project Area
N
0 10 20 30 40 50
MIL
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 100-YR 24-HR PRECIPITATIO
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
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National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

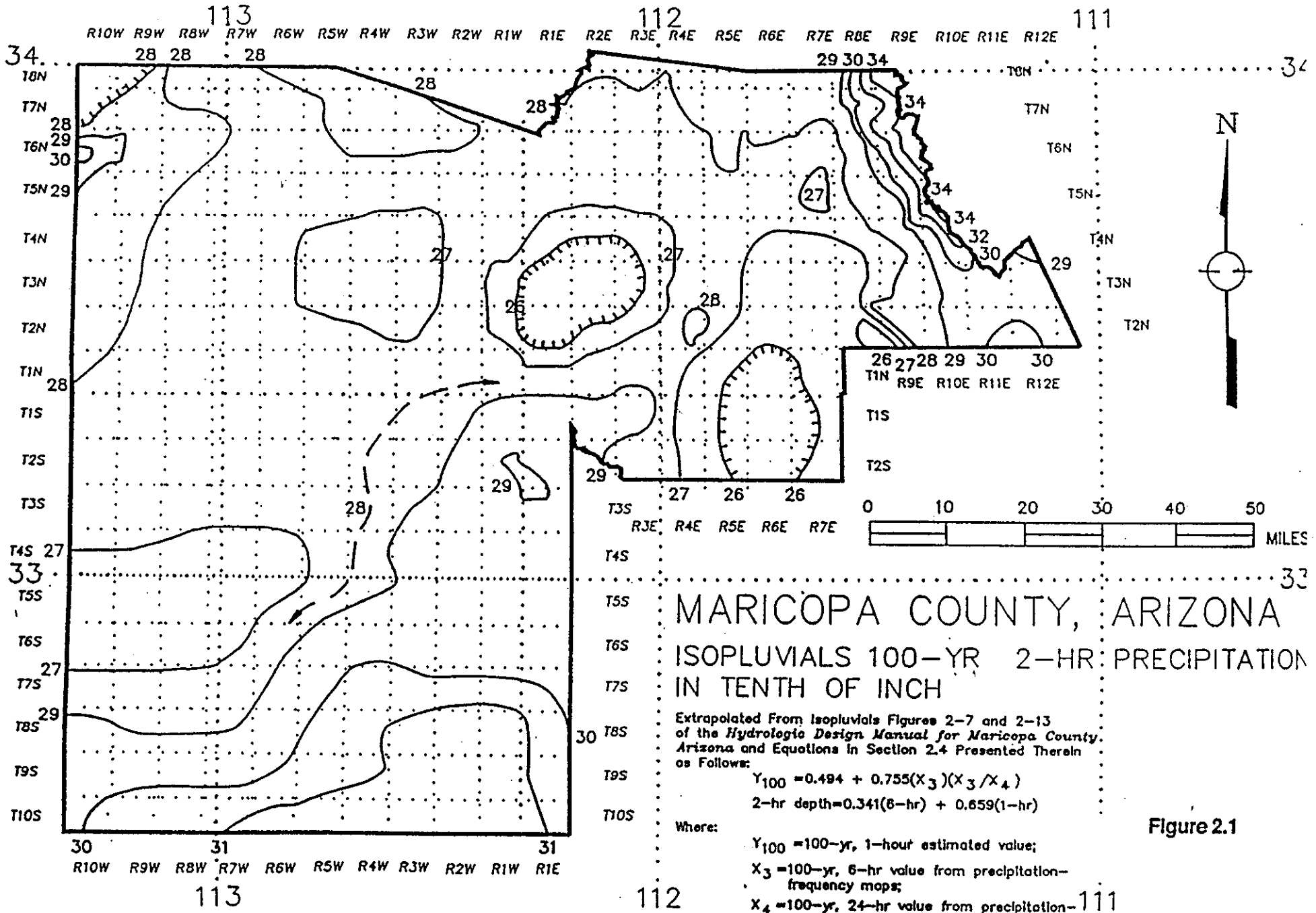
Figure 2.13

Rainfall Data

Primary Zone Number: **7** Latitude: **0.0** Elevation: **0**

Short Duration Zone Number: **8** Longitude: **0.0**

	Point Values (in)					
Duration	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
5 MIN	0.33	0.42	0.49	0.58	0.66	0.73
10 MIN	0.49	0.64	0.74	0.89	1.00	1.12
15 MIN	0.59	0.80	0.94	1.13	1.28	1.43
30 MIN	0.79	1.07	1.26	1.53	1.74	1.94
1 HOUR	0.96	1.32	1.57	1.90	2.17	2.43
2 HOUR	1.04	1.45	1.73	2.10	2.40	2.69
3 HOUR	1.10	1.54	1.83	2.24	2.55	2.87
6 HOUR	1.20	1.70	2.03	2.49	2.85	3.20
12 HOUR	1.30	1.88	2.26	2.79	3.20	3.60
24 HOUR	1.40	2.06	2.49	3.09	3.54	4.00



Extrapolated From Isopluvials Figures 2-7 and 2-13 of the *Hydrologic Design Manual for Maricopa County, Arizona* and Equations in Section 2.4 Presented Therein as Follows:

$$Y_{100} = 0.494 + 0.755(X_3)(X_3/X_4)$$

$$\text{2-hr depth} = 0.341(\text{6-hr}) + 0.659(\text{1-hr})$$

Where:

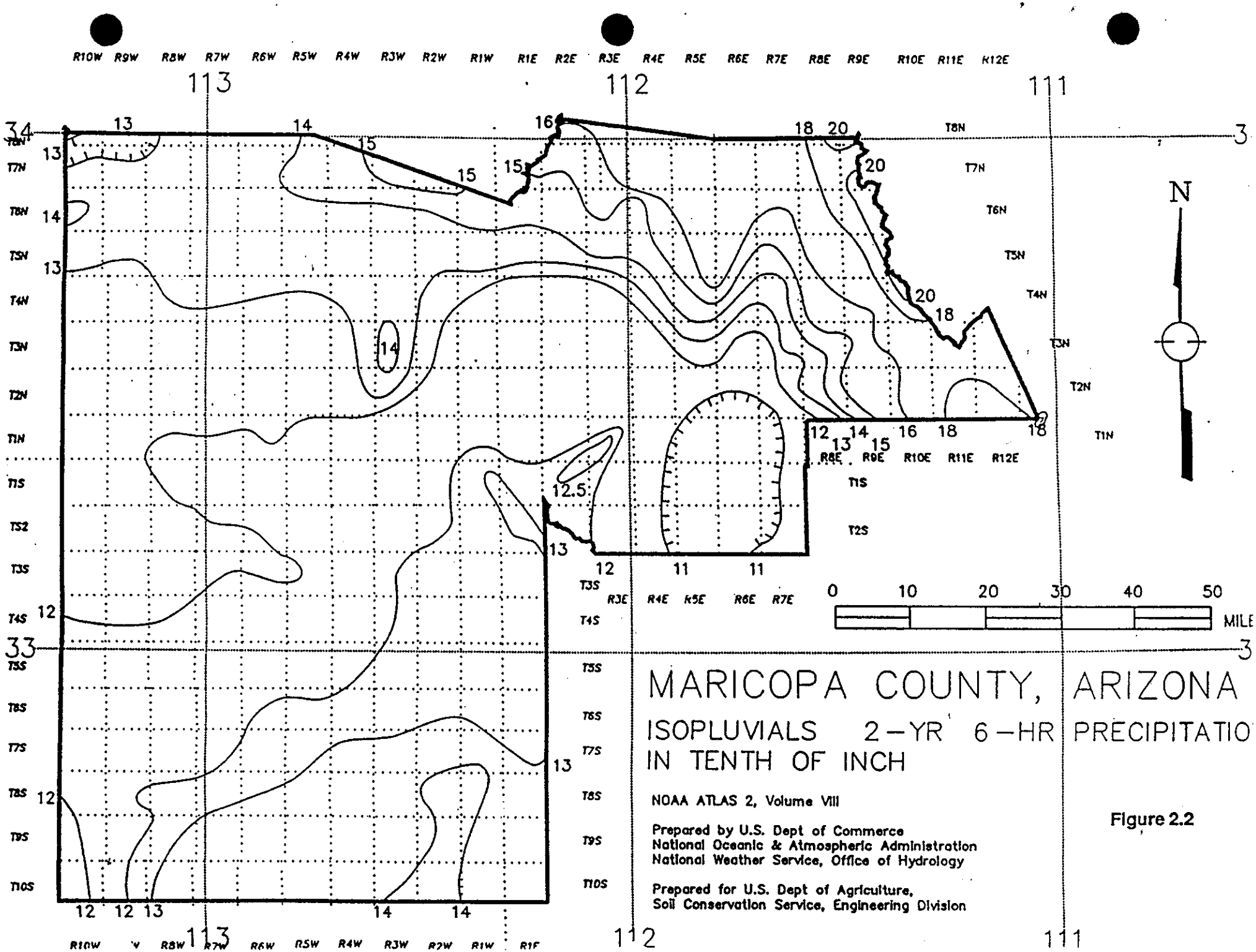
Y_{100} = 100-yr, 1-hour estimated value;

X_3 = 100-yr, 6-hr value from precipitation-frequency maps;

X_4 = 100-yr, 24-hr value from precipitation-frequency maps;

6-hr = isopluvial values from figure 2.7;

Figure 2.1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113
112
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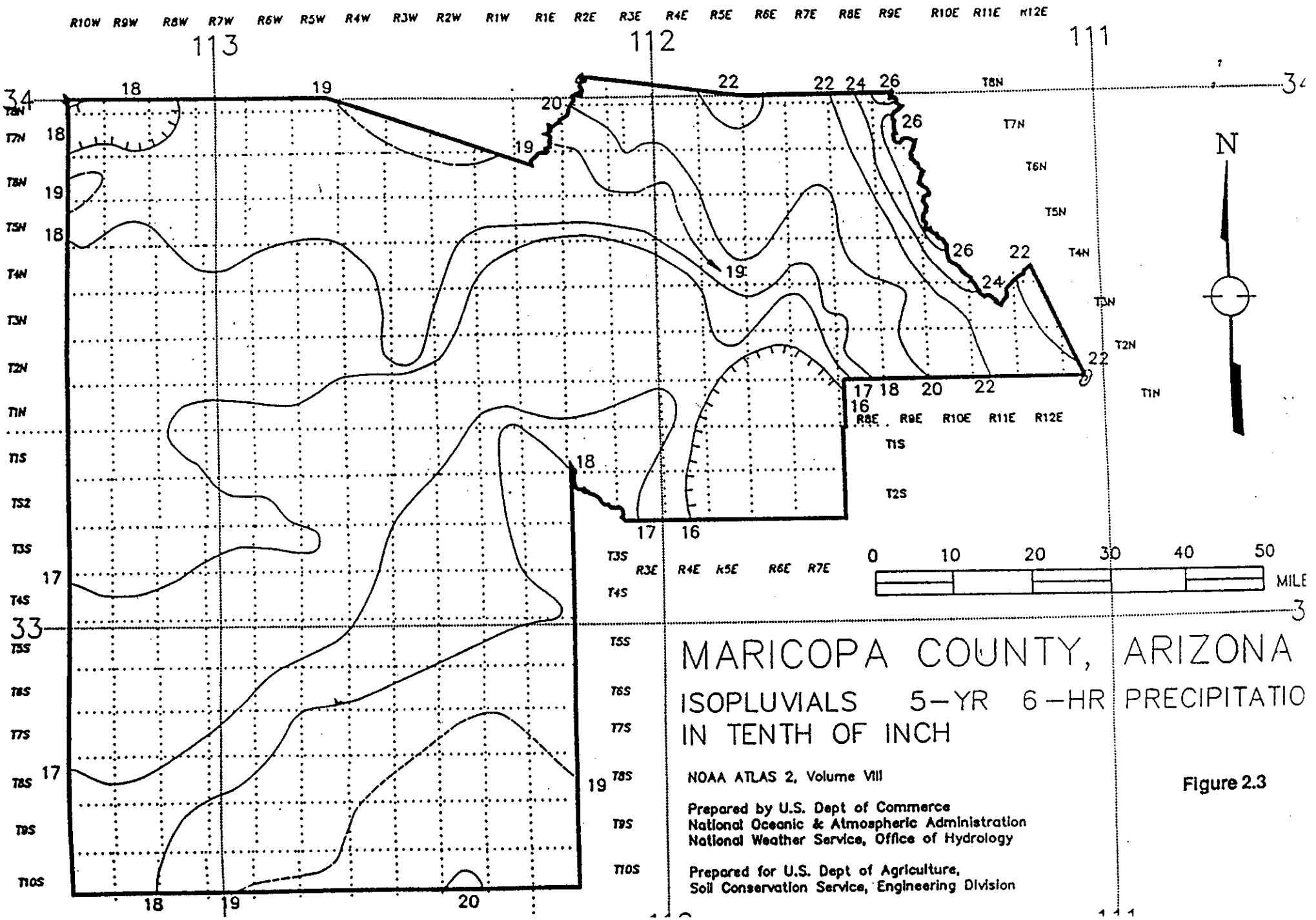
T8N
T7N
T6N
T5N
T4N
T3N
T2N
T1N
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
T10S
N
0 10 20 30 40 50
MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 2-YR 6-HR PRECIPITATIO
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.2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T8N
T7N
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T4N
T3N
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0 10 20 30 40 50
MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 5-YR 6-HR PRECIPITATIO
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
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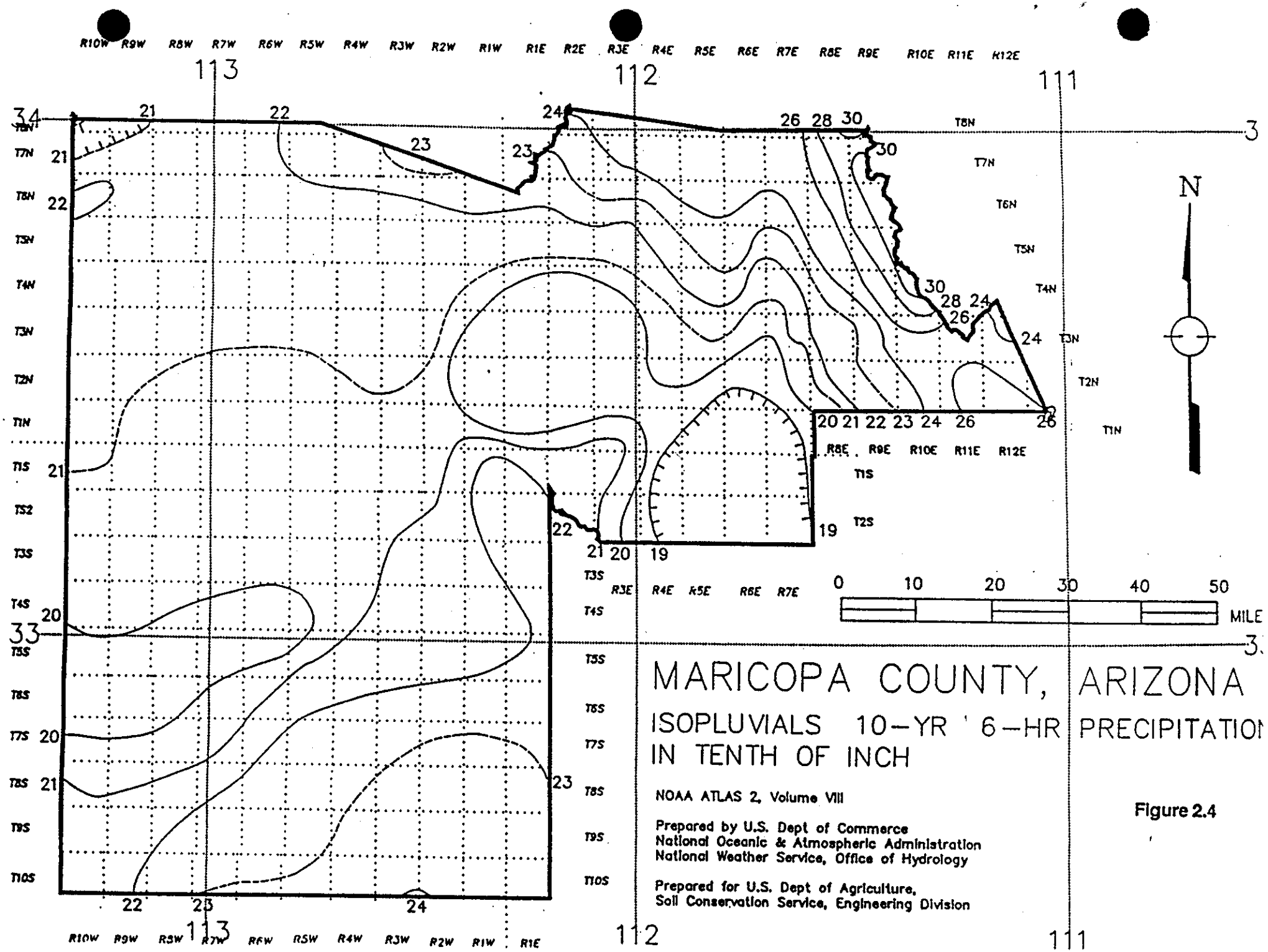
Soil Conservation Service, Engineering Division

Figure 2.3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T3N
T2N
T1N
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T7S
T8S
T9S
T10S
N
0 10 20 30 40 50
MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 10-YR 6-HR PRECIPITATION
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
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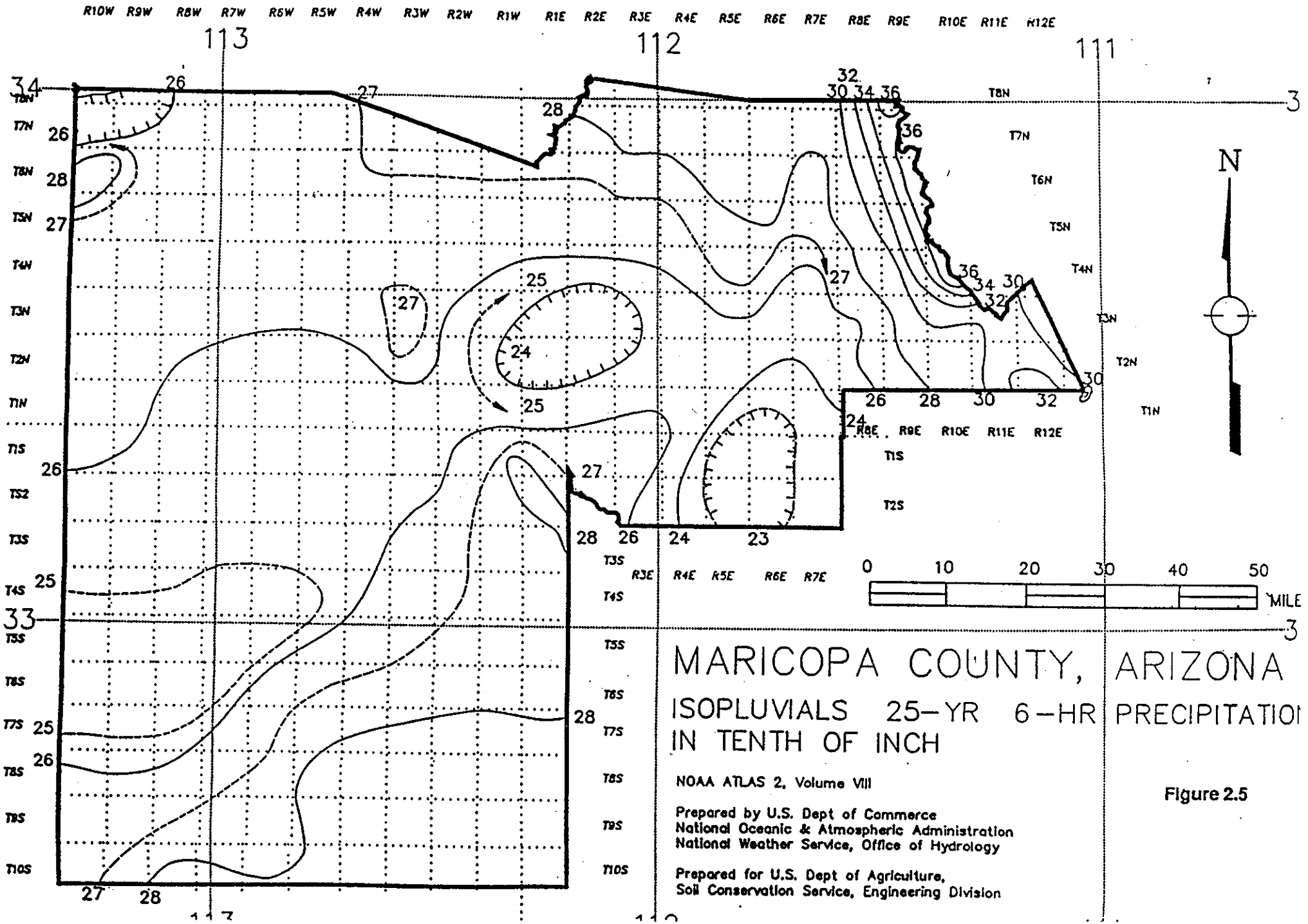
Figure 2.4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T2N
T1N
T1S
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T8S
T9S
T10S
N
0 10 20 30 40 50
MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 25-YR 6-HR PRECIPITATION
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
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National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.5

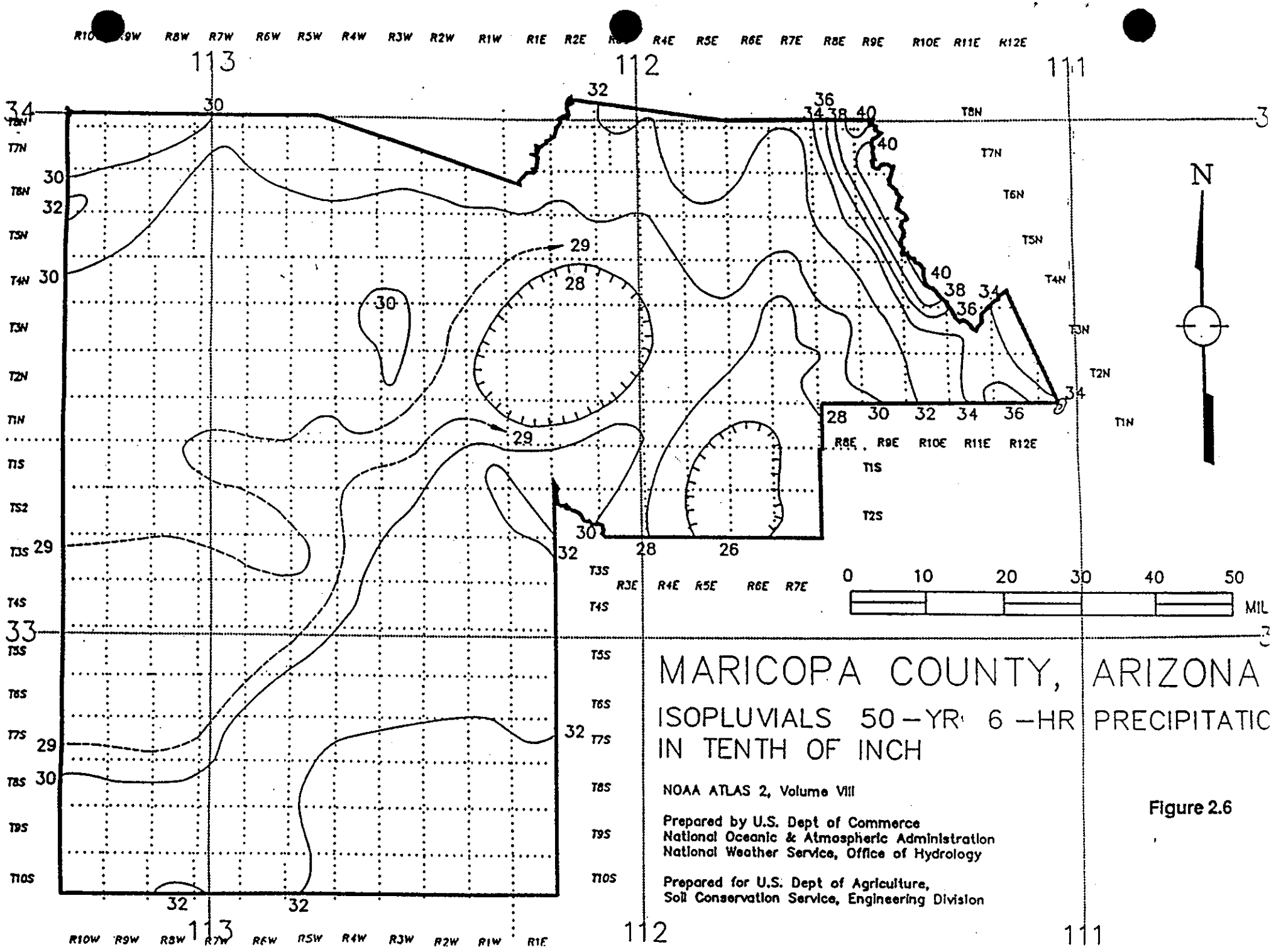
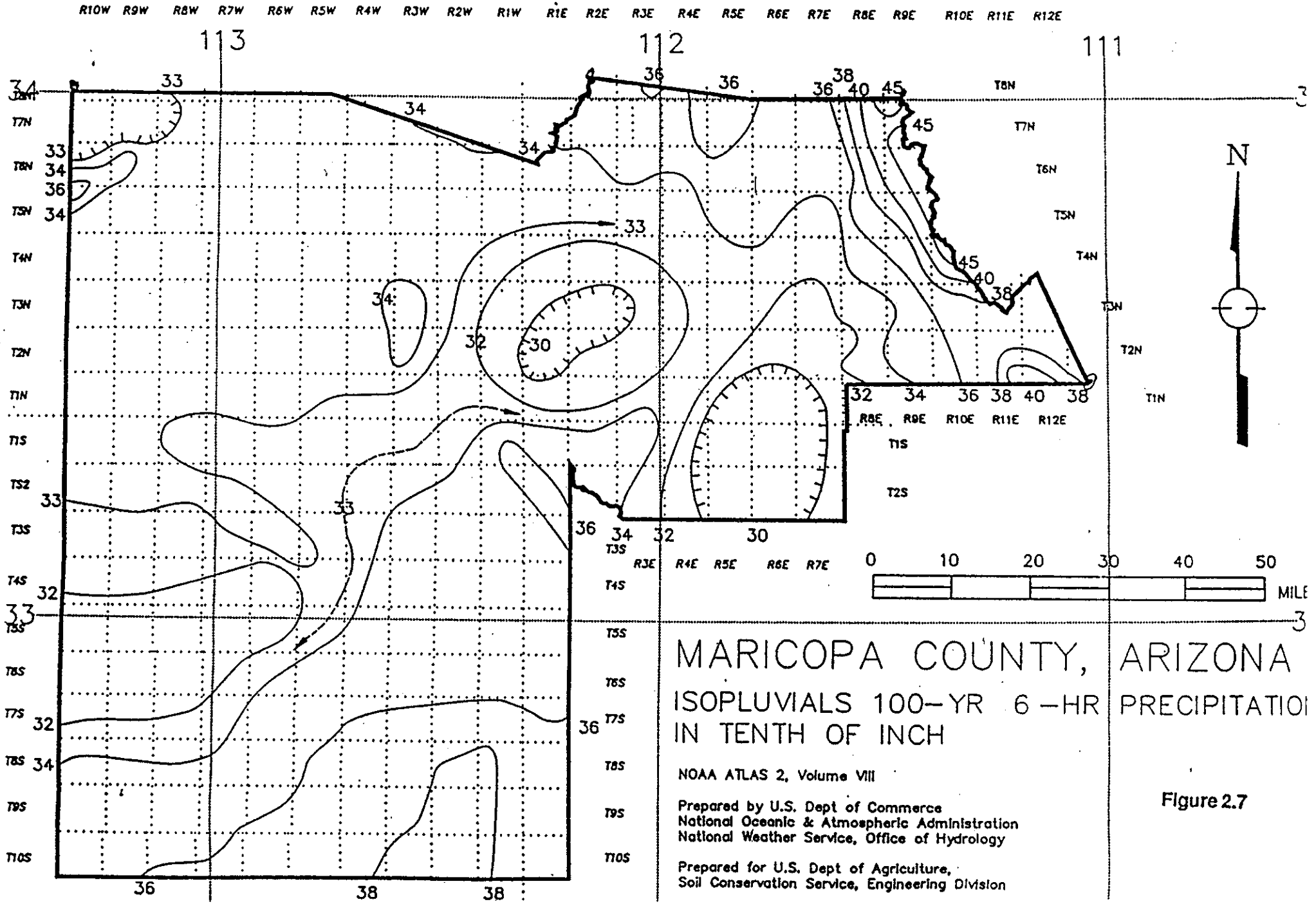

MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 50-YR 6-HR PRECIPITATIC
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division
N
0 10 20 30 40 50
MIL
113
112
111

Figure 2.6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T7N
T6N
T5N
T4N
T3N
T2N
T1N
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
T10S
N
0 10 20 30 40 50
MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 100-YR 6-HR PRECIPITATIO
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
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National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.7

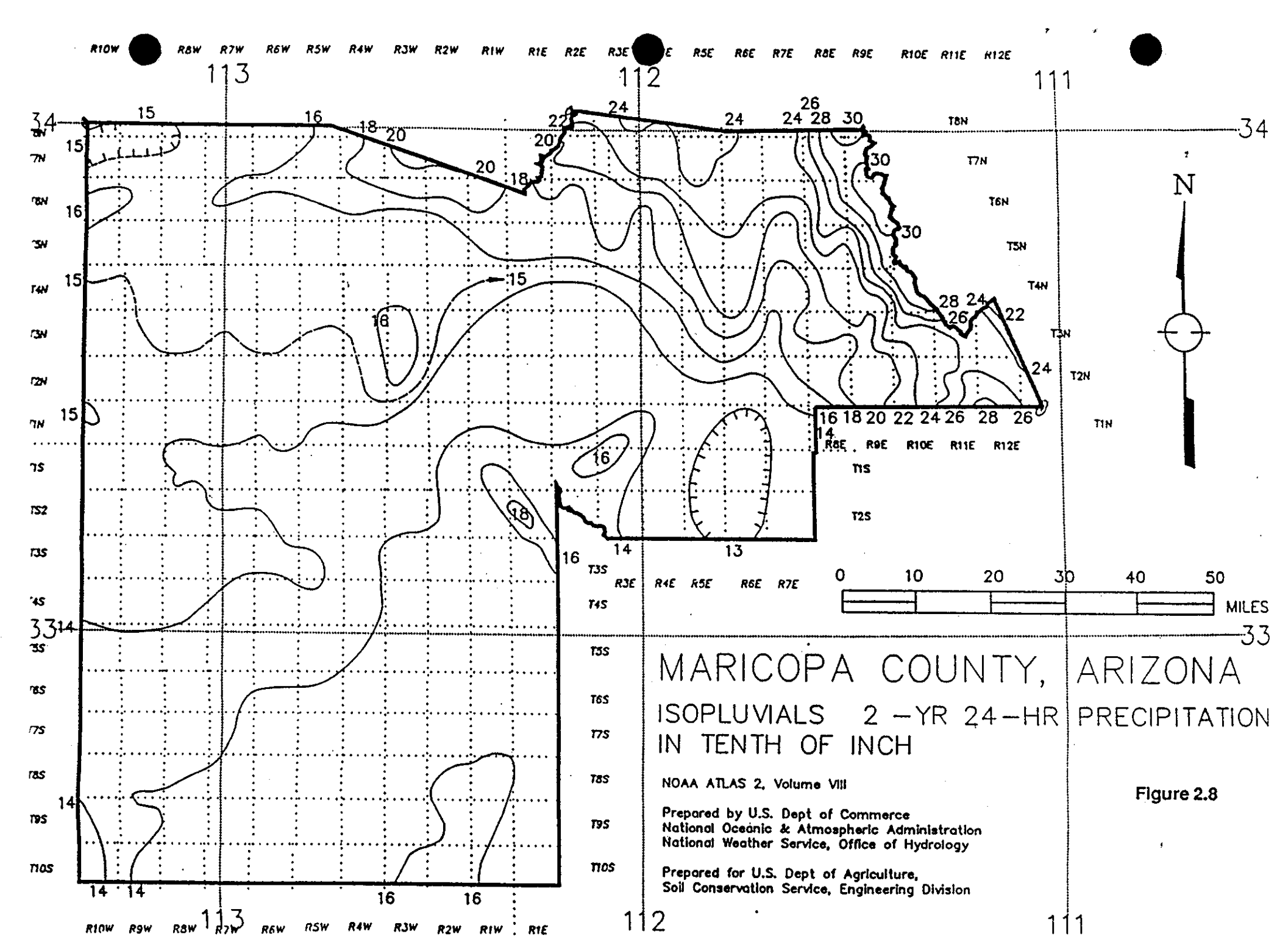
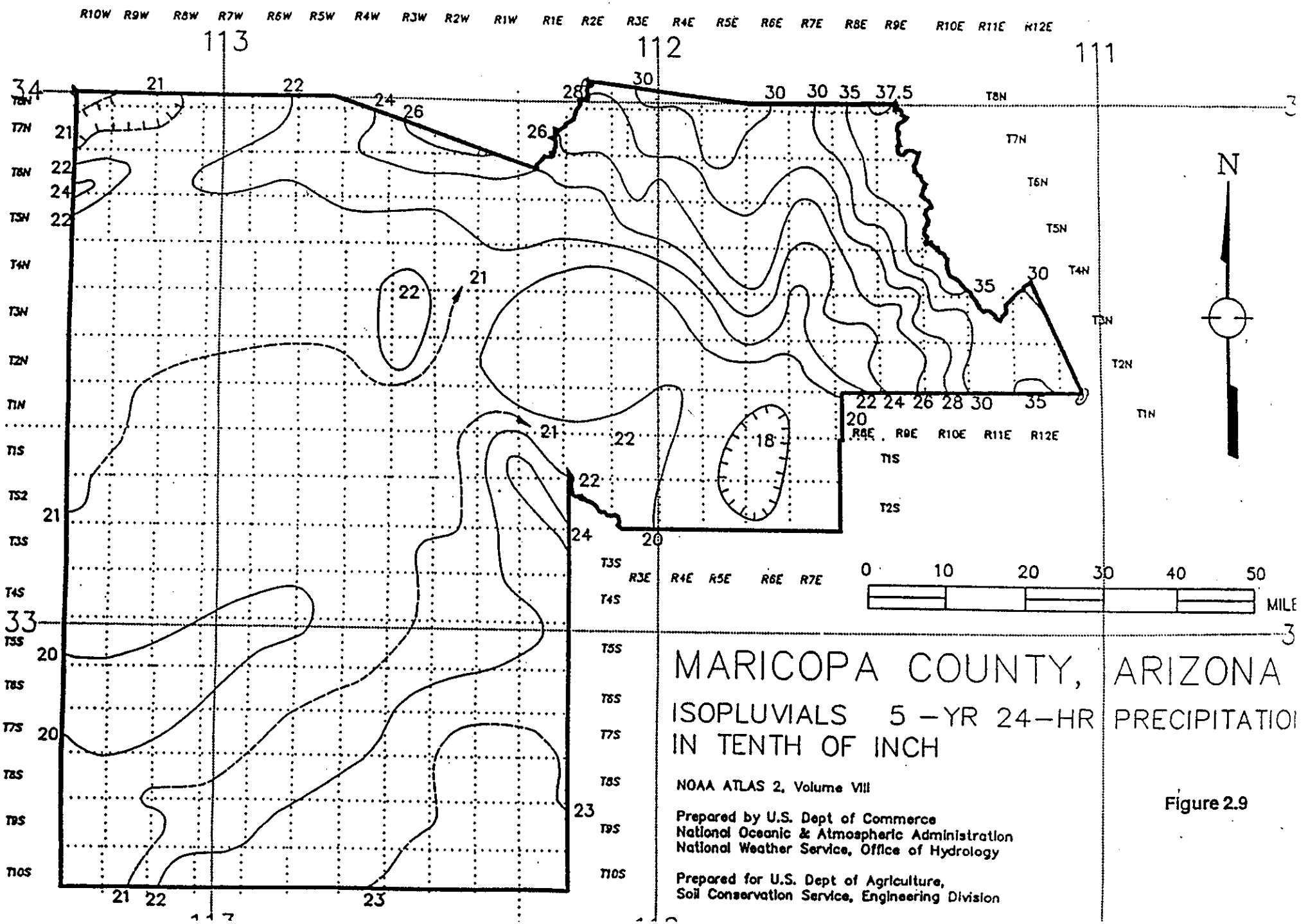

MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 2 -YR 24-HR PRECIPITATION
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division
N
0 10 20 30 40 50
MILES

Figure 2.8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T7N
T6N
T5N
T4N
T3N
T2N
T1N
T1S
T2S
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T5S
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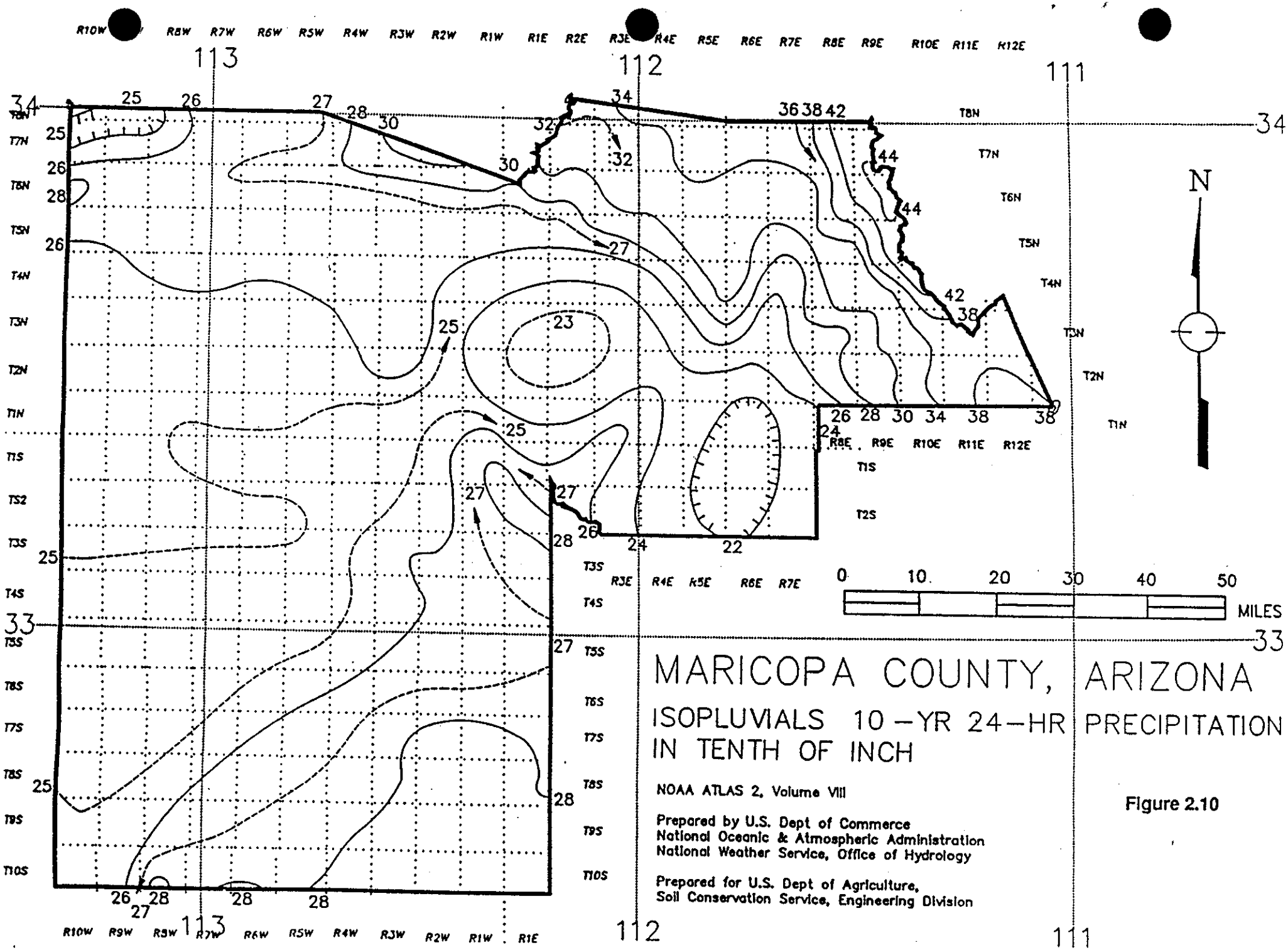
T7S
T8S
T9S
T10S
N
0 10 20 30 40 50
MILE
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 5 – YR 24 – HR PRECIPITATIO
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.9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113
112
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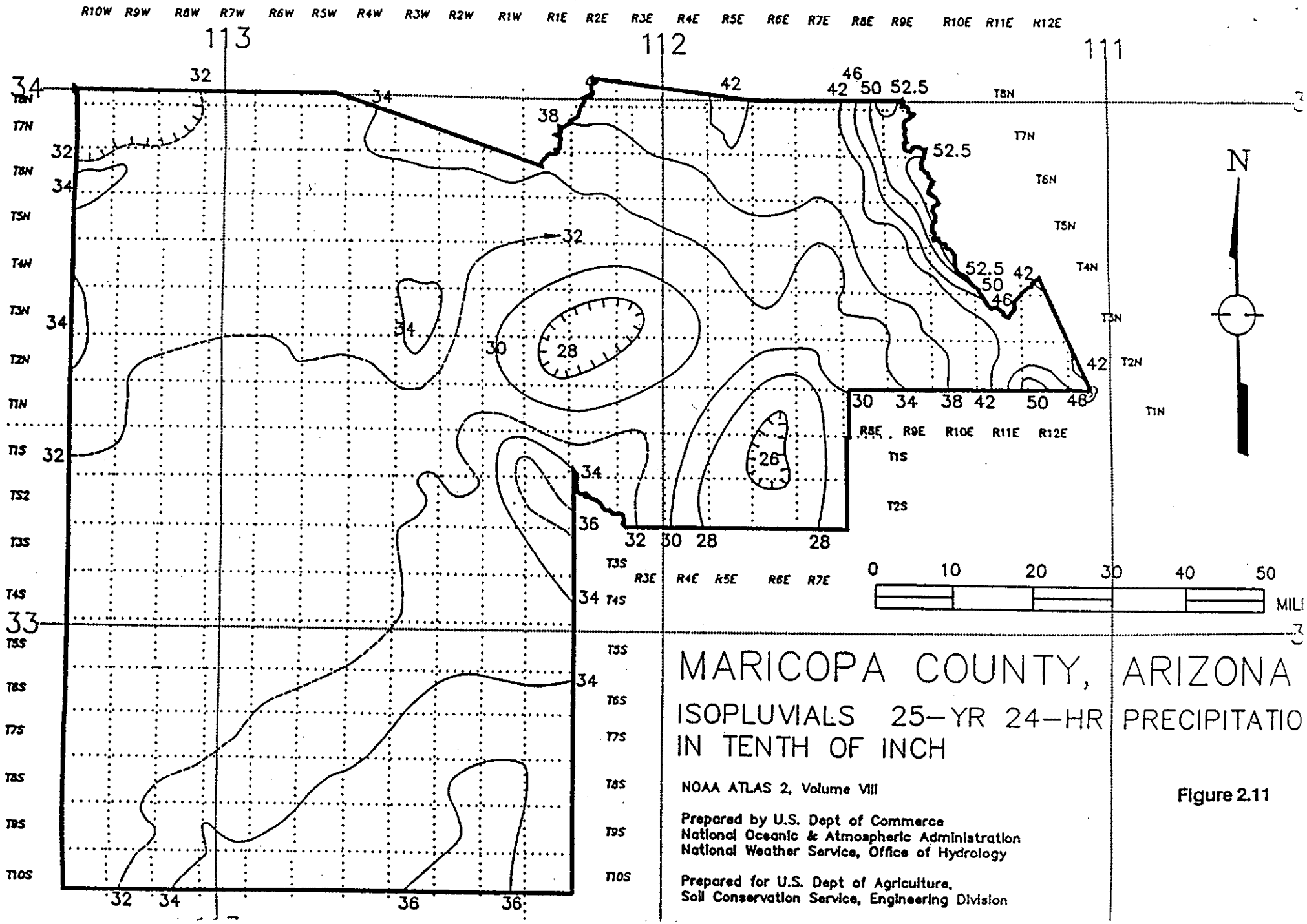
33
T8N T7N T6N T5N T4N T3N T2N T1N T1S T2S T3S T4S T5S T6S T7S T8S T9S T10S
N
0 10 20 30 40 50
MILES
MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 10-YR 24-HR PRECIPITATION
IN TENTH OF INCH
NOAA ATLAS 2, Volume VIII
Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.10



MARICOPA COUNTY, ARIZONA

ISOPLUVIALS 25–YR 24–HR PRECIPITATIO IN TENTH OF INCH

NOAA ATLAS 2, Volume VIII

Prepared by U.S. Dept of Commerce
National Oceanic & Atmospheric Administration
National Weather Service, Office of Hydrology

Prepared for U.S. Dept of Agriculture,
Soil Conservation Service, Engineering Division

Figure 2.11

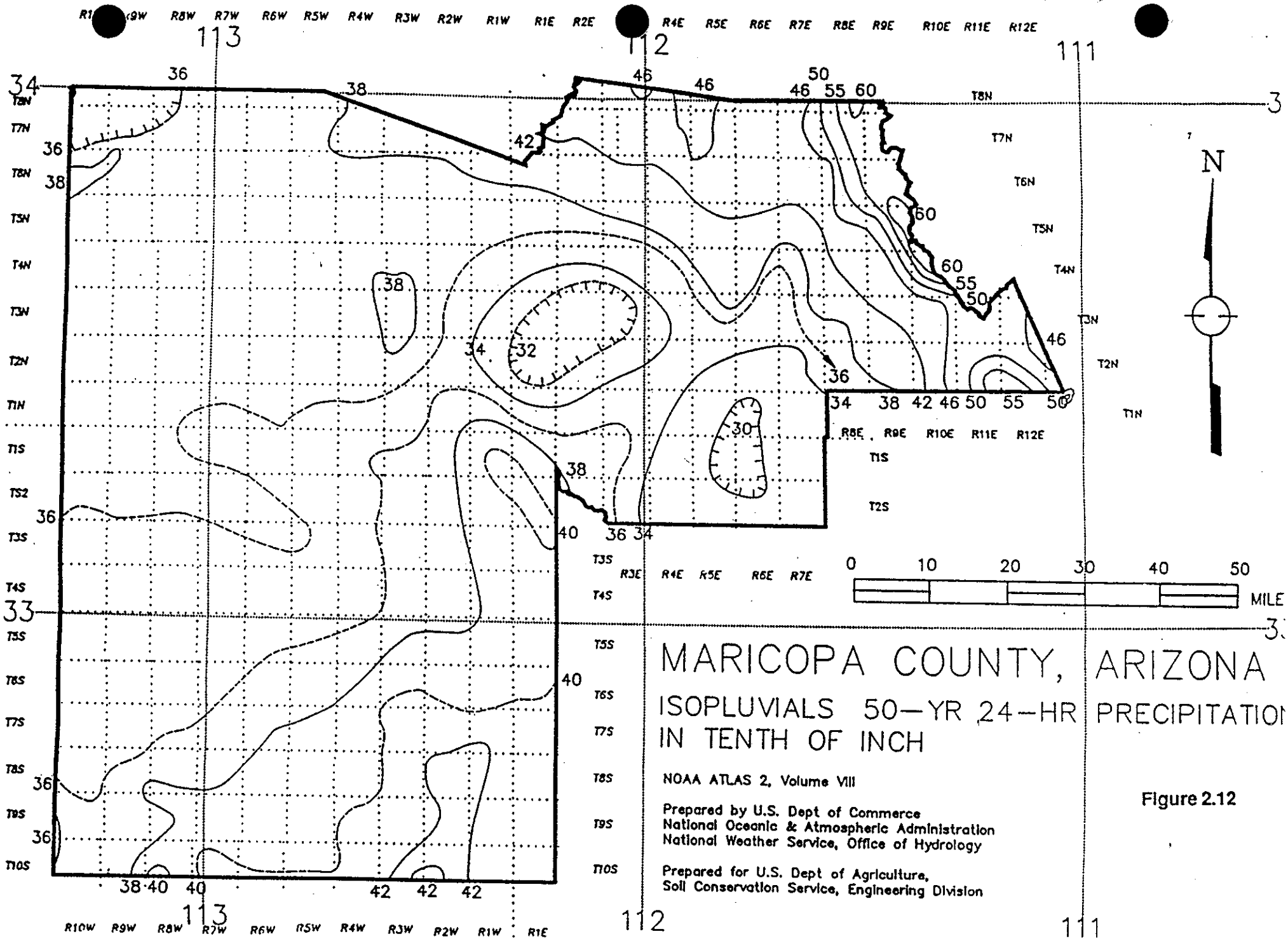

MARICOPA COUNTY, ARIZONA
ISOPLUVIALS 50—YR 24—HR PRECIPITATION
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Figure 2.12

D.2 Physical Parameters Calculations

Flood Control District of Maricopa County
SCOTTSDALE - GRANITE REEF ADMP

Land Use Data

3/30/2002

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
A01	FWY	0.011	2.2	Normal	80.0	95	0.05	0.020	Low	0.068
	COM-1	0.492	97.0	Normal	70.0	80	0.10	0.020	Min	0.024
	MHDR	0.004	0.8	Normal	55.0	40	0.25	0.050	Low	0.074
B01	MFR	0.055	77.5	Normal	60.0	45	0.25	0.050	Low	0.059
	MHDR	0.016	22.5	Normal	55.0	40	0.25	0.050	Low	0.066
B02	IND	0.090	89.1	Normal	60.0	70	0.15	0.030	Min	0.029
	VACANT	0.003	3.0	Dry	15.0	5	0.10	0.030	Min	0.038
	FWY	0.003	3.0	Normal	80.0	95	0.05	0.020	Low	0.076
	MFR	0.005	5.0	Normal	60.0	45	0.25	0.050	Low	0.073
B03	MFR	0.005	64.3	Normal	60.0	45	0.25	0.050	Low	0.074
	MDR	0.003	35.7	Normal	50.0	50	0.25	0.050	Low	0.077
B04	IND	0.072	93.5	Normal	60.0	70	0.15	0.030	Min	0.030
	MFR	0.001	1.3	Normal	60.0	45	0.25	0.050	Low	0.083
	FWY	0.004	5.2	Normal	80.0	95	0.05	0.020	Low	0.074
B05	FWY	0.002	2.3	Normal	80.0	95	0.05	0.020	Low	0.079
	IND	0.007	8.0	Normal	60.0	70	0.15	0.030	Min	0.036
	MFR	0.069	78.4	Normal	60.0	45	0.25	0.050	Low	0.057
	PARK	0.002	2.3	Normal	90.0	5	0.20	0.100	Hi	0.147
	VACANT	0.008	9.1	Dry	15.0	5	0.10	0.030	Min	0.036
B06	FWY	0.002	13.3	Normal	80.0	95	0.05	0.020	Low	0.079
	MFR	0.004	26.7	Normal	60.0	45	0.25	0.050	Low	0.074
	VACANT	0.002	13.3	Dry	15.0	5	0.10	0.030	Min	0.039
	INS-1	0.007	46.7	Normal	85.0	75	0.10	0.020	Min	0.036
B07	FWY	0.001	6.3	Normal	80.0	95	0.05	0.020	Low	0.083
	INS-1	0.007	43.8	Normal	85.0	75	0.10	0.020	Min	0.036
	MFR	0.003	18.8	Normal	60.0	45	0.25	0.050	Low	0.076
	VACANT	0.005	31.3	Dry	15.0	5	0.10	0.030	Min	0.037
B10	COM-1	0.011	10.0	Normal	70.0	80	0.10	0.020	Min	0.035
	PARK	0.055	50.0	Normal	90.0	5	0.20	0.100	Hi	0.111
	MHDR	0.013	11.8	Normal	55.0	40	0.25	0.050	Low	0.067
	MFR	0.031	28.2	Normal	60.0	45	0.25	0.050	Low	0.062
B11	COM-1	0.001	1.7	Normal	70.0	80	0.10	0.020	Min	0.041

Land Use Data

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
	PARK	0.006	10.0	Normal	90.0	5	0.20	0.100	Hi	0.135
	MHDR	0.053	88.3	Normal	55.0	40	0.25	0.050	Low	0.059
B12	INS-1	0.002	1.7	Normal	85.0	75	0.10	0.020	Min	0.039
	MHDR	0.111	93.3	Normal	55.0	40	0.25	0.050	Low	0.055
	PARK	0.005	4.2	Normal	90.0	5	0.20	0.100	Hi	0.137
	MFR	0.001	0.8	Normal	60.0	45	0.25	0.050	Low	0.083
B13	PARK	0.015	6.8	Normal	90.0	5	0.20	0.100	Hi	0.125
	INS-1	0.013	5.9	Normal	85.0	75	0.10	0.020	Min	0.034
	MFR	0.008	3.6	Normal	60.0	45	0.25	0.050	Low	0.070
	IND	0.003	1.4	Normal	60.0	70	0.15	0.030	Min	0.038
	VACANT	0.020	9.0	Dry	15.0	5	0.10	0.030	Min	0.033
	MHDR	0.001	0.5	Normal	55.0	40	0.25	0.050	Low	0.083
	MDR	0.161	72.9	Normal	50.0	50	0.25	0.050	Low	0.052
B14	COM-1	0.131	88.5	Normal	70.0	80	0.10	0.020	Min	0.028
	COM-1	0.016	10.8	Normal	70.0	80	0.10	0.020	Min	0.034
	MHDR	0.001	0.7	Normal	55.0	40	0.25	0.050	Low	0.083
C01	MDR	0.025	78.1	Normal	50.0	50	0.25	0.050	Low	0.063
	COM-1	0.006	18.8	Normal	70.0	80	0.10	0.020	Min	0.036
	FWY	0.001	3.1	Normal	80.0	95	0.05	0.020	Low	0.083
C02	MDR	0.014	38.9	Normal	50.0	50	0.25	0.050	Low	0.067
	COM-1	0.018	50.0	Normal	70.0	80	0.10	0.020	Min	0.033
	FWY	0.004	11.1	Normal	80.0	95	0.05	0.020	Low	0.074
C03	COM-1	0.008	20.0	Normal	70.0	80	0.10	0.020	Min	0.036
	MFR	0.012	30.0	Normal	60.0	45	0.25	0.050	Low	0.068
	INS-1	0.006	15.0	Normal	85.0	75	0.10	0.020	Min	0.036
	FWY	0.003	7.5	Normal	80.0	95	0.05	0.020	Low	0.076
	MDR	0.011	27.5	Normal	50.0	50	0.25	0.050	Low	0.068
C04	COM-1	0.002	4.5	Normal	70.0	80	0.10	0.020	Min	0.039
	FWY	0.005	11.4	Normal	80.0	95	0.05	0.020	Low	0.073
	INS-1	0.001	2.3	Normal	85.0	75	0.10	0.020	Min	0.041
	MDR	0.018	40.9	Normal	50.0	50	0.25	0.050	Low	0.065
	MFR	0.006	13.6	Normal	60.0	45	0.25	0.050	Low	0.072

Land Use Data

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
C04	VACANT	0.012	27.3	Dry	15.0	5	0.10	0.030	Min	0.034
C05	COM-1	0.008	5.8	Normal	70.0	80	0.10	0.020	Min	0.036
	INS-1	0.002	1.5	Normal	85.0	75	0.10	0.020	Min	0.039
	FWY	0.006	4.4	Normal	80.0	95	0.05	0.020	Low	0.072
	MDR	0.121	88.3	Normal	50.0	50	0.25	0.050	Low	0.054
C06	PARK	0.003	1.6	Normal	90.0	5	0.20	0.100	Hi	0.145
	INS-1	0.015	9.8	Normal	85.0	75	0.10	0.020	Min	0.034
	FWY	0.002	1.3	Normal	80.0	95	0.05	0.020	Low	0.079
	MDR	0.133	87.2	Normal	50.0	50	0.25	0.050	Low	0.053
C07	MFR	0.003	4.2	Normal	60.0	45	0.25	0.050	Low	0.076
	FWY	0.001	1.4	Normal	80.0	95	0.05	0.020	Low	0.083
	MDR	0.068	94.4	Normal	50.0	50	0.25	0.050	Low	0.057
C08	FWY	0.002	1.7	Normal	80.0	95	0.05	0.020	Low	0.079
	MDR	0.116	98.3	Normal	50.0	50	0.25	0.050	Low	0.054
C09	MFR	0.005	8.8	Normal	60.0	45	0.25	0.050	Low	0.073
	FWY	0.001	1.8	Normal	80.0	95	0.05	0.020	Low	0.083
	MDR	0.051	89.5	Normal	50.0	50	0.25	0.050	Low	0.059
C10	MDR	0.054	100.0	Normal	50.0	50	0.25	0.050	Low	0.059
C11	VACANT	0.001	2.0	Dry	15.0	5	0.10	0.030	Min	0.041
	MDR	0.049	98.0	Normal	50.0	50	0.25	0.050	Low	0.059
C12	FWY	0.003	30.0	Normal	80.0	95	0.05	0.020	Low	0.076
	MDR	0.007	70.0	Normal	50.0	50	0.25	0.050	Low	0.071
C13	COM-1	0.176	100.0	Normal	70.0	80	0.10	0.020	Min	0.027
D01	FWY	0.004	4.9	Normal	80.0	95	0.05	0.020	Low	0.074
	COM-1	0.002	2.4	Normal	70.0	80	0.10	0.020	Min	0.039
	MDR	0.076	92.7	Normal	50.0	50	0.25	0.050	Low	0.057
D02	MDR	0.004	2.9	Normal	50.0	50	0.25	0.050	Low	0.074
	COM-1	0.004	2.9	Normal	70.0	80	0.10	0.020	Min	0.037
	PARK	0.004	2.9	Normal	90.0	5	0.20	0.100	Hi	0.140
	FWY	0.005	3.6	Normal	80.0	95	0.05	0.020	Low	0.073
	PARK	0.001	0.7	Normal	90.0	5	0.20	0.100	Hi	0.155

Land Use Data

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
	INS-1	0.004	2.9	Normal	85.0	75	0.10	0.020	Min	0.037
	MHDR	0.004	2.9	Normal	55.0	40	0.25	0.050	Low	0.074
	MDR	0.114	81.4	Normal	50.0	50	0.25	0.050	Low	0.054
D03	FWY	0.009	8.7	Normal	80.0	95	0.05	0.020	Low	0.070
	PARK	0.004	3.8	Normal	90.0	5	0.20	0.100	Hi	0.140
	INS-1	0.001	1.0	Normal	85.0	75	0.10	0.020	Min	0.041
	VACANT	0.005	4.8	Dry	15.0	5	0.10	0.030	Min	0.037
	COM-1	0.013	12.5	Normal	70.0	80	0.10	0.020	Min	0.034
	MHDR	0.020	19.2	Normal	55.0	40	0.25	0.050	Low	0.065
	MDR	0.052	50.0	Normal	50.0	50	0.25	0.050	Low	0.059
D04	FWY	0.004	6.6	Normal	80.0	95	0.05	0.020	Low	0.074
	INS-1	0.001	1.6	Normal	85.0	75	0.10	0.020	Min	0.041
	MDR	0.056	91.8	Normal	50.0	50	0.25	0.050	Low	0.059
D05	INS-1	0.015	9.4	Normal	85.0	75	0.10	0.020	Min	0.034
	PARK	0.010	6.4	Normal	90.0	5	0.20	0.100	Hi	0.130
	FWY	0.006	3.8	Normal	80.0	95	0.05	0.020	Low	0.072
	MFR	0.014	8.8	Normal	60.0	45	0.25	0.050	Low	0.067
	MDR	0.114	71.6	Normal	50.0	50	0.25	0.050	Low	0.054
D06	FWY	0.001	0.9	Normal	80.0	95	0.05	0.020	Low	0.083
	COM-1	0.004	3.7	Normal	70.0	80	0.10	0.020	Min	0.037
	MDR	0.104	95.4	Normal	50.0	50	0.25	0.050	Low	0.055
D07	FWY	0.001	2.0	Normal	80.0	95	0.05	0.020	Low	0.083
	MDR	0.048	98.0	Normal	50.0	50	0.25	0.050	Low	0.060
D08	INS-1	0.002	3.8	Normal	85.0	75	0.10	0.020	Min	0.039
	FWY	0.002	3.8	Normal	80.0	95	0.05	0.020	Low	0.079
	MDR	0.049	92.5	Normal	50.0	50	0.25	0.050	Low	0.059
D09	COM-1	0.216	100.0	Normal	70.0	80	0.10	0.020	Min	0.027
E01	COM-1	0.008	13.8	Normal	70.0	80	0.10	0.020	Min	0.036
	FWY	0.006	10.3	Normal	80.0	95	0.05	0.020	Low	0.072
	MFR	0.005	8.6	Normal	60.0	45	0.25	0.050	Low	0.073
	INS-1	0.004	6.9	Normal	85.0	75	0.10	0.020	Min	0.037
	MDR	0.035	60.3	Normal	50.0	50	0.25	0.050	Low	0.061

Land Use Data

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
E02	FWY	0.004	2.7	Normal	80.0	95	0.05	0.020	Low	0.074
	COM-1	0.003	2.0	Normal	70.0	80	0.10	0.020	Min	0.038
	MFR	0.040	27.0	Normal	60.0	45	0.25	0.050	Low	0.061
	MDR	0.101	68.2	Normal	50.0	50	0.25	0.050	Low	0.055
E03	FWY	0.006	8.6	Normal	80.0	95	0.05	0.020	Low	0.072
	MFR	0.007	10.0	Normal	60.0	45	0.25	0.050	Low	0.071
	MDR	0.057	81.4	Normal	50.0	50	0.25	0.050	Low	0.059
E04	FWY	0.003	7.9	Normal	80.0	95	0.05	0.020	Low	0.076
	INS-1	0.002	5.3	Normal	85.0	75	0.10	0.020	Min	0.039
	PARK	0.007	18.4	Normal	90.0	5	0.20	0.100	Hi	0.134
	MDR	0.026	68.4	Normal	50.0	50	0.25	0.050	Low	0.063
E05	FWY	0.003	6.4	Normal	80.0	95	0.05	0.020	Low	0.076
	INS-1	0.008	17.0	Normal	85.0	75	0.10	0.020	Min	0.036
	MDR	0.025	53.2	Normal	50.0	50	0.25	0.050	Low	0.063
	MDR	0.011	23.4	Normal	50.0	50	0.25	0.050	Low	0.068
E06	FWY	0.002	5.6	Normal	80.0	95	0.05	0.020	Low	0.079
	MDR	0.017	47.2	Normal	50.0	50	0.25	0.050	Low	0.066
	MDR	0.017	47.2	Normal	50.0	50	0.25	0.050	Low	0.066
E07	MDR	0.003	3.6	Normal	50.0	50	0.25	0.050	Low	0.076
	MFR	0.012	14.3	Normal	60.0	45	0.25	0.050	Low	0.068
	FWY	0.001	1.2	Normal	80.0	95	0.05	0.020	Low	0.083
	VACANT	0.001	1.2	Dry	15.0	5	0.10	0.030	Min	0.041
	MDR	0.067	79.8	Normal	50.0	50	0.25	0.050	Low	0.058
E08	FWY	0.001	3.2	Normal	80.0	95	0.05	0.020	Low	0.083
	MDR	0.030	96.8	Normal	50.0	50	0.25	0.050	Low	0.062
E09	COM-1	0.223	100.0	Normal	70.0	80	0.10	0.020	Min	0.027
F01	FWY	0.004	13.3	Normal	80.0	95	0.05	0.020	Low	0.074
	MFR	0.015	50.0	Normal	60.0	45	0.25	0.050	Low	0.066
	MDR	0.011	36.7	Normal	50.0	50	0.25	0.050	Low	0.068
F02	FWY	0.005	10.9	Normal	80.0	95	0.05	0.020	Low	0.073
	MDR	0.041	89.1	Normal	50.0	50	0.25	0.050	Low	0.060

Land Use Data

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
F03	FWY	0.003	17.6	Normal	80.0	95	0.05	0.020	Low	0.076
	MDR	0.014	82.4	Normal	50.0	50	0.25	0.050	Low	0.067
F04	INS-1	0.014	23.3	Normal	85.0	75	0.10	0.020	Min	0.034
	FWY	0.007	11.7	Normal	80.0	95	0.05	0.020	Low	0.071
	MFR	0.012	20.0	Normal	60.0	45	0.25	0.050	Low	0.068
	COM-1	0.016	26.7	Normal	70.0	80	0.10	0.020	Min	0.034
	MDR	0.011	18.3	Normal	50.0	50	0.25	0.050	Low	0.068
F05	FWY	0.003	3.4	Normal	80.0	95	0.05	0.020	Low	0.076
	INS-1	0.001	1.1	Normal	85.0	75	0.10	0.020	Min	0.041
	MFR	0.002	2.3	Normal	60.0	45	0.25	0.050	Low	0.079
	MDR	0.082	93.2	Normal	50.0	50	0.25	0.050	Low	0.056
F06	MFR	0.019	18.4	Normal	60.0	45	0.25	0.050	Low	0.065
	COM-1	0.006	5.8	Normal	70.0	80	0.10	0.020	Min	0.036
	VACANT	0.005	4.9	Dry	15.0	5	0.10	0.030	Min	0.037
	FWY	0.002	1.9	Normal	80.0	95	0.05	0.020	Low	0.079
	MDR	0.071	68.9	Normal	50.0	50	0.25	0.050	Low	0.057
F07	COM-1	0.250	100.0	Normal	70.0	80	0.10	0.020	Min	0.026
G01	MFR	0.015	30.6	Normal	60.0	45	0.25	0.050	Low	0.066
	COM-1	0.006	12.2	Normal	70.0	80	0.10	0.020	Min	0.036
	FWY	0.005	10.2	Normal	80.0	95	0.05	0.020	Low	0.073
	MDR	0.023	46.9	Normal	50.0	50	0.25	0.050	Low	0.064
G02	INS-1	0.002	2.7	Normal	85.0	75	0.10	0.020	Min	0.039
	FWY	0.005	6.7	Normal	80.0	95	0.05	0.020	Low	0.073
	PARK	0.008	10.7	Normal	90.0	5	0.20	0.100	Hi	0.132
	MFR	0.004	5.3	Normal	60.0	45	0.25	0.050	Low	0.074
	COM-1	0.008	10.7	Normal	70.0	80	0.10	0.020	Min	0.036
	MDR	0.048	64.0	Normal	50.0	50	0.25	0.050	Low	0.060
G03	INS-1	0.008	8.6	Normal	85.0	75	0.10	0.020	Min	0.036
	FWY	0.005	5.4	Normal	80.0	95	0.05	0.020	Low	0.073
	MDR	0.080	86.0	Normal	50.0	50	0.25	0.050	Low	0.056
G04	FWY	0.001	2.2	Normal	80.0	95	0.05	0.020	Low	0.083
	MDR	0.044	97.8	Normal	50.0	50	0.25	0.050	Low	0.060

Land Use Data

Area Id	Land Use Code	Area	Area Pct (%)	DTHETA Condition	Vegetation Cover (%)	RTIMP (%)	IA (in)	Kn	Kb Type	Kb
G05	FWY	0.003	6.7	Normal	80.0	95	0.05	0.020	Low	0.076
	MDR	0.042	93.3	Normal	50.0	50	0.25	0.050	Low	0.060
G06	COM-1	0.127	100.0	Normal	70.0	80	0.10	0.020	Min	0.028

Soil Data

Area Id	Soil Survey	Map Unit	Area	Area Pct (%)	XKSAT	Rock Outcrop (%)	Effective (%)
A01	Eastern County	LAA	0.156	30.8	0.25		
	Eastern County	GM	0.183	36.1	0.25*		
	Eastern County	PM	0.120	23.7	0.04		
	Eastern County	AM	0.002	0.4	1.20*		
	Eastern County	VF	0.045	8.9	1.20*		
	Aguila/Carefree	55	0.001	0.2	0.27		
B01	Eastern County	LAA	0.016	22.5	0.25		
	Eastern County	RIB	0.028	39.4	0.40		
	Eastern County	GM	0.007	9.9	0.25*		
	Eastern County	RIA	0.020	28.2	0.40		
B02	Eastern County	LAA	0.097	96.0	0.25		
	Eastern County	RIA	0.004	4.0	0.40		
B03	Eastern County	GM	0.001	14.3	0.25*		
	Eastern County	RIB	0.001	14.3	0.40		
	Eastern County	LAA	0.005	71.4	0.25		
B04	Eastern County	LAA	0.040	51.9	0.25		
	Eastern County	RIA	0.030	39.0	0.40		
	Eastern County	RIB	0.006	7.8	0.40		
	Eastern County	GM	0.001	1.3	0.25*		
B05	Eastern County	LAA	0.006	6.8	0.25		
	Eastern County	RIA	0.028	31.8	0.40		
	Eastern County	RIB	0.045	51.1	0.40		
	Eastern County	GM	0.009	10.2	0.25*		
B06	Eastern County	RIA	0.010	62.5	0.40		
	Eastern County	RIB	0.005	31.3	0.40		
	Eastern County	GM	0.001	6.3	0.25*		
B07	Eastern County	RIA	0.001	6.3	0.40		
	Eastern County	RIB	0.008	50.0	0.40		
	Eastern County	GM	0.007	43.8	0.25*		
B10	Eastern County	LAA	0.058	52.3	0.25		
	Eastern County	GM	0.025	22.5	0.25*		
	Eastern County	RIA	0.018	16.2	0.40		
	Eastern County	RIB	0.010	9.0	0.40		
B11	Eastern County	LAA	0.060	100.0	0.25		
B12	Eastern County	LAA	0.119	100.0	0.25		
B13	Eastern County	LAA	0.151	68.3	0.25		
	Eastern County	RIB	0.036	16.3	0.40		
	Eastern County	RIA	0.034	15.4	0.40		
B14	Eastern County	LAA	0.107	71.3	0.25		
	Aguila/Carefree	101	0.015	10.0	0.28		
	Eastern County	RIA	0.027	18.0	0.40		
	Eastern County	RIB	0.001	0.7	0.40		
C01	Eastern County	LAA	0.032	100.0	0.25		
C02	Eastern County	LAA	0.035	97.2	0.25		

* Custom Value (not default value)

Soil Data

Area Id	Soil Survey	Map Unit	Area	Area Pct (%)	XKSAT	Rock Outcrop (%)	Effective (%)
C02	Eastern County	RIA	0.001	2.8	0.40		
C03	Eastern County	RIA	0.015	37.5	0.40		
	Eastern County	RIB	0.020	50.0	0.40		
	Eastern County	GM	0.005	12.5	0.25*		
C04	Eastern County	LAA	0.009	20.5	0.25		
	Eastern County	RIA	0.035	79.5	0.40		
C05	Eastern County	LAA	0.133	97.1	0.25		
	Eastern County	RIA	0.004	2.9	*		
C06	Eastern County	LAA	0.040	26.2	0.25		
	Eastern County	RIA	0.032	20.7	0.40		
	Eastern County	RIB	0.064	42.0	0.40		
	Eastern County	GM	0.017	11.1	0.25*		
C07	Eastern County	LAA	0.072	100.0	0.25		
C08	Eastern County	LAA	0.047	39.8	0.25		
	Eastern County	RIA	0.038	32.2	0.40		
	Eastern County	GM	0.010	8.5	0.25*		
	Eastern County	RIB	0.023	19.5	0.40		
C09	Eastern County	LAA	0.057	100.0	0.25		
C10	Eastern County	LAA	0.044	81.5	0.25		
	Eastern County	RIA	0.010	18.5	0.40		
C11	Eastern County	LAA	0.013	26.0	0.25		
	Eastern County	RIA	0.018	36.0	0.40		
	Eastern County	GM	0.010	20.0	0.25*		
	Eastern County	RIB	0.009	18.0	0.40		
C12	Eastern County	GM	0.001	10.0	0.25*		
	Eastern County	RIB	0.004	40.0	0.40		
	Eastern County	RIA	0.005	50.0	0.40		
C13	Eastern County	GM	0.004	2.0	*		
	Eastern County	LAA	0.057	32.3	*		
	Aguila/Carefree	101	0.116	65.7	*		
D01	Eastern County	LAA	0.082	100.0	0.25		
D02	Eastern County	LAA	0.139	100.0	0.25		
D03	Eastern County	LAA	0.055	53.9	0.25		
	Eastern County	PNA	0.007	6.9	0.40		
	Eastern County	GM	0.006	5.9	0.25*		
	Eastern County	RIA	0.034	33.3	0.40		
D04	Eastern County	LAA	0.060	100.0	0.25		
D05	Eastern County	LAA	0.158	100.0	0.25		
D06	Eastern County	LAA	0.109	100.0	0.25		
D07	Eastern County	LAA	0.049	100.0	0.25		
D08	Eastern County	LAA	0.051	94.4	0.25		

* Custom Value (not default value)

Soil Data

Area Id	Soil Survey	Map Unit	Area	Area Pct (%)	XKSAT	Rock Outcrop (%)	Effective (%)
D08	Eastern County	MV	0.003	5.6	0.25*		
D09	Aguila/Carefree	110	0.003	1.6	*		
	Aguila/Carefree	79	0.013	6.1	*		
	Eastern County	GM	0.032	14.8	*		
	Aguila/Carefree	23	0.017	8.1	*		
	Eastern County	MV	0.004	1.7	*		
	Aguila/Carefree	101	0.146	67.8	*		
E01	Eastern County	LAA	0.058	100.0	0.25		
E02	Eastern County	LAA	0.135	90.6	0.25		
	Eastern County	MV	0.014	9.4	0.25*		
E03	Eastern County	LAA	0.003	4.3	0.25		
	Eastern County	MV	0.067	95.7	0.25*		
E04	Eastern County	LAA	0.038	100.0	0.25		
E05	Eastern County	LAA	0.030	63.8	0.25		
	Eastern County	MV	0.017	36.2	0.25*		
E06	Eastern County	MV	0.036	100.0	0.25*		
E07	Eastern County	LAA	0.050	59.5	0.25		
	Eastern County	MV	0.034	40.5	0.25*		
E08	Eastern County	MV	0.031	100.0	0.25*		
E09	Aguila/Carefree	23	0.121	54.2	*		
	Eastern County	MV	0.102	45.8	*		
F01	Eastern County	LAA	0.030	100.0	0.25		
F02	Eastern County	MV	0.046	100.0	0.25*		
F03	Eastern County	LAA	0.089	52.7	0.25		
	Eastern County	MV	0.080	47.3	0.25*		
F04	Eastern County	LAA	0.060	100.0	0.25		
F05	Eastern County	LAA	0.020	23.0	0.25		
	Eastern County	MV	0.067	77.0	0.25*		
F06	Eastern County	LAA	0.046	44.7	0.25		
	Eastern County	MV	0.057	55.3	0.25*		
F07	Aguila/Carefree	23	0.177	70.7	*		
	Eastern County	MV	0.073	29.3	*		
G01	Eastern County	LAA	0.049	100.0	0.25		
G02	Eastern County	LAA	0.052	68.4	0.25		
	Eastern County	MV	0.024	31.6	0.25*		
G03	Eastern County	LAA	0.078	83.0	0.25		
	Eastern County	CO	0.016	17.0	0.04*	*	
G04	Eastern County	LAA	0.045	100.0	0.25		
G05	Eastern County	CO	0.023	52.3	0.04*	*	

* Custom Value (not default value)

Soil Data

Area Id	Soil Survey	Map Unit	Area	Area Pct (%)	XKSAT	Rock Outcrop (%)	Effective (%)
G05	Eastern County	LAA	0.021	47.7	0.25		
G06	Eastern County	MV	0.032	25.2	*		
	Eastern County	LAA	0.020	15.4	*		
	Aguila/Carefree	23	0.075	59.3	*		

* Custom Value (not default value)

Flood Control District of Maricopa County
SCOTTSDALE - GRANITE REEF ADMP

Sub Basin Data

3/30/2002

Basin: 01 Storms: Multiple Duration: 6 Hour Loss Method: Green-Ampt Unit Hydrograph: Clark

Area ID	Sub Basin Parameters: Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	Rainfall Losses: IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		Return Period (Years): 2	5	10	25	50	100
A01	0.51	0.83	6.0	6.0	Urban	0.025	0.10	0.25	5.40	0.32	80	Tc (hrs)	0.95	0.78	0.70	0.63	0.58	0.54
												R (hrs)	0.44	0.36	0.32	0.28	0.26	0.24
B01	0.07	0.41	55.4	55.4	Urban	0.061	0.25	0.25	4.30	0.54	44	Tc (hrs)	0.57	0.42	0.36	0.31	0.28	0.27
												R (hrs)	0.43	0.31	0.26	0.22	0.20	0.19
B02	0.10	0.70	19.9	19.9	Urban	0.033	0.15	0.25	4.70	0.41	68	Tc (hrs)	0.66	0.53	0.48	0.42	0.39	0.36
												R (hrs)	0.65	0.50	0.45	0.40	0.36	0.34
B03	0.01	0.24	31.7	31.7	Urban	0.075	0.25	0.25	4.65	0.41	47	Tc (hrs)	0.54	0.40	0.36	0.31	0.28	0.27
												R (hrs)	1.02	0.74	0.65	0.55	0.50	0.47
B04	0.08	0.55	28.2	28.2	Urban	0.033	0.15	0.25	4.45	0.50	71	Tc (hrs)	0.48	0.39	0.35	0.31	0.29	0.27
												R (hrs)	0.44	0.34	0.31	0.27	0.25	0.23
B05	0.09	0.81	23.5	23.5	Urban	0.056	0.22	0.26	4.15	0.58	44	Tc (hrs)	1.26	0.92	0.81	0.70	0.63	0.58
												R (hrs)	1.61	1.14	0.98	0.84	0.75	0.69
B06	0.02	0.47	36.3	36.3	Urban	0.052	0.13	0.26	4.00	0.64	60	Tc (hrs)	0.59	0.45	0.40	0.35	0.33	0.30
												R (hrs)	1.22	0.92	0.81	0.70	0.64	0.59
B07	0.02	0.29	54.8	54.8	Urban	0.047	0.13	0.28	4.35	0.51	49	Tc (hrs)	0.35	0.26	0.24	0.22	0.20	0.19
												R (hrs)	0.46	0.33	0.30	0.27	0.25	0.23
B10	0.11	0.78	27.4	27.4	Urban	0.084	0.21	0.25	4.60	0.49	28	Tc (hrs)	1.50	1.26	1.08	0.91	0.82	0.74
												R (hrs)	1.67	1.37	1.15	0.96	0.85	0.77
B11	0.06	0.34	17.9	17.9	Urban	0.066	0.24	0.25	4.80	0.39	37	Tc (hrs)	0.87	0.63	0.55	0.47	0.43	0.40
												R (hrs)	0.65	0.46	0.40	0.33	0.30	0.27
B12	0.12	0.38	13.1	13.1	Urban	0.058	0.25	0.25	4.80	0.38	39	Tc (hrs)	0.96	0.71	0.62	0.53	0.48	0.44
												R (hrs)	0.55	0.39	0.34	0.29	0.26	0.23
B13	0.22	0.74	51.1	51.1	Urban	0.055	0.22	0.26	4.55	0.42	44	Tc (hrs)	0.79	0.59	0.52	1.58	0.40	0.38
												R (hrs)	0.53	0.38	0.33	1.14	0.25	0.23
B14	0.15	1.00	8.0	8.0	Urban	0.029	0.10	0.25	4.60	0.48	80	Tc (hrs)	1.07	0.87	0.79	0.70	0.65	0.61
												R (hrs)	1.18	0.94	0.84	0.74	0.68	0.63

Sub Basin Data

Basin: 01 Storms: Multiple Duration: 6 Hour Loss Method: Green-Ampt Unit Hydrograph: Clark

Area ID	Sub Basin Parameters: Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	Rainfall Losses: IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		Return Period (Years): 2	5	10	25	50	100
C01	0.03	0.45	10.0	10.0	Urban	0.059	0.22	0.25	4.80	0.37	57	**Tc (hrs)**	1.06	0.83	0.74	0.65	0.59	0.55
												R (hrs)	1.48	1.14	1.00	0.86	0.78	0.71
C02	0.04	0.54	9.8	9.8	Urban	0.051	0.15	0.25	4.80	0.40	70	**Tc (hrs)**	1.00	0.81	0.73	0.65	0.60	0.55
												R (hrs)	1.51	1.20	1.07	0.93	0.85	0.78
C03	0.04	0.49	36.7	36.7	Urban	0.057	0.18	0.25	4.10	0.61	62	**Tc (hrs)**	0.63	0.49	0.44	0.39	0.35	0.33
												R (hrs)	0.79	0.60	0.53	0.46	0.42	0.39
C04	0.04	0.54	9.6	9.6	Urban	0.057	0.18	0.28	4.20	0.51	44	**Tc (hrs)**	1.40	1.03	0.90	0.78	0.71	0.65
												R (hrs)	1.94	1.38	1.19	1.02	0.91	0.83
C05	0.14	0.76	9.9	9.9	Urban	0.054	0.23	0.25	4.70	0.37	54	**Tc (hrs)**	1.50	1.53	1.02	0.89	0.81	0.75
												R (hrs)	1.45	1.48	0.95	0.81	0.73	0.68
C06	0.15	0.73	18.8	18.8	Urban	0.053	0.23	0.25	4.30	0.49	52	**Tc (hrs)**	1.12	0.85	0.76	0.66	0.60	0.55
												R (hrs)	0.95	0.70	0.62	0.53	0.48	0.44
C07	0.07	0.60	10.2	10.2	Urban	0.058	0.25	0.25	4.80	0.35	50	**Tc (hrs)**	1.36	1.03	0.91	0.79	0.72	0.67
												R (hrs)	1.54	1.13	0.99	0.85	0.76	0.70
C08	0.12	0.56	11.0	11.0	Urban	0.054	0.25	0.25	4.40	0.45	51	**Tc (hrs)**	1.20	0.91	0.80	0.70	0.64	0.59
												R (hrs)	0.96	0.70	0.62	0.53	0.48	0.43
C09	0.06	0.54	12.1	12.1	Urban	0.061	0.25	0.25	4.80	0.36	50	**Tc (hrs)**	1.21	0.92	0.82	0.71	0.65	0.60
												R (hrs)	1.42	1.05	0.92	0.78	0.71	0.65
C10	0.05	0.45	17.9	17.9	Urban	0.059	0.25	0.25	4.65	0.38	50	**Tc (hrs)**	0.87	0.67	0.59	0.51	0.47	0.43
												R (hrs)	0.89	0.66	0.58	0.49	0.45	0.41
C11	0.05	0.41	24.7	24.7	Urban	0.059	0.25	0.25	4.40	0.45	49	**Tc (hrs)**	0.73	0.55	0.48	0.42	0.38	0.36
												R (hrs)	0.71	0.52	0.45	0.39	0.35	0.32
C12	0.01	0.49	0.4	0.4	Urban	0.073	0.19	0.25	4.10	0.58	64	**Tc (hrs)**	1.50	1.50	1.50	1.50	1.50	1.50
												R (hrs)	4.51	4.51	4.51	4.51	4.51	4.51
C13	0.18	1.00	10.0	10.0	Urban	0.027	0.10	0.29	2.65	1.70	80	**Tc (hrs)**	1.55	0.79	0.71	0.63	0.58	0.54
												R (hrs)	1.62	0.77	0.68	0.59	0.55	0.50

Sub Basin Data

Basin: 01 Storms: Multiple Duration: 6 Hour Loss Method: Green-Ampt Unit Hydrograph: Clark

Area ID	Sub Basin Parameters						Rainfall Losses						Return Period (Years)					
	Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		2	5	10	25	50	100
D01	0.08	0.57	9.0	9.0	Urban	0.057	0.24	0.25	4.80	0.36	53	**Tc (hrs)**	1.34	1.02	0.90	0.79	0.72	0.67
												R (hrs)	1.35	0.99	0.87	0.75	0.68	0.62
D02	0.14	0.66	15.5	15.5	Urban	0.058	0.23	0.25	4.80	0.36	51	**Tc (hrs)**	1.19	0.91	0.81	0.70	0.64	0.59
												R (hrs)	0.99	0.74	0.65	0.55	0.50	0.46
D03	0.10	0.73	18.2	18.2	Urban	0.060	0.20	0.25	4.50	0.45	52	**Tc (hrs)**	1.23	0.94	0.84	0.73	0.67	0.61
												R (hrs)	1.32	0.98	0.86	0.74	0.67	0.61
D04	0.06	0.62	12.3	12.3	Urban	0.060	0.23	0.25	4.80	0.36	53	**Tc (hrs)**	1.28	0.98	0.87	0.76	0.69	0.64
												R (hrs)	1.65	1.22	1.08	0.92	0.83	0.76
D05	0.16	0.72	13.0	13.0	Urban	0.059	0.23	0.25	4.80	0.38	51	**Tc (hrs)**	1.41	1.07	0.94	0.83	0.75	0.69
												R (hrs)	1.19	0.87	0.76	0.66	0.59	0.54
D06	0.11	0.66	10.6	10.6	Urban	0.055	0.24	0.25	4.80	0.35	52	**Tc (hrs)**	1.35	1.03	0.91	0.80	0.73	0.67
												R (hrs)	1.31	0.97	0.85	0.73	0.66	0.60
D07	0.05	0.52	15.6	15.6	Urban	0.060	0.25	0.25	4.80	0.35	51	**Tc (hrs)**	1.02	0.79	0.70	0.60	0.55	0.51
												R (hrs)	1.25	0.94	0.82	0.70	0.63	0.58
D08	0.05	0.73	14.5	14.5	Urban	0.059	0.24	0.25	4.80	0.36	53	**Tc (hrs)**	1.33	1.01	0.90	0.78	0.71	0.66
												R (hrs)	2.08	1.53	1.35	1.16	1.04	0.96
D09	0.22	1.01	15.0	15.0	Urban	0.027	0.10	0.29	2.65	1.70	80	**Tc (hrs)**	0.80	0.67	0.60	0.53	0.49	0.46
												R (hrs)	0.70	0.57	0.51	0.44	0.41	0.38
E01	0.06	0.51	15.2	15.2	Urban	0.058	0.20	0.25	4.80	0.38	60	**Tc (hrs)**	0.93	0.74	0.66	0.58	0.53	0.49
												R (hrs)	1.01	0.78	0.68	0.59	0.53	0.49
E02	0.15	0.70	12.1	12.1	Urban	0.057	0.24	0.25	4.80	0.37	50	**Tc (hrs)**	1.40	1.05	0.93	0.81	0.74	0.68
												R (hrs)	1.19	0.87	0.76	0.65	0.59	0.54
E03	0.07	0.87	9.6	9.6	Urban	0.061	0.23	0.25	4.80	0.36	53	**Tc (hrs)**	1.50	1.44	1.27	1.10	0.99	0.92
												R (hrs)	2.37	2.26	1.97	1.67	1.50	1.37
E04	0.04	0.39	9.6	9.6	Urban	0.076	0.22	0.25	4.80	0.39	47	**Tc (hrs)**	1.29	0.97	0.86	0.75	0.68	0.62
												R (hrs)	1.47	1.07	0.94	0.80	0.72	0.66

Sub Basin Data

Basin: 01 Storms: Multiple Duration: 6 Hour Loss Method: Green-Ampt Unit Hydrograph: Clark

	Sub Basin Parameters						Rainfall Losses						Return Period (Years)					
Area ID	Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		2	5	10	25	50	100
E05	0.05	0.33	15.5	15.5	Urban	0.060	0.21	0.25	4.80	0.37	57	**Tc (hrs)**	0.72	0.56	0.50	0.43	0.40	0.38
												R (hrs)	0.60	0.46	0.40	0.34	0.31	0.29
E06	0.04	0.40	12.8	12.8	Urban	0.067	0.24	0.25	4.80	0.36	53	**Tc (hrs)**	0.99	0.77	0.68	0.59	0.54	0.50
												R (hrs)	1.17	0.88	0.77	0.66	0.59	0.55
E07	0.08	0.42	15.8	15.8	Urban	0.060	0.25	0.25	4.80	0.36	49	**Tc (hrs)**	0.89	0.68	0.60	0.52	0.47	0.44
												R (hrs)	0.66	0.50	0.43	0.37	0.33	0.31
E08	0.03	0.36	10.3	10.3	Urban	0.063	0.24	0.25	4.80	0.35	51	**Tc (hrs)**	0.97	0.75	0.67	0.58	0.53	0.49
												R (hrs)	1.14	0.86	0.76	0.64	0.58	0.53
E09	0.22	1.00	10.0	10.0	Urban	0.027	0.10	0.29	2.65	1.70	80	**Tc (hrs)**	1.55	0.79	0.71	0.63	0.58	0.55
												R (hrs)	1.42	0.67	0.60	0.52	0.48	0.45
F01	0.03	0.34	11.9	11.9	Urban	0.068	0.22	0.25	4.80	0.39	53	**Tc (hrs)**	0.93	0.72	0.64	0.55	0.50	0.47
												R (hrs)	1.05	0.79	0.69	0.59	0.53	0.49
F02	0.05	0.44	11.4	11.4	Urban	0.061	0.23	0.25	4.80	0.36	55	**Tc (hrs)**	1.02	0.80	0.71	0.62	0.56	0.52
												R (hrs)	1.14	0.87	0.76	0.65	0.59	0.54
F03	0.17	0.60	12.4	12.4	Urban	0.069	0.21	0.25	4.80	0.37	58	**Tc (hrs)**	1.34	1.03	0.92	0.81	0.74	0.68
												R (hrs)	0.94	0.70	0.62	0.54	0.49	0.45
F04	0.06	0.61	11.5	11.5	Urban	0.051	0.15	0.25	4.80	0.42	68	**Tc (hrs)**	1.04	0.83	0.75	0.66	0.61	0.57
												R (hrs)	1.29	1.01	0.90	0.78	0.71	0.66
F05	0.09	0.44	9.0	9.0	Urban	0.057	0.24	0.25	4.80	0.36	52	**Tc (hrs)**	1.11	0.85	0.76	0.66	0.60	0.55
												R (hrs)	0.87	0.65	0.57	0.49	0.44	0.40
F06	0.10	0.48	8.6	8.6	Urban	0.057	0.23	0.25	4.80	0.36	49	**Tc (hrs)**	1.23	0.94	0.83	0.72	0.65	0.60
												R (hrs)	0.94	0.70	0.61	0.52	0.47	0.43
F07	0.25	1.02	10.0	10.0	Urban	0.026	0.10	0.29	2.65	1.70	80	**Tc (hrs)**	0.93	0.78	0.70	0.62	0.58	0.54
												R (hrs)	0.76	0.63	0.56	0.49	0.45	0.42
G01	0.05	0.44	9.0	9.0	Urban	0.062	0.21	0.25	4.80	0.38	57	**Tc (hrs)**	1.14	0.89	0.79	0.69	0.63	0.59
												R (hrs)	1.25	0.94	0.83	0.72	0.65	0.60

Sub Basin Data

Basin: 01 Storms: Multiple Duration: 6 Hour Loss Method: Green-Ampt Unit Hydrograph: Clark

Area ID	Sub Basin Parameters						Rainfall Losses						Return Period (Years)					
	Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		2	5	10	25	50	100
G02	0.08	0.50	12.3	12.3	Urban	0.066	0.21	0.25	4.80	0.38	52	**Tc (hrs)**	1.18	0.91	1.56	0.70	0.64	0.59
												R (hrs)	1.11	0.83	1.51	0.63	0.56	0.52
G03	0.09	0.51	27.6	27.6	Urban	0.055	0.23	0.25	5.60	0.26	55	**Tc (hrs)**	0.70	0.55	0.49	0.43	0.39	0.37
												R (hrs)	0.57	0.43	0.38	0.32	0.30	0.28
G04	0.05	0.38	35.4	35.4	Urban	0.061	0.25	0.25	4.80	0.35	51	**Tc (hrs)**	0.58	0.45	0.40	0.35	0.32	0.30
												R (hrs)	0.55	0.41	0.36	0.31	0.28	0.26
G05	0.05	0.39	29.8	29.8	Urban	0.061	0.24	0.15	7.00	0.14	53	**Tc (hrs)**	0.58	1.58	0.40	0.36	0.34	0.32
												R (hrs)	0.55	1.68	0.37	0.33	0.30	0.28
G06	0.13	0.46	20.0	20.0	Urban	0.028	0.10	0.29	2.65	1.70	80	**Tc (hrs)**	0.43	0.36	0.33	0.29	0.27	0.25
												R (hrs)	0.25	0.21	0.19	0.16	0.15	0.14

D.3 Hydrograph Routing Data

Granite Reef ADMP Route Information

Route ID	Length (ft)	Upstream Elevation	Downstream Elevation	Slope (ft/ft)	Cross Section Type
RB01	1320	1191	1188.5	0.0019	Ditch
RB02	548	1207.8	1197.6	0.0186	Minor Arterial
RB03	1348	1202	1198	0.0030	Minor Arterial
RB05	271	1199	1197.6	0.0052	Minor Arterial
RB07	1525	1207.9	1204	0.0026	Minor Arterial
RB12	4395	*	*	0.0019 *(1)	Shallow Flow
RB13	1269	*	*	0.004 *(1)	Shallow Flow
RB14	2746	*	*	0.004 *(1)	Major Arterial
RC01	1217	1220.2	1218.6	0.0013	Major Arterial
RC03	1097	1204	1203	0.0009	Channel
RC04	1563	1221.5	1204.9	0.0106	Major Arterial
RC02	632	1218	1214	0.0063	Major Arterial
RC06	1271	1212	1204.9	0.0056	Channel
RC07	2638	1227	1219	0.0030	Minor Arterial
RC08	2205	1217.7	1212	0.0026	Minor Arterial
RC09	3368	1228	1218	0.0030	Minor Arterial
RC10	688	1225	1218.8	0.0090	Minor Arterial
RC11	1334	1218.8	1216.8	0.0015	Minor Arterial
RC12	2693	1223	1221	0.0007	Minor Arterial with a wall
RC13S	5197	*	*	0.0058 *(1)	Shallow Flow
RC13W	2052	*	*	0.0044*(2)	Storm Sewer
RD01E	1315	1232	1228.8	0.0024	Major Arterial
RD01S	2611	1233	1227	0.0023	Minor Arterial
RD02	1063	1228.8	1224	0.0045	Major Arterial
RD03	1307	1224	1218.8	0.0040	Minor Arterial
RD04	1084	1234	1232	0.0018	Major Arterial
RD05E	560	1239	1238	0.0018	Subdivision Road
RD05E2	767	1238	1237	0.0013	Minor Arterial
RD05S	2669	1239	1232	0.0026	Minor Arterial
RD05S2	3035	1238	1228.8	0.0030	Minor Arterial
RD06	609	1237	1235	0.0033	Minor Arterial
RD07	3657	1235	1224	0.0030	Minor Arterial
RD08	2751	1234.3	1224	0.0037	Minor Arterial with a wall
RE01S	2567	1245	1236.7	0.0032	Subdivision Road
RE02W	355	*	*	0.0009*(2)	Storm Sewer
RE02S	2617	1244	1236.7	0.0028	Subdivision Road
RE03S	3444	1244	1233	0.0032	Subdivision Road
RE03W	1504	*	*	0.0009	Storm Sewer
RE04S	2636	1252	1245.1	0.0026	Minor Arterial
RE05S	3053	1250	1243.7	0.0021	Minor Arterial
RE05W	1490	*	*	0.0021*(2)	Storm Sewer
RE06	3333	1249	1244.5	0.0014	Minor Arterial with a wall
RE07	1335	1253.3	1250	0.0025	Minor Arterial
RE08	1326	1252.8	1249	0.0029	Minor Arterial with a wall
RE09S	5501	1244.5	1224	0.0037	Minor Arterial along Pima Rd.
RE09W	779	*	*	0.0009*(2)	Storm Sewer
RF01S	2619	1260	1252	0.0031	Minor Arterial
RF02S	1338	1256.3	1253.3	0.0022	Minor Arterial
RF02W	1310	*	*	0.001*(2)	Storm Sewer
RF03	482	1257.7	1256	0.0035	Minor Arterial
RF04S	2652	1266	1259.8	0.0023	Minor Arterial
RF05S	2167	1264.4	1257.4	0.0032	Minor Arterial
RF05W	1302	*	*	0.004*(2)	Storm Sewer
RF06	1299	1267.4	1264.8	0.0020	Minor Arterial
RF07W	1315	*	*	0.001 *(2)	Storm Sewer
RF07S	5280	1257	1245	0.0023	Minor Arterial along Pima Rd.
RG01S	2625	1269.8	1266	0.0014	Minor Arterial
RG02	1358	1269.9	1267.4	0.0018	Minor Arterial
RG03S	1322	1273	1269.8	0.0024	Minor Arterial
RG04	1336	1274.3	1269.9	0.0033	Subdivision Road
RG05	1994	1275	1269.9	0.0026	Subdivision Road
RG06S	5286	1272	1257	0.0028	Minor Arterial along Pima Rd.

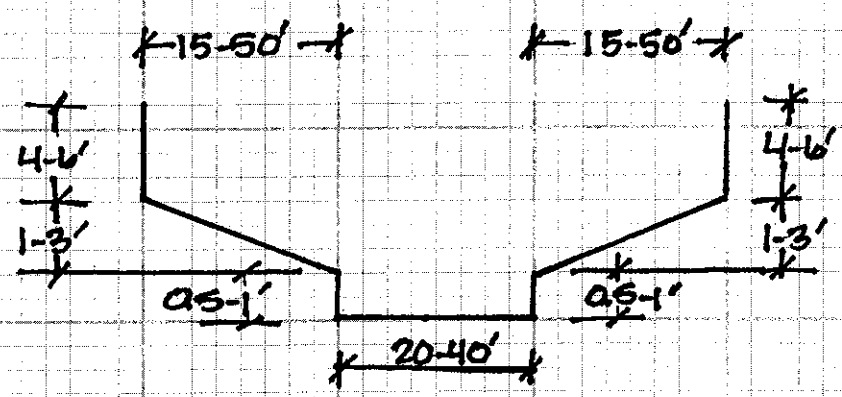
Notes: 1) The slope was estimated because there was no topo information.
2) The storm sewer's slope was taken from the as-built inofmation.

Entellus™

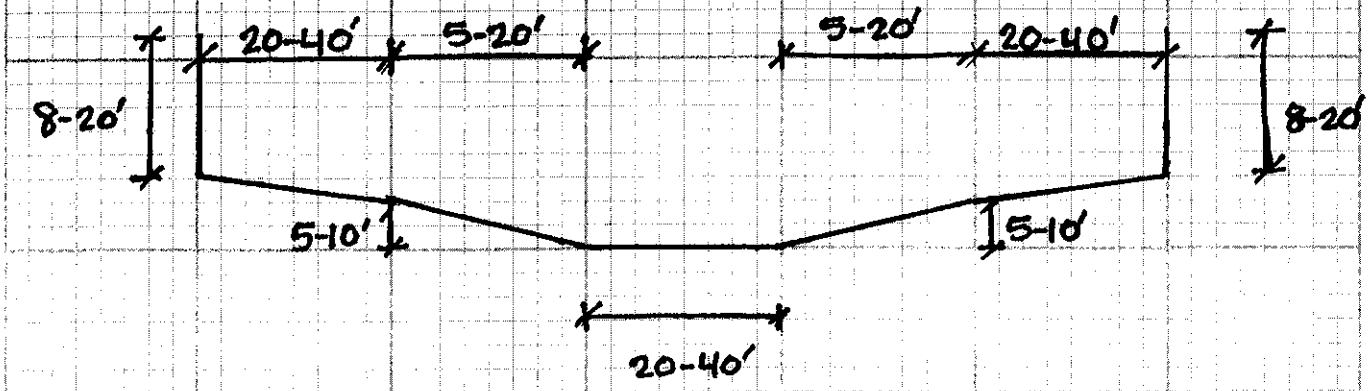
SHEET 1 OF 4
BY AMG DATE 4/15/02
CHECK PAW DATE 4/17/02

CLIENT FCDMC
JOB NAME GRANITE REEF DMP JOB NO. 310.021

SUBDIVISION ROAD



CHANNEL

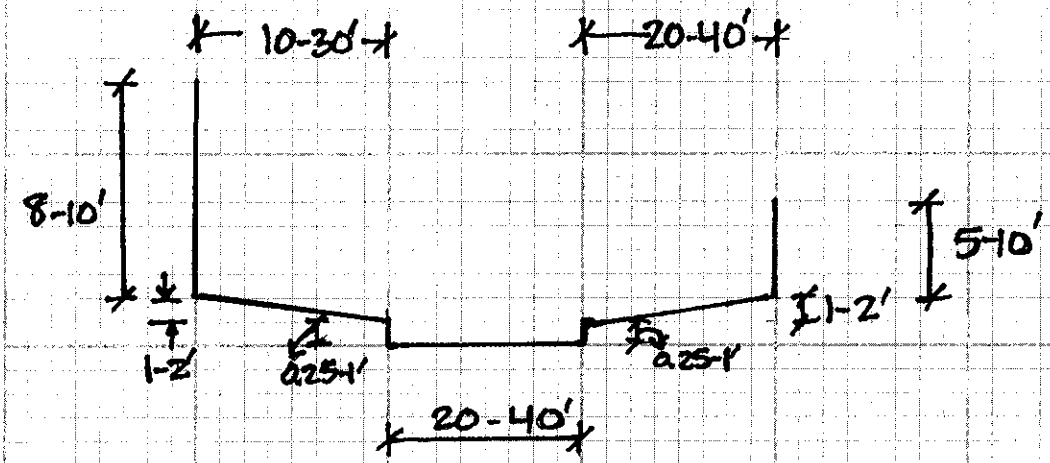


Entellus™

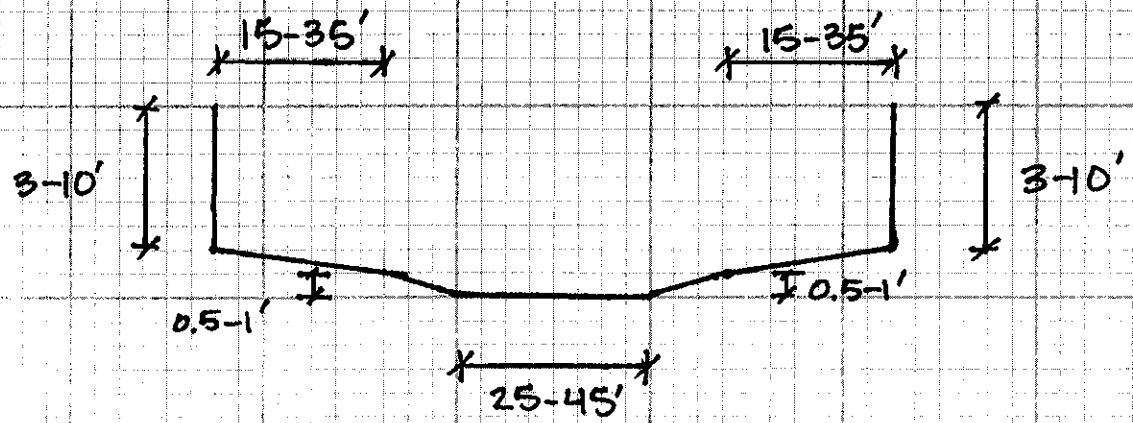
SHEET 2 OF 4
BY AMG DATE 4/15/02
CHECK PAW DATE 4/17/02

CLIENT FCDMC
JOB NAME GRANITE REEF DMP JOB NO. 310.021

MINOR ARTERIAL W/ WALL



MINOR ARTERIAL ALONG PIMA RD.



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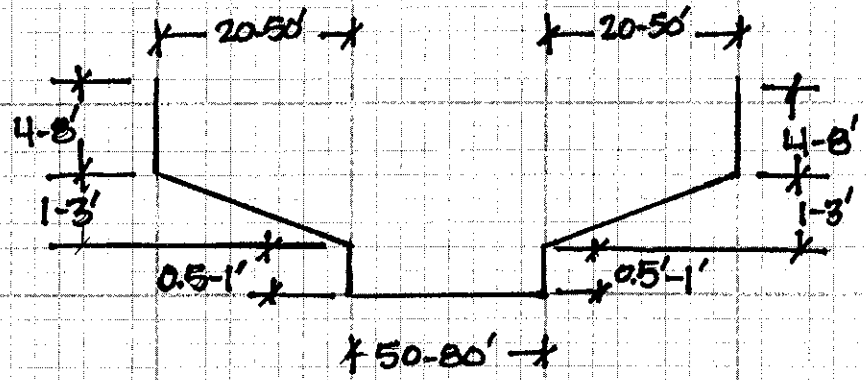
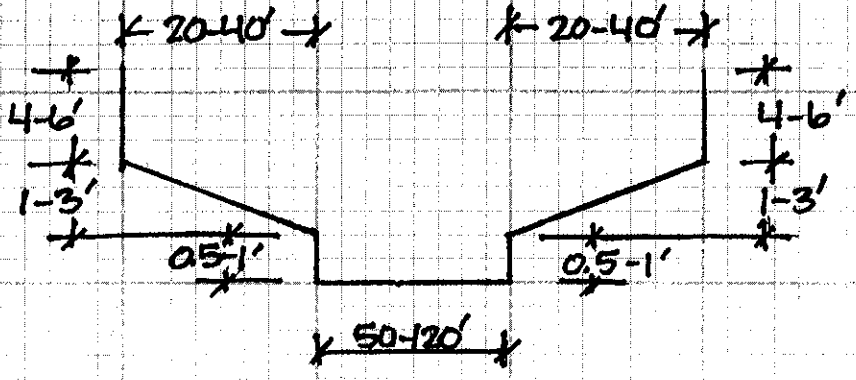
SHEET 3 OF 4
BY AMG DATE 4/15/02
CHECK PAW DATE 4/17/02

CLIENT FCDMC
JOB NAME GRANITE REEF DMP JOB NO. 310.021

MINOR ARTERIAL



MAJOR ARTERIAL



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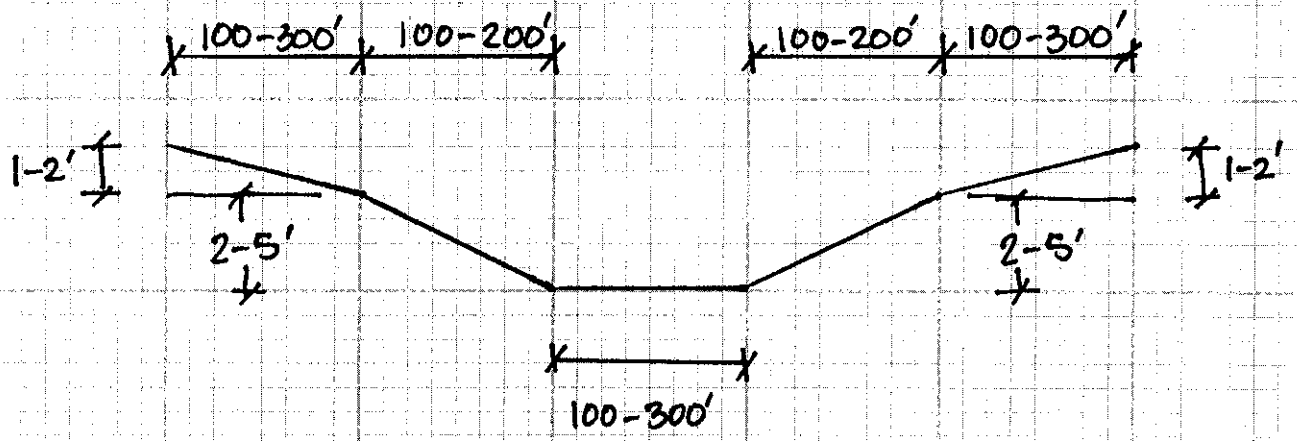
SHEET 4 OF 4
BY AMG DATE 4/15/02
CHECK PAW DATE 4/17/02

CLIENT FCDMC

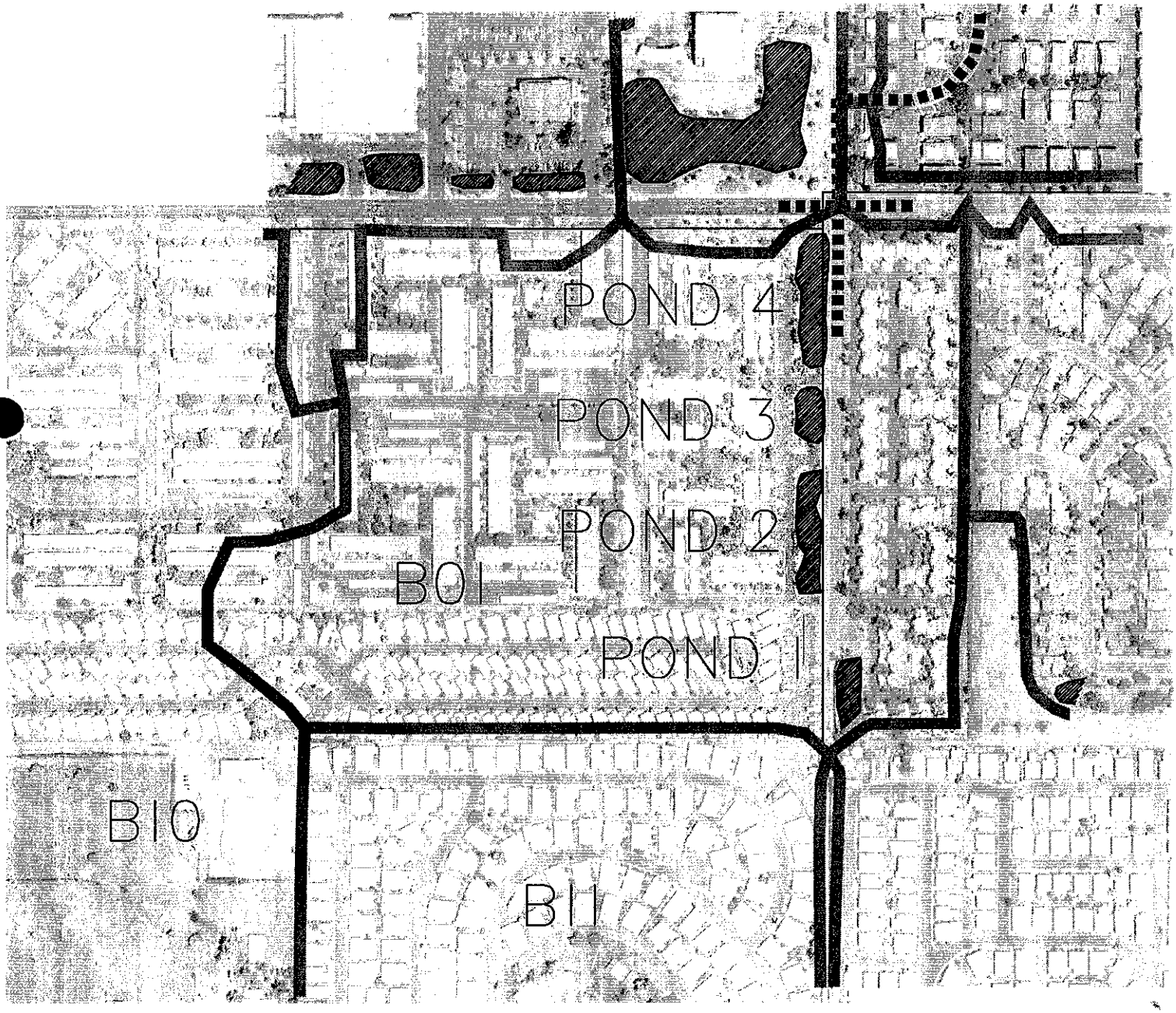
JOB NAME GRANITE REEF DMP JOB NO. 310,021

SHALLOW FLOW



D.4 Storage Routing Data

BASIN B01



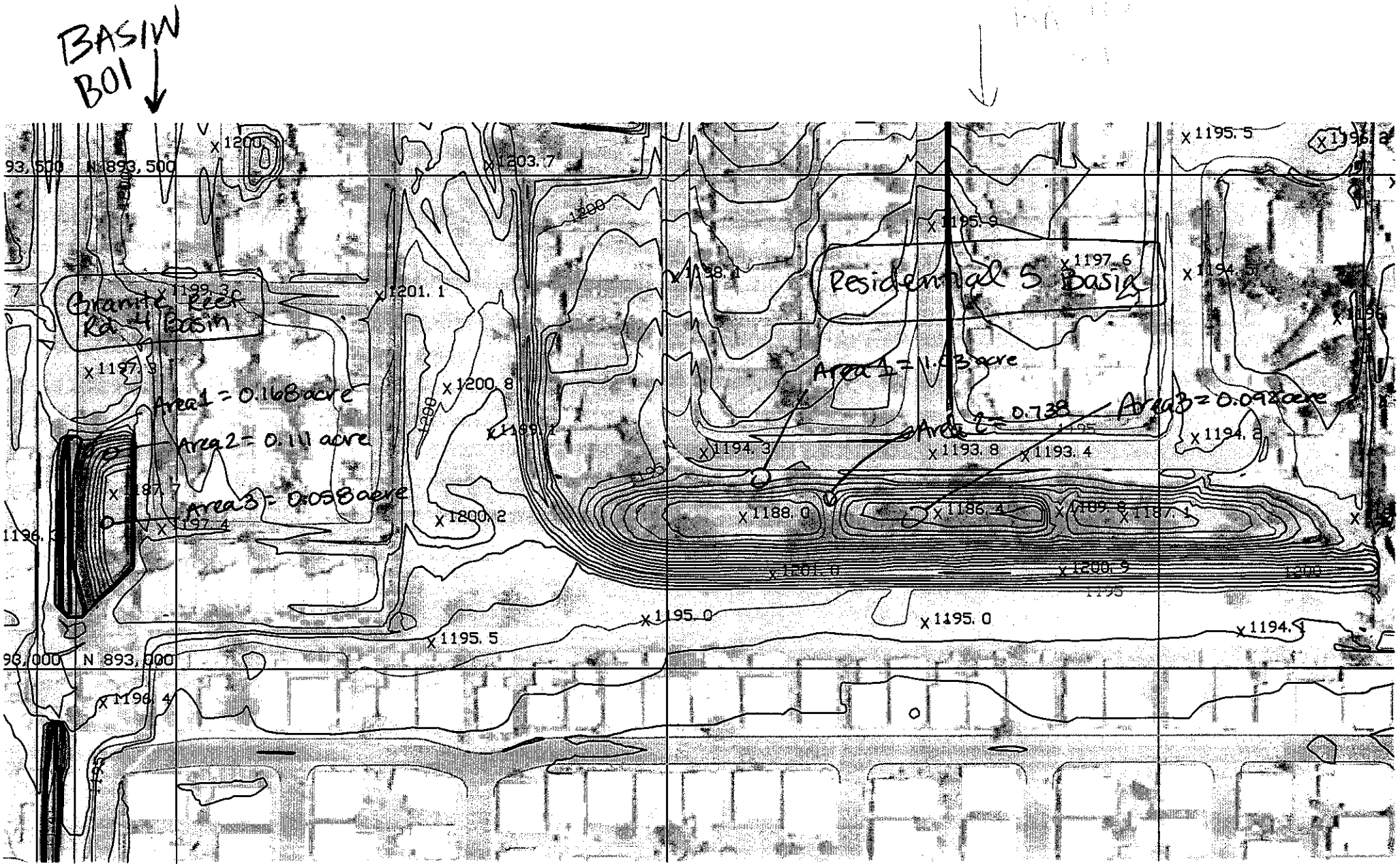
Detention Basin Calculations

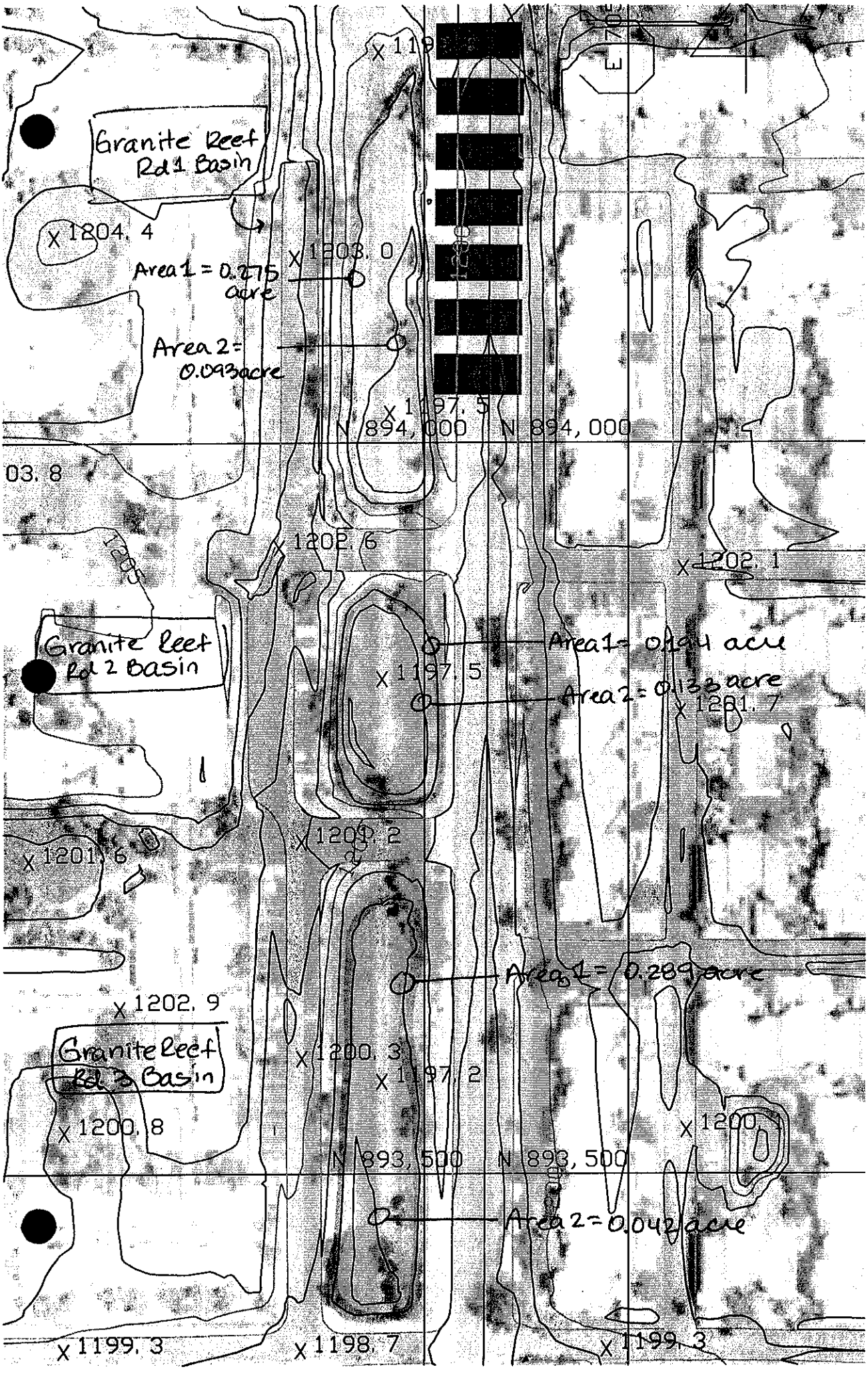
Note: See attached drawings of detention ponds for dimensions.

Basin B01

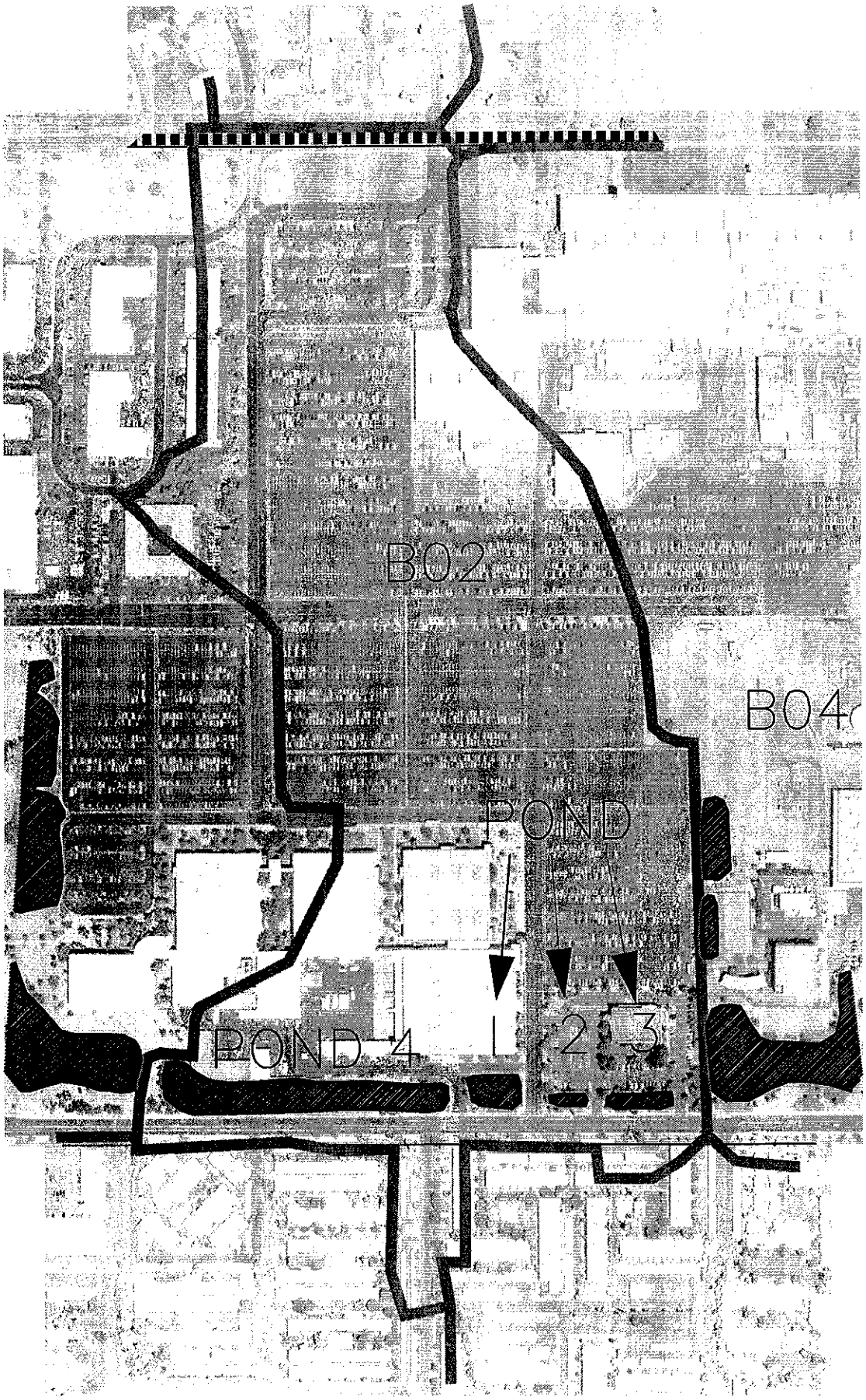
Depth (ft)	Pond 1 Area	Storage	Depth (ft)	Pond 2 Area	Pond 3 Area	Pond 4 Area	Ponds 2,3,4 Area	Storage
0	0.058		0	0.042	0.133	0.093	0.268	
3	0.111	0.25	1	0.289	0.194	0.275	0.758	0.49
6	0.168	0.42					**Total (ac ft)**	0.49
	Total (ac ft)	0.66						

All Ponds = 0.66 + 0.49 = 1.15 ac ft.


BASIN B01
Granite Reef Rd. Basin
Area1 = 0.168acre
Area2 = 0.111 acre
Area3 = 0.058acre
Residential 5 Basin
Area 1 = 1.43acre
Area 2 = 0.738
Area3 = 0.092acre
E 893,500
N 893,500
E 893,000
N 893,000
X1203.7
X1201.1
X1200.8
X1200.2
X1199.1
X1198.1
X1197.6
X1195.9
X1195.5
X1194.5
X1194.3
X1193.8
X1193.4
X1188.0
X1186.4
X1201.0
X1200.9
X1195.0
X1195.0
X1194.1
X1196.4

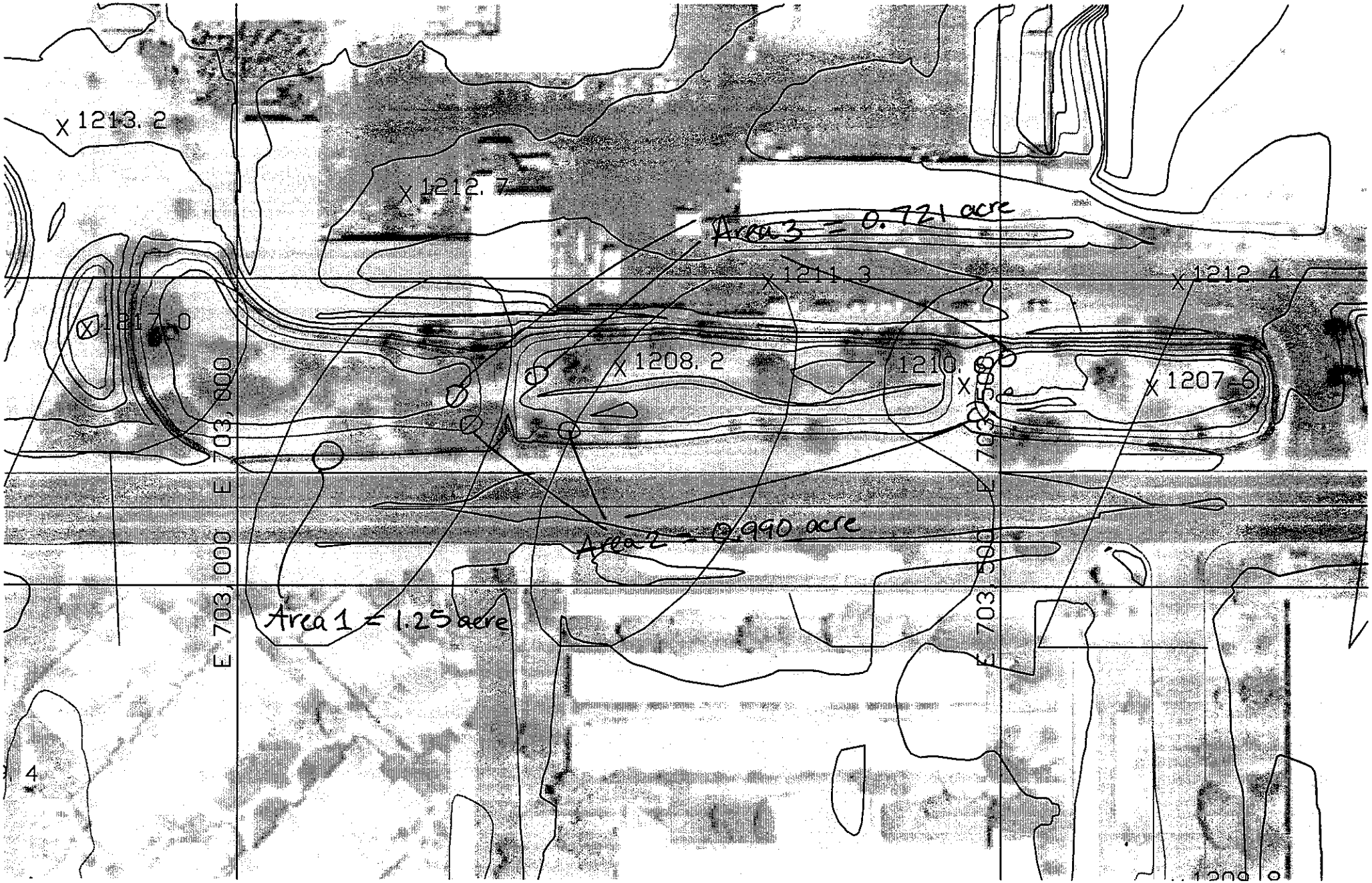

B01 BASIN
Granite Reef Rd 1 Basin
X 1204.4
Area 1 = 0.275 acre
X 1203.0
Area 2 = 0.093 acre
X 1197.5
N 894,000
N 894,000
03.8
X 1202.6
X 1202.1
Granite Reef Rd 2 Basin
Area 1= 0.164 acre
X 1197.5
Area 2= 0.138 acre
X 1201.7
X 1201.6
X 1201.2
Area 1 = 0.289 acre
X 1202.9
Granite Reef Rd 3 Basin
X 1200.3
X 1197.2
X 1200.8
X 1200.1
N 893,500
N 893,500
Area 2 = 0.042 acre
X 1199.3
X 1198.7
X 1199.3

BASIN B02

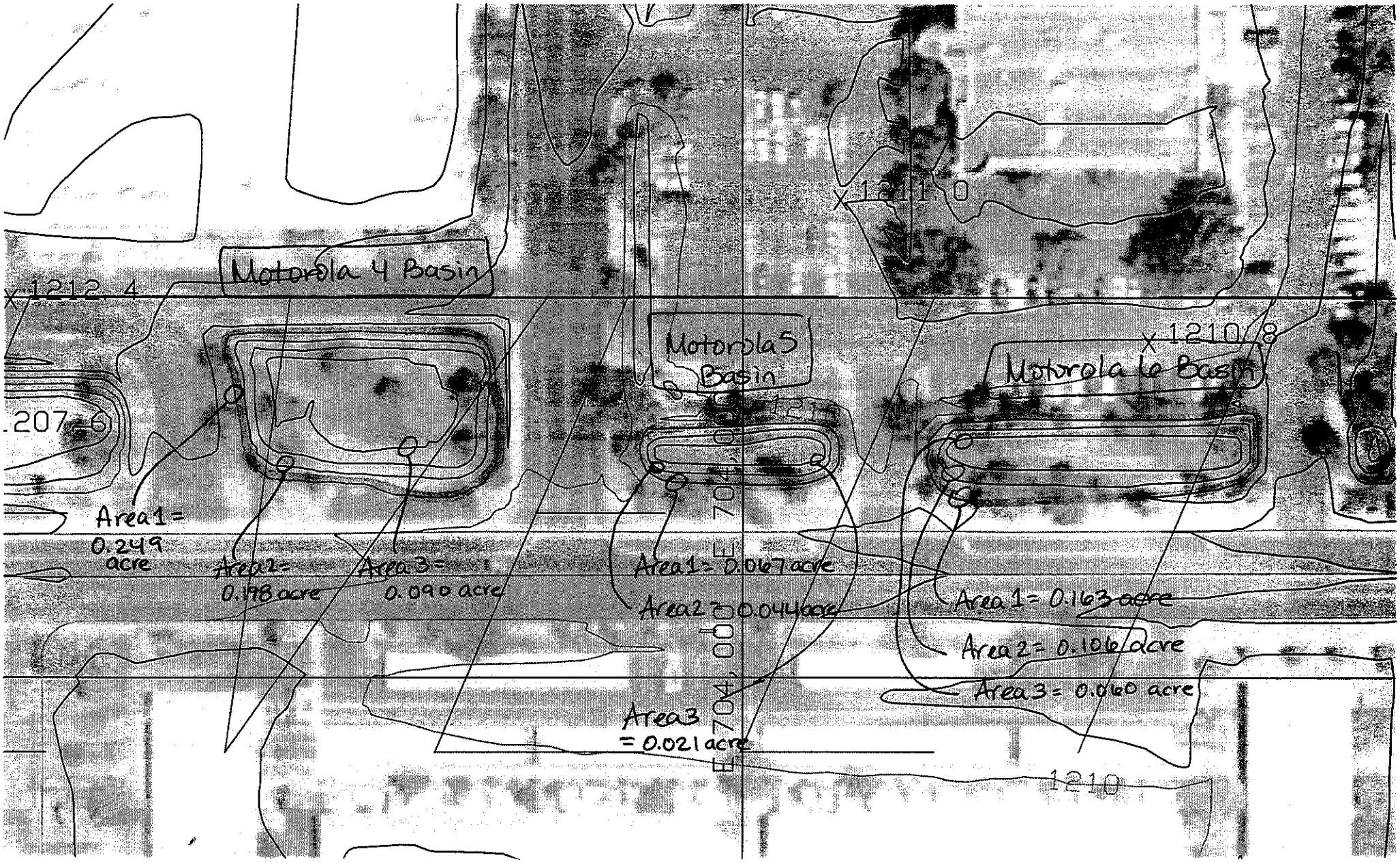


BASIN B02

Motorola 3 Basin



BASIN B02


Motorola 4 Basin
Motorola 5 Basin
Motorola 6 Basin
1212.4
1211.0
1210.8
1207.6
1210.4
1210
Area1 = 0.249 acre
Area2 = 0.178 acre
Area3 = 0.090 acre
Area1 = 0.067 acre
Area2 = 0.044 acre
Area3 = 0.021 acre
Area 1 = 0.163 acre
Area 2 = 0.106 acre
Area 3 = 0.060 acre

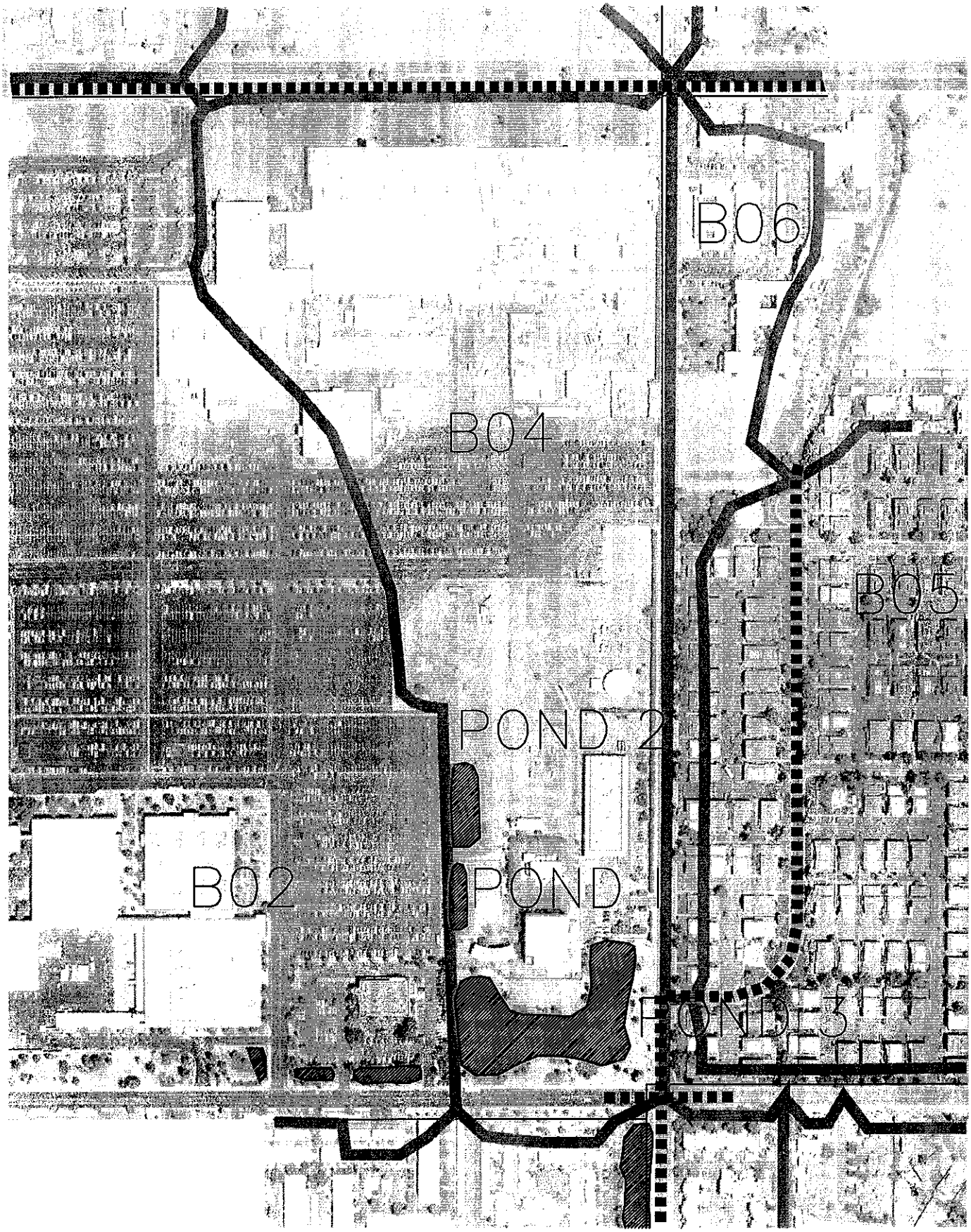
Detention Basin Calculations

Note: See attached drawings of detention ponds for dimensions.

Basin B02

Depth (ft)	Pond 1 Area	Pond 2 Area	Pond 3 Area	Pond 4 Area	All Ponds Area	Storage
0	0.09	0.021	0.06	0.721	0.892	
1	0.198	0.044	0.106	0.99	1.338	1.11
2	0.249	0.067	0.163	1.25	1.729	1.53
					Total (ac ft)	2.64

BASIN B04



Detention Basin Calculations

Note: See attached drawings of detention ponds for dimensions.

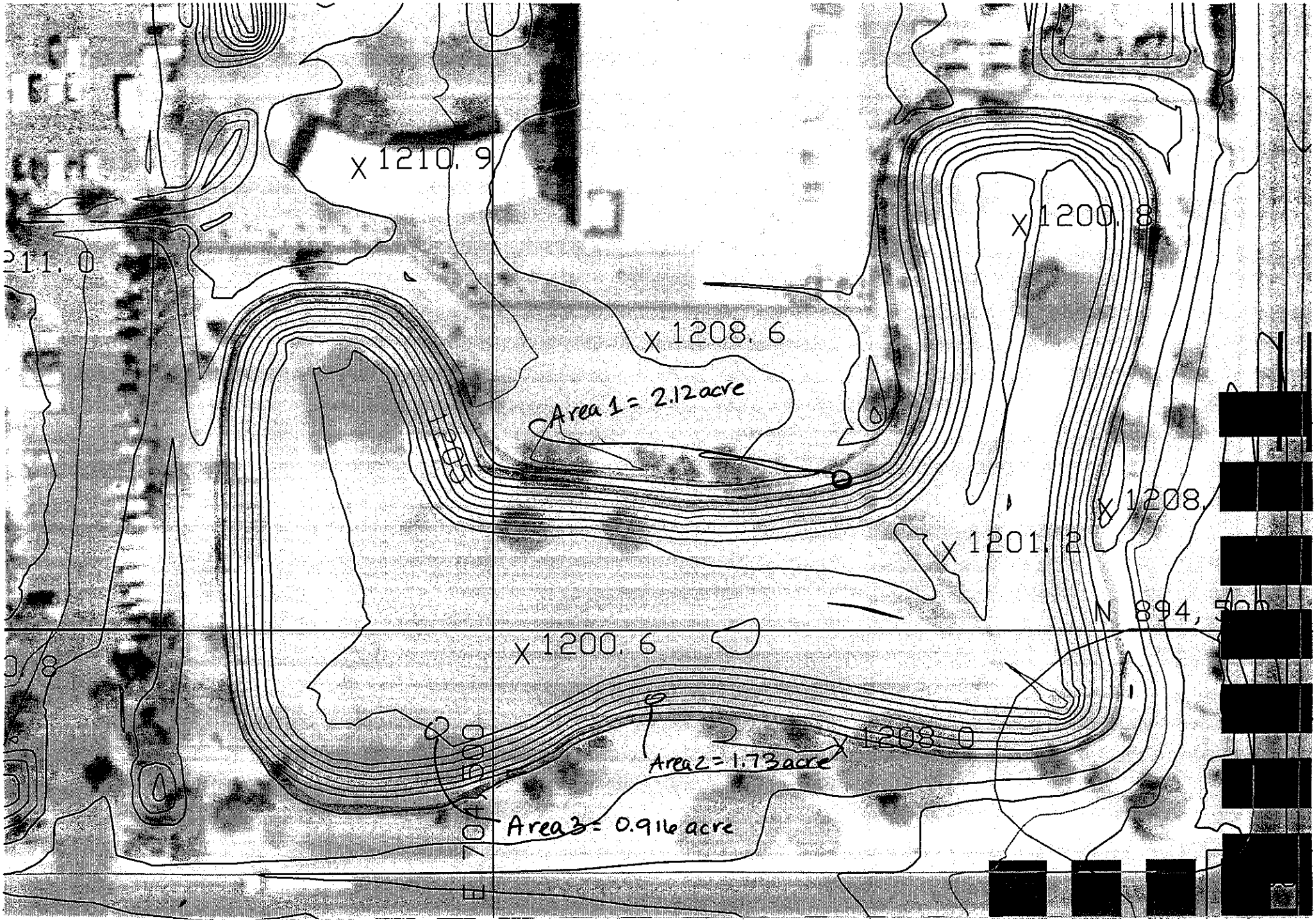
Basin B04

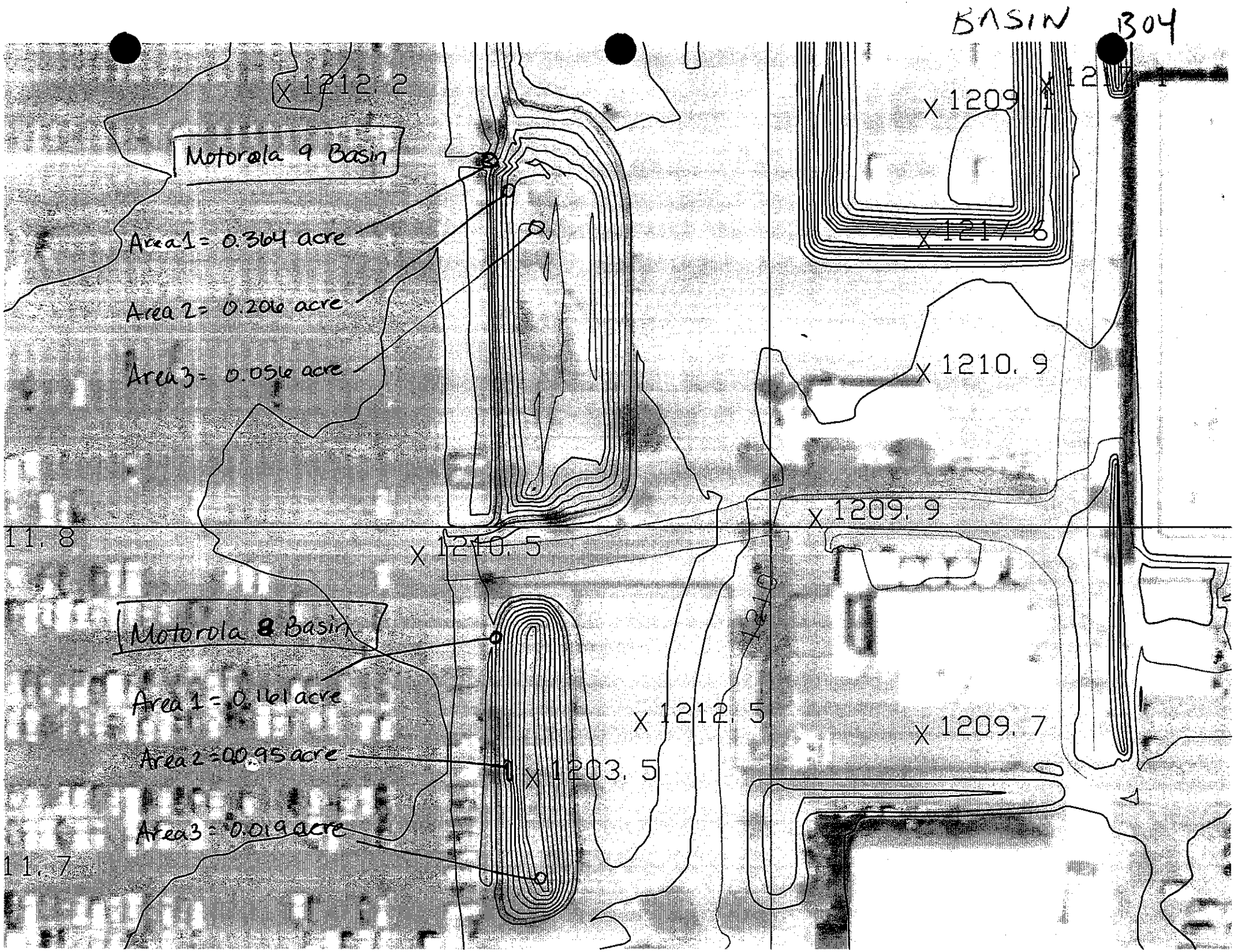
	Pond 1			Pond 2			Pond 3	
Depth (ft)	Area	Storage	Depth (ft)	Area	Storage	Depth (ft)	Area	Storage
0	0.019		0	0.056		0	0.916	
4	0.095	0.21	2	0.206	0.25	4	1.73	5.21
8	0.161	0.40	6	0.364	1.13	7	2.12	5.77
	Total (ac ft)	0.61			1.37			10.97

All Ponds = 0.61 + 1.37 + 10.97 = 12.95 ac ft.

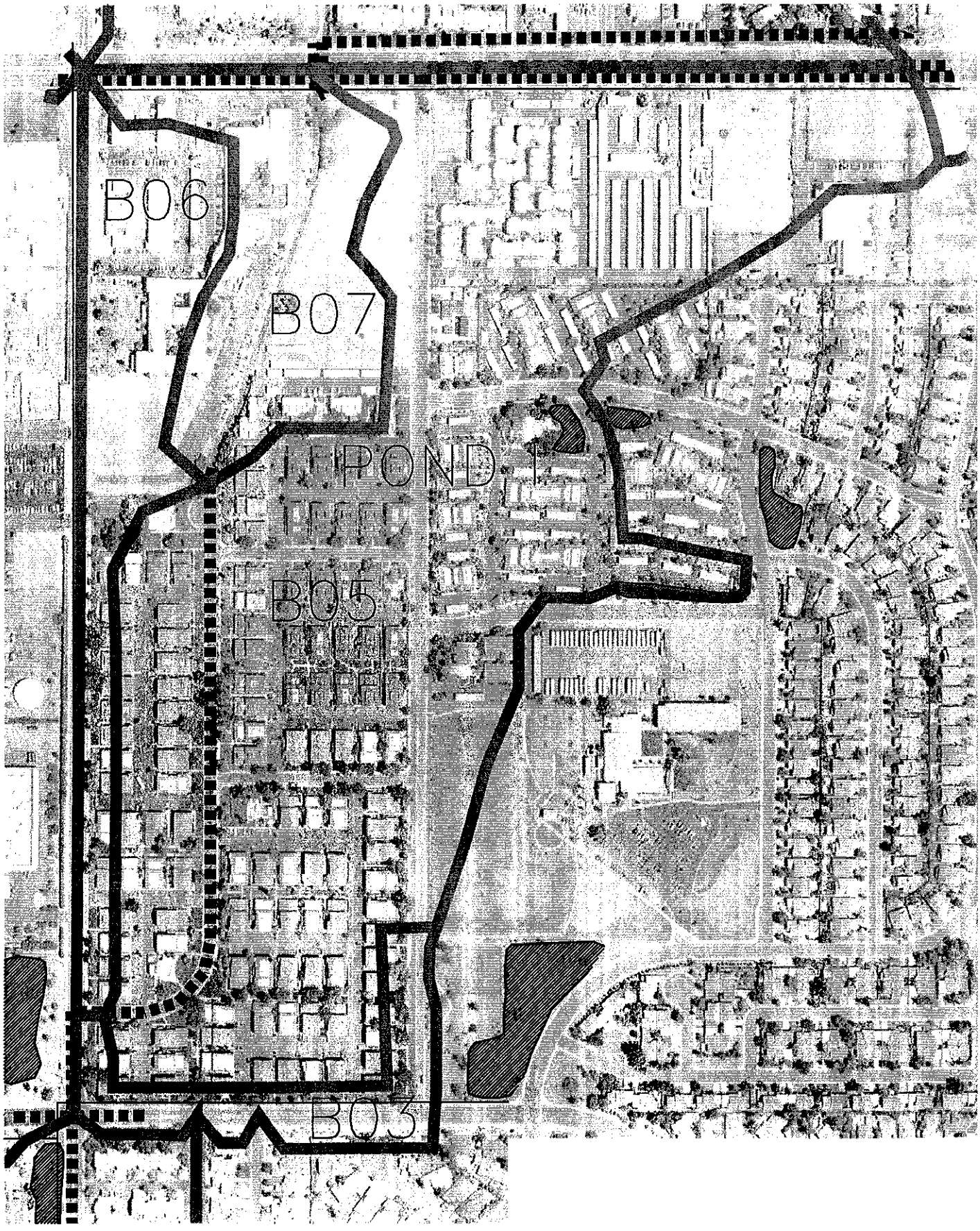
BASIN 304

Motorola 7 Basin




BASIN 304
X 1212.2
Motorola 9 Basin
Area 1 = 0.364 acre
Area 2 = 0.206 acre
Area 3 = 0.056 acre
X 1209
X 1214.6
X 1210.9
X 1209.9
11.8
X 1210.5
Motorola 8 Basin
Area 1 = 0.161 acre
Area 2 = 0.095 acre
Area 3 = 0.019 acre
X 1212.5
X 1203.5
X 1209.7
11.7

BASIN B05

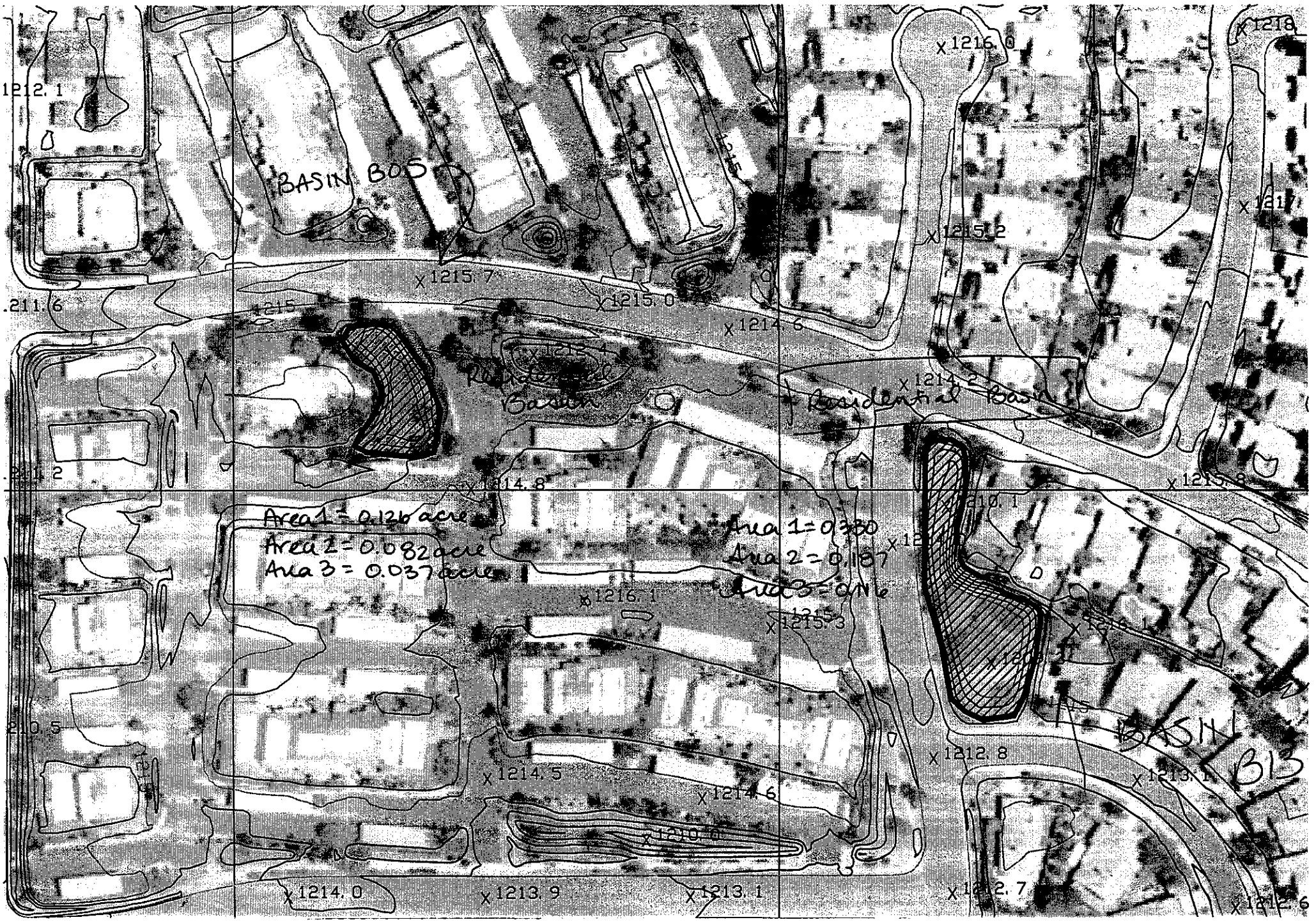


Detention Basin Calculations

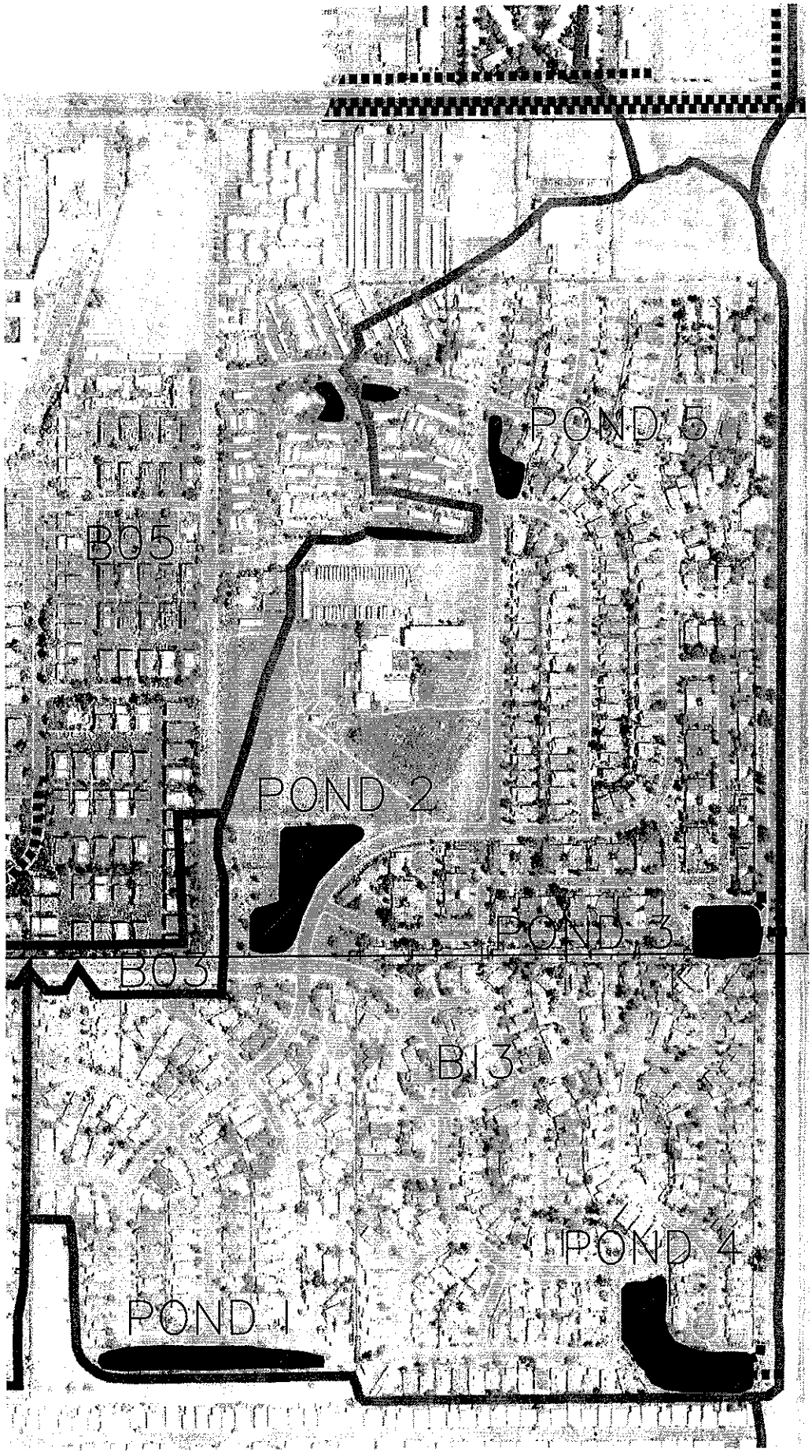
Note: See attached drawings of detention ponds for dimensions.

Basin B05

	Pond 1	
Depth (ft)	**Area**	**Storage**
0	0.037	
1	0.082	0.058
2	0.126	0.103
	Total (ac ft)	0.16


BASIN B05
Area 1 = 0.126 acre
Area 2 = 0.082 acre
Area 3 = 0.037 acre
Area 1 = 0.380
Area 2 = 0.187
Area 3 = 0.116
BASIN B13
X 1212.1
X 1216.0
X 1215.7
X 1215.0
X 1214.6
X 1215.2
X 1214.8
X 1216.1
X 1215.3
X 1214.5
X 1214.6
X 1214.0
X 1213.9
X 1213.1
X 1212.8
X 1212.7

BASIN BI3



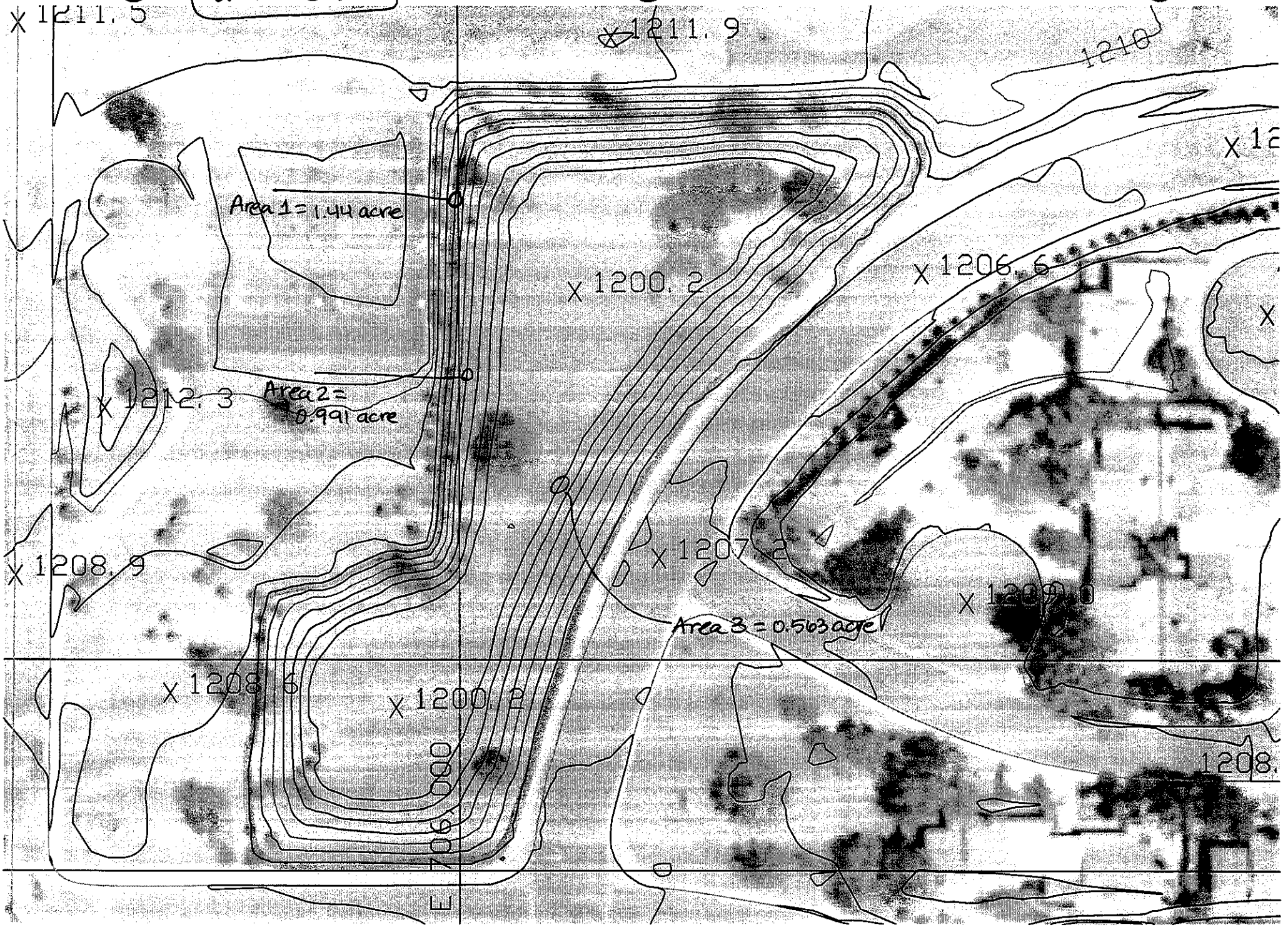
Detention Basin Calculations

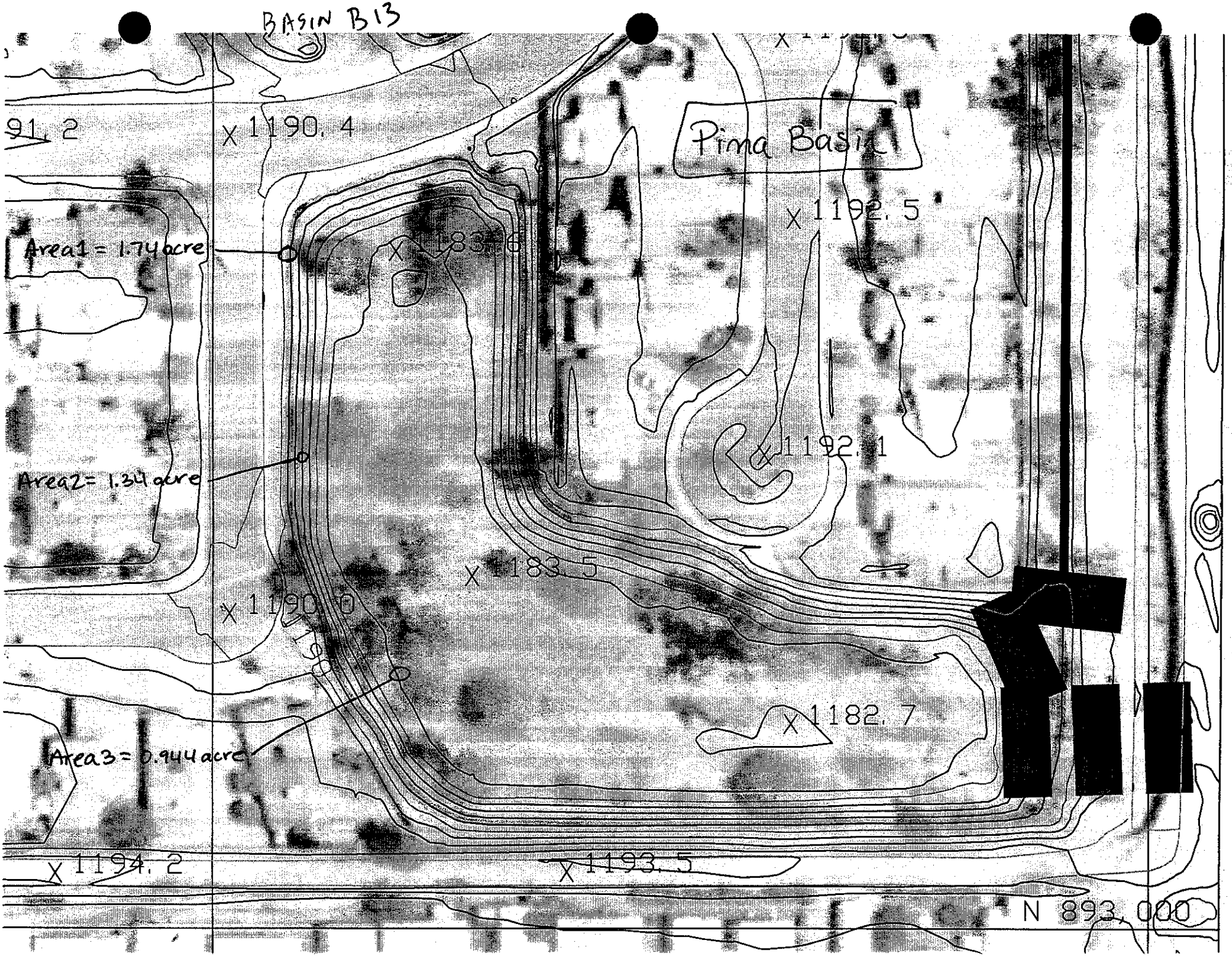
Note: See attached drawings of detention ponds for dimensions.

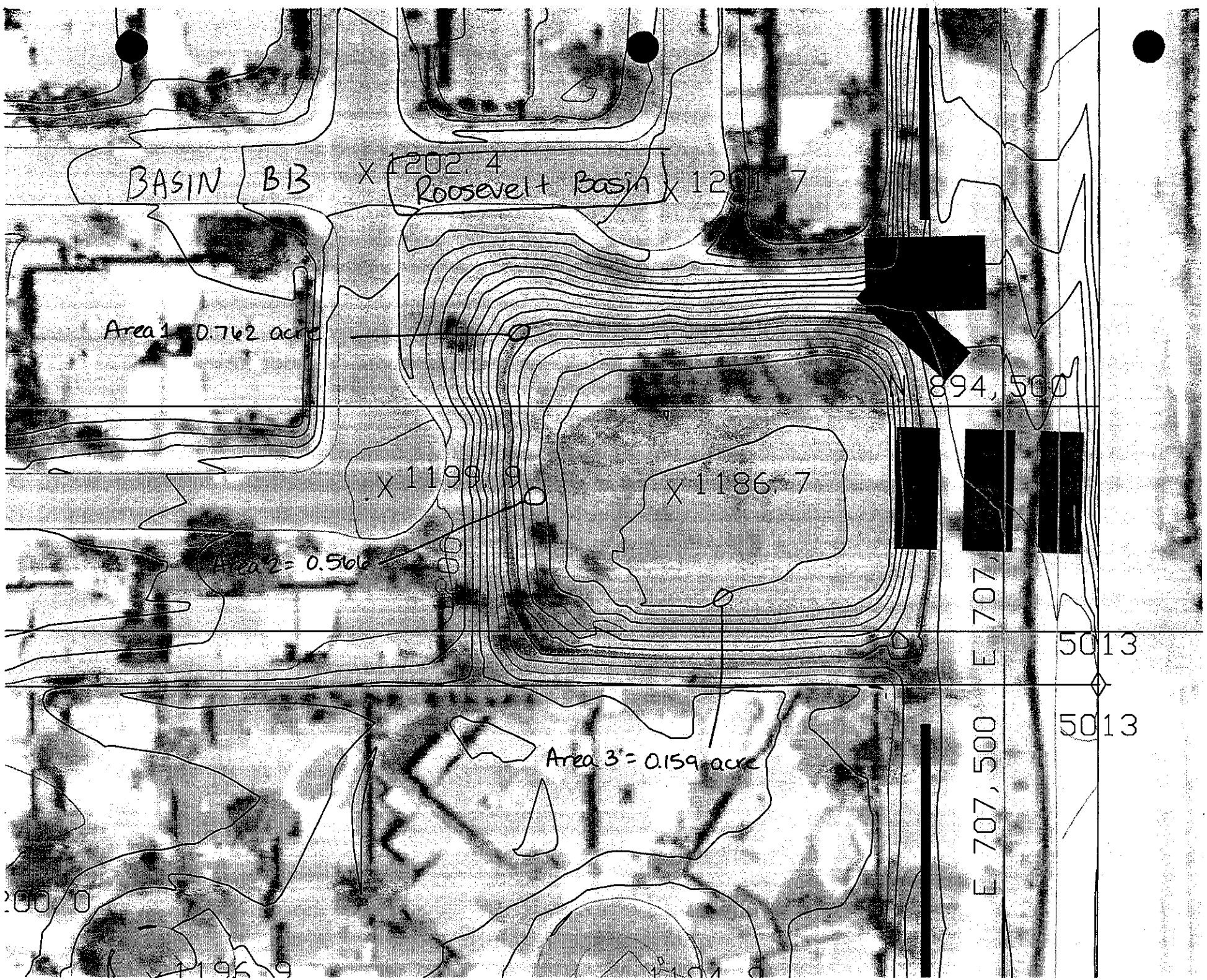
Basin B13

	Pond 1			Pond 2			Pond 3			Pond 4			Pond 5	
Depth (ft)	Area	Storage	Depth (ft)	Area	Storage	Depth (ft)	Area	Storage	Depth (ft)	Area	Storage	Depth (ft)	Area	Storage
0	0.092		0	0.563		0	0.159		0	0.944		0	0.116	
2	0.738	0.73	3	0.991	2.30	3	0.566	1.02	3	1.34	3.41	1	0.187	0.15
4	1.03	1.35	6	1.44	3.63	6	0.762	1.98	5	1.74	3.07	4	0.33	0.77
	Total (ac ft)	2.08			5.93			3.01			6.48			0.92

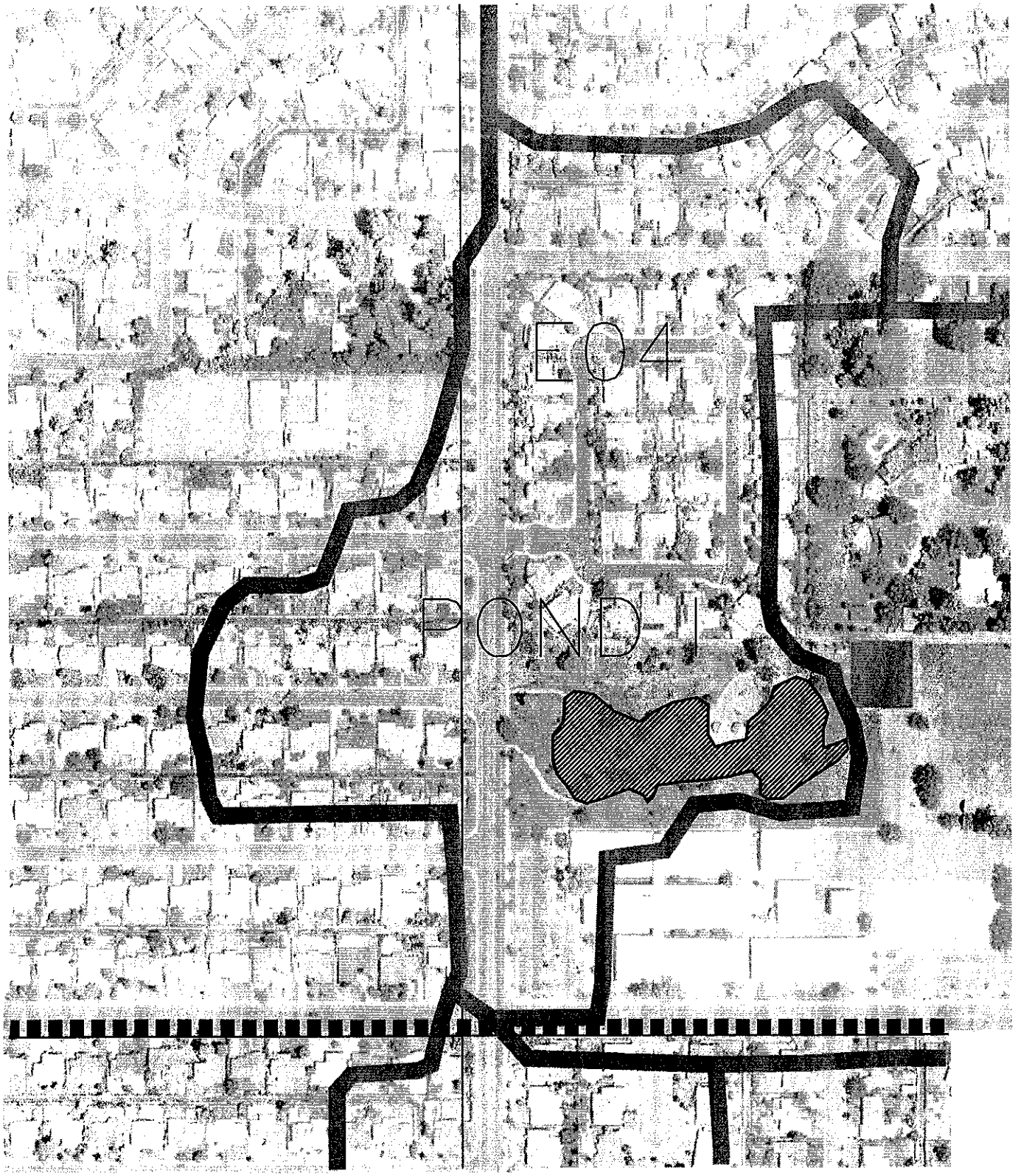
All Ponds = 2.08 + 5.93 + 3.01 + 6.48 + 0.92 = 18.4 ac ft.


Park Basin
BASIN
X 1211.5
X 1211.9
1210
X 12
Area 1 = 1.44 acre
X 1200.2
X 1206.6
X
X 1212.3
Area 2 =
0.991 acre
X 1208.9
X 1207.2
X 1209.0
Area 3 = 0.563 acre
X 1208.6
X 1200.2
1208.


BASIN B13
91.2
X 1190.4
Pima Basin
X 1192.5
Area1 = 1.74 acre
X 1183.6
X 1192.1
Area2 = 1.34 acre
X 1183.5
X 1190.0
Area3 = 0.944 acre
X 1182.7
X 1194.2
X 1193.5
N 893,000


BASIN B3
X 1202.4
Roosevelt Basin
X 1201.7
Area 1 = 0.762 acre
N 894,500
X 1199.9
X 1186.7
Area 2 = 0.566
E 707,500
5013
5013
Area 3 = 0.159 acre

BASIN E04



Detention Basin Calculations

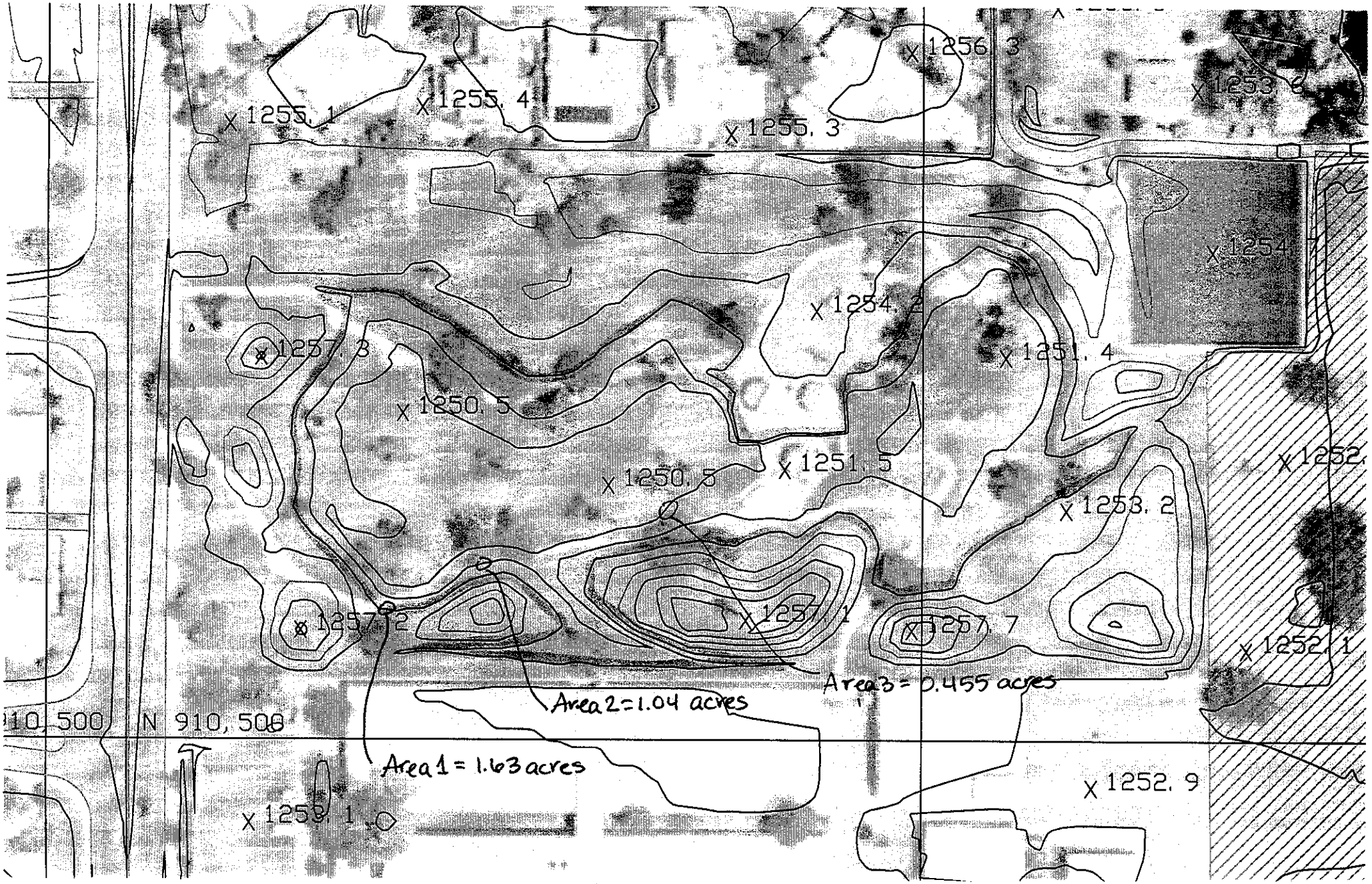
Note: See attached drawings of detention ponds for dimensions.

Basin E04

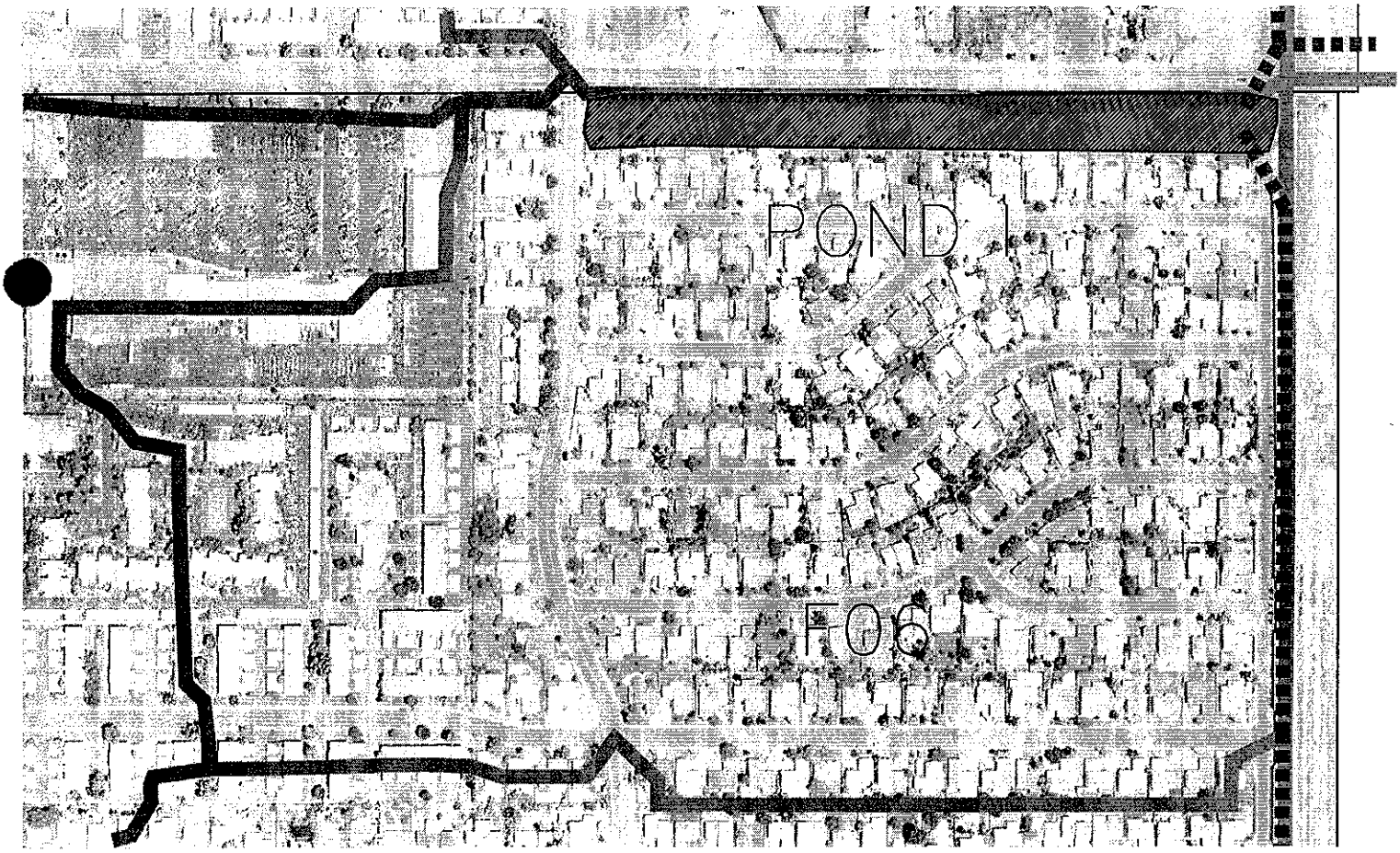
	Pond 1	
Depth (ft)	**Area**	**Storage**
0	0.455	
1	1.04	0.73
2	1.63	1.32
	Total (ac ft)	2.05

Camel back Basin

BASIN E04



BASIN F06



Detention Basin Calculations

Note: See attached drawings of detention ponds for dimensions.

Basin F06

	Pond 1	
Depth (ft)	**Area**	**Storage**
0	0.96	
3.35	1.605	4.25
	Total (ac ft)	4.25

SRP-MIC FUTURE DETENTION

Basin ID	Area (sq mi)	Storage *(1) (ac ft)	80%
A01	0.507	44	35.2
B14	0.149	13	10.4
C13	0.176	14	11.2
D09	0.216	17	13.6
E09	0.223	17	13.6
F07	0.25	19	15.2
G06	0.127	10	8

Notes: 1) The Storage area was calculated from a HEC-1 model that used the 100-year, 2-hour rainfall. (See HEC-1 model - attached.)

*** ***

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          **************
          *            *
33 KK     *      A01   *        BASIN
          *            *
          **************
```

SUBBASIN RUNOFF DATA

34 BA SUBBASIN CHARACTERISTICS

TAREA	0.51	SUBBASIN AREA

35 LG GREEN AND AMPT LOSS RATE

STRTL	0.10	STARTING LOSS
DTH	0.25	MOISTURE DEFICIT
PSIF	5.40	WETTING FRONT SUCTION
XKSAT	0.32	HYDRAULIC CONDUCTIVITY
RTIMP	70.00	PERCENT IMPERVIOUS AREA

36 UC CLARK UNITGRAPH

TC	0.54	TIME OF CONCENTRATION
R	0.24	STORAGE COEFFICIENT

37 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES

0.0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
100.0									

***

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.54 HR, R= 0.24 HR

SNYDER TP= 0.27 HR, CP= 0.56

UNIT HYDROGRAPH
46 END-OF-PERIOD ORDINATES

20.	66.	129.	208.	298.	463.	634.	692.	679.	647.
613.	575.	534.	492.	451.	416.	376.	330.	287.	249.
217.	188.	164.	142.	124.	108.	93.	81.	71.	61.
53.	46.	40.	35.	30.	26.	23.	20.	17.	15.
13.	11.	10.	9.	7.	7.				

*** *** *** *** ***

INTERPOLATED HYDROGRAPH AT A01

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	66.63-HR
+ (CFS)	(HR)					
		(CFS)				
+ 640.	4.20		88.	22.	8.	8.
		(INCHES)	1.615	1.624	1.624	1.624
		(AC-FT)	44.	44.	44.	44.

CUMULATIVE AREA = 0.51 SQ MI

*** ***

```
        **************
        *            *
39 KK   *     B14    *       BASIN
        *            *
        **************
```

SUBBASIN RUNOFF DATA

40 BA SUBBASIN CHARACTERISTICS

TAREA	0.15	SUBBASIN AREA

41 LG GREEN AND AMPT LOSS RATE

STRTL	0.10	STARTING LOSS
DTH	0.25	MOISTURE DEFICIT
PSIF	4.60	WETTING FRONT SUCTION
XKSAT	0.48	HYDRAULIC CONDUCTIVITY
RTIMP	70.00	PERCENT IMPERVIOUS AREA

42 UC CLARK UNITGRAPH

TC	0.62	TIME OF CONCENTRATION
R	0.64	STORAGE COEFFICIENT

43 UA ACCUMULATED-AREA VS. TIME, 11 ORDINATES

0.0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
100.0									

***

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.62 HR, R= 0.64 HR

SNYDER TP= 0.40 HR, CP= 0.40

UNIT HYDROGRAPH

110 END-OF-PERIOD ORDINATES

2.	6.	12.	21.	30.	43.	63.	82.	92.	95.
96.	97.	96.	95.	94.	92.	89.	87.	85.	81.
77.	73.	70.	66.	63.	60.	57.	54.	51.	48.
46.	44.	41.	39.	37.	35.	34.	32.	30.	29.
27.	26.	25.	23.	22.	21.	20.	19.	18.	17.
16.	15.	15.	14.	13.	13.	12.	11.	11.	10.
10.	9.	9.	8.	8.	7.	7.	7.	6.	6.
6.	5.	5.	5.	5.	4.	4.	4.	4.	4.
3.	3.	3.	3.	3.	3.	3.	2.	2.	2.
2.	2.	2.	2.	2.	2.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.

*** *** *** *** ***

INTERPOLATED HYDROGRAPH AT B14

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
				6-HR	24-HR	72-HR	66.63-HR
+	(CFS)	(HR)					
			(CFS)				
+	110.	4.30		25.	6.	2.	2.
			(INCHES)	1.566	1.598	1.598	1.598
			(AC-FT)	12.	13.	13.	13.

CUMULATIVE AREA = 0.15 SQ MI

*** ***

```
          **************
          *            *
45 KK     *     D09    *        BASIN
          *            *
          **************

             SUBBASIN RUNOFF DATA

46 BA          SUBBASIN CHARACTERISTICS
                     TAREA        0.22  SUBBASIN AREA

47 LG          GREEN AND AMPT LOSS RATE
                     STRTL        0.10  STARTING LOSS
                       DTH        0.29  MOISTURE DEFICIT
                      PSIF        2.65  WETTING FRONT SUCTION
                     XKSAT        1.70  HYDRAULIC CONDUCTIVITY
                     RTIMP       70.00  PERCENT IMPERVIOUS AREA

48 UC          CLARK UNITGRAPH
                        TC        0.48  TIME OF CONCENTRATION
                         R        0.39  STORAGE COEFFICIENT

49 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                    0.0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                  100.0

                                                                    ***

                                                   UNIT HYDROGRAPH PARAMETERS
                                             CLARK   TC=  0.48 HR,       R=  0.39 HR
                                            SNYDER   TP=  0.27 HR,      CP=  0.41

                                                         UNIT HYDROGRAPH
                                                    69 END-OF-PERIOD ORDINATES
             6.       21.       43.       69.      114.      173.      207.      214.      214.      211.
           206.      198.      190.      182.      172.      159.      146.      134.      123.      113.
           104.       96.       88.       81.       74.       68.       63.       58.       53.       49.
            45.       41.       38.       35.       32.       29.       27.       25.       23.       21.
            19.       18.       16.       15.       14.       13.       12.       11.       10.        9.
             8.        8.        7.        6.        6.        5.        5.        5.        4.        4.
             4.        3.        3.        3.        3.        2.        2.        2.        2.

      ***          ***          ***          ***          ***


                   INTERPOLATED HYDROGRAPH AT       D09

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR         24-HR        72-HR      66.63-HR
+   (CFS)       (HR)
                          (CFS)
+     191.      4.20                  34.           8.           3.           3.
                        (INCHES)    1.447        1.461        1.461        1.461
                         (AC-FT)      17.          17.          17.          17.

                   CUMULATIVE AREA =     0.22 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** ***

          **************
          *            *
 51 KK    *     E09    *      BASIN
          *            *
          **************

            SUBBASIN RUNOFF DATA

 52 BA        SUBBASIN CHARACTERISTICS
                    TAREA        0.22  SUBBASIN AREA

 53 LG        GREEN AND AMPT LOSS RATE
                    STRTL        0.10  STARTING LOSS
                      DTH        0.29  MOISTURE DEFICIT
                     PSIF        2.65  WETTING FRONT SUCTION
                    XKSAT        1.70  HYDRAULIC CONDUCTIVITY
                    RTIMP       70.00  PERCENT IMPERVIOUS AREA

 54 UC        CLARK UNITGRAPH
                       TC        0.57  TIME OF CONCENTRATION
                        R        0.47  STORAGE COEFFICIENT

 55 UA        ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                    0.0        5.0       16.0       30.0       65.0       77.0       84.0       90.0       94.0       97.0
                  100.0

                                                                      ***

                                                          UNIT HYDROGRAPH PARAMETERS
                                                    CLARK    TC=  0.57 HR,        R=  0.47 HR
                                                   SNYDER    TP=  0.33 HR,       CP=  0.42

                                                               UNIT HYDROGRAPH
                                                          82 END-OF-PERIOD ORDINATES
             4.        14.        29.        48.        68.       105.       153.       180.       186.       188.
           186.       184.       180.       174.       168.       162.       156.       148.       137.       128.
           119.       111.       103.        96.        89.        83.        77.        72.        67.        62.
            58.        54.        50.        47.        44.        41.        38.        35.        33.        30.
            28.        26.        25.        23.        21.        20.        18.        17.        16.        15.
            14.        13.        12.        11.        10.        10.         9.         8.         8.         7.
             7.         6.         6.         5.         5.         5.         4.         4.         4.         4.
             3.         3.         3.         3.         2.         2.         2.         2.         2.         2.
             2.         1.

      ***              ***              ***              ***              ***


                          INTERPOLATED HYDROGRAPH AT        E09

  PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
                                        6-HR         24-HR         72-HR       66.63-HR
+    (CFS)       (HR)
                             (CFS)
+      177.      4.23                    35.            9.            3.             3.
                            (INCHES)   1.444         1.461         1.461          1.461
                             (AC-FT)     17.           17.           17.            17.

                          CUMULATIVE AREA =     0.22 SQ MI
```

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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
*** *** ***


         **************
         *            *
57 KK    *      F07   *       BASIN
         *            *
         **************

            SUBBASIN RUNOFF DATA

58 BA         SUBBASIN CHARACTERISTICS
                    TAREA         0.25  SUBBASIN AREA

59 LG         GREEN AND AMPT LOSS RATE
                    STRTL         0.10  STARTING LOSS
                      DTH         0.29  MOISTURE DEFICIT
                     PSIF         2.65  WETTING FRONT SUCTION
                    XKSAT         1.70  HYDRAULIC CONDUCTIVITY
                    RTIMP        70.00  PERCENT IMPERVIOUS AREA

60 UC         CLARK UNITGRAPH
                       TC         0.56  TIME OF CONCENTRATION
                        R         0.43  STORAGE COEFFICIENT

61 UA         ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                    0.0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                  100.0

                                                                      ***

                                                          UNIT HYDROGRAPH PARAMETERS
                                                    CLARK   TC=  0.56 HR,       R=  0.43 HR
                                                   SNYDER   TP=  0.31 HR,      CP=  0.42

                                                               UNIT HYDROGRAPH
                                                          76 END-OF-PERIOD ORDINATES
              5.        18.        36.        59.        83.       129.       187.       216.       222.       223.
            220.       216.       210.       203.       194.       186.       178.       167.       155.       143.
            133.       123.       114.       105.        97.        90.        84.        77.        72.        66.
             61.        57.        53.        49.        45.        42.        39.        36.        33.        31.
             28.        26.        24.        22.        21.        19.        18.        17.        15.        14.
             13.        12.        11.        10.        10.         9.         8.         8.         7.         7.
              6.         6.         5.         5.         4.         4.         4.         4.         3.         3.
              3.         3.         2.         2.         2.         2.


      ***             ***             ***             ***             ***


                     INTERPOLATED HYDROGRAPH AT       F07

  PEAK FLOW      TIME                         MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR      66.63-HR
+   (CFS)        (HR)
                              (CFS)
+     206.       4.23                      39.         10.          4.          4.
                           (INCHES)      1.445       1.460       1.460       1.460
                            (AC-FT)        19.         19.         19.         19.

                     CUMULATIVE AREA =     0.25 SQ MI
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*** ***

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          **************
          *            *
 63 KK    *      G06   *        BASIN
          *            *
          **************
```

SUBBASIN RUNOFF DATA

```
 64 BA          SUBBASIN CHARACTERISTICS
                     TAREA        0.13  SUBBASIN AREA

 65 LG          GREEN AND AMPT LOSS RATE
                     STRTL        0.10  STARTING LOSS
                       DTH        0.35  MOISTURE DEFICIT
                      PSIF        2.65  WETTING FRONT SUCTION
                     XKSAT        1.70  HYDRAULIC CONDUCTIVITY
                     RTIMP       70.00  PERCENT IMPERVIOUS AREA

 66 UC          CLARK UNITGRAPH
                       TC        0.26  TIME OF CONCENTRATION
                        R        0.14  STORAGE COEFFICIENT

 67 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                     0.0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                   100.0
```

***

UNIT HYDROGRAPH PARAMETERS

CLARK TC= 0.26 HR, R= 0.14 HR

SNYDER TP= 0.13 HR, CP= 0.50

UNIT HYDROGRAPH
26 END-OF-PERIOD ORDINATES

21.	79.	198.	296.	301.	276.	245.	212.	175.	138.
109.	86.	68.	54.	42.	33.	26.	21.	17.	13.
10.	8.	6.	5.	4.	3.				

*** *** *** *** ***

INTERPOLATED HYDROGRAPH AT G06

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	66.63-HR
+ (CFS)	(HR)				
		(CFS)			
+ 180.	4.07	20.	5.	2.	2.
		(INCHES) 1.442	1.447	1.447	1.447
		(AC-FT) 10.	10.	10.	10.

CUMULATIVE AREA = 0.13 SQ MI

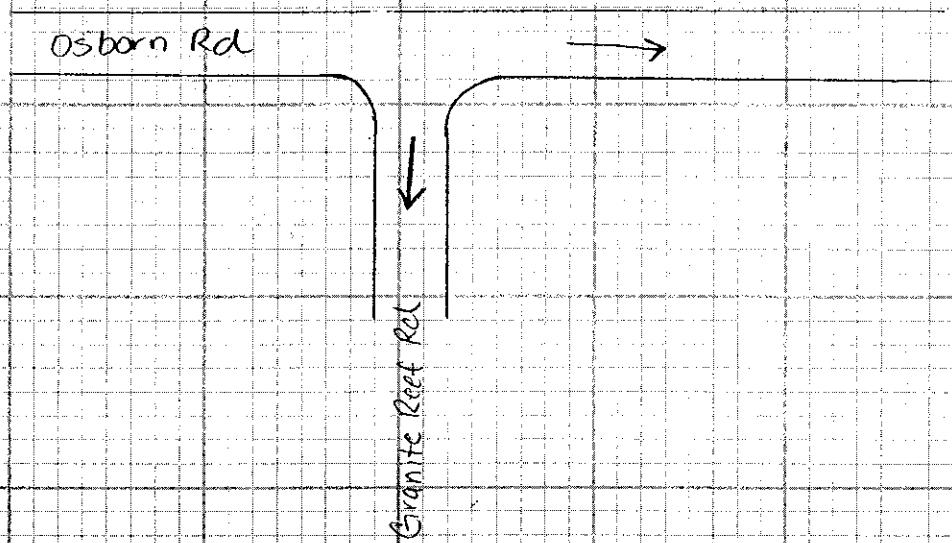
D.5 Flow Splits and Diversions Data

Entellus™

SHEET 1 OF 25
BY AMG DATE 4/17/02
CHECK PAW DATE 4/18/02

CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DDOS at Granite Reef Rd and Osborn Rd



See split flow calculation table diversion DDOS and DDOS #2

Normal Depth Split Flow Calculations
Diversion DD05

(1) Main Path South on Granite Reef Road (Route RD05S)

(2) Diverted Flow east along Osborn Road (RD05E)

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	Q_{total}
0.1	40	48	0.02	0.00158	0.00109	0	0	2.5	2.5	5
0.2	40	48	0.02	0.00158	0.00109	0	0	8	8	16
0.3	40	48	0.02	0.00158	0.00109	0	0	16	16	32
0.4	40	48	0.02	0.00158	0.00109	0	0	25	25	50
0.5	40	48	0.02	0.00158	0.00109	0	0	**37**	**37**	74
0.6	40	48	0.02	0.00158	0.00109	25	100	40	40	80
0.7	40	48	0.02	0.00158	0.00109	25	100	46	47	93
0.8	40	48	0.02	0.00158	0.00109	25	100	54	58	112
0.9	40	48	0.02	0.00158	0.00109	25	100	65	74	139
1	40	48	0.02	0.00158	0.00109	25	100	79	95	174
1.1	40	48	0.02	0.00158	0.00109	25	100	96	121	217
1.2	40	48	0.02	0.00158	0.00109	25	100	116	154	270
1.3	40	48	0.02	0.00158	0.00109	25	100	117	194	311

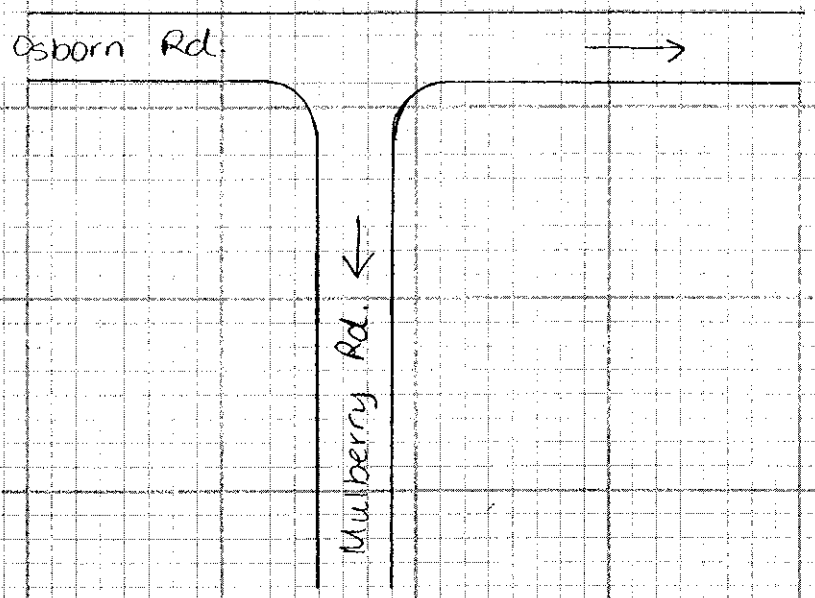
Notes: (a) Assumed 6 inch vertical curbs.

Entellus™

SHEET 3 OF 25
BY AMG DATE 4/17/02
CHECK PAW DATE 4/18/02

CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DD05 #2 at Mulberry Rd and Osborn Rd



See split flow calculation table DD05 #2 and DD05

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SHEET 4 OF 25

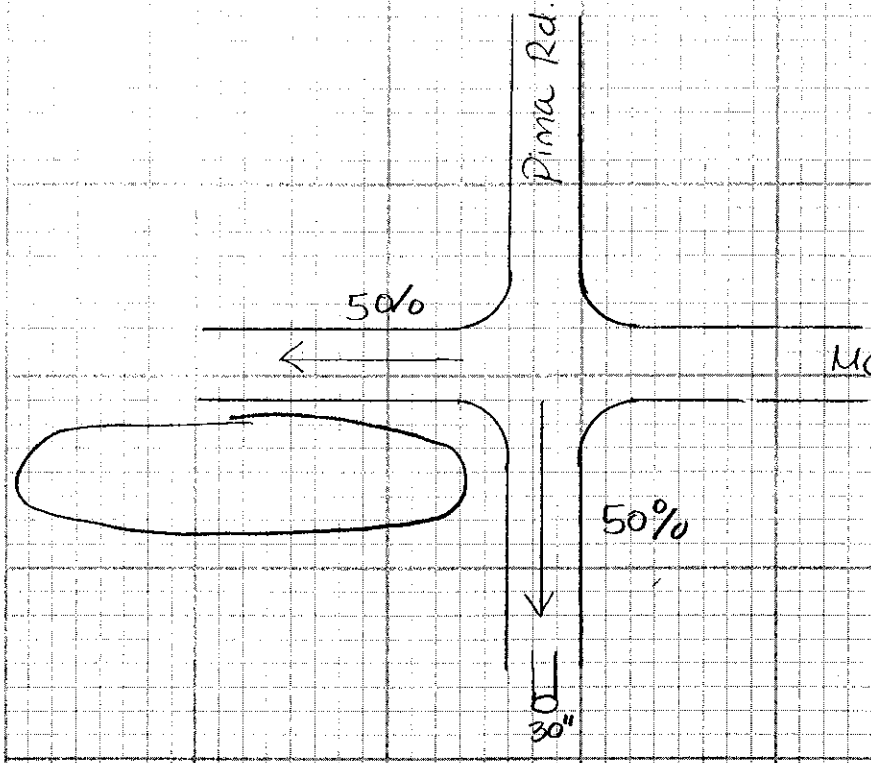
BY AMG DATE 4/17/02

CHECK PAW DATE 4/18/02

CLIENT Flood Control District of Maricopa County

JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DG06 at Pima Rd & McDonald Dr.



Assumed 50% of flow from basin G06 flows into detention basin, remaining flow is overland south.

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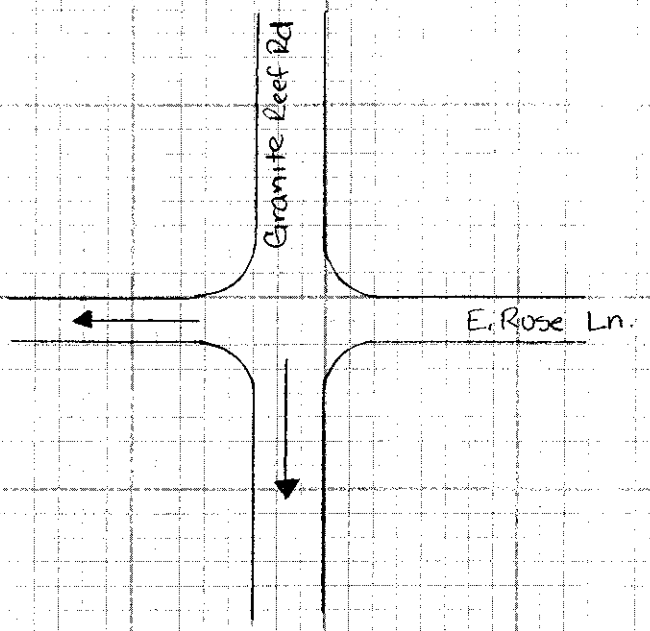
SHEET 5 OF 25
BY AMG DATE 4/17/02
CHECK PAW DATE 4/18/02

CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.02-1

Diversion DG03 at Granite Reef Rd & E. Rose Ln.



See Split Flow Calculation Table.

Normal Depth Split Flow Calculations
Diversion DG03

(1) Main Path South on Granite Reef Road (Route RG03)

(2) Diverted Flow west along Rose Lane

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	Q_{total}
0.1	44	38	0.02	0.0024	0.00335	0	0	3.5	3.5	7
0.2	44	38	0.02	0.0024	0.00335	0	0	11	11	22
0.3	44	38	0.02	0.0024	0.00335	0	0	21	22	43
0.4	44	38	0.02	0.0024	0.00335	0	0	35	35	70
0.5	44	38	0.02	0.0024	0.00335	0	0	**50**	**51**	101
0.6	44	38	0.02	0.0024	0.00335	20	30	54	55	109
0.7	44	38	0.02	0.0024	0.00335	20	30	61	63	124
0.8	44	38	0.02	0.0024	0.00335	20	30	73	75	148
0.9	44	38	0.02	0.0024	0.00335	20	30	88	92	180
1	44	38	0.02	0.0024	0.00335	20	30	105	112	217
1.1	44	38	0.02	0.0024	0.00335	20	30	127	137	264
1.2	44	38	0.02	0.0024	0.00335	20	30	151	166	317

Notes: (a) Assumed 6 inch vertical curbs.

Entellus™

SHEET 7 OF 25

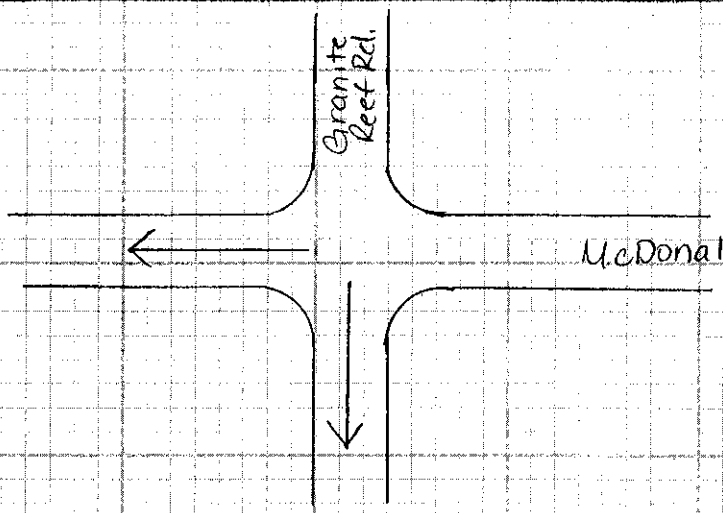
BY AMG DATE 4/17/02

CHECK PAW DATE 4/18/02

CLIENT Flood Control District of Maricopa County

JOB NAME Granite Reef Drainage Master Plan JOB NO. 310,021

Diversion DG01 at Granite Reef Rd & McDonald Dr.



See split flow calculation Table

Normal Depth Split Flow Calculations
Diversion DG01

(1) Main Path South on Granite Reef Road (Route RG01)

(2) Diverted Flow west along McDonald Drive

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	Q_{total}
0.1	44	70	0.02	0.0014	0.00348	0	0	3	7	10
0.2	44	70	0.02	0.0014	0.00348	0	0	8	21	29
0.3	44	70	0.02	0.0014	0.00348	0	0	16	41	57
0.4	44	70	0.02	0.0014	0.00348	0	0	26	66	92
0.5	44	70	0.02	0.0014	0.00348	0	0	**38**	**96**	134
0.6	44	70	0.02	0.0014	0.00348	20	20	41	103	144
0.7	44	70	0.02	0.0014	0.00348	20	20	47	117	164
0.8	44	70	0.02	0.0014	0.00348	20	20	55	139	194
0.9	44	70	0.02	0.0014	0.00348	20	20	67	166	233
1	44	70	0.02	0.0014	0.00348	20	20	80	198	278
1.1	44	70	0.02	0.0014	0.00348	20	20	97	236	333
1.2	44	70	0.02	0.0014	0.00348	20	20	115	280	395

Notes: (a) Assumed 6 inch vertical curbs.

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SHEET 9 OF 25
BY AMG DATE 4/17/02
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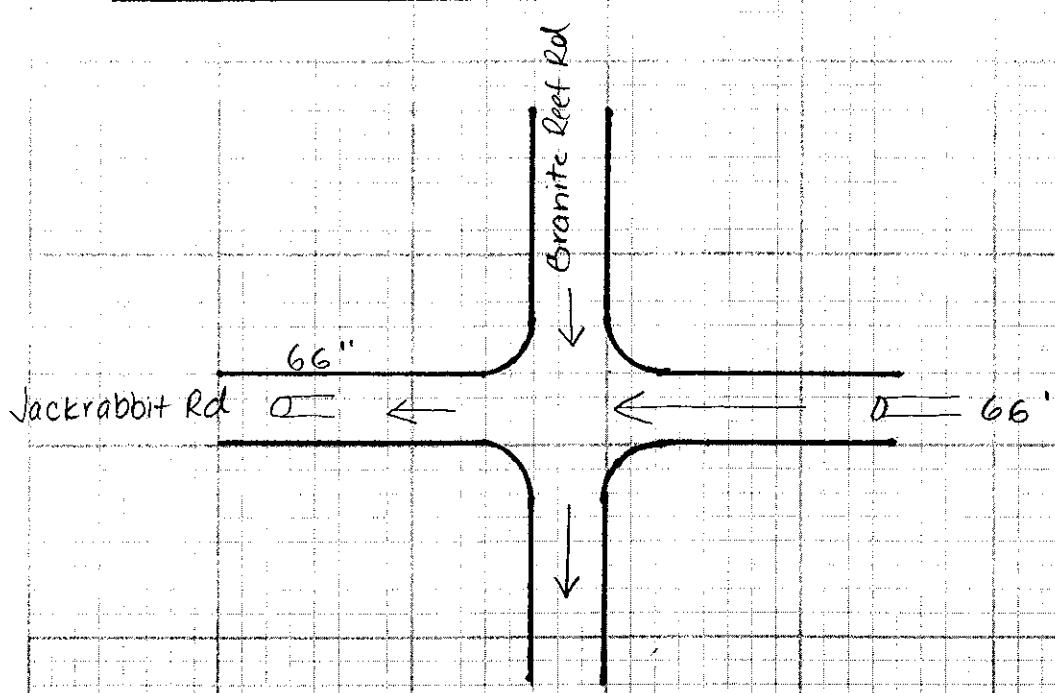
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DF04 @ Granite Reef Rd & Jackrabbit Rd



Flow West is storm drain only. Maximum capacity is 185 cfs (see storm drain calculations)
120 cfs is collected here.

Normal Depth Split Flow Calculations
Diversion DF04

(1) Main Path South on Granite Reef Road (Route RF04)

(2) Diverted Flow west along Jackrabbit Road and the storm drain.

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	$Q_{(storm\ drain)}$	Q_{total}
0.1	44	34	0.02	0.0038	0.0054	30	20	4	4	1	9
0.2	44	34	0.02	0.0038	0.0054	30	20	14	13	3	30
0.3	44	34	0.02	0.0038	0.0054	30	20	27	25	5	57
0.4	44	34	0.02	0.0038	0.0054	30	20	43	40	10	93
0.5	44	34	0.02	0.0038	0.0054	30	20	**63**	**58**	15	136
0.6	44	34	0.02	0.0038	0.0054	30	20	68	62	20	150
0.7	44	34	0.02	0.0038	0.0054	30	20	78	71	20	169
0.8	44	34	0.02	0.0038	0.0054	30	20	93	85	20	198
0.9	44	34	0.02	0.0038	0.0054	30	20	112	103	20	235
1	44	34	0.02	0.0038	0.0054	30	20	136	124	20	280
1.1	44	34	0.02	0.0038	0.0054	30	20	166	150	20	336
1.2	44	34	0.02	0.0038	0.0054	30	20	200	180	20	400

Notes: (a) Assumed 6 inch vertical curbs.

(b) The stormdrain capacity is 20 cfs at this location (see stormdrain capacity calculations.)

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SHEET 11 OF 25
BY AMG DATE 4/17/02
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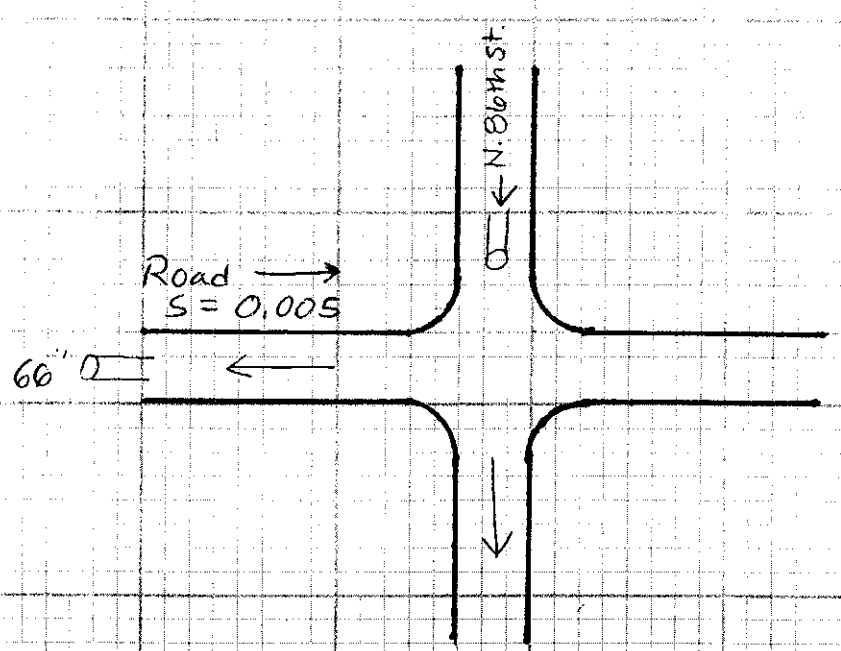
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DFOS @ N. 86th st & Jackrabbit Rd.



FLOW WEST IS STORM DRAIN ONLY.
Maximum Capacity is 185cfs. (See storm drain calculations) 60cfs collected at this location.

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SHEET 12 OF 25

BY AMG DATE 4/17/02

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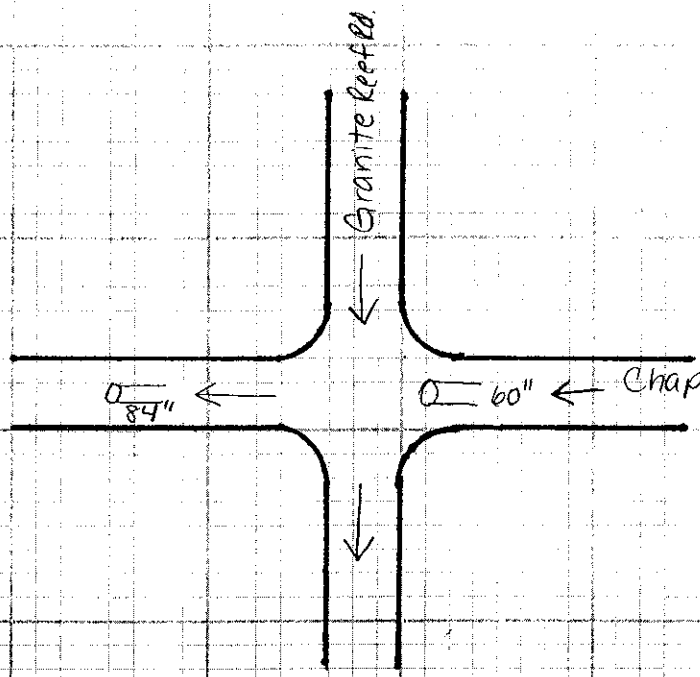
CLIENT Flood Control District of Maricopa County

JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DF01 @ Granite Reef Rd & Chaparral Rd.



See Split Flow Calculation Sheet.

Normal Depth Split Flow Calculations
Diversion DF01

(1) Main path west along Chapparal Road and the storm drain.

(2) Diverted flow south on Granite Reef Road (Route RF01S)

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	$Q_{(storm\ drain)}$	Q_{total}
0.1	56	46	0.02	0.00436	0.0059	0	0	6	0	1	7
0.2	56	46	0.02	0.00436	0.0059	0	0	19	0	2	21
0.3	56	46	0.02	0.00436	0.0059	0	0	37	0	5	42
0.4	56	46	0.02	0.00436	0.0059	0	0	60	0	15	75
0.5	56	46	0.02	0.00436	0.0059	0	0	86	0	25	111
0.6	56	46	0.02	0.00436	0.0059	20	30	98	6	35	139
0.7	56	46	0.02	0.00436	0.0059	20	30	125	18	45	188
0.8	56	46	0.02	0.00436	0.0059	20	30	164	35	55	254
0.9	56	46	0.02	0.00436	0.0059	20	30	213	57	65	335

Notes: (a) Assumed 6 inch vertical curbs.

(b) The main Route RF01S is 1/2 foot lower than the diversion.

(c) The stormdrain capacity is 128 cfs at this location (see stormdrain capacity calculations.)

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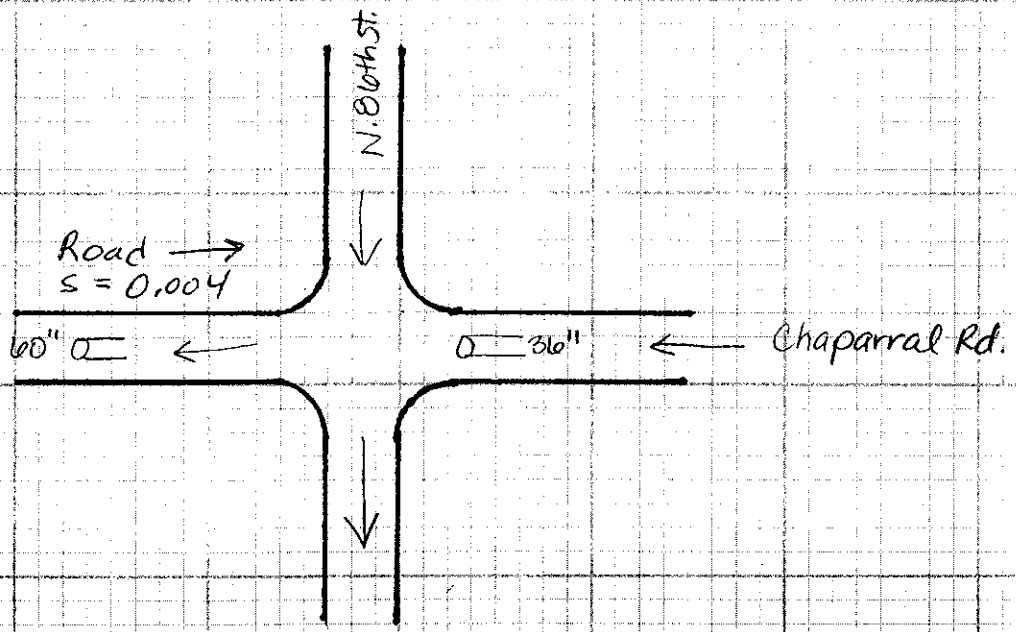
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310021

Diversion DF02 @ N. 86th St. & Chaparral Rd.



FLOW WEST IS STORM DRAIN ONLY
Maximum Capacity IS 63 cfs (see storm Drain Calculations) 47 cfs IS COLLECTED Here.

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SHEET 15 OF 25
BY AMG DATE 4/17/02
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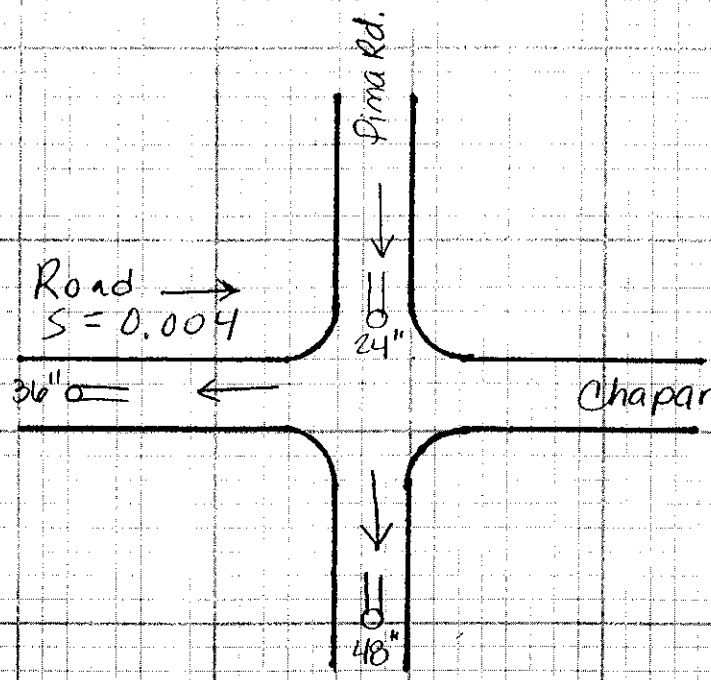
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DF07 @ Pima Rd & Chaparral Rd.



FLOW WEST IS STORM DRAIN ONLY.
Maximum capacity is 16 cfs. (See storm Drain Calculations.)

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SHEET 16 OF 25
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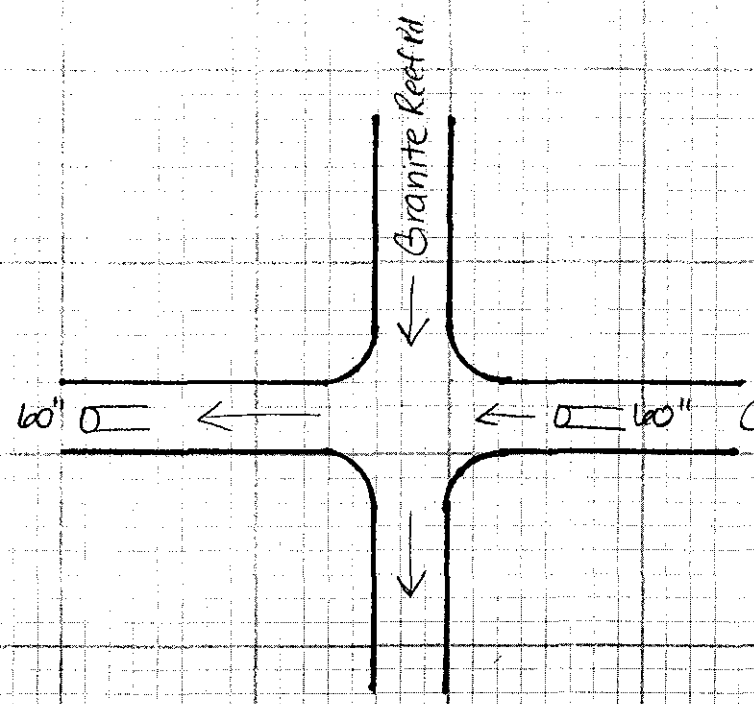
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DE04 @ Granite Reef Rd + Camelback Rd.



See Split Flow Calculation Sheet.

Normal Depth Split Flow Calculations
Diversion DE04

(1) Main path west along Camelback Road (with storm drain) rest in street. (Route RE04W)

(2) Diverted flow south on Granite Reef Road (Route RE04S)

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	$Q_{(storm\ drain)}$	Q_{total}
0.1	48	48	0.02	0.0015	0.0028	0	0	0	3	0	3
0.2	48	48	0.02	0.0015	0.0028	0	0	0	12	3	15
0.3	48	48	0.02	0.0015	0.0028	0	0	0	23	8	31
0.4	48	48	0.02	0.0015	0.0028	0	0	0	37	12	49
0.5	48	48	0.02	0.0015	0.0028	0	0	0	**43**	16	59
0.6	48	48	0.02	0.0015	0.0028	30	30	0	47	20	67
0.7	48	48	0.02	0.0015	0.0028	30	30	0	55	24	79
0.8	48	48	0.02	0.0015	0.0028	30	30	0	67	24	91
0.9	48	48	0.02	0.0015	0.0028	30	30	0	83	24	107
1	48	48	0.02	0.0015	0.0028	30	30	0	102	24	126
1.1	48	48	0.02	0.0015	0.0028	30	30	3	124	24	151
1.2	48	48	0.02	0.0015	0.0028	30	30	9	151	24	184
1.3	48	48	0.02	0.0015	0.0028	30	30	18	180	24	222
1.4	48	48	0.02	0.0015	0.0028	30	30	30	213	24	267

Notes: (a) Assumed 6 inch vertical curbs.

(b) The main Route RE04W is 1 foot higher than the diversion.

(c) The stormdrain capacity is 92 cfs at this location (see stormdrain capacity calculations.)
The total flow is divided by basin E05, E04, and the basin west of the project area.

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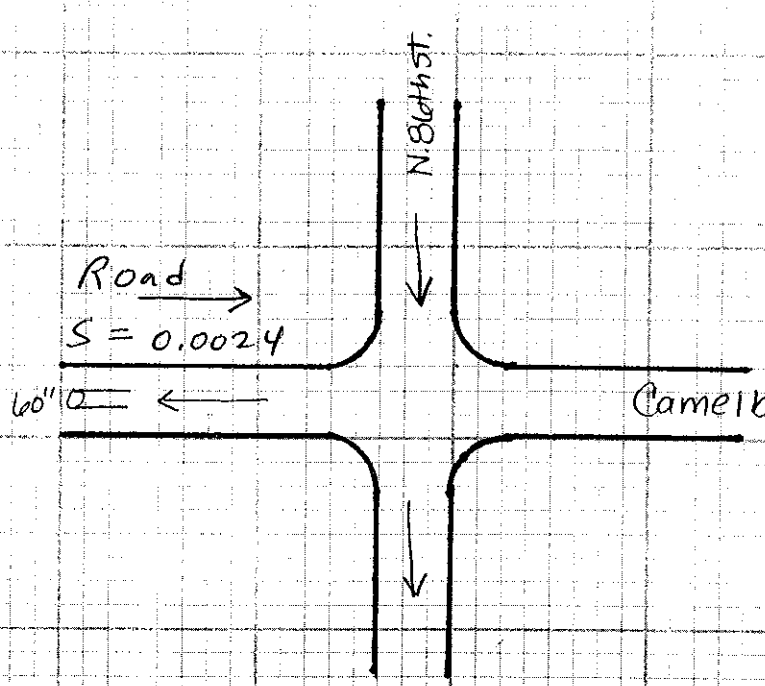
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DE05 at N. 86th st. & Camelback Rd.



FLOW WEST IS STORM DRAIN ONLY.
Maximum capacity is 92 CFS (see storm drain calculations) 30 cfs is taken here.

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SHEET 19 OF 25
BY AMG DATE 4/17/02
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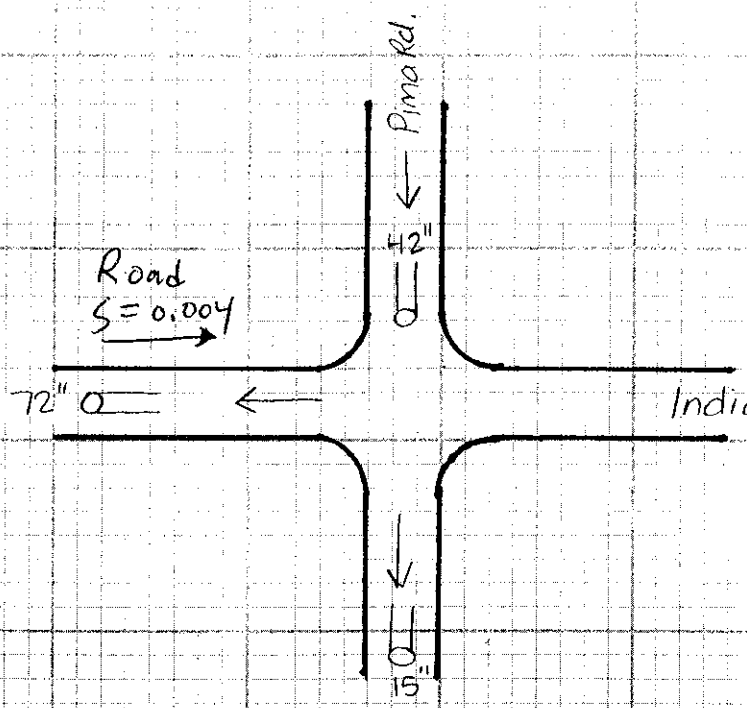
CLIENT Flood Control District of Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DE09 at Indian School Rd & Pima Rd.



FLOW WEST IS STORM DRAIN ONLY.
Maximum Capacity is 96 cfs (see stormdrain calculations) 20cfs is taken at this location.

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SHEET 20 OF 25
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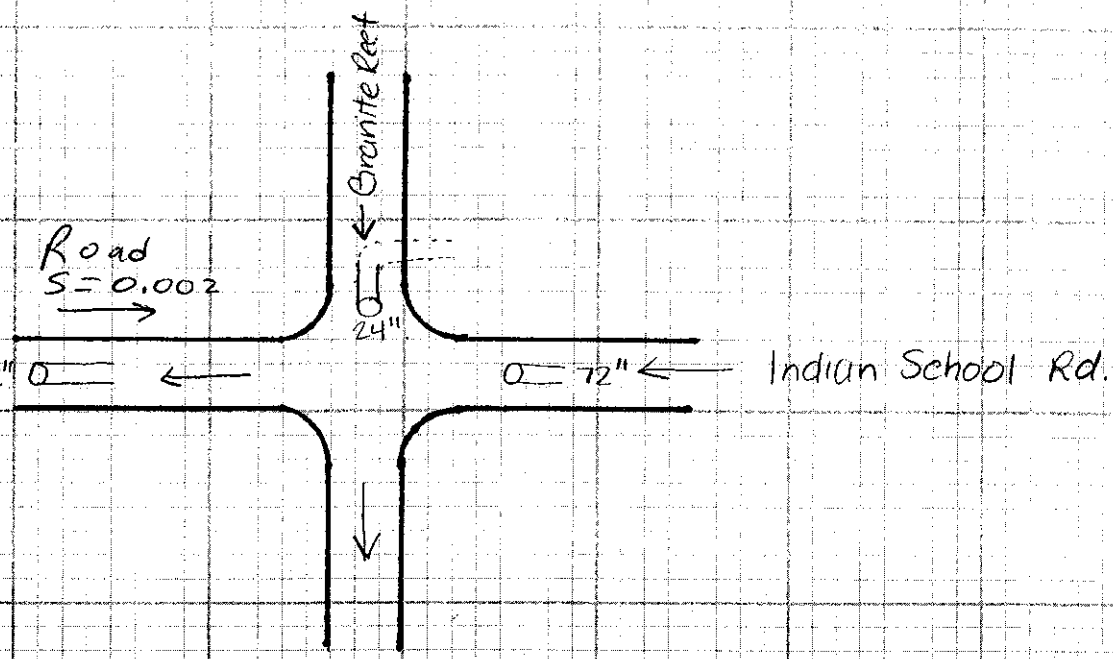
CLIENT Flood Control District Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DE01 @ Granite Reef Rd + Indian School Rd.



FLOW WEST IS STORM DRAIN ONLY.
Maximum capacity is 96 cfs (see storm drain calculations.)

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SHEET 21 OF 25
BY AMG DATE 4/17/02
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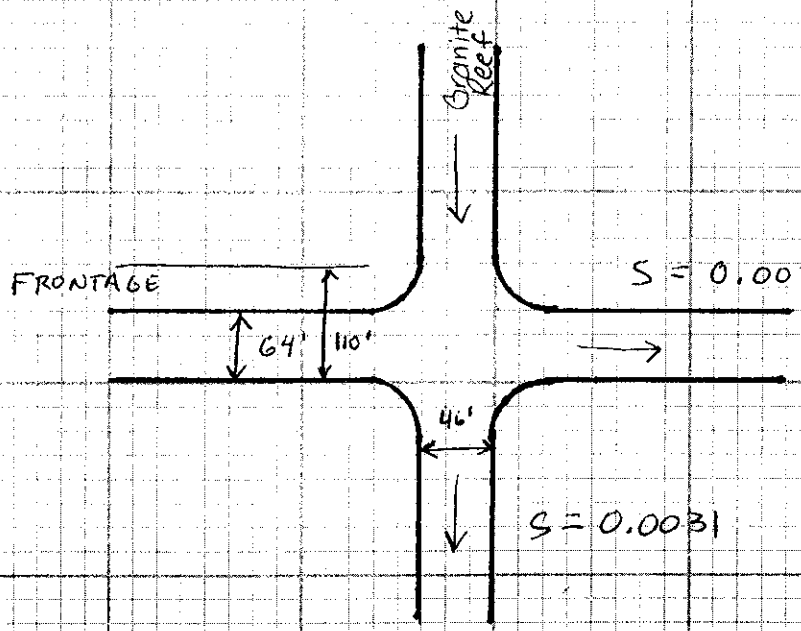
CLIENT Flood Control District Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310021

Diversion DD01 @ Granite Reef Rd & Thomas Rd.



See Split Flow calculation Sheet

Normal Depth Split Flow Calculations
Diversion DD01

(1) Main path east along Thomas Road. (Route RD01E)

(2) Diverted flow south on Granite Reef Road (Route RD01S)

Depth	Width $_{(1)}$	Width $_{(2)}$	Manning's	Slope $_{(1)}$	Slope $_{(2)}$	Side Slope $_{(1)}$	Side Slope $_{(2)}$	$Q_{(1)}$	$Q_{(2)}$	Q_{total}
0.1	64	46	0.02	0.00216	0.0031	0	0	5	4	9
0.2	64	46	0.02	0.00216	0.0031	0	0	15	13	28
0.3	64	46	0.02	0.00216	0.0031	0	0	30	25	55
0.4	64	46	0.02	0.00216	0.0031	0	0	48	41	89
0.5	64	46	0.02	0.00216	0.0031	0	0	**69**	**59**	128
0.6	110	46	0.02	0.00216	0.0031	25	25	77	63	140
0.7	110	46	0.02	0.00216	0.0031	25	25	95	73	168
0.8	110	46	0.02	0.00216	0.0031	25	25	121	86	207
0.9	110	46	0.02	0.00216	0.0031	25	25	155	104	259
1	110	46	0.02	0.00216	0.0031	25	25	194	126	320
1.1	110	46	0.02	0.00216	0.0031	25	25	240	152	392
1.2	110	46	0.02	0.00216	0.0031	25	25	293	182	475
1.3	110	46	0.02	0.00216	0.0031	25	25	351	217	568
1.4	110	46	0.02	0.00216	0.0031	25	25	416	256	672

Notes: (a) Assumed 6 inch vertical curbs.

(b) Thomas Road has north and south frontage roads that were considered at flow depths of greater than 6 inches.

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SHEET 23 OF 25
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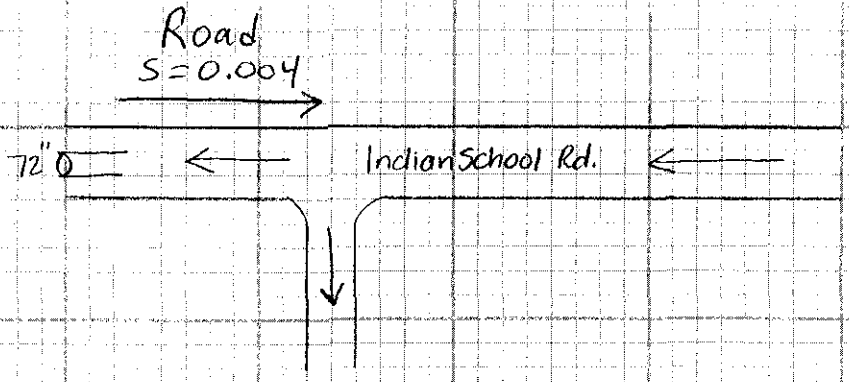
CLIENT Flood Control District Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DE02 at Indian School Rd between Granite Reef Rd and N. 86th St.



FLOW WEST IS STORM DRAIN ONLY.
STORM DRAIN MAXIMUM CAPACITY IS 96 cfs.
60 cfs IS DIVERTED AT THIS LOCATION.

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SHEET 24 OF 25
BY AMG DATE 4/17/02
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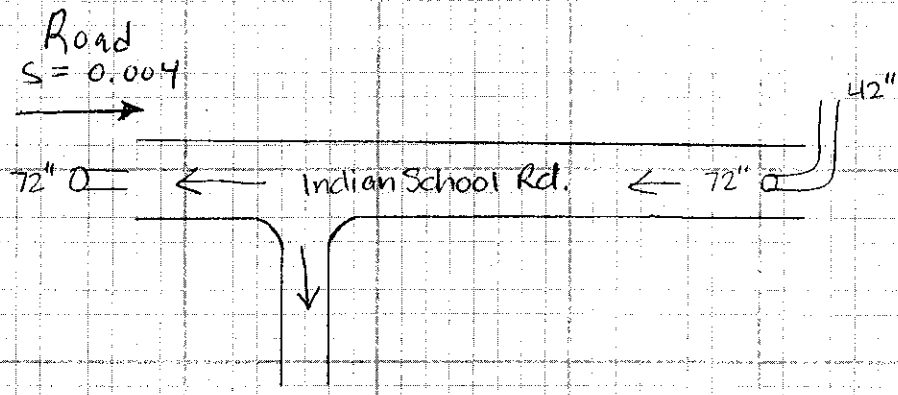
CLIENT Flood Control District Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 310.021

Diversion DE03 at Indian School Rd between N. 86th St. and Pima Rd.



FLOW WEST IS STORM DRAIN ONLY.
STORM DRAIN MAXIMUM CAPACITY IS 96 cfs, (See storm drain calculations) Half is Diverted at this Diversion.

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SHEET 25 OF 25
BY AMG DATE 4/17/02
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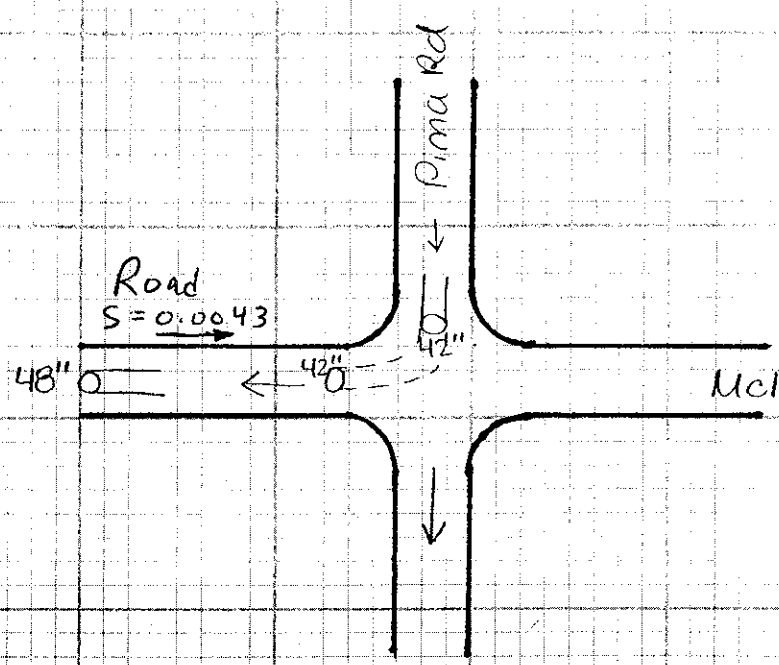
CLIENT Flood Control District Maricopa County
JOB NAME Granite Reef Drainage Master Plan JOB NO. 31002.1

Diversion DC13 at Pima Rd and McDowell Rd



FLOW WEST IS STORM DRAIN ONLY.
STORM DRAIN CAPACITY IS 51 CFS.
(See storm drain capacity calculations)

APPENDIX E HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION

STORM DRAIN ANALYSIS

MCFCD - GRANITE REEF ADMP PROJECT
FLOW RATE ANALYSIS

Manning's Formula:

$Q = (1.486/n)*(R^{0.667})*(S^{0.5})*A$

Where
Q = Flow Rate in cubic feet per sec
n = Manning's Coefficient from **Attachment 1** depending on pipe material
R = Hydraulic Radius (Area/Wetted Perimeter; in case of pipe flowing full R = d/4 for circular pipe) in feet
S = Slope in feet per foot
A = Area of pipe in square feet
d = Diameter of pipe in feet
Pipe I.D.s have been taken from **Attachments 2 & 3.**

	Pipe Mat.	n	Pipe Dia (in.)	Pipe Dia (ft)	From El.	To El.	Length (ft)	Slope (S)	Hyd. Rad. (R)	Area (A)	Flow Rate (Q)
Segment 1(Pipe I.D.:02-48)											
Pipe 1	RGRCP	0.02	48	4.00	1207.90	1201.00	1785	0.0039	1.00	12.56	68.40
Segment 2 (Pipe I.D.s: 23-15, 22-18, 21-24, 20-30, 19-54, 18-48, 10-48)											
Pipe 1	RGRCP	0.02	15	1.25	1241.00	1238.45	243	0.0105	0.31	1.23	5.05
Pipe 2	RGRCP	0.02	18	1.50	1238.45	1236.98	598	0.0025	0.38	1.77	3.98
Pipe 3	RGRCP	0.02	24	2.00	1236.98	1233.80	1242	0.0026	0.50	3.14	8.75
Pipe 4	RGRCP	0.02	30	2.50	1233.80	1226.10	1770	0.0044	0.63	4.91	20.69
Pipe 5	RGRCP	0.02	54	4.50	1226.10	1224.93	1190	0.0010	1.13	15.90	47.24
Pipe 6	RGRCP	0.02	48	4.00	1224.93	1224.00	120	0.0078	1.00	12.56	96.85
Pipe 7	RGRCP	0.02	48	4.00	1220.59	1209.85	5127	0.0021	1.00	12.56	50.35

	Pipe Mat.	n	Pipe Dia (in.)	Pipe Dia (ft)	From El.	To El.	Length (ft	Slope (S)	Hyd. Rad. (R)	Area (A)	Flow Rate (Q)
Segment 3 (Pipe I.D.s: 09-24, 08-42, 06-48, 05-42, 04-48)											
Pipe 1	CIP	0.02	24	2.00	1222.10	1219.89	414	0.0053	0.50	3.14	14.31
Pipe 2	CIP	0.02	42	3.50	1219.89	1218.65	428	0.0029	0.88	9.62	46.98
Pipe 3	RGRCP	0.02	48	4.00			70	0.0090	1.00	12.56	104.37
Pipe 4	RGRCP	0.02	42	3.50	1219.92	1215.63	982	0.0044	0.88	9.62	50.91
Pipe 5	RGRCP	0.02	48	4.00	1215.63	1210.83	905	0.0053	1.00	12.56	80.12
Segment 4 (Pipe I.D.s: 03-18)											
Pipe 1	RGRCP	0.02	18	1.50	1221.50	1214.00	3227	0.0023	0.38	1.77	3.87
Segment 5 (Pipe I.D.s: 25-72)											
Pipe 1	RGRCP	0.02	72	6.00	1240.50	1236.00	5175	0.0009	1.50	28.26	95.77
Segment 6 (Pipe I.D.s: 28-60)											
Pipe 1	RGRCP	0.02	60	5.00	1248.06	1240.50	3576	0.0021	1.25	19.63	91.78
Segment 7 (Pipe I.D.s: 41-18, 40-24, 39-30, 38-36, 37-42)											
Pipe 1	RGRCP	0.02	18	1.50	1254.71	1251.62	1048	0.0029	0.38	1.77	4.35
Pipe 2	RGRCP	0.02	24	2.00	1251.62	1250.10	724	0.0021	0.50	3.14	7.92
Pipe 3	RGRCP	0.02	30	2.50	1250.05	1245.20	1340	0.0036	0.63	4.91	18.87
Pipe 4	RGRCP	0.02	36	3.00	1245.20	1244.12	584	0.0018	0.75	7.07	21.95
Pipe 5	RGRCP	0.02	42	3.50	1244.12	1241.60	1239	0.0020	0.88	9.62	34.73
Segment 8 (Pipe I.D.s: 34-36, 33-60, 32-84, 31-90, 30-96)											
Pipe 1	RGRCP	0.02	36	3.00		1255.30	610	0.0010	0.75	7.07	16.14
Pipe 2	RGRCP	0.02	60	5.00	1255.30	1255.60	652	0.0010	1.25	19.63	63.12
Pipe 3	RGRCP	0.02	84	7.00	1255.60	1254.28	1925	0.0007	1.75	38.47	128.36
Pipe 4	RGRCP	0.02	90	7.50	1254.28	1252.94	694	0.0019	1.88	44.16	258.95
Pipe 5	RGRCP	0.02	96	8.00	1252.94	1249.70	576	0.0056	2.00	50.24	525.11

	Pipe Mat.	n	Pipe Dia (in.)	Pipe Dia (ft)	From El.	To El.	Length (ft)	Slope (S)	Hyd. Rad. (R)	Area (A)	Flow Rate (Q)
Segment 9 (Pipe I.D.s: 55-18)											
Pipe 1	RGRCP	0.02		0.00	1264.20	1260.00	3685	0.0011	0.00	0.00	0.00
Segment 10 (Pipe I.D.s: 46-24)											
Pipe 1	HDPE	0.01	24	2.00	1269.00	1255.10	5138	0.0027	0.50	3.14	12.74
Segment 11 (Pipe I.D.s: 53-24, 52-30)											
Pipe 1	RGRCP	0.02	24	2.00	1283.94	1271.75	2051	0.0059	0.50	3.14	13.33
Pipe 2	RGRCP	0.02	30	2.50	1271.75	1269.00	632	0.0044	0.63	4.91	20.69

ATTACHMENT- 1

The friction coefficients C_h and n are assumed to be independent of Reynolds number. Even though this is not correct, the uncertainty involved in obtaining a reliable value of the friction coefficients can introduce an error as large as the variation with Reynolds number.

Engineers in the waterworks field generally use the Manning or the Hazen–Williams equation. This choice may have been based on simplifications of their solution due to the availability of special slide rules, tables, nomographs, and charts. The availability of modern hand calculators and computers makes the solution of any of the equations so simple that this is no longer a factor. Even so, it is unlikely that there will be any significant change in the preferred equation by the various user groups. It is therefore advisable to be familiar with all three equations.

Manning's n values are listed in Table 1.2. Extreme values of n range from 0.01 for new pipe in excellent condition to 0.035 for an extremely rough pipe. Typical values used in design range from 0.011 to 0.017. The same caution should be exercised using these values as was suggested for the tabulated f values in Fig. 1.4. Whenever possible, obtain information from the manufacturer. Suggested values of Hazen–Williams C_h are listed in Table 1.3. Values of C_h range from 140 for new pipe in excellent condition to less than 100 for old pipe in poor condition. Typical values would be between 120 and 130.

TABLE 1.2 Values of Manning's Coefficient n

	Variation		Use in Designing	
Kind of Pipe	From	To	From	To
Clean uncoated cast-iron pipe	0.011	0.015	0.013	0.015
Clean coated cast-iron pipe	0.010	0.014	0.012	0.014
Dirty or tuberculated cast-iron pipe	0.015	0.035		
Riveted steel pipe	0.013	0.017	0.015	0.017
Lock-bar and welded pipe	0.010	0.013	0.012	0.013
Galvanized-iron pipe	0.012	0.017	0.015	0.017
Brass and glass pipe	0.009	0.013		
Wood-stave pipe	0.010	0.014		
Wood-stave pipe, small diameter			0.011	0.012
Wood-stave pipe, large diameter			0.012	0.013
Concrete pipe	0.010	0.017		
Concrete pipe with rough joints			0.016	0.017
Concrete pipe, "dry mix," rough forms			0.015	0.016
Concrete pipe, "wet mix," steel forms			0.012	0.014
Concrete pipe, very smooth			0.011	0.012
Vitrified sewer pipe	0.010	0.017	0.013	0.015
Common clay drainage tile	0.011	0.017	0.012	0.014

Source: R. Manning, "Flow of Water Open Channels and Pipes," *Trans. Inst. Civil Engrs. (Ireland)*, vol. 20, 1890.

ATTACHMENT-2

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SHEET 1 OF 2
BY KAB DATE 02/05/02
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CLIENT F C D of Maricopa Co.
JOB NAME GRANITE REEF WASH
JOB NO. 310021

S.D. #	S.D. SIZE		AS-BUILT SET №
01	54	@ Roosevelt & GRANITE REEF	(46)
02	48	N. of ROOSEVELT, E. OF GRANITE REEF	—
03	18	HAYDEN TO GRANITE REEF ON Mc DOWELL	—
✓04	48	GRANITE REEF TO PIMA ON MC DOWELL	(43) Mat[illegible] Assumed for [illegible]
✓05	42	" " " "	"
✓06	48	TURNS TO THE NORTH @ END (PIMA RD.)	"
✓08	42	N. On PIMA FROM MCDOWELL	(36) Mat[illegible] from Cent[illegible] 06-4[illegible]
✓09	24	" " " " "	"
✓10	48	FROM McDOWELL N. TO THOMAS RD ALONG 87TH ST.	(53)
✓18	48	FROM THOMAS N. TO INDIAN SCHOOL RD. ON PIMA RD.	(37)
✓19	54	↓	↓
✓20	30		
✓21	24		
✓22	18		
✓23	15		
✓25	72	FROM HAYDEN TO PIMA RD. ON INDIAN SCHOOL RD. (Assumed to be RGRCP from Det.; Also missing 1 sht. for exact length)	(48)
✓28	60	E. of HAYDEN Rd. +/- 523' TO 86TH ST ON CAMELBACK RD. (Assumed RGRCP)	(51)
30	96	Just E. of HAYDEN RD. TO PIMA RD ON CHAPARRAL RD.	(54)
31	90		
32	84		
33	60		
34	36		

See pg. 2. for 07-

g

Sq'd

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SHEET 2 OF 2
BY KAB DATE 2/5/02
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CLIENT FCD of Maricopa Co

JOB NAME GRANITE REEF WASH JOB NO. 310021

S.D. NO	S.D. SIZE		AS-BUILT SET NO
37-42		FROM INDIAN SCHOOL RD. N. TO CHAPARRAL RD. ON PIMA RD.	(34)
38-36		↓	↓
39-30			
40-24			
41-18			
07-24		100LF PIPE RUNS E-W. APPROX. 1395 FT. N. OF McKELLIPS ON PIMA RD.	(33)
46-24		FROM CHAPARRAL RD. TO McDONALD DR. ON PIMA RD.	(35)
52-30		FROM McDONALD DR. TO THE AZ. CANAL ON PIMA RD	(38)
53-24			
55-18		FROM WASH E. of HAYDEN TO 86TH ST. ON JACKRABBIT RD	( )

ATTACHMENT-4 1

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SHEET 1 OF 1

BY SR DATE 02/05/02

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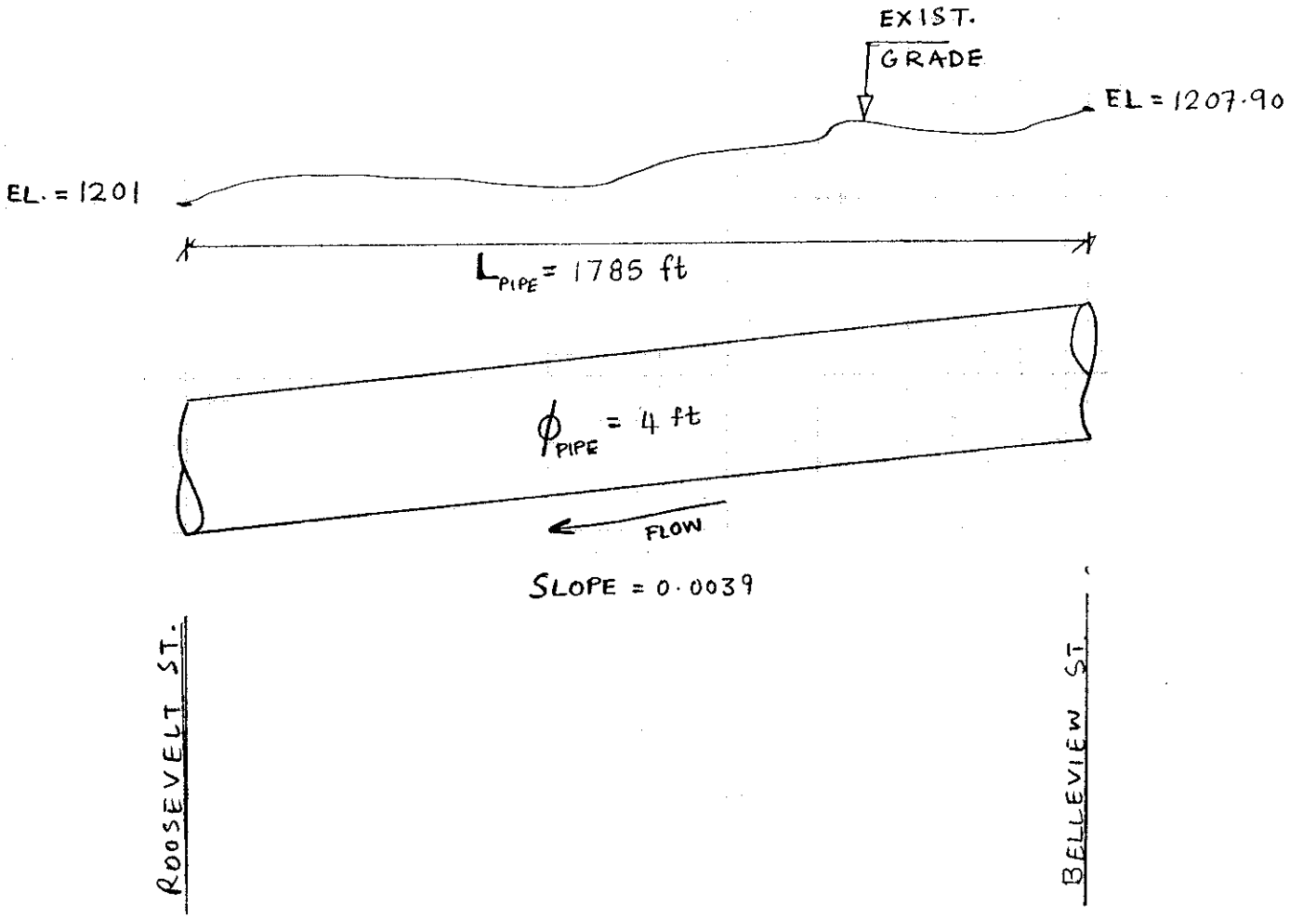
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE ID: 02-48

84th PLACE



SEGMENT : 1

PIPE # : 1

ATTACHMENT - 4.2

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SHEET 1 OF 7

BY SR DATE 02/05/02

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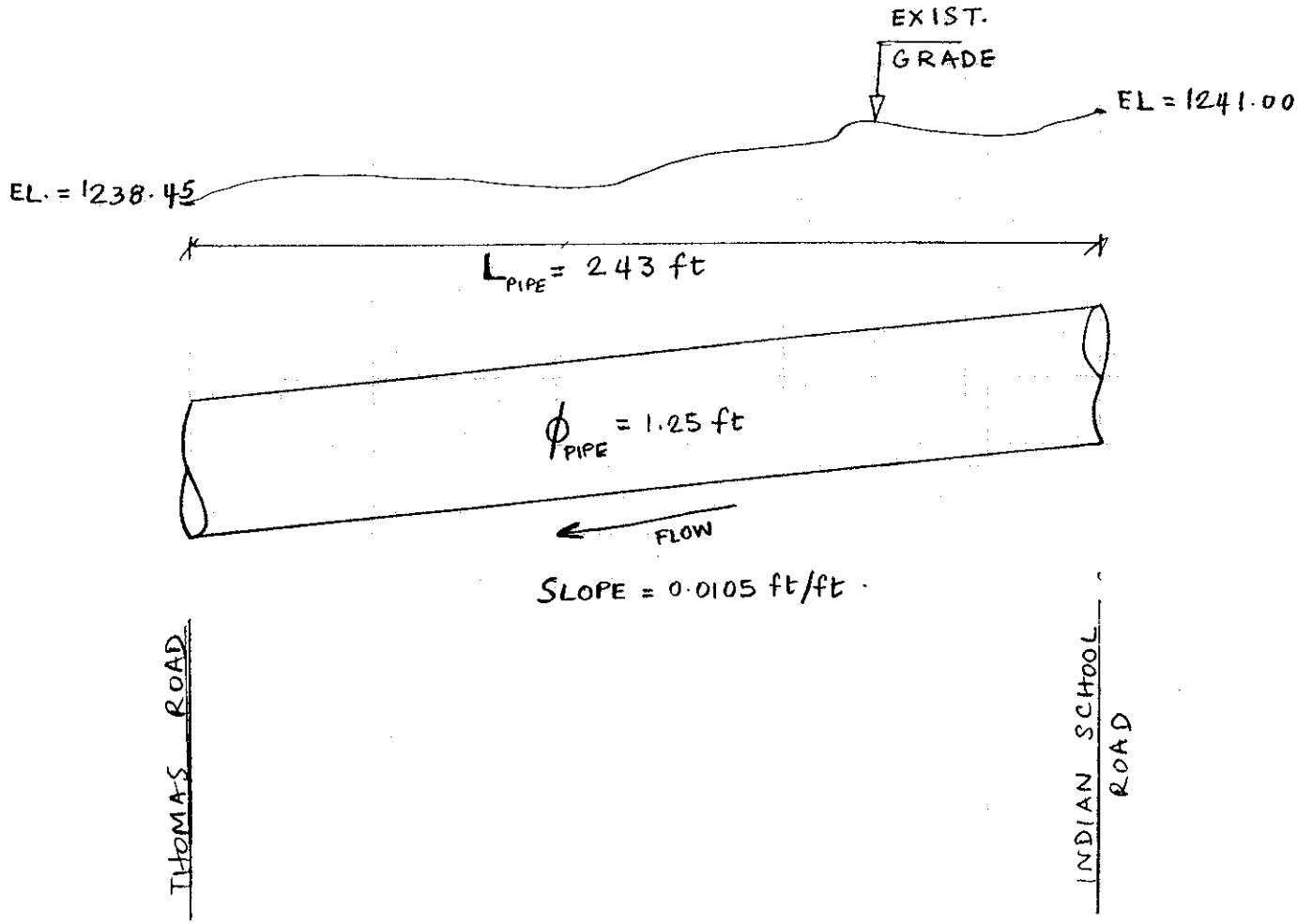
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. : 23-15

PIMA ROAD



SEGMENT : 2

PIPE # : 1

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SHEET 2 OF 7

BY SR DATE 02/05/02

CHECK PAW DATE 4/17/02

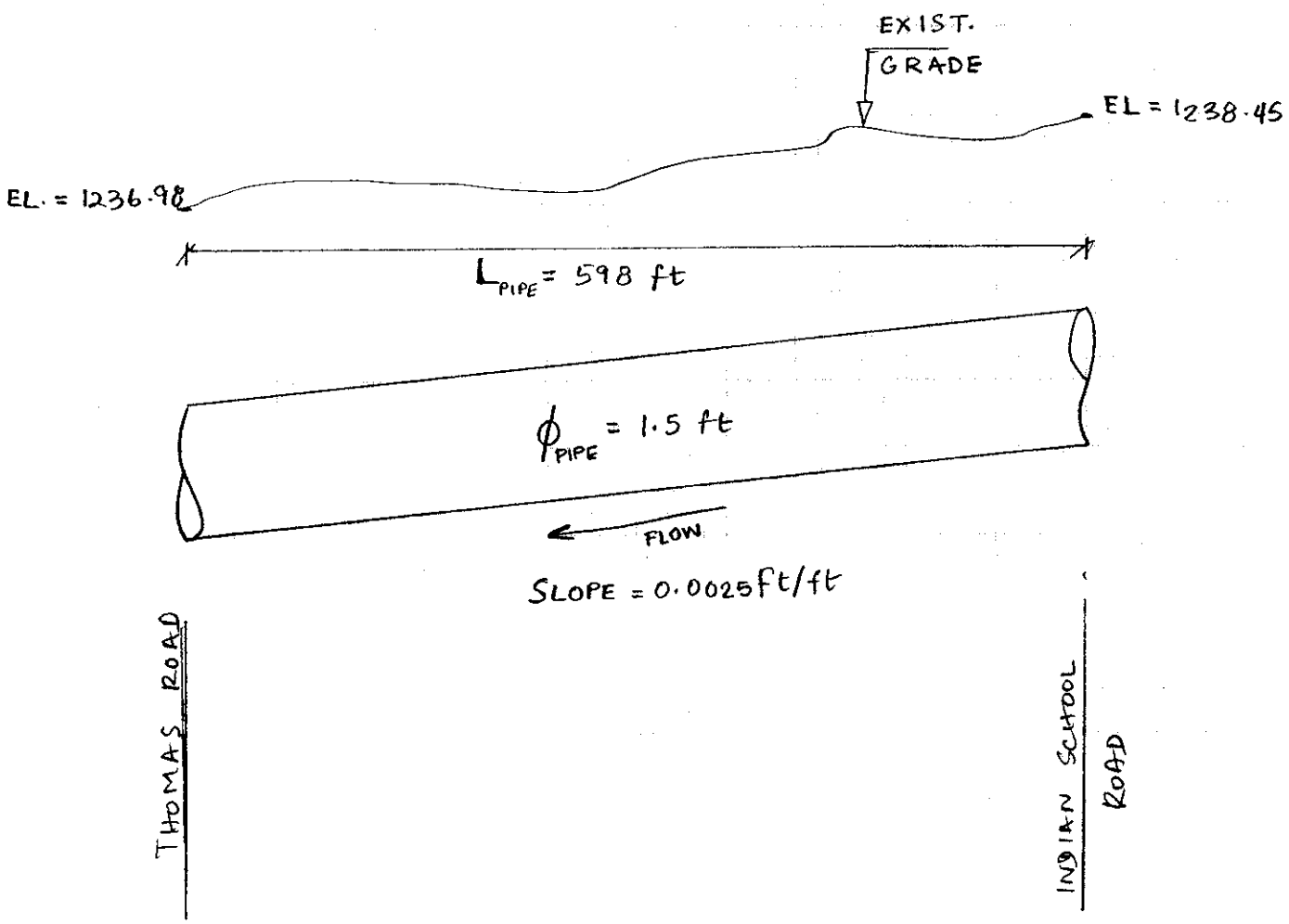
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE. I.D. = 22-18

PIMA ROAD



SEGMENT : 2

PIPE # : 2

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SHEET 3 OF 7

BY SR DATE 02/05/02

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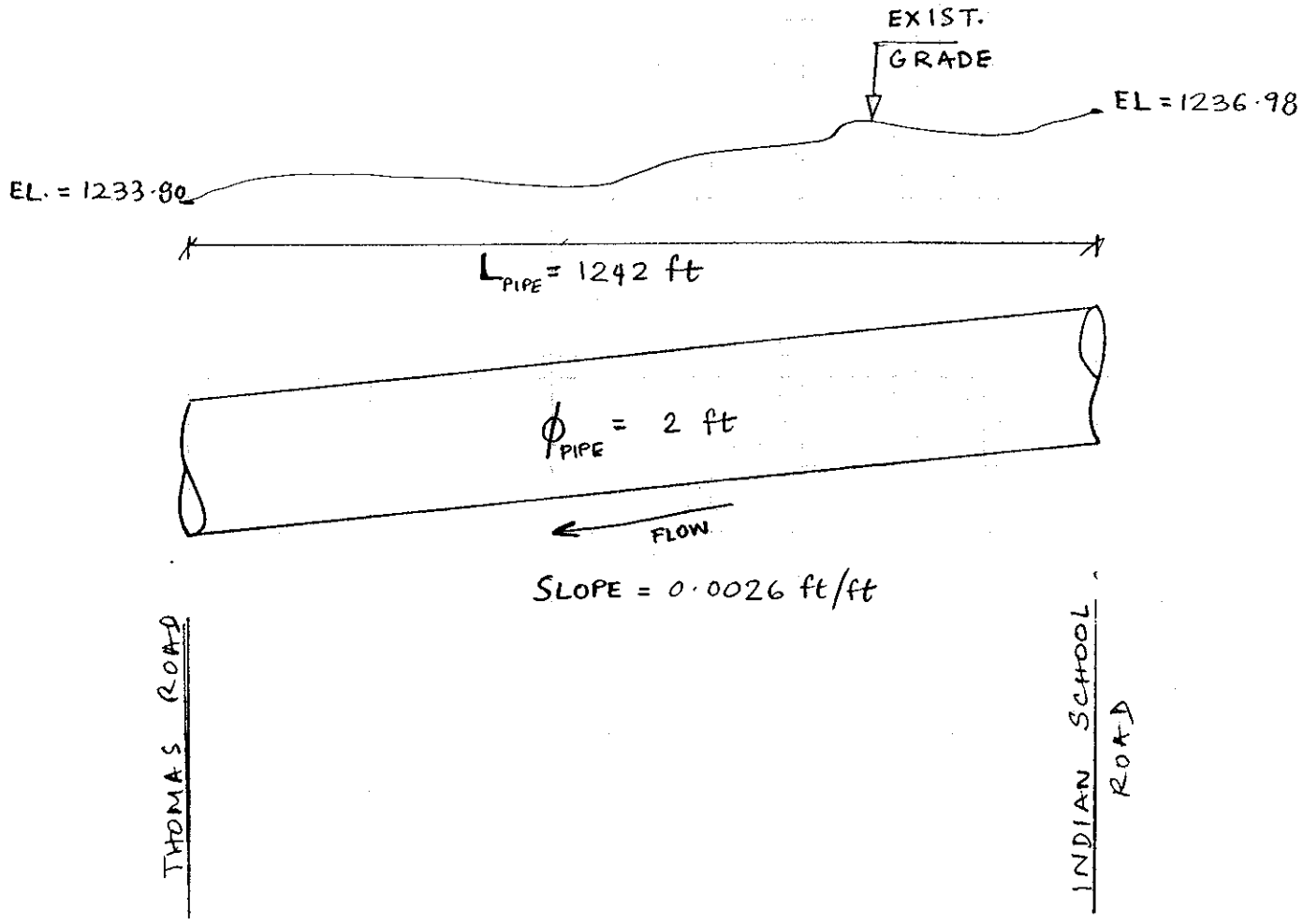
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE. ID. : 21-24

PIMA ROAD



SEGMENT : 2

PIPE # : 3

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SHEET 4 OF 7

BY SR DATE 02/05/02

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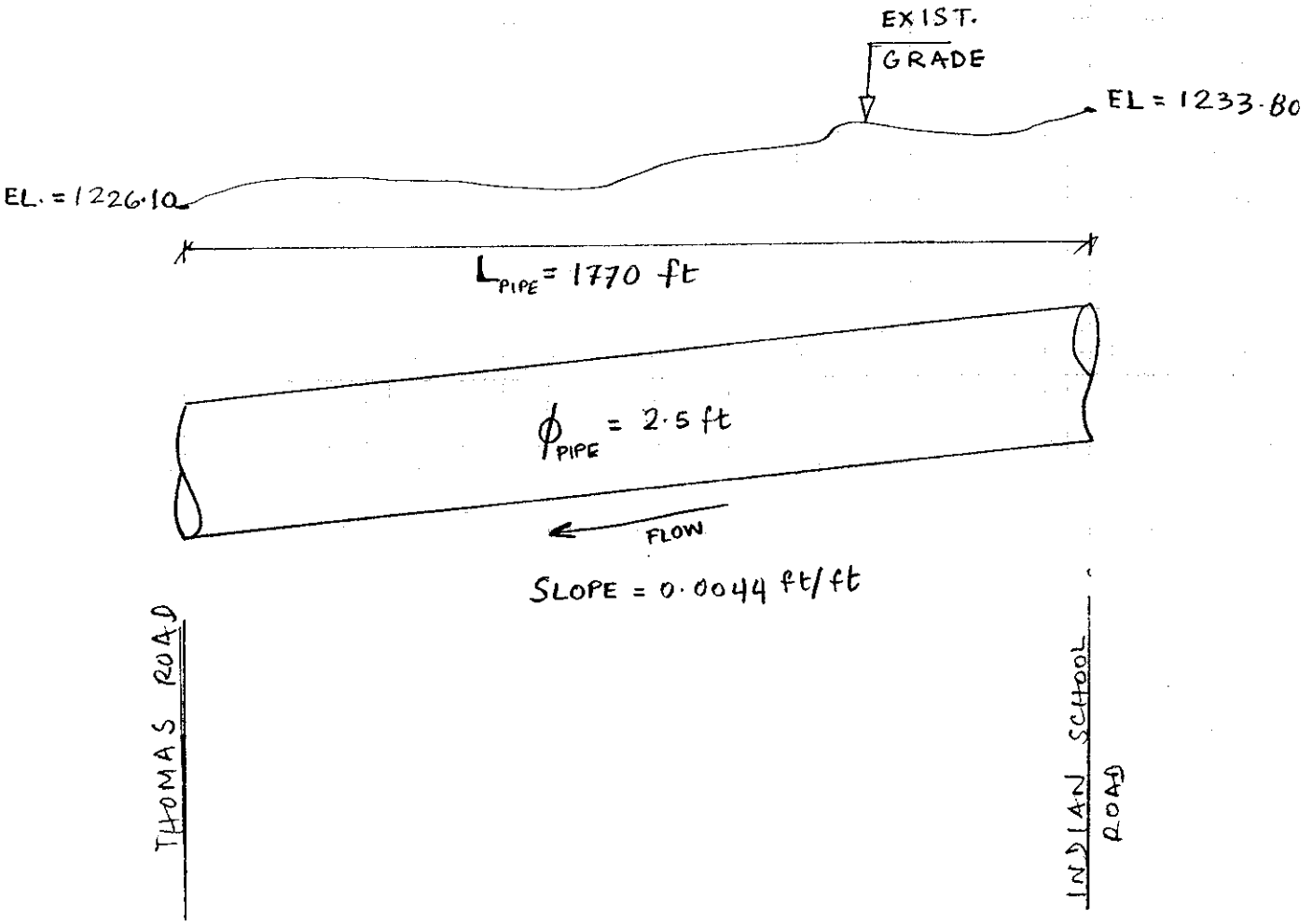
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. ≑ 20-30

PIMA ROAD



SEGMENT : 2

PIPE # : 4

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SHEET 5 OF 7

BY SR DATE 02/05/02

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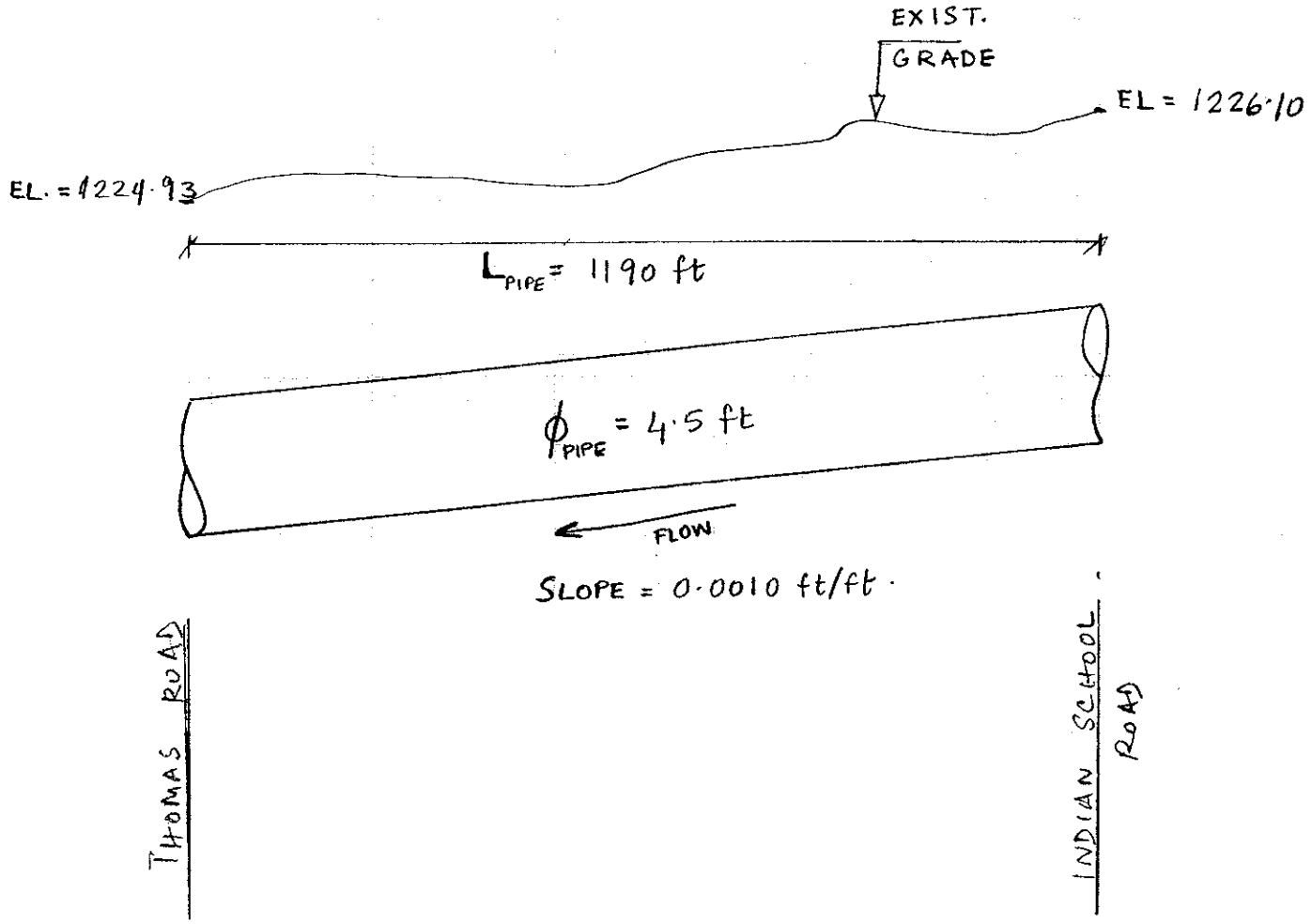
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. : 19-54

PIMA ROAD



SEGMENT : 2

PIPE # : 5

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SHEET 6 OF 7

BY SR DATE 02/05/02

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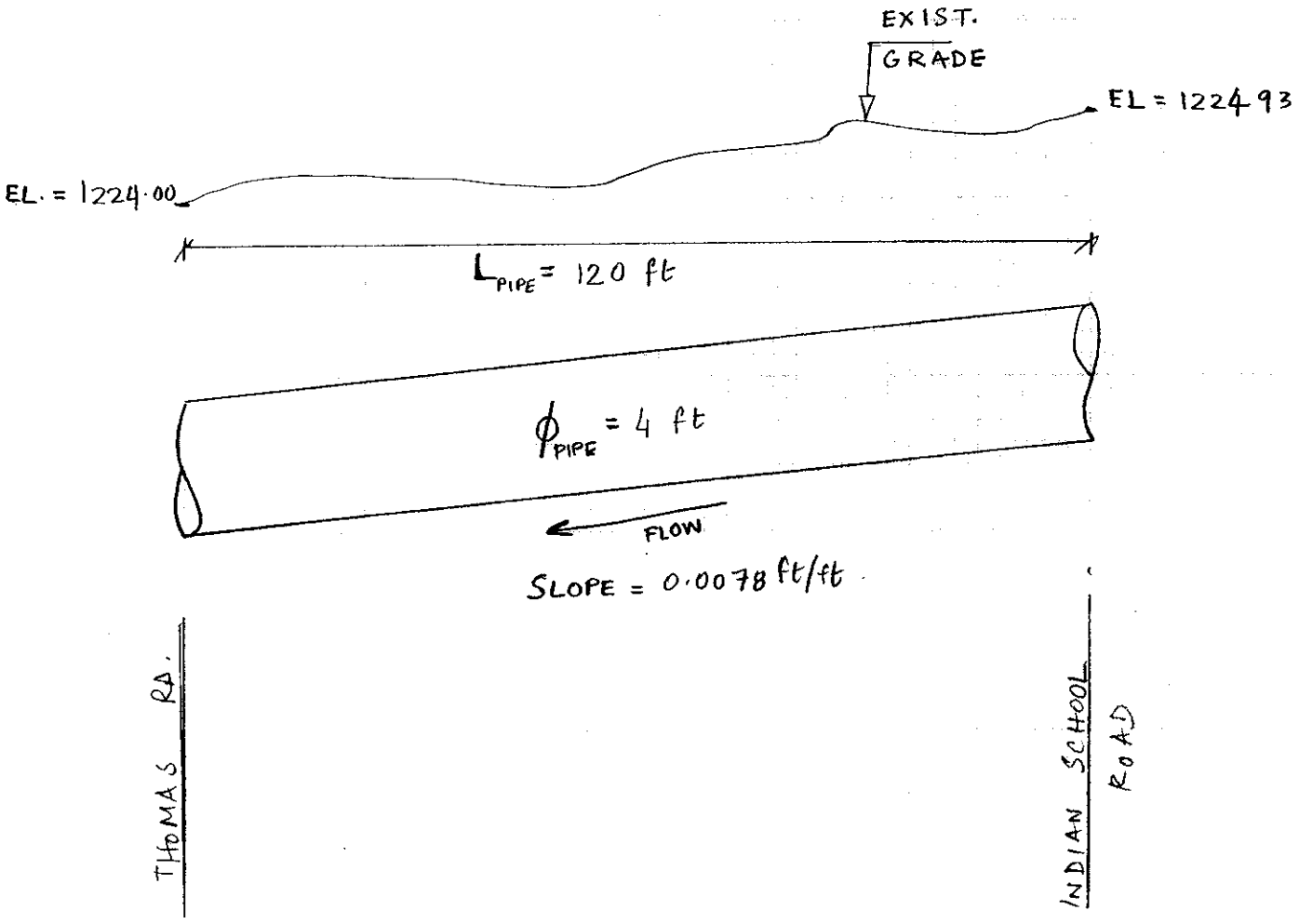
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 18-48

PIMA ROAD



SEGMENT : 2

PIPE # : 6

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SHEET 7 OF 7

BY SR DATE 02/05/02

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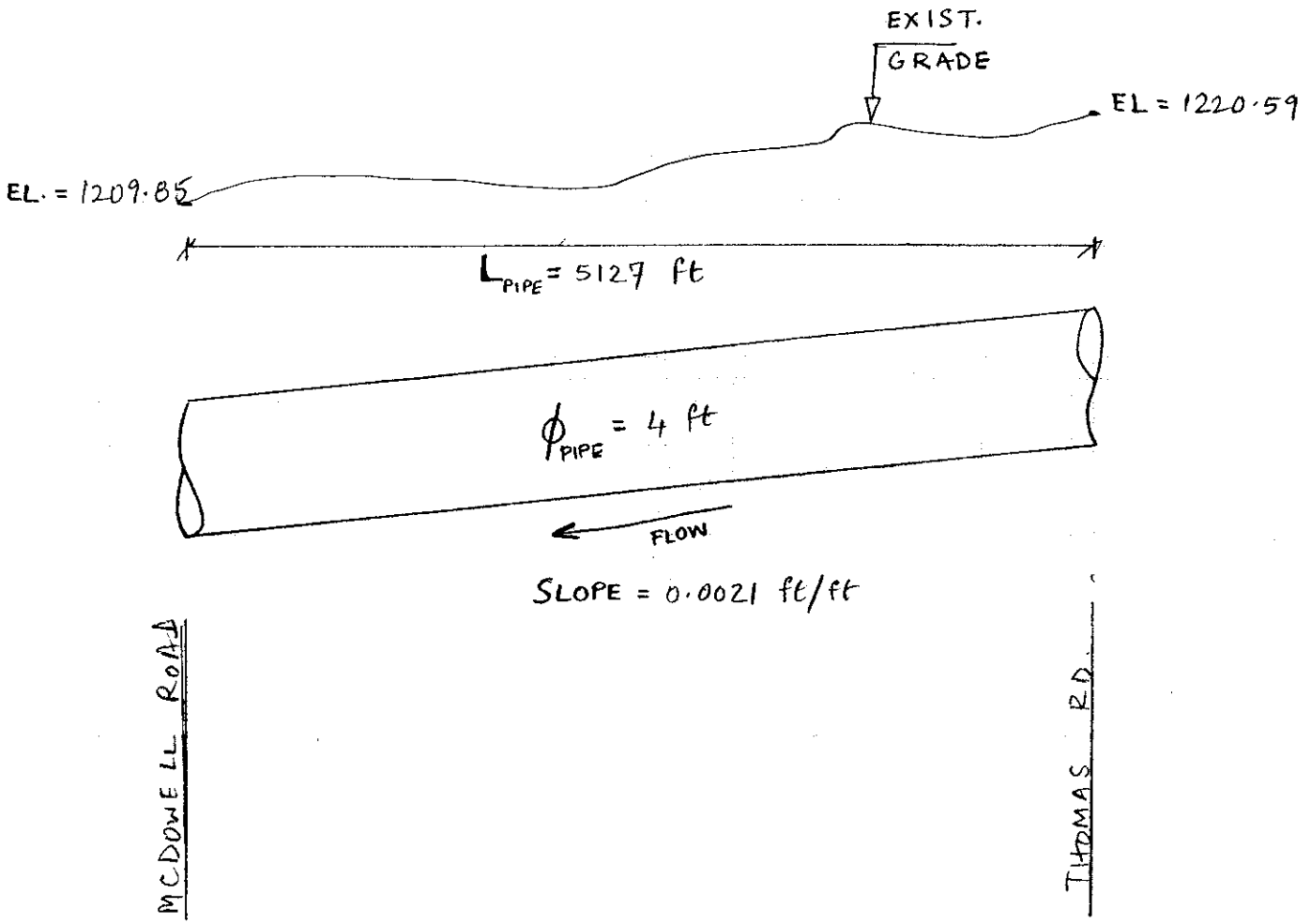
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 10-48

87th STREET



SEGMENT : 2

PIPE # : 7

ATTACHMENT - 4.3

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SHEET 1 OF 5

BY SR DATE 02/05/02

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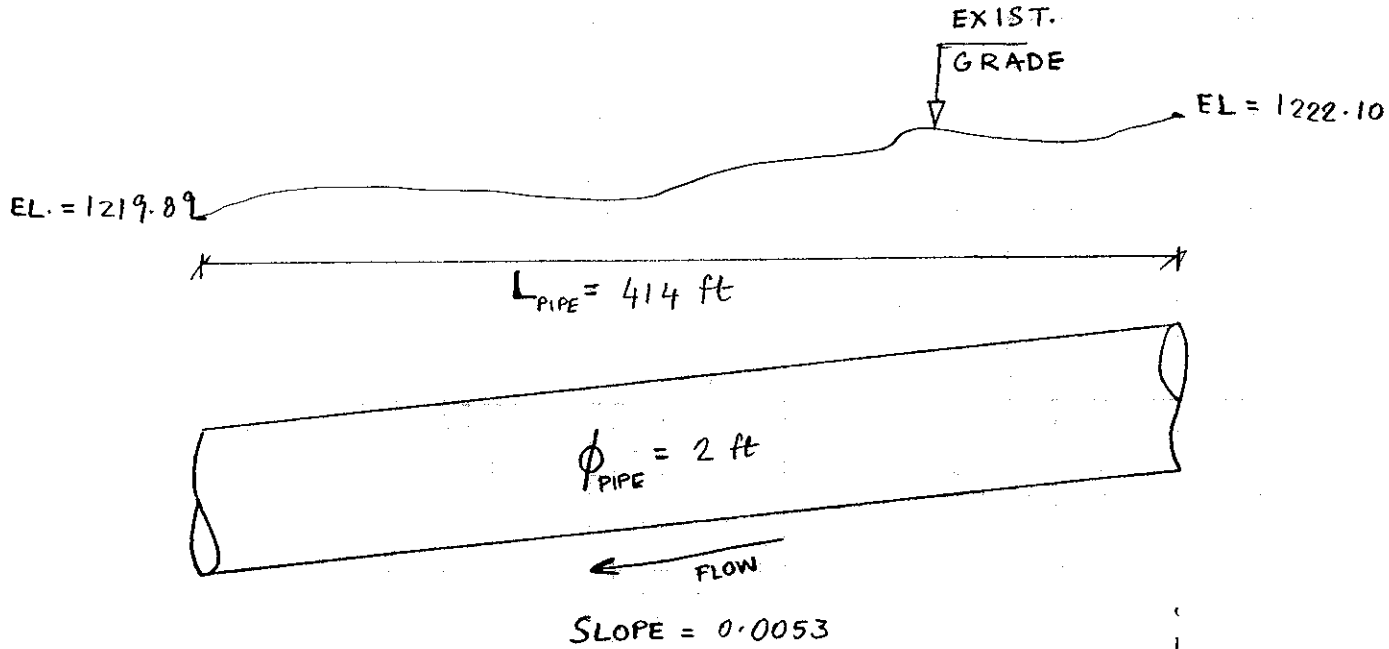
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE. I.D. : 09-24

PIMA ROAD



SEGMENT : 3

PIPE # : 1

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SHEET 2 OF 5

BY SR DATE 02/05/02

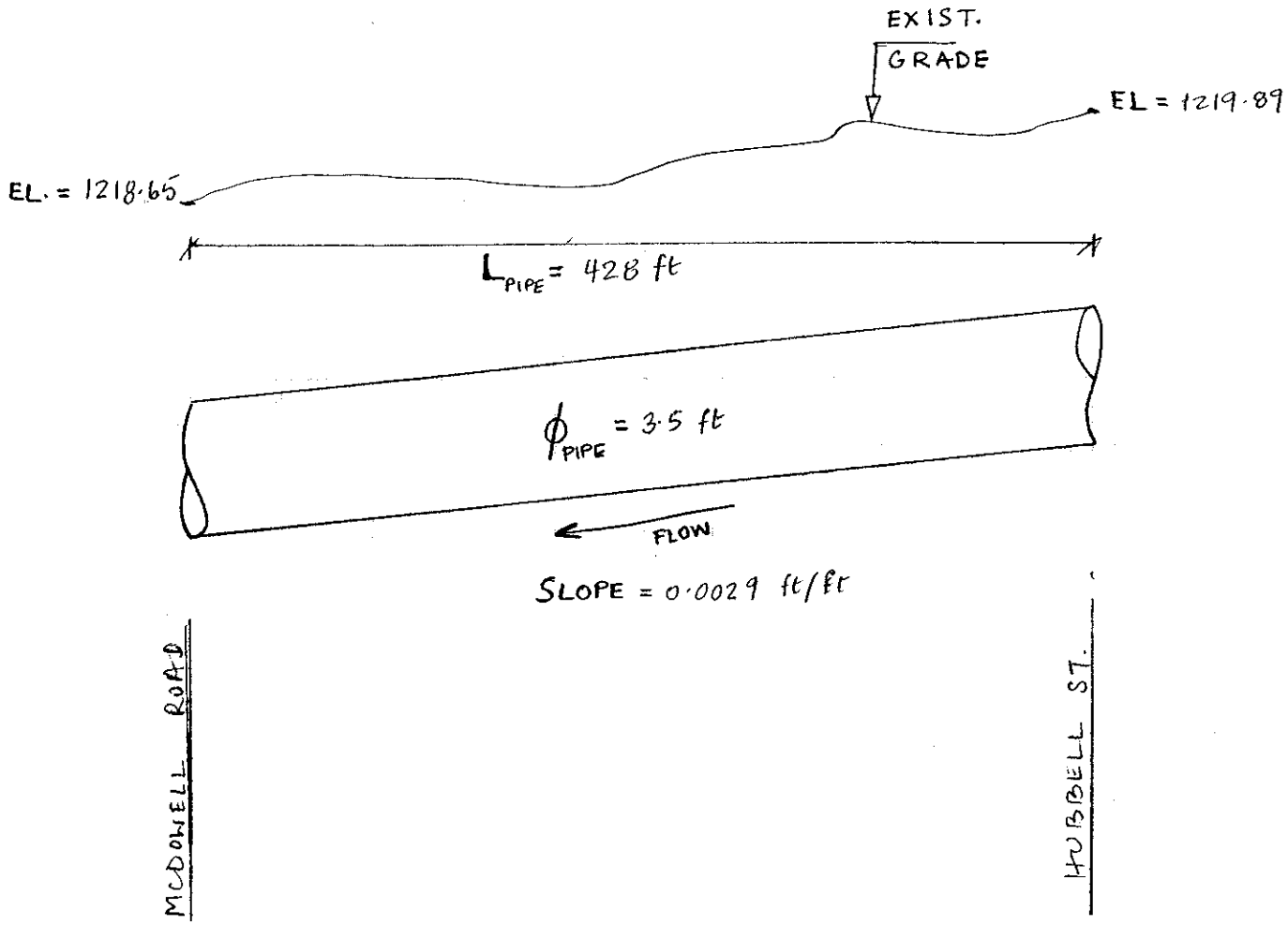
CHECK PAW DATE 4/17/02

CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. : OB-42

PIMA ROAD



SEGMENT : 3

PIPE # : 2

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SHEET 3 OF 5

BY SR DATE 02/05/02

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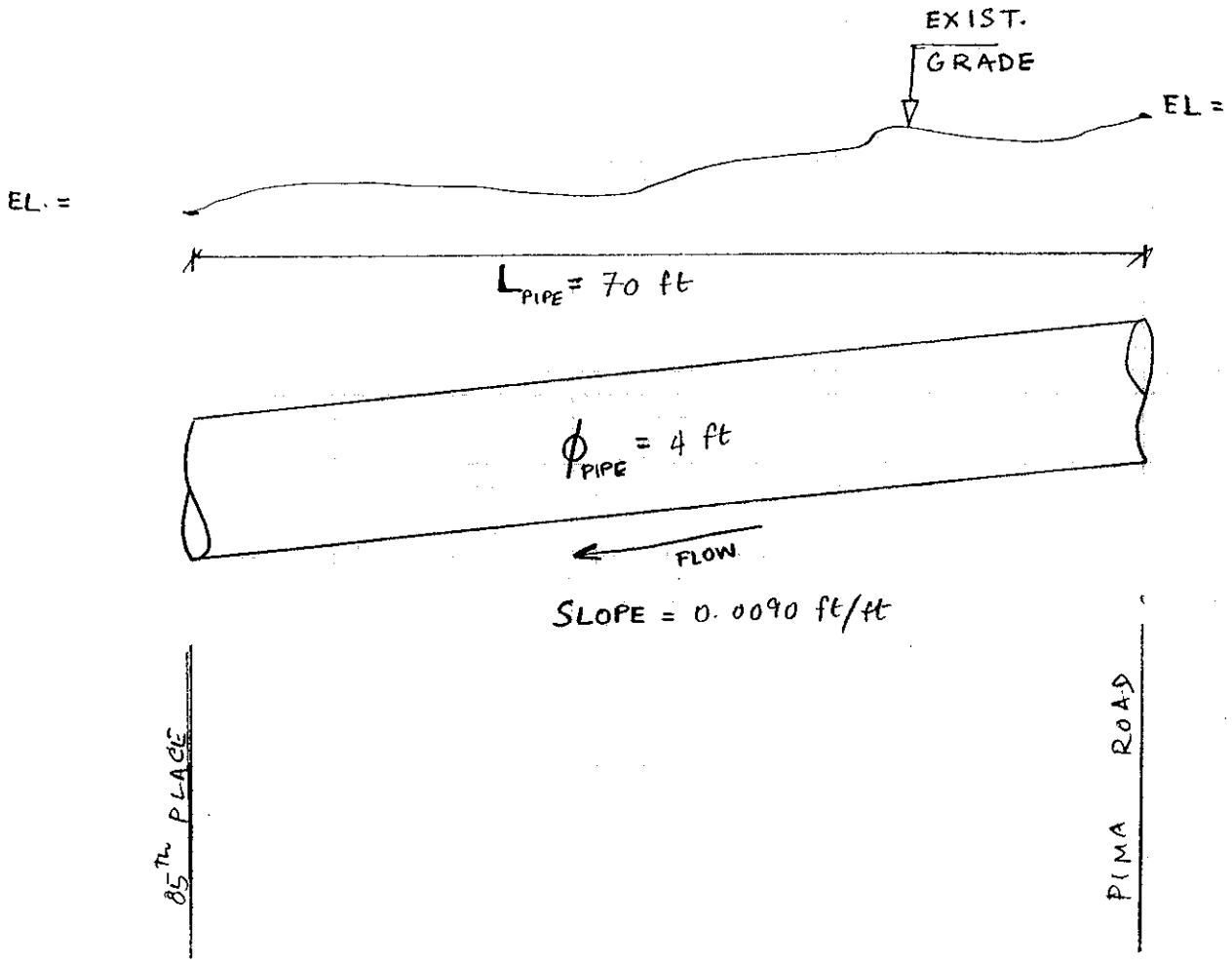
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 06-48

MCDOWELL ROAD



SEGMENT : 3

PIPE # : 3

Entellus™

SHEET 4 OF 5

BY SR DATE 02/05/02

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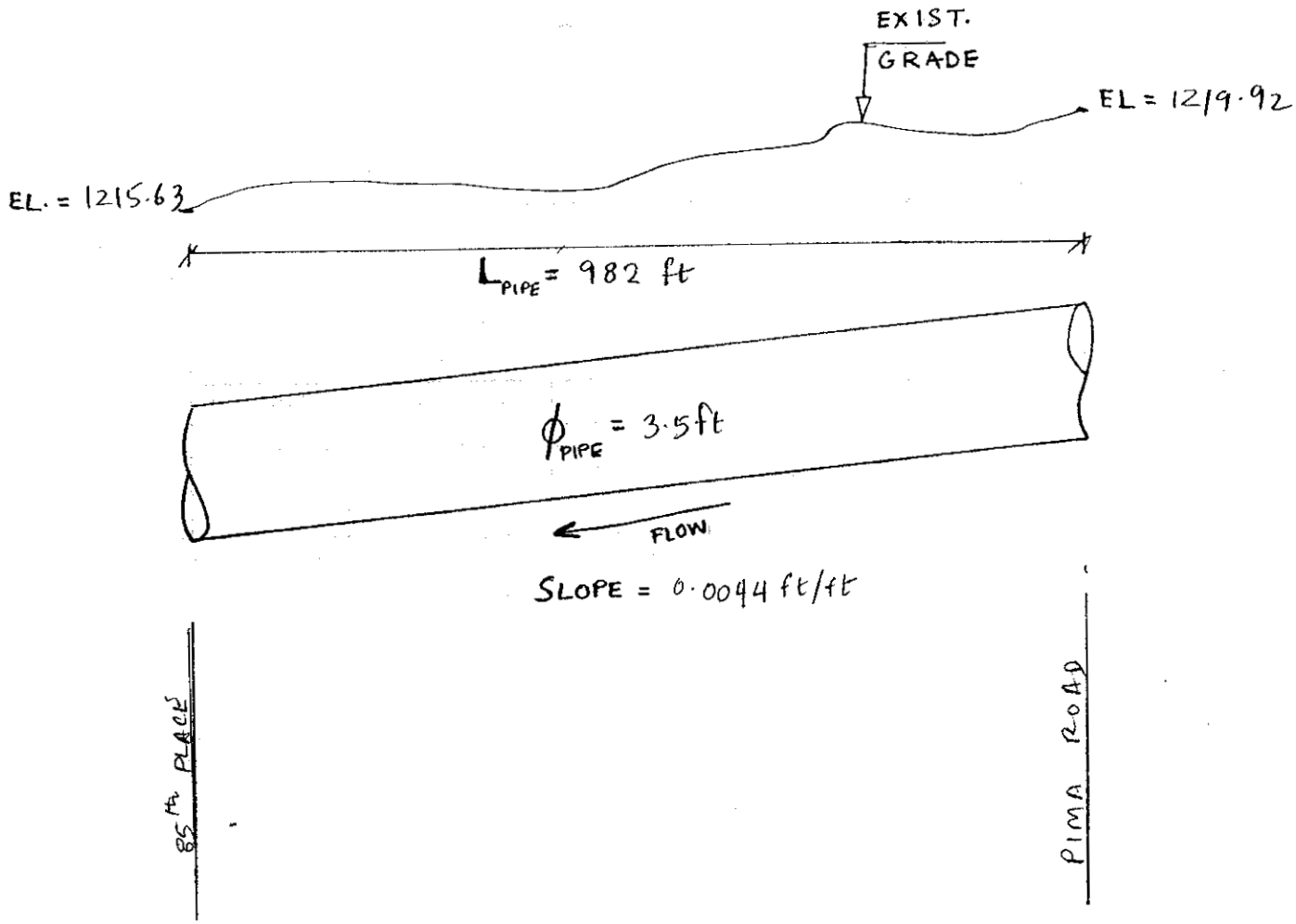
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 05-42

MCDOWELL ROAD



SEGMENT : 3

PIPE # : 4

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SHEET 5 OF 5

BY SR DATE 02/05/02

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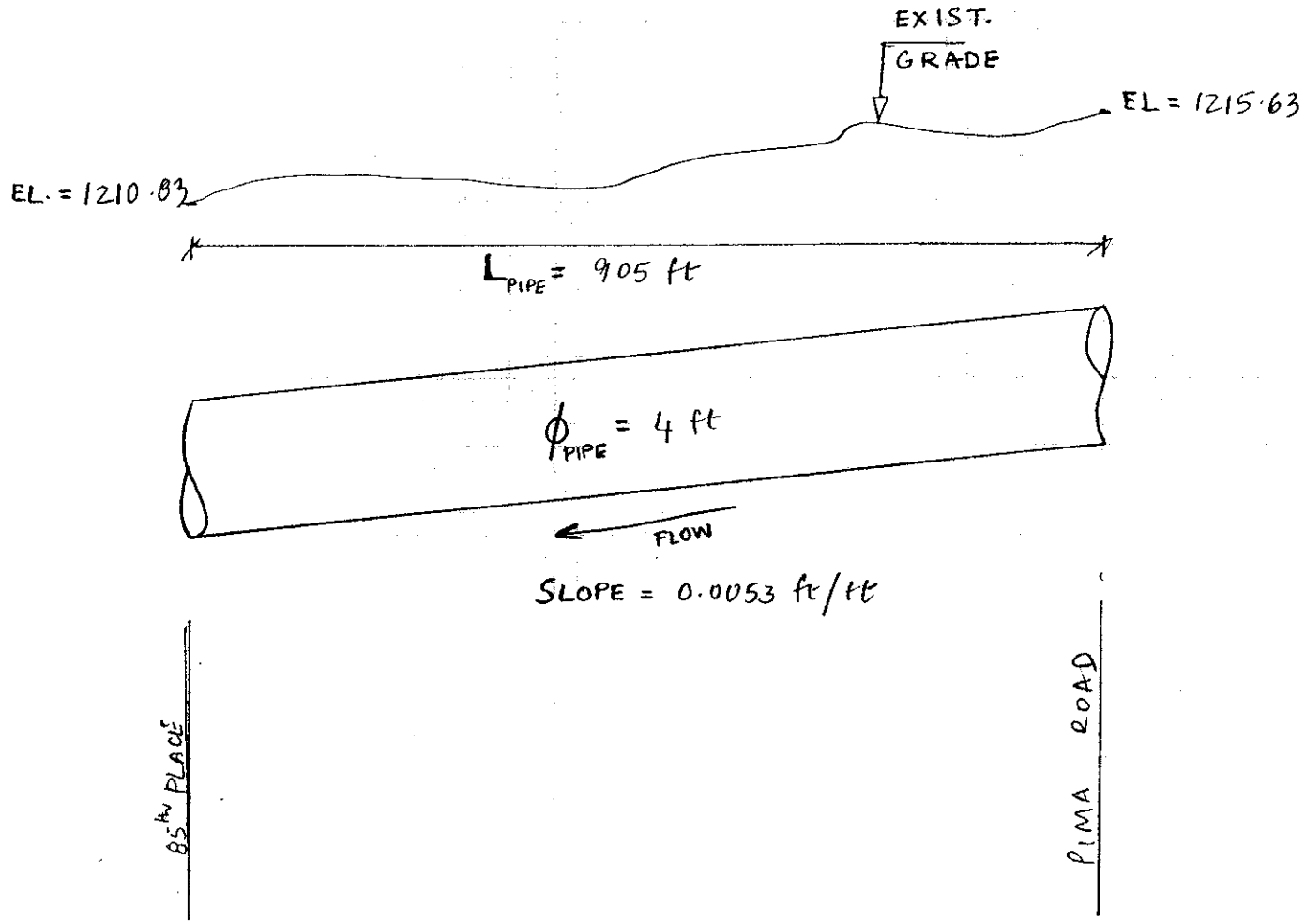
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE ID. = 04-48

MCDOWELL ROAD



SEGMENT : 3

PIPE # : 5

ATTACHMENT -4.4

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SHEET 1 OF 1

BY SR DATE 02/05/02

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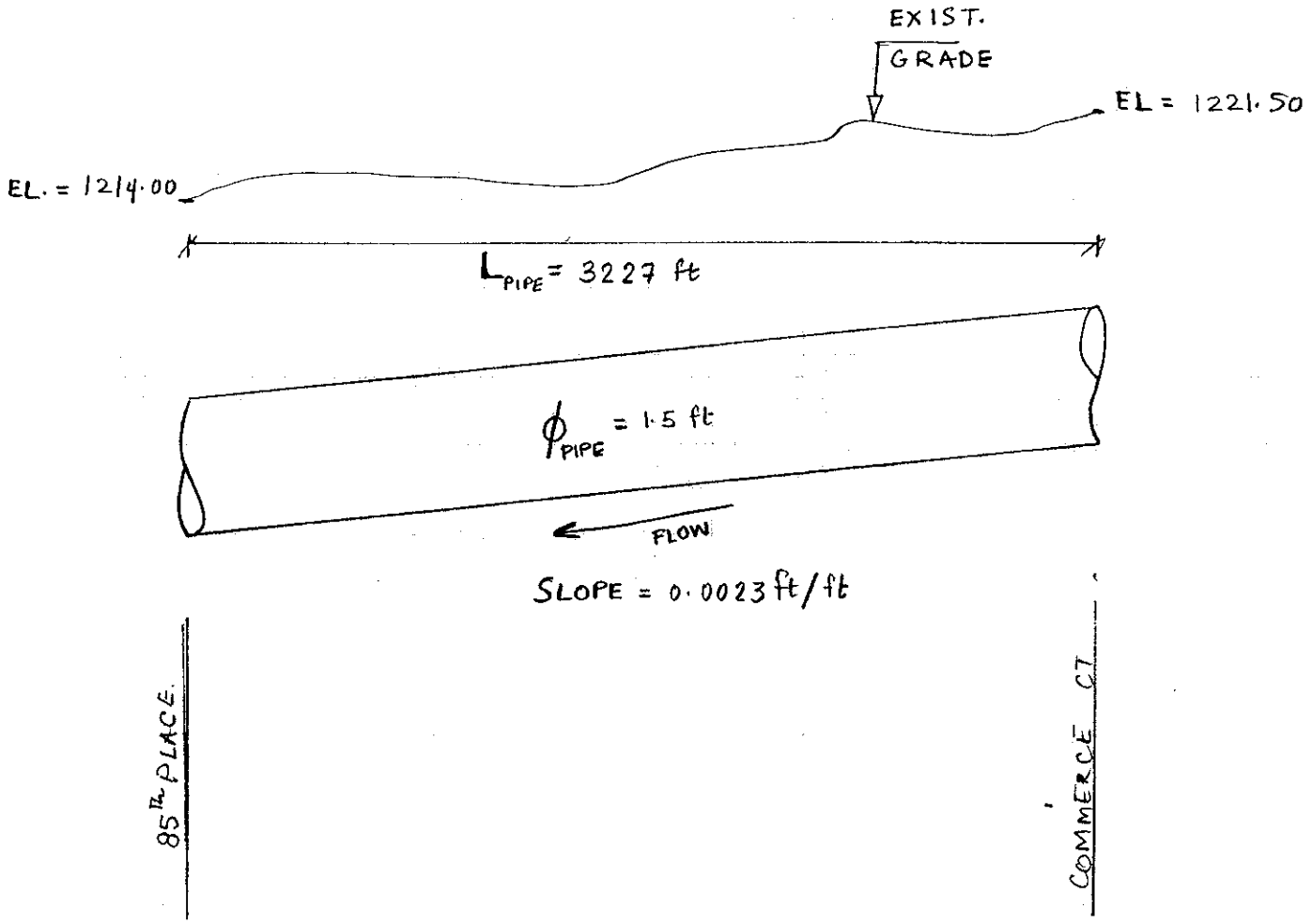
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE ID. : 03-18

MCDOWELL ROAD



SEGMENT : 4

PIPE # : 1

ATTACHMENT - 4.5

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SHEET 1 OF 1

BY SR DATE 02/05/02

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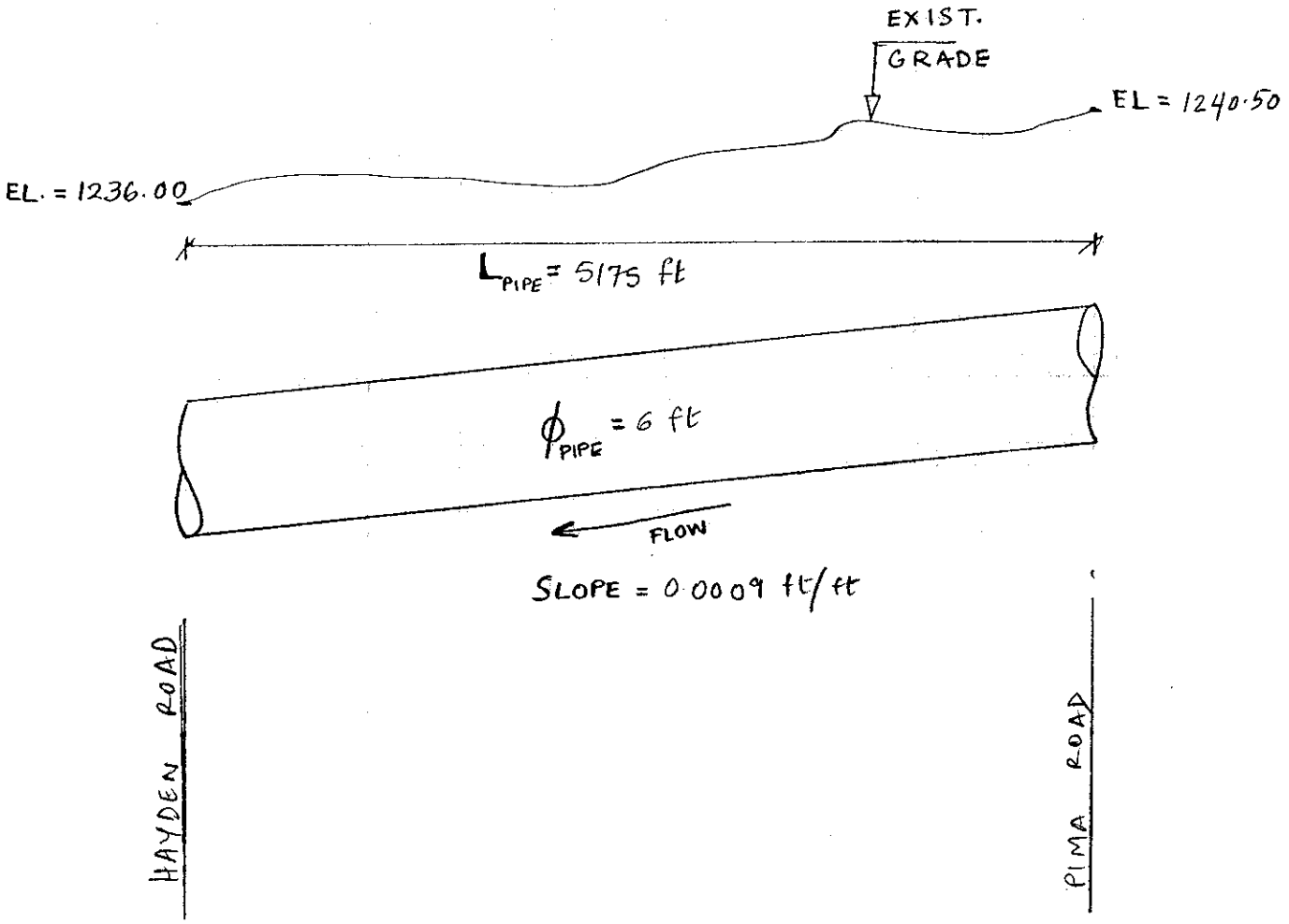
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 25-72

INDIAN SCHOOL ROAD



SEGMENT :5

PIPE # :1

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ATTACHMENT - 4.6

SHEET 1 OF 1

BY SR DATE 02/05/02

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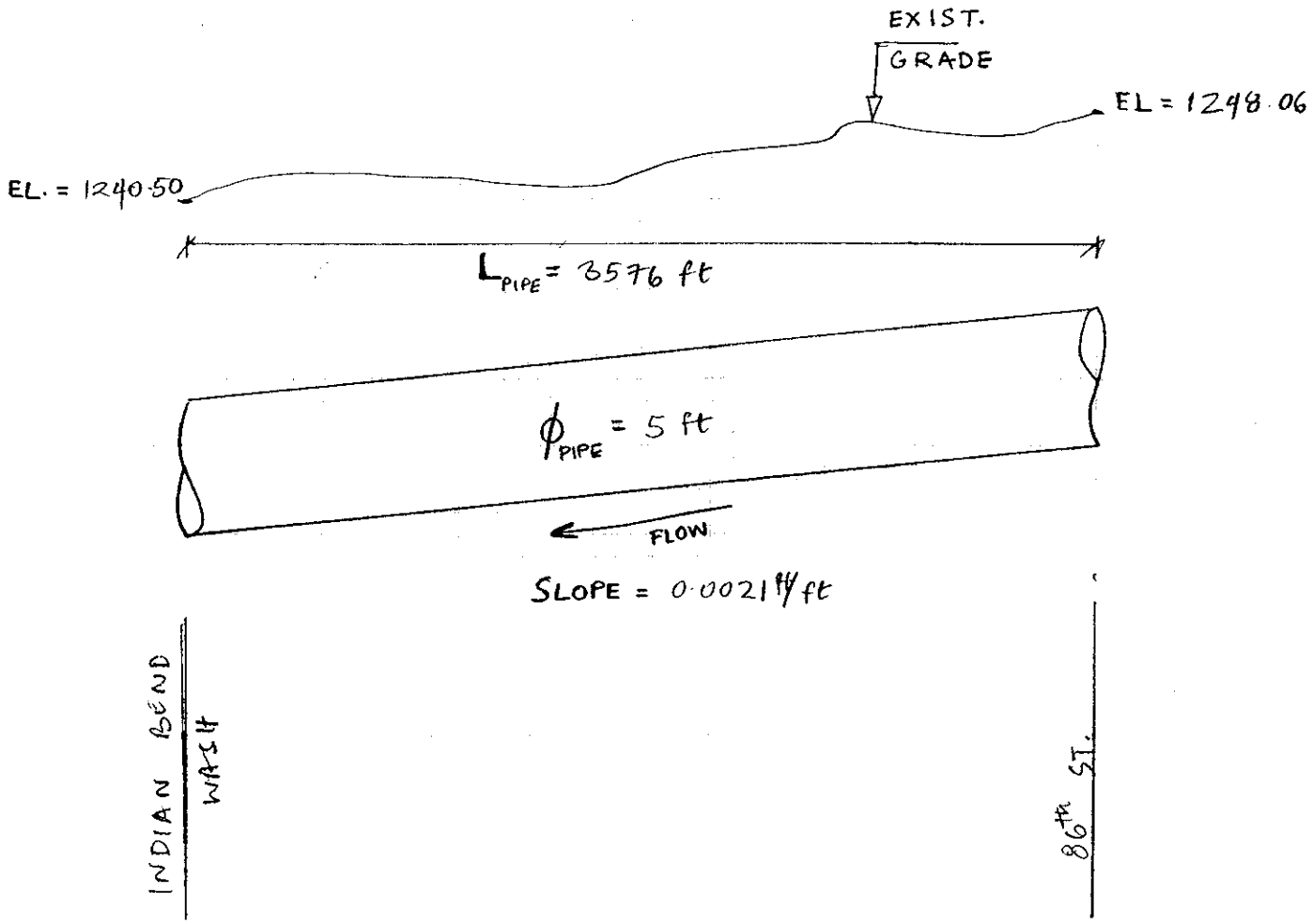
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 28-60



SEGMENT : 6

PIPE # : 1

ATTACHMENT 4.7

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BY SR DATE 02/05/02

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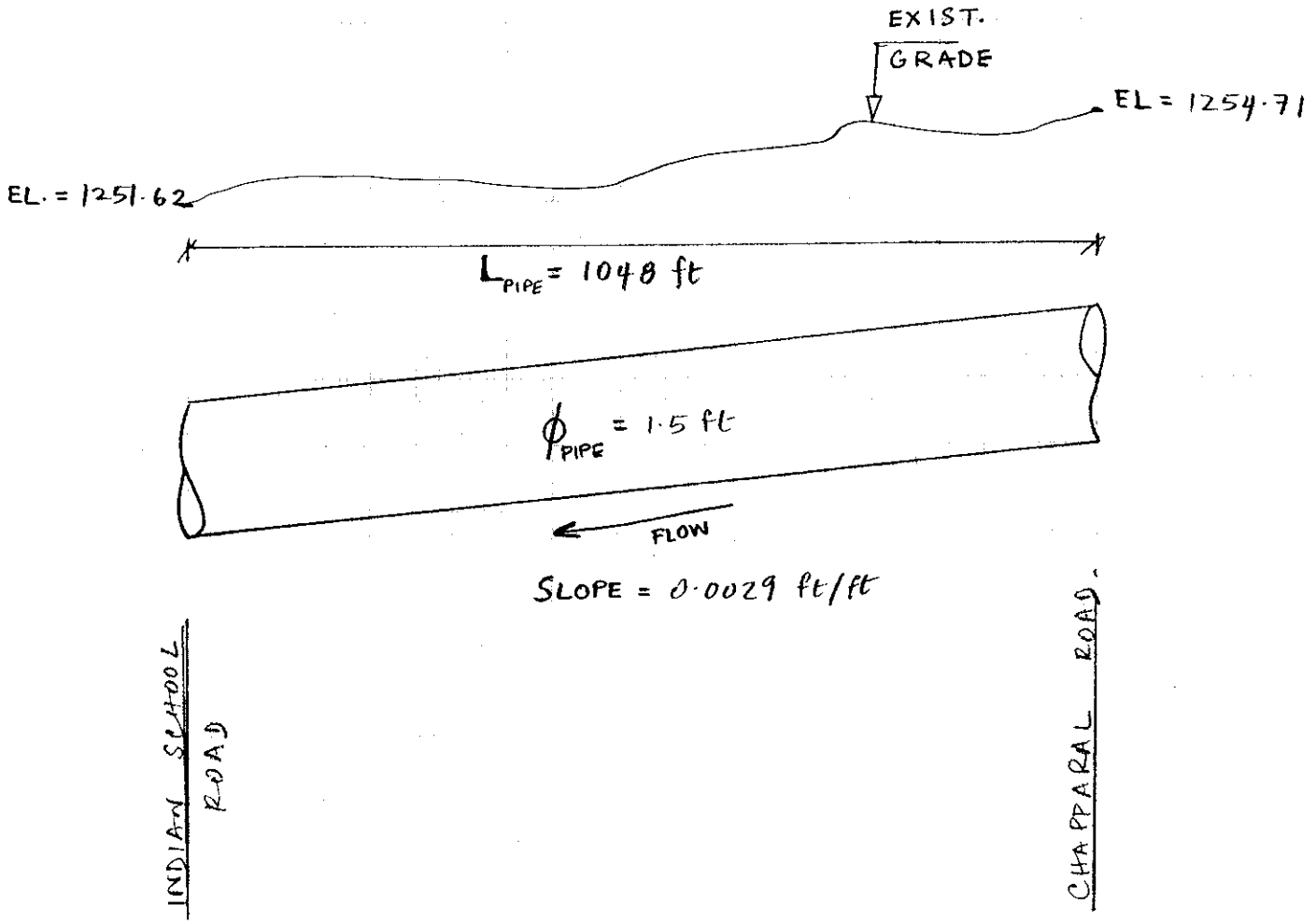
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 41-18

PIMA ROAD.



SEGMENT : 7

PIPE # : 1

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SHEET 2 OF 5

BY SR DATE 02/05/02

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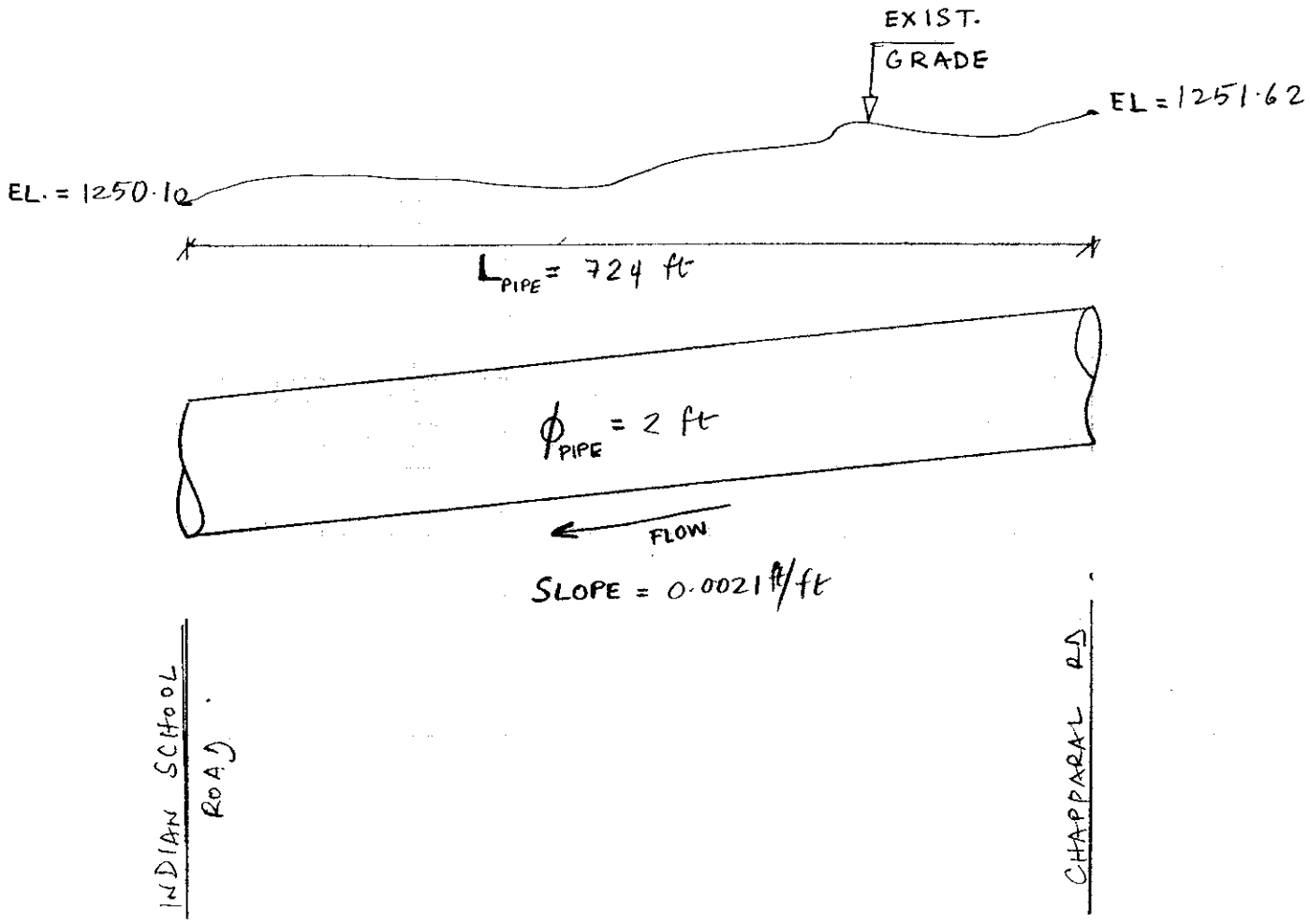
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. : 40-24

PIMA ROAD



SEGMENT : 7

PIPE # : 2

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SHEET 3 OF 5

BY SR DATE 02/05/02

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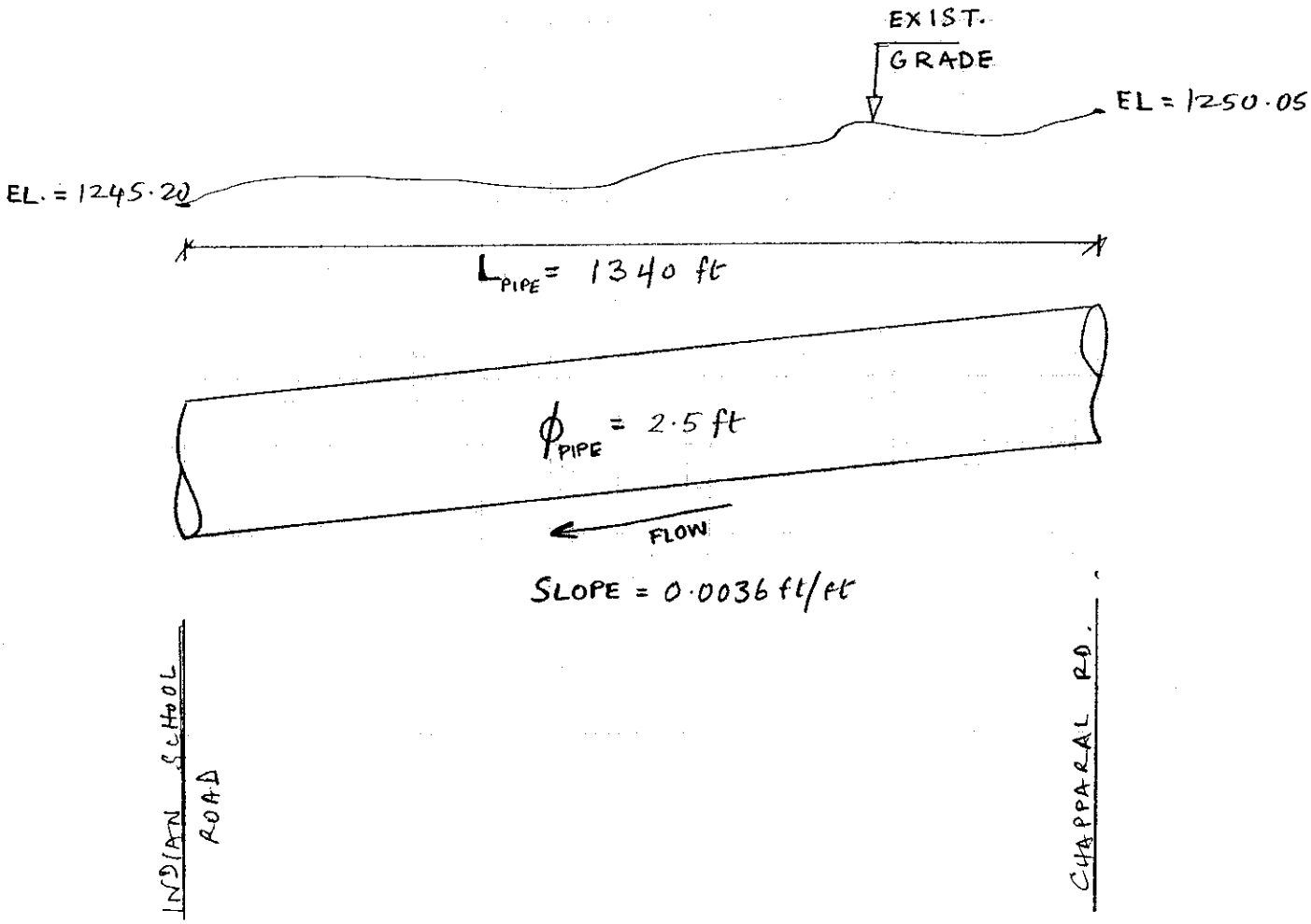
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE ID. # 39-30

PIMA ROAD



SEGMENT : 7

PIPE # : 3

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SHEET 4 OF 5

BY SR DATE 02/05/02

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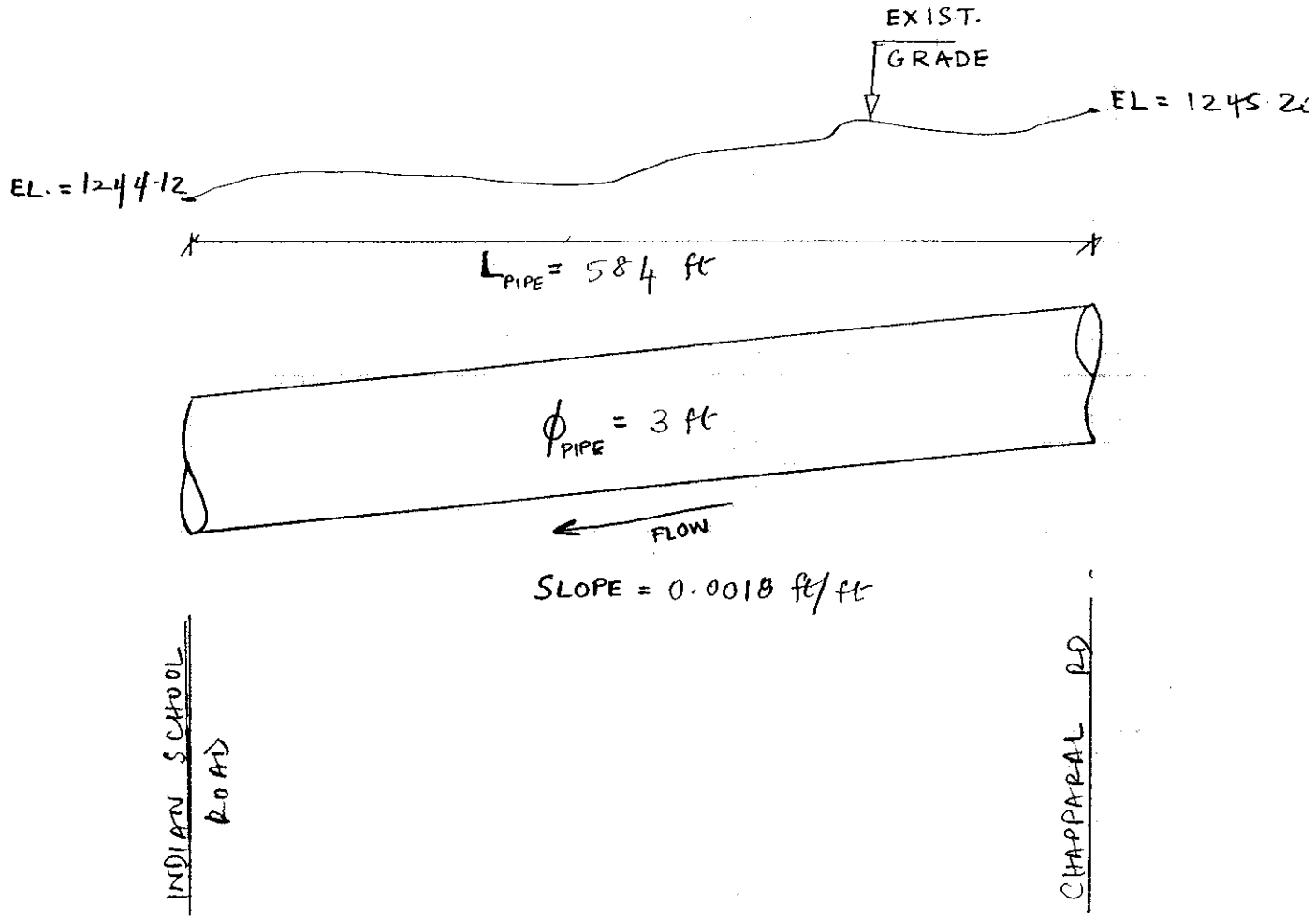
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. # 38-36

PIMA ROAD



SEGMENT : 7

PIPE # : 4

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SHEET 5 OF 5

BY SR DATE 02/05/02

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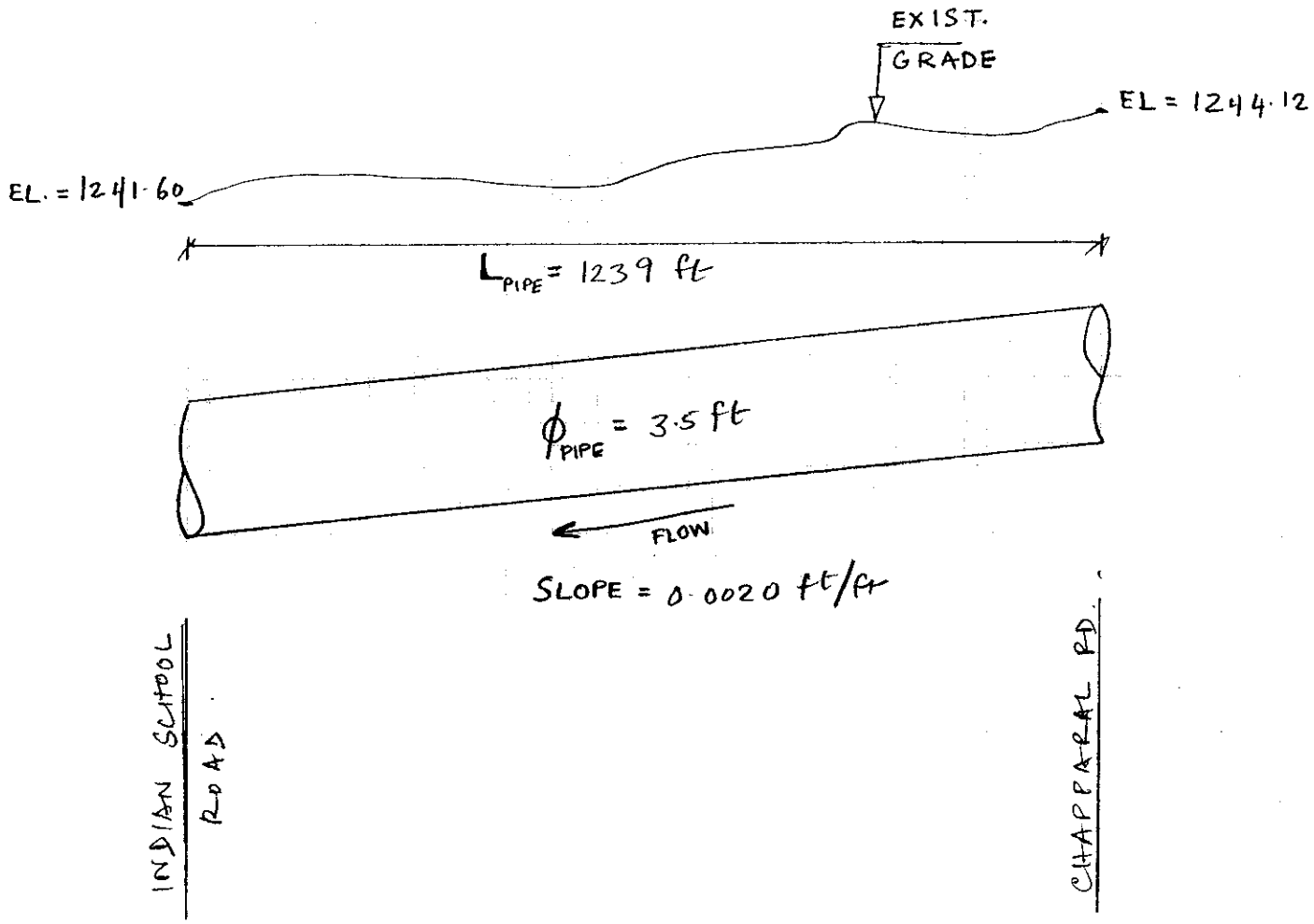
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. = 37-42

PIMA ROAD



SEGMENT : 7

PIPE # : 5

ATTACHMENT - 4.8

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SHEET 1 OF 5

BY SR DATE 02/05/02

CHECK PAW DATE 4/17/02

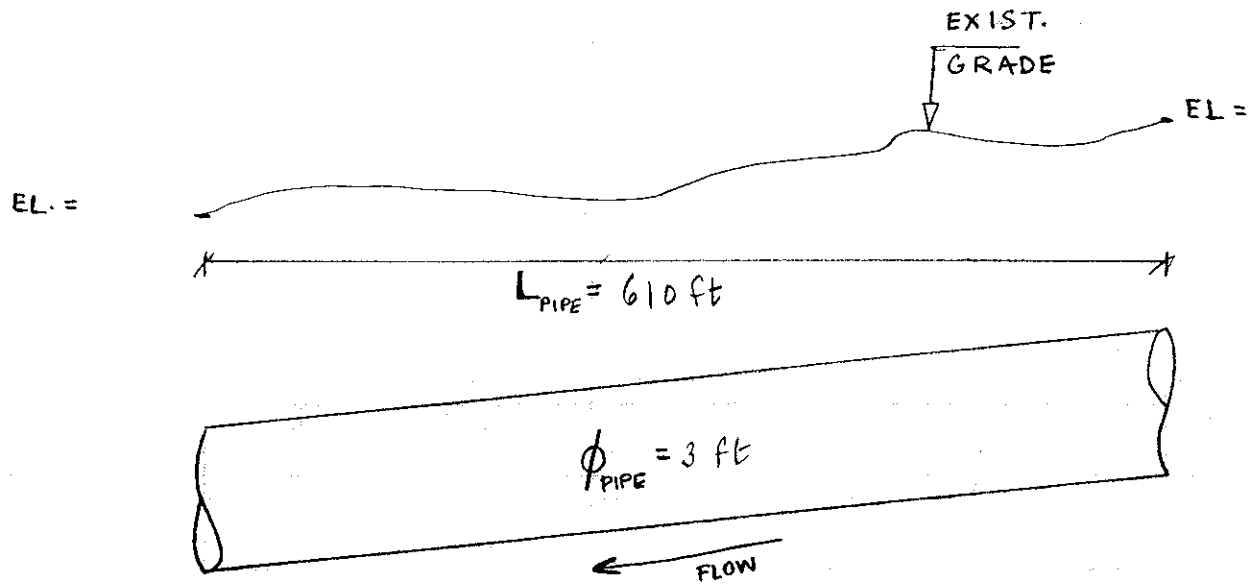
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 34-36

CHAPPARAL ROAD



SLOPE = 0.0010 ft/ft

SEGMENT : 8

PIPE # : 1

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SHEET 2 OF 5

BY SR DATE 02/05/02

CHECK PAW DATE 4/17/02

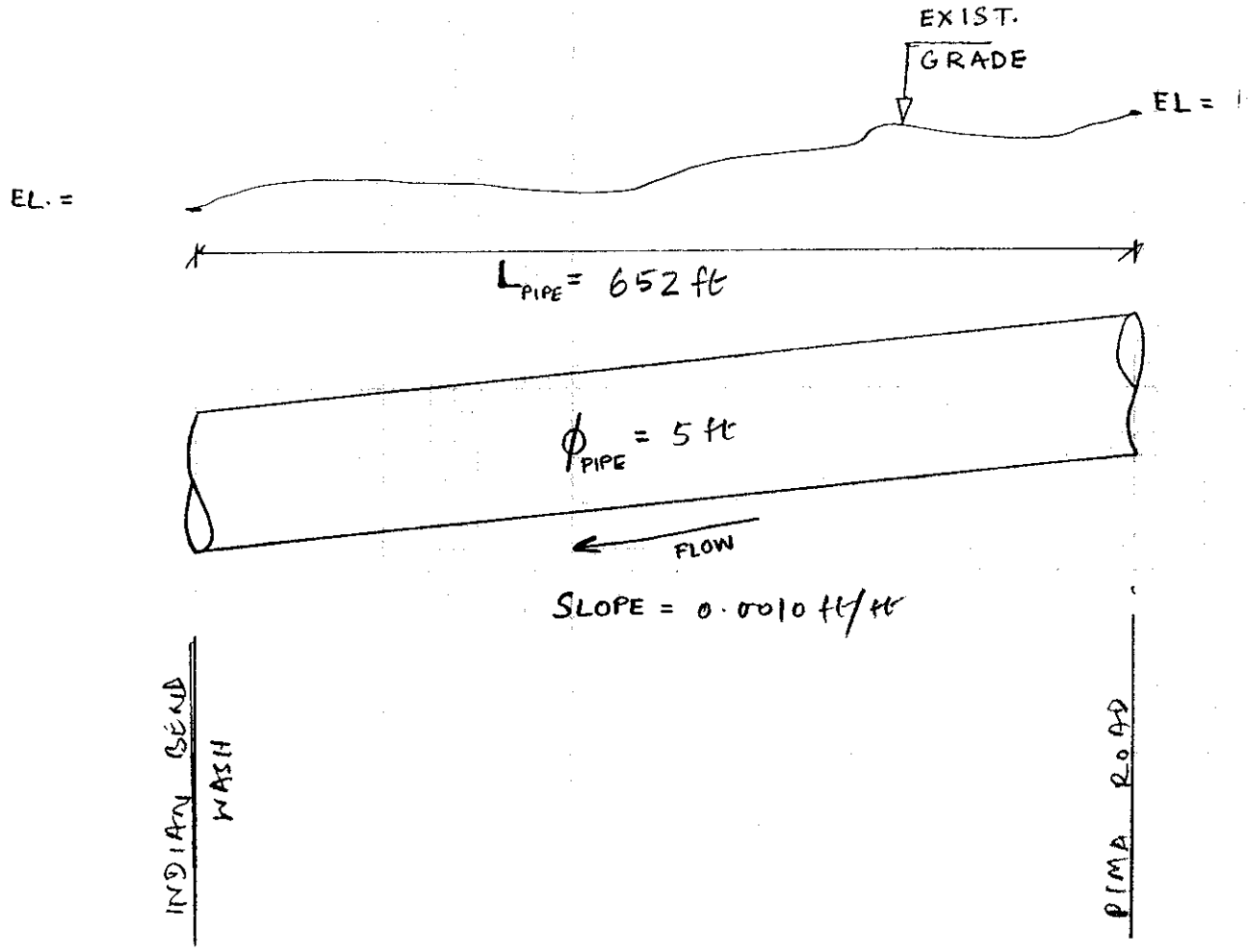
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 33-60

CHAPPARAL ROAD



SEGMENT : 8

PIPE # : 2

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SHEET 3 OF 5

BY SR DATE 02/05/02

CHECK PAW DATE 4/17/02

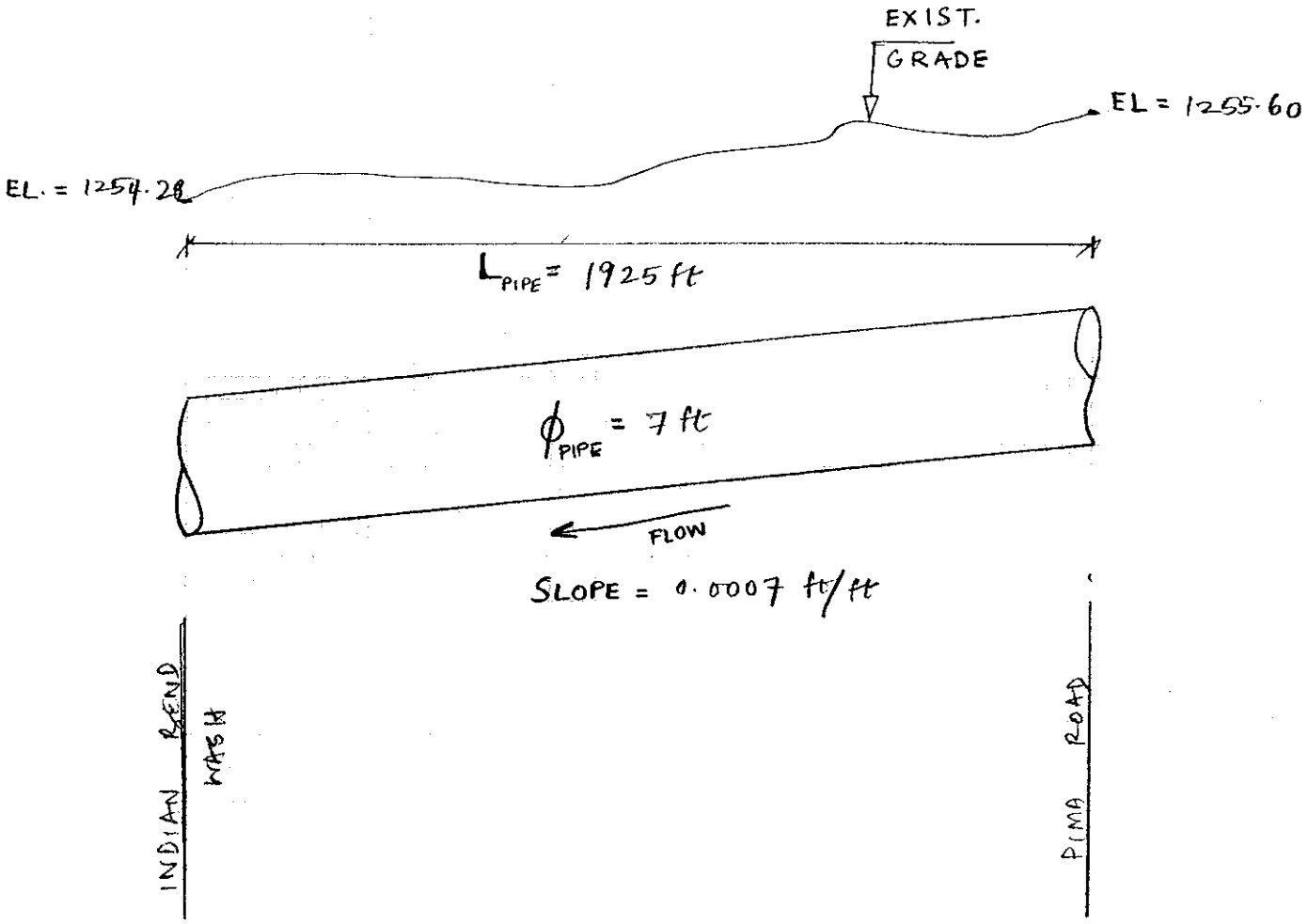
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 32-84

CHAPPARAL RD.,



SEGMENT : 8

PIPE # : 3

Entellus™

SHEET 4 OF 5

BY SR DATE 02/05/02

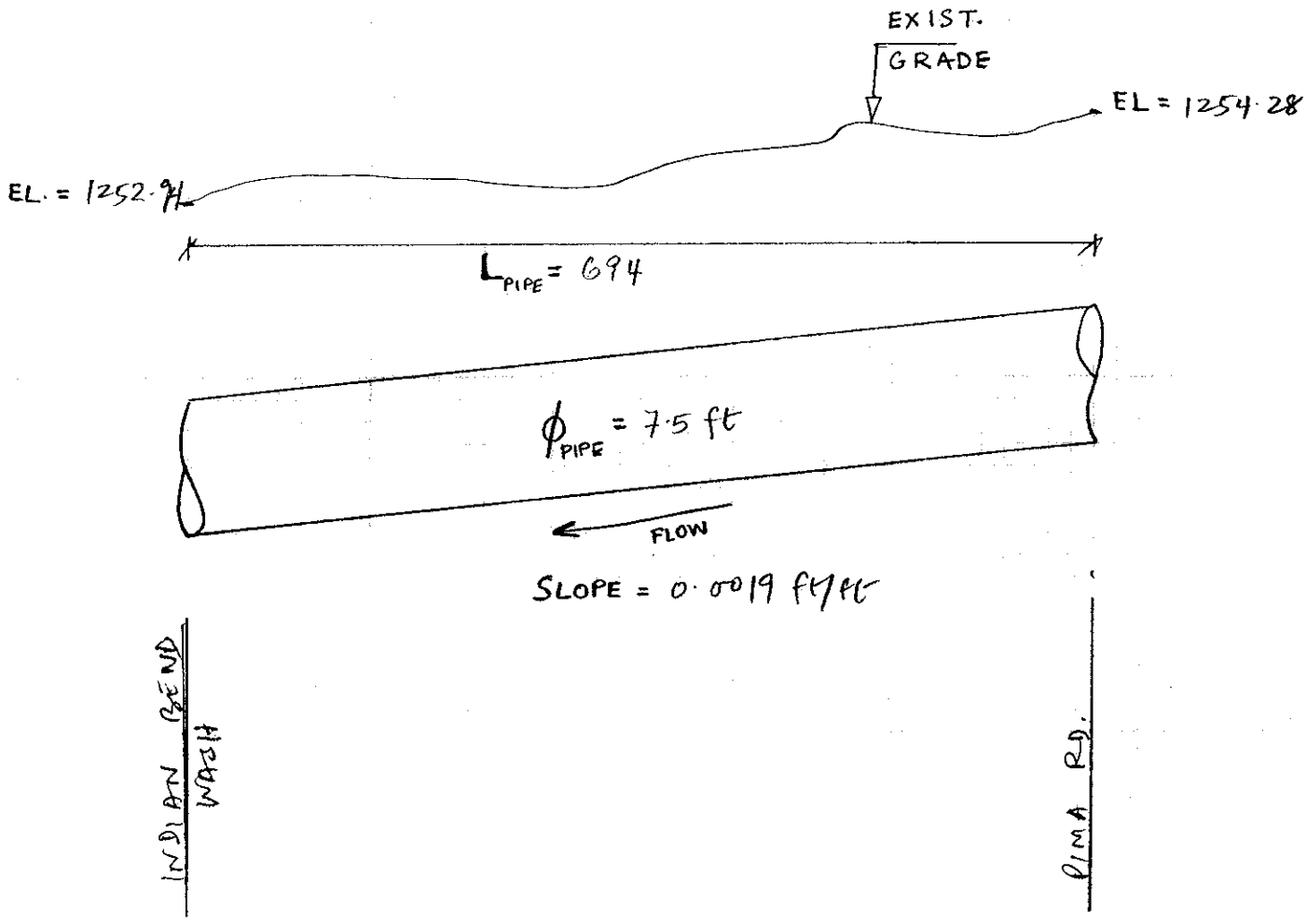
CHECK PAW DATE 4/17/02

CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH JOB NO. 310.021

PIPE I.D. = 31-90

@ HAPPARAL ROAD



SEGMENT : 8

PIPE # : 4

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SHEET 5 OF 5

BY SR DATE 02/05/02

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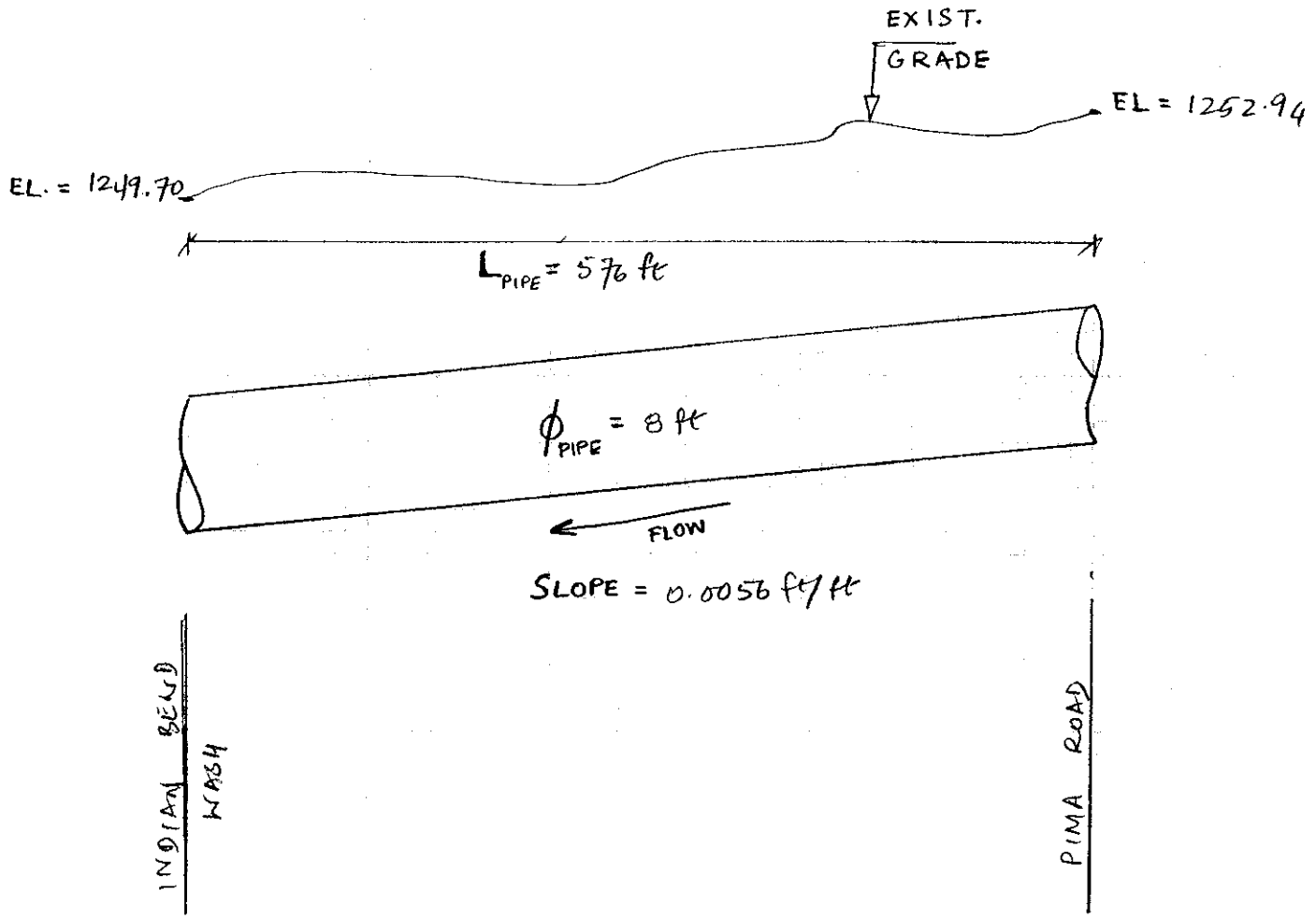
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 30-96

CHAPPARAL ROAD



SEGMENT : 8

PIPE # : 5

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ATTACHMENT- 4.9

SHEET 1 OF 1

BY SR DATE 02/05/02

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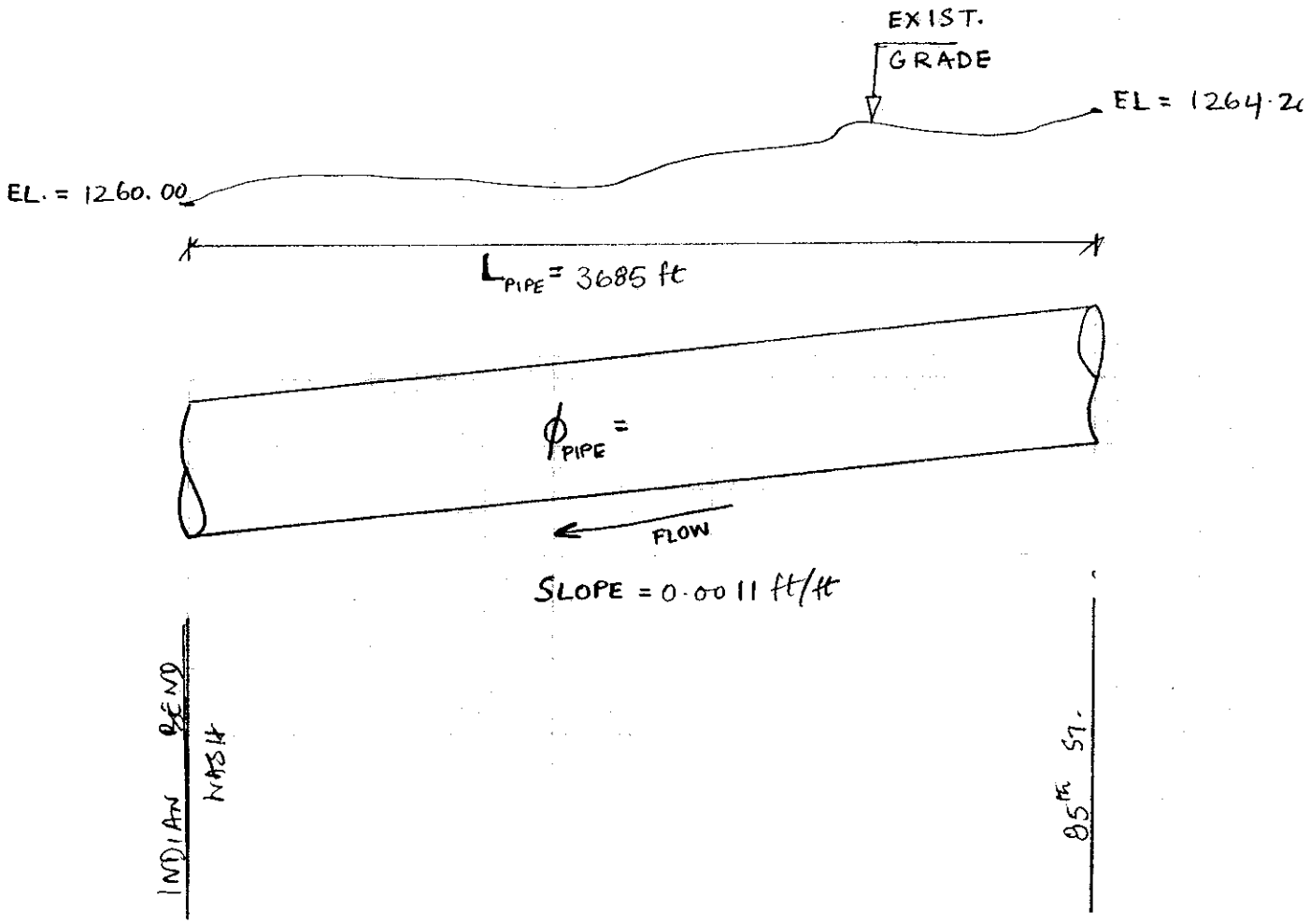
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 55 –

JACK RABBIT ROAD



SEGMENT : 9

PIPE # : 1

ATTACHMENT - 4.10

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SHEET 1 OF 1

BY SR DATE 02/05/02

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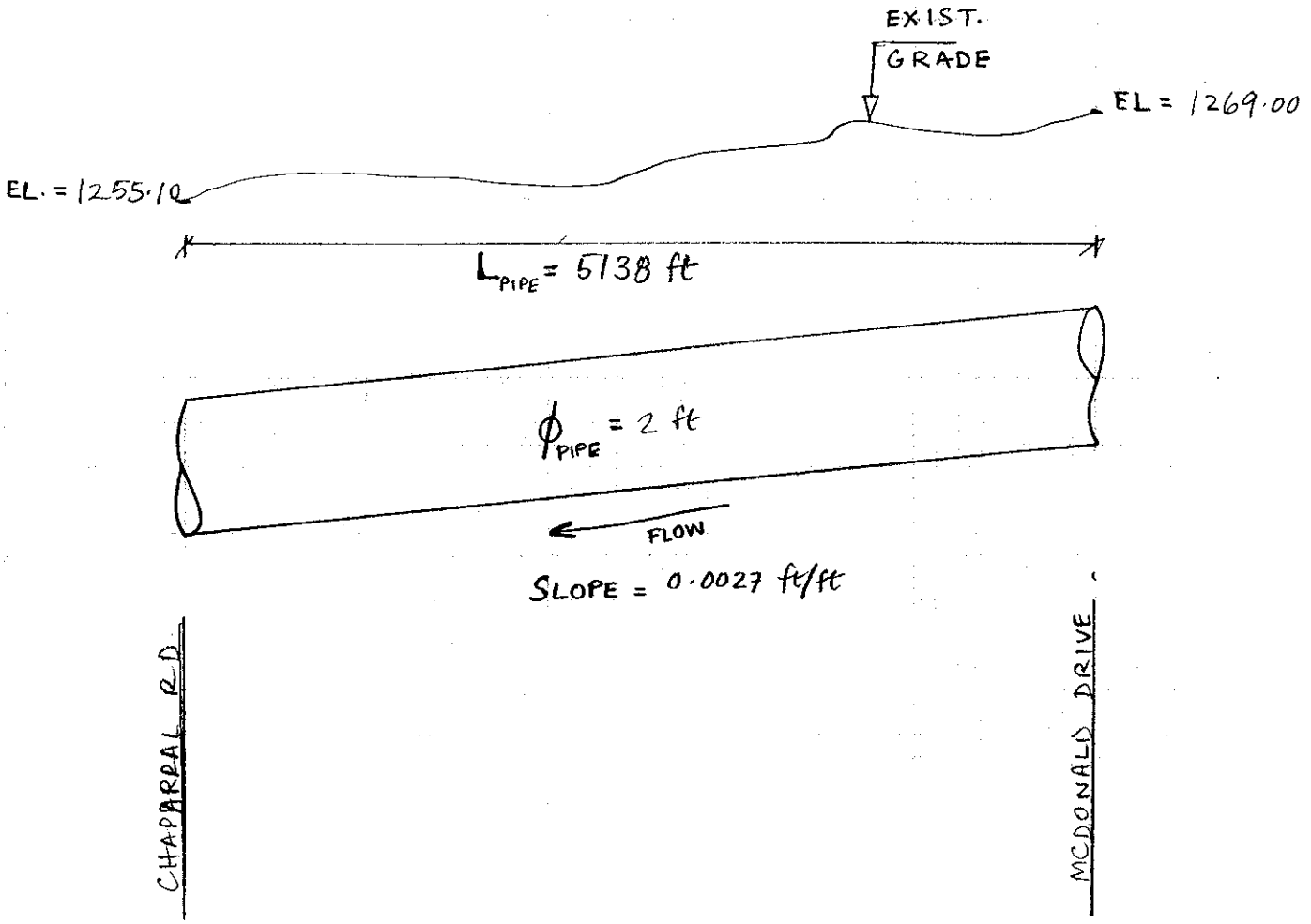
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE ID : 46-24

PIMA ROAD



SEGMENT : 10

PIPE # : 1

ATTACHMENT - 4.11

Entellus™

SHEET 1 OF 2

BY SR DATE 02/05/02

CHECK PAW DATE 4/17/02

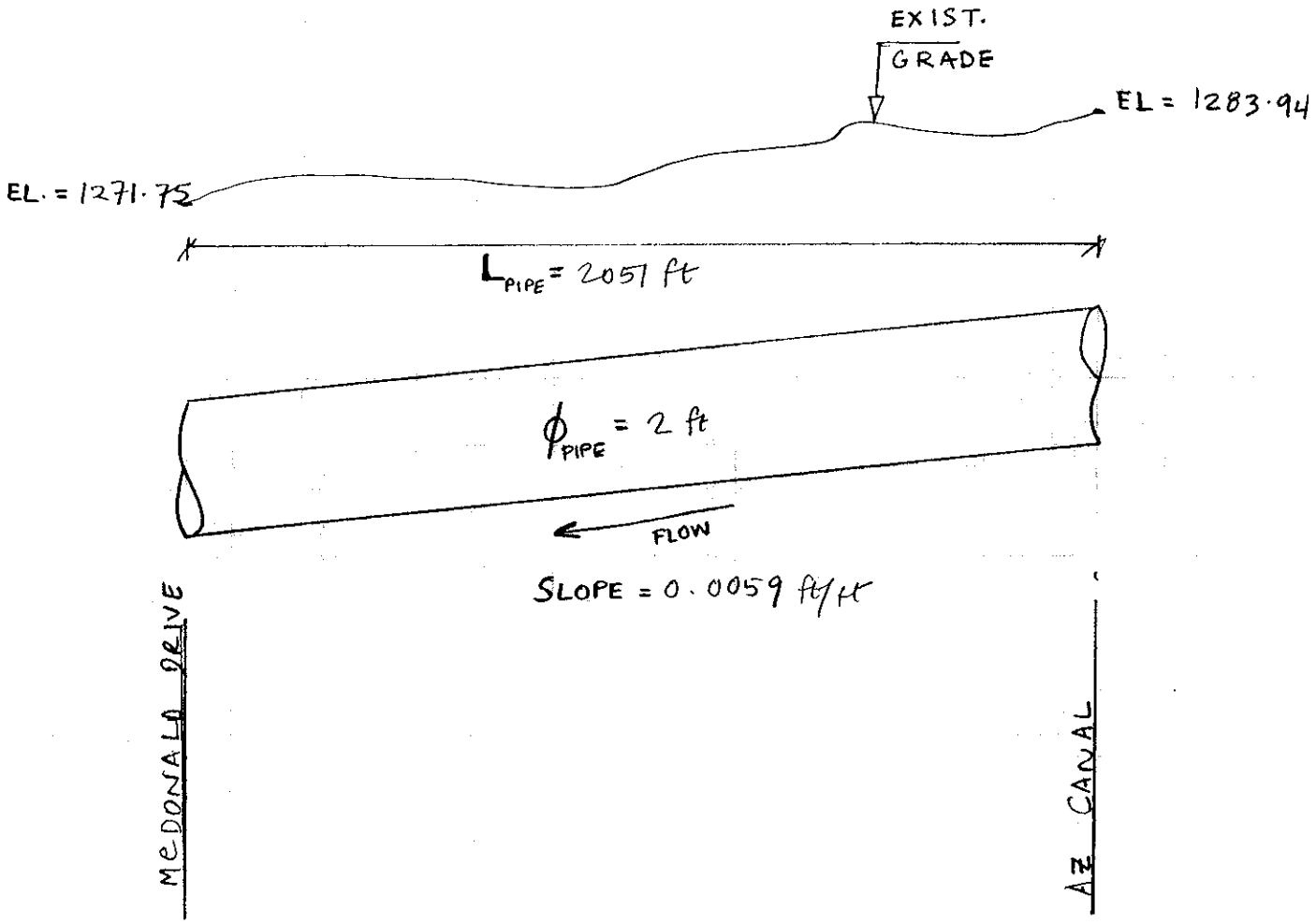
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. : 53-24

PIMA ROAD



SEGMENT : 11

PIPE # : 1

Entellus™

SHEET 2 OF 2

BY SR DATE 02/05/02

CHECK PAW DATE 4/17/02

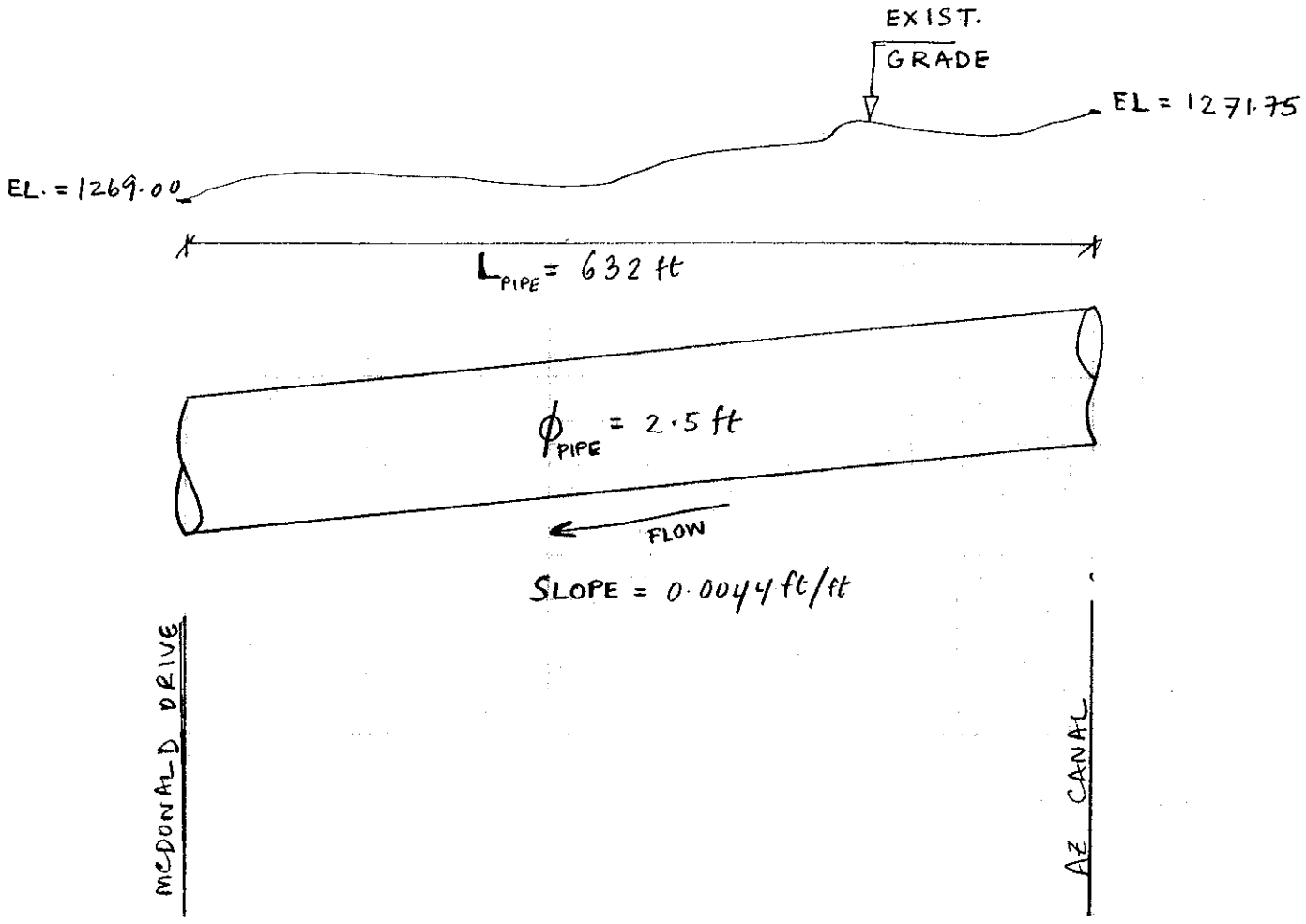
CLIENT FCD of MARICOPA COUNTY

JOB NAME GRANITE REEF WASH

JOB NO. 310.021

PIPE I.D. = 52-30

PIMA ROAD



SEGMENT : 11

PIPE # : 2

APPENDIX F 100-year, 6-hour future conditions HEC-1 SUMMARY

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY   1991                *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*    RUN DATE  04/30/02  TIME  10:05:11 *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

```
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   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
    2         ID   ********************************************************************************
    3         ID   **                                                                            **
    4         ID   **                      Granite Reef ADMP                                     **
    5         ID   **                                                                            **
    6         ID   ********************************************************************************
    7         ID   ********************************************************************************
    8         ID   PROJECT:                 Granite Reef DMP
    9         ID   CLIENT:                  Flood Control District of Maricopa County
   10         ID   PREPARED BY:             Entellus, Inc.
   11         ID   PROJECT No:              FCD              Entellus 310.021
   12         ID   FILE NAME: FUT-6.DAT                   CREATED DATE: Mar 28, 2002
   13         ID   MODIFIED:
   14         ID   STORM:                   100-year 6-hour Storm
   15         ID   DEVELOPMENT CONDITIONS: Existing Conditions
   16         ID
   17         ID
   18         ID
   19         ID
   20         ID   DDM MCUHP1
              *
              *
   21         ID
   22         IT       5                    1000
   23         IO       5
              *
              *DIAGRAM
              *
   24         IN      15
   25         JD    3.20     0.01
   26         PC   0.000    0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   27         PC   0.087    0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   28         PC   0.962    0.972   0.983   0.991   1.000
   29         JD   3.179     0.50
   30         JD   3.120     2.80
   31         PC   0.000    0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
   32         PC   0.087    0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
   33         PC   0.950    0.963   0.975   0.988   1.000
   34         JD   2.950     16.0
   35         PC   0.000    0.009   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
   36         PC   0.135    0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
   37         PC   0.946    0.960   0.973   0.987   1.000
   38         JD   2.598     90.0
   39         PC   0.000    0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
   40         PC   0.179    0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
   41         PC   0.927    0.945   0.964   0.982   1.000
   42         JD   1.824    500.0
   43         PC   0.000    0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
   44         PC   0.212    0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
   45         PC   0.907    0.930   0.954   0.977   1.000
```

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

   46 KK     G03   BASIN
   47 BA   0.093
   48 LG    0.23    0.25    5.60    0.26      55
   49 UC   0.367   0.275
   50 UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   51 UA     100
      *
      *
      * *** DIVERSION DG03 ***********************************************************
      *
      * See Diversion Calculation in Appendix D of Hydrology Report.
      *
      * DDM   ***** Preserved *****

   52 KK    DG03
   53 DT   DG03I
   54 DI       0       7      22      43      70     101     124     180     217     264
   55 DQ       0     3.5      11      22      35      51      63      92     112     137
      *
      *
      * Route is a Minor Arterial Road with a median.
      *

   56 KK   RG03S
   57 RS       1    FLOW       0
   58 RC    .035   0.015    .035    1322  0.0024
   59 RX       0       1      40      41     105     106     146     147
   60 RY       8       2       1      .5      .5       1       2       8
      *

   61 KK     G01   BASIN
   62 BA   0.049
   63 LG    0.21    0.25    4.80    0.38      57
   64 UC   0.588   0.598
   65 UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   66 UA     100
      *
      *
      *
      * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG03.
      * THE HARD-CODE VALUE IS 50% OF CG03'S CONTRIBUTING AREA.
      * SEE DIVERSION DG03.
      *
      * DDM   ***** Preserved *****

   67 KK    CG01
   68 HC       2   0.096
      *
      *
      * *** DIVERSION DG01 ***********************************************************
      *
      * See Diversion Calculation in Appendix D of Hydrology Report.
      *
      * DDM   ***** Preserved *****
```



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

   69 KK    DG01
   70 DT   DG01I
   71 DI       0      10      29      57      92     134     144     194     233     278
   72 DQ       0       7      21      41      66      96     103     139     166     198
      *
      *
      * Route is a Minor Arterial Road.
      *

   73 KK   RG01S
   74 RS      16    FLOW       0
   75 RC   0.035   0.015   0.035    2625  0.0014
   76 RX       0       1      40      41     105     106     146     147
   77 RY       8       2       1      .5      .5       1       2       8
      *
```

```
   78          KK     F04   BASIN
   79          KM
   80          KM    This basin's original area was 0.073 sq mi.  The infield area is bermed
   81          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
   82          KM    from the subbasin calculations to account for the storage.
   83          KM
   84          BA   0.060
   85          LG    0.15    0.25    4.80    0.42      68
   86          UC   0.567   0.659
   87          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   88          UA     100
               *
               *

   89          KK     G04   BASIN
   90          BA   0.045
   91          LG    0.25    0.25    4.80    0.35      51
   92          UC   0.296   0.261
   93          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   94          UA     100
               *
               *
               * Route is a Subdivision Road.
               *

   95          KK    RG04
   96          RS       4    FLOW       0
   97          RC    .035   0.015   0.035    1336  0.0033
   98          RX       0       1      28      29      57      58      86      87
   99          RY       8       2       1     0.5     0.5       1       2       8
               *

  100          KK     G05   BASIN
  101          BA   0.045
  102          LG    0.24    0.15    7.00    0.14      53
  103          UC   0.317   0.283
  104          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  105          UA     100
               *
               *
               * Route is a Subdivision Road.
               *
1                                      HEC-1 INPUT                                          PAGE
4

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

  106          KK    RG05
  107          RS       7    FLOW       0
  108          RC   0.035   0.015   0.035    1994  0.0026
  109          RX       0       1      28      29      57      58      86      87
  110          RY       8       2       1     0.5     0.5       1       2       8
               *

  111          KK     G06   BASIN
  112          BA   0.127
  113          LG    0.10    0.35    2.65    1.70      80
  114          UC   0.254   0.140
  115          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  116          UA     100
               *
               *
               *
               * *** STORAGE ROUTING LG06 *********************************************
               *
               * See the detention calculations in the Appendix.
               * DDM   ***** Preserved *****

  117          KK    LG06
  118          DT   LG06D     8.0
  119          DI       0     100    1000   10000
  120          DQ       0     100    1000   10000
               *
               *
               * *** DIVERSION DG06 ****************************************************
               *
               * THIS DIVESION IS DUE TO THE DETENTION BASIN.
               * See Diversion Calculation in Appendix D of Hydrology Report.
               * DDM   ***** Preserved *****
```

```
 121          KK    DG06
 122          DT   DG06I
 123          DI       0      50     100     200     300     500     700     900    1000
 124          DQ       0      25      49      75     132     195     230     259     287
              *
              *
              * *** STORAGE ROUTING LG06A ***********************************************
              * THE STORAGE CALCULATIONS CAN BE FOUND IN THE APPENDIX.
              *
              * DDM   ***** Preserved *****

 125          KK   LG06A
 126          DT  LG06AD    4.25
 127          DI       0     100    1000   10000
 128          DQ       0     100    1000   10000
              *
              *
1                                      HEC-1 INPUT                                    PAGE
5

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

 129          KK     G02   BASIN
 130          BA   0.075
 131          LG    0.21    0.25    4.80    0.38      52
 132          UC   0.592   0.517
 133          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 134          UA     100
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG06.
              * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
              * SEE DIVERSION DG06.
              *
              * DDM   ***** Preserved *****

 135          KK    CG02
 136          HC       4   0.229
              *
              *
              * Route is a Minor Arterial Road.
              *

 137          KK    RG02
 138          RS       4    FLOW       0
 139          RC   0.035   0.015   0.035    1358  0.0018
 140          RX       0       1      26      27      62      63      88      89
 141          RY       8       2       1     0.5     0.5       1       2       8
              *

 142          KK     F06   BASIN
 143          BA   0.103
 144          LG    0.23    0.25    4.80    0.36      49
 145          UC   0.604   0.427
 146          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 147          UA     100
              *
              *
              * DDM   ***** Preserved *****

 148          KK    CF06
 149          HC       2
              *
              *
              * Route is a Minor Arterial Road.
              *

 150          KK    RF06
 151          RS       3    FLOW       0
 152          RC   0.035   0.015   0.035    1299   0.002
 153          RX       0       1      26      27      62      63      88      89
 154          RY       8       2       1     0.5     0.5       1       2       8
              *
1                                      HEC-1 INPUT                                    PAGE
6

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

 155          KK     F05   BASIN
```

```
156           BA   0.088
157           LG    0.24    0.25    4.80    0.36      52
158           UC   0.554   0.401
159           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
160           UA     100
              *
              * DDM   ***** Preserved *****

161           KK    CF05
162           HC       2
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
              * ALL EXCESS OVERLAND AMOUNT FLOWS SOUTH.
              *
              *
              * STORM DRAIN ANALYSIS SHOWS A CAPACITY OF 185 CFS, 1/3 IS INTERCEPTED AT
              * THIS LOCATION.(61 cfs) 20% Clogging Factor means 49 cfs here.
              * (61 x .8 = 49cfs)
              *
              * *** DIVERSION DF05 ***********************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****

163           KK    DF05
164           DT   DF05I
165           DI       0       1      50     100     200     300     400     500    1000    2000
166           DQ       0      .9      10      51     151     251     351     451     951    1951
              *
              *
              * THE INFORMATION FOR THE STORM DRAIN WAS MEASURED IN THE FIELD.
              * THE PIPE IS A 66" RCP, SLOPE WAS ESTIMATED TO BE 0.004 FT/FT.
              *

167           KK   RF05W
168           KO       3
169           RK    1302   0.001    0.02            CIRC       3
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05 & DG01.
              * THE HARD-CODE VALUE IS 80% OF CG01 AND 10% OF CF05'S CONTRIBUTING AREA.
              * SEE DIVERSION DG01 AND DF05.
              *
              * DDM   ***** Preserved *****

170           KK    CF04
171           HC       3    0.17
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
              *
              *
              * *** DIVERSION DF04 ***********************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                        PAGE
7

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

172           KK    DF04
173           DT   DF04I
174           DI       0       9      30      57      93     136     150     198     336     400
175           DQ       0       5      16      30      50      73      82     105     170     200
              *
              *
              * DIVERSION RECOVER D05
              *

176           KK    F05R
177           DR   DF05I
              *
              * Route is a Minor Arterial Road.
              *

178           KK   RF05S
179           RS       4    FLOW       0
180           RC   0.035   0.015   0.035    2167  0.0032
```

```
181          RX       0       1      26      27      62      63      88      89
182          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             *

183          KK     F03   BASIN
184          BA   0.170
185          LG    0.21    0.25    4.80    0.37      58
186          UC   0.683   0.445
187          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
188          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05.
             * THE HARD-CODE VALUE IS 90% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DF05.
             *
             * DDM   ***** Preserved *****

189          KK    CF03
190          HC       2   0.556
             *
             *
             * Route is a Minor Arterial Road.
             * Normal Depth Routing did not work for this Route.
             *

191          KK    RF03
192          RD
193          RC   0.035   0.015   0.035     482  0.0035
194          RX       0       1      26      27      62      63      88      89
195          RY       8       3       2       0       0       2       3       8
             *
             *
             *
             * DIVERSION RECOVER G06
             *
```



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

196          KK    G06R
197          DR   DG06I
             *
             *
             * Route is a Minor Arterial Road along Pima Road.
             *
             *

198          KK   RG06S
199          RS      18    FLOW       0
200          RC   0.035   0.015   0.035    5286  0.0028
201          RX       0       1      26      27      62      63      88      89
202          RY       8       3       2       0       0       2       3       8
             *

203          KK     F07   BASIN
204          BA   0.250
205          LG    0.10    0.29    2.65    1.70      80
206          UC   0.538   0.415
207          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
208          UA     100
             *
             *
             * *** STORAGE ROUTING LF07 ***********************************************
             *
             * See the detention calculations in the Appendix.
             * DDM   ***** Preserved *****

209          KK    LF07
210          DT   LF07D    15.2
211          DI       0     100    1000   10000
212          DQ       0     100    1000   10000
             *
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DG06.
             * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
```

```
                * SEE DIVERSION DG06.
                *
                * DDM   ***** Preserved *****

      213       KK    CF07
      214       HC       2   0.314
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANAYLSIS SHOWS THE MAXIMUM FLOW IN THE STORM DRAIN AT THIS
                * LOCATION IS 16 CFS.  20% clogging factor = 13 cfs (16cfs * .8 = 13 cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                *
                * *** DIVERSION DF07 ************************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                             PAGE
9

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

      215       KK    DF07
      216       DT   DF07I
      217       DI       0       1      16     100     200     400     600     800    1000    2000
      218       DQ       0       0       0      87     187     387     587     787     987    1987
                *
                *
                * Route is a Storm Drain 36" RCP with a Slope of 0.001 ft/ft
                *
                *

      219       KK   RF07W
      220       KO       3
      221       RD    1315   0.001   0.013            CIRC       3
                *
                *

      222       KK     F02   BASIN
      223       BA   0.046
      224       LG    0.23    0.25    4.80    0.36      55
      225       UC   0.521   0.538
      226       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      227       UA     100
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF07.
                * THE HARD-CODE VALUE IS 10% OF CF07'S CONTRIBUTING AREA.
                * SEE DIVERSION DF07.
                *
                * DDM   ***** Preserved *****

      228       KK    CF02
      229       HC       3    .627
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THIS STORM DRAIN
                * AT THIS LOCATION IS 63 CFS AND 16 CFS IS IN THE STORMDRAIN FROM THE EAST.
                * 20% clogging factor means 50 cfs (63cfs * 0.8 = 50cfs).
                *
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DF02 ************************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****

      230       KK    DF02
      231       DT   DF02I
      232       DI       0       1      50     100     200     300     400     500    1000    2000
      233       DQ       0       1      10      50     150     250     350     450     950    1950
                *
                *
                *
                * ROUTE IS A 5FT RCP STORM DRAIN WITH A SLOPE OF 0.001 FT/FT
                *
1                                       HEC-1 INPUT                                             PAGE
10
```

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

 234          KK   RF02W
 235          KO      3
 236          RK    1310   0.001    0.02            CIRC       5
              *
              *
              * DIVERSION RECOVER F04
              *

 237          KK    F04R
 238          DR   DF04I
              *
              *
              * Route is a Minor Arterial Road.
              *
              *

 239          KK   RF04S
 240          RS      11    FLOW       0
 241          RC   0.035   0.013   0.035    2652  0.0023
 242          RX       0       1      26      27      62      63      88      89
 243          RY       8       3       2       0       0       2       3       8
              *
              *
              * THE WEST SIDE OF THE ROAD IS DIVERTED WEST AND THE EAST SIDE OF THE ROAD
              * FLOWS SOUTH INTO CF01.  THE TOTAL FLOW DOES NOT EXCEED THE CROWN OF THE ROAD
              * SO THE SPLIT IS 50-50.
              *
              * *** DIVERSION DRF04 ************************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****

 244          KK   DRF04
 245          DT  DRF04I
 246          DI       0       1      20      50     100     200     300
 247          DQ       0      .5      10      25      50     100     150
              *

 248          KK     F01   BASIN
 249          BA   0.030
 250          LG    0.22    0.25    4.80    0.39      53
 251          UC   0.467   0.490
 252          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 253          UA     100
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF04 & DF02.
              * THE HARD-CODE VALUE IS 25% OF CF04 AND 10% OF CF02'S CONTRIBUTING AREA.
              * SEE DIVERSION DF04 AND DF02.
              *
              * DDM   ***** Preserved *****
1                                     HEC-1 INPUT                                          PAGE
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 254          KK    CF01
 255          HC       3    .101
              *
              *
              * THE DIVERSION AT THIS LOCATION IS SOUTH (SEE SPLITFLOW ANALYSIS)
              *
              *
              * *** DIVERSION DF01 ************************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****

 256          KK    DF01
 257          DT   DF01I
 258          DI       0       7      21      42      75     111     139     188     254     335
 259          DQ       0       0       0       0       0       0       6      18      35      57
              *
              *
              * DIVERSION RECOVER DF02
```

```
                *
          260   KK   DRF02
          261   DR   DF02I
                *
                *
                * Route is a Minor Arterial Road.
                *
          262   KK   RF02S
          263   RS       3    FLOW       0
          264   RC   0.035   0.015   0.035    1338  0.0022
          265   RX       0       1      26      27      62      63      88      89
          266   RY       8       2       1     0.5     0.5       1       2       8
                *
                *
          267   KK     E07   BASIN
          268   BA   0.084
          269   LG    0.25    0.25    4.80    0.36      49
          270   UC   0.442   0.305
          271   UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
          272   UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF02.
                * THE HARD-CODE VALUE IS 90% OF CF02'S CONTRIBUTING AREA.
                * SEE DIVERSION DF02.
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE
12

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

          273   KK    CE07
          274   HC       2    .661
                *
                *
                * Route is a Minor Arterial Road.
                *
          275   KK    RE07
          276   RS       1    FLOW       0
          277   RC   0.035   0.015   0.035    1335  0.0025
          278   RX       0       1      26      27      62      63      88      89
          279   RY       8       2       1     0.5     0.5       1       2       8
                *
          280   KK     E05   BASIN
          281   KM
          282   KM    This basin's original area was 0.060 sq mi.  The infield area is bermed
          283   KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
          284   KM    from the subbasin calculations to account for the storage.
          285   KM
          286   BA   0.047
          287   LG    0.21    0.25    4.80    0.37      57
          288   UC   0.375   0.292
          289   UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
          290   UA     100
                *
                * DDM   ***** Preserved *****

          291   KK    CE05
          292   HC       2
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 92 CFS.
                * THE TOTAL FLOW WAS DIVIDED BY E05, E04, AND THE BASIN WEST OF THE PROJECT
                * AREA, SO 31 CFS AT THIS LOCATION.
                * 20% clogging factor means 25cfs at this location (31cfs * 0.8 = 25cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DE05 ***********************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****
```

```
 293          KK    DE05
 294          DT   DE05I
 295          DI       0       1      50     100     200     300     400     500    1000    2000
 296          DQ       0       1      25      75     175     275     375     475     975    1975
              *
              *
              *
              * ROUTE IS A 5FT RCP WITH A SLOPE OF 0.0021 FT/FT.
              *
1                                        HEC-1 INPUT                                        PAGE
13

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

 297          KK   RE05W
 298          RK    1490  0.0021    0.02            CIRC       5
              *
 299          KK     E04   BASIN
 300          BA   0.038
 301          LG    0.22    0.25    4.80    0.39      47
 302          UC   0.621   0.655
 303          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 304          UA     100
              *
              *
              *
              * *** STORAGE ROUTING LE04 ***********************************************
              *
              * DDM   ***** Preserved *****

 305          KK    LE04
 306          DT   LE04D     1.5
 307          DI       0     100    1000   10000
 308          DQ       0     100    1000   10000
              *
              * DIVERSION RECOVER DF01
              *

 309          KK  DRF01I
 310          DR   DF01I
              *
              *
              *
              * Route is a Minor Arterial Road.
              *

 311          KK   RF01S
 312          RS      24    FLOW       0
 313          RC   0.035   0.015   0.035    2619  0.0031
 314          RX       0       1      26      27      62      63      88      89
 315          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF01 & DE05.
              * THE HARD-CODE VALUE IS 5% OF CF01 AND 5% OF CE05'S CONTRIBUTING AREA.
              * SEE DIVERSION DF01 AND DE05.
              *
              * DDM   ***** Preserved *****

 316          KK    CE04
 317          HC       3   0.071
              *
              *
              * THERE IS A DIVERSION SOUTH (SEE SPLITFLOW CALCULATIONS)
              *
              * *** DIVERSION DE04 *****************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                        PAGE
14

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

 318          KK    DE04
 319          DT   DE04I
 320          DI       0       3      31      59      91     126     151     184     222     267
```

```
321          DQ       0       0       0       0       0       0       3       9      18      30
             *
             *
             * DDM   ***** Preserved *****

322          KK   DUMMY
323          HC       3
             *

324          KK     E08   BASIN
325          BA   0.031
326          LG    0.24    0.25    4.80    0.35      51
327          UC   0.488   0.531
328          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
329          UA     100
             *
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *

330          KK    RE08
331          RS       5    FLOW       0
332          RC   0.035   0.015   0.035    1326  0.0029
333          RX       0       1      19      25      30      49      79      80
334          RY      10     1.5       0       0       0       0     1.5       8
             *

335          KK     E06   BASIN
336          BA   0.036
337          LG    0.24    0.25    4.80    0.36      53
338          UC   0.500   0.548
339          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
340          UA     100
             *
             * DDM   ***** Preserved *****

341          KK    CE06
342          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *

343          KK    RE06
344          RS      13    FLOW       0
345          RC   0.035   0.015   0.035    3333  0.0014
346          RX       0       1      19      25      30      49      79      80
347          RY      10     1.5       0       0       0       0     1.5       8
             *
1                                        HEC-1 INPUT                                    PAGE
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

348          KK     E03   BASIN
349          BA   0.070
350          LG    0.23    0.25    4.80    0.36      53
351          UC   0.917   1.373
352          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
353          UA     100
             *
             *
             * DIVERSION RECALL DF07
             *

354          KK   DRF07
355          DR   DF07I
             *
             * Route is a minor arterial along Pima Rd.
             *

356          KK   RF07S
357          RS       7    FLOW       0
358          RC   0.035   0.015   0.035    5280  0.0023
359          RX       0       1      40      41     104     105     145     146
360          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
```

```
                *
      361       KK     E09   BASIN
      362       BA   0.223
      363       LG    0.10    0.29    2.65    1.70      80
      364       UC   0.546   0.446
      365       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      366       UA     100
                *
                *
                * *** STORAGE ROUTING LE09 *********************************************
                *
                * See the detention calculations in the Appendix.
                * DDM   ***** Preserved *****

      367       KK    LE09
      368       DT   LE09D    13.6
      369       DI       0     100    1000   10000
      370       DQ       0     100    1000   10000
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF07.
                * THE HARD-CODE VALUE IS 90% OF CF07'S CONTRIBUTING AREA.
                * SEE DIVERSION DF07.
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                          PAGE
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     LINE       ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


      371       KK    CE09
      372       HC       2    .511
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
                * BASIN EAST OF THE PROJECT AREA, WHICH IS 19 CFS AT THIS LOCATION.
                *
                * 20% clogging factor means 15cfs, (19cfs * 0.8 = 15cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH AT THIS DIVERSION LOCATION.
                *
                * *** DIVERSION DE09 *****************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****

      373       KK    DE09
      374       DT   DE09I
      375       DI       0       1      50     100     200     300     400     500    1000    2000
      376       DQ       0       1      35      85     185     285     385     485     985    1985
                *
                *
                *
                * ROUTE IS A 6FT RCP WITH A SLOPE OF 0.0009 FT/FT.
                *
                *

      377       KK   RE09W
      378       KO       3
      379       RK     779  0.0009   0.013            CIRC       6
                *
                *
                *
                * DIVERSION RECOVER DE05
                *

      380       KK  DRE05I
      381       DR   DE05I
                *
                *
                * Route is a Minor Arterial Road.
                *

      382       KK   RE05S
      383       RS       6    FLOW       0
      384       RC   0.035   0.015   0.035    3053  0.0021
      385       RX       0       1      26      27      62      63      88      89
```

```
386          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE05 & DE09.
             * THE HARD-CODE VALUE IS 95% OF CE05 AND 10% OF CE09'S CONTRIBUTING AREA.
             * SEE DIVERSION DE05 AND DE09.
             *
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                        PAGE
17

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


387          KK    CE03
388          HC       4    .858
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
             * BASIN EAST OF THE PROJECT AREA, WHICH IS 38cfs AT THIS LOCATION.
             *
             * 20% clogging factor means that 31cfs (38.4 cfs * 0.8 = 31cfs)
             * ALL OVERLAND FLOWS CONTINUE SOUTH.
             *
             * *** DIVERSION DE03 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****

389          KK    DE03
390          DT   DE03I
391          DI       0       1      50     100     200     300     400     500    1000    2000
392          DQ       0       1      19      69     169     269     369     469     969    1969
             *
             *
             *
             * ROUTE IS A 6FT RCP WITH A SLOPE OF 0.0009 FT/FT.
             *

393          KK   RE03W
394          RK    1504  0.0009    0.02            CIRC       6
             *

395          KK     E02   BASIN
396          BA   0.149
397          LG    0.24    0.25    4.80    0.37      50
398          UC   0.683   0.539
399          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
400          UA     100
             *
             * THE CONTRIBUTING AREA IS HARD-CODED DUE TO DIVERSION DE03.
             * THE HARD-CODE VALUE IS 5% OF CE03'S CONTRIBUTING AREA.
             * SEE DIVERSION DE03.
             *
             * DDM   ***** Preserved *****

401          KK    CE02
402          HC       2    .183
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
             * BASIN EAST OF THE PROJECT AREA, 58cfs AT THIS LOCATION.
             *
             * 20% clogging factor means 46cfs (58cfs * 0.8 = 46cfs).
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             *
             * *** DIVERSION DE02 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                        PAGE
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```

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

 403          KK    DE02
 404          DT   DE02I
 405          DI       0       1      50     100     200     300     400     500    1000    2000
 406          DQ       0       1      20      60     154     254     354     454     954    1954
              *
              *
              *
              * ROUTE IS A 6FT RCP WITH A SLOPE OF 0.0009 FT/FT.
              *

 407          KK   RE02W
 408          KO       3
 409          RD     355  0.0009    0.02            CIRC       6
              *

 410          KK     E01   BASIN
 411          BA   0.058
 412          LG    0.20    0.25    4.80    0.38      60
 413          UC   0.492   0.494
 414          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 415          UA     100
              *
              *
              * DIVERSION RECOVER DE04
              *

 416          KK  DRE04I
 417          DR   DE04I
              *
              *
              * Route is a Minor Arterial Road.
              *

 418          KK   RE04S
 419          RS       1    FLOW       0
 420          RC   0.035   0.015   0.035    2636  0.0026
 421          RX       0       1      26      27      62      63      88      89
 422          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE04 & DE02.
              * THE HARD-CODE VALUE IS 100% OF CE04 AND 25% OF CE02'S CONTRIBUTING AREA.
              * SEE DIVERSION DE04 AND DE02.
              *
              * DDM   ***** Preserved *****

 423          KK    CE01
 424          HC       3   .1656
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
              *
              * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
              * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
              * BASIN EAST OF THE PROJECT AREA, 76.8 cfs AT THIS LOCATION.
              *
              * 20% clogging factor means 61cfs (76.8cfs * 0.8 = 61.4 cfs)
              * THIS DIVERSION IS STORMDRAIN ONLY, ALL OVERLAND FLOW IS SOUTH.
              *
              * *** DIVERSION DE01 ***********************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                        PAGE
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 425          KK    DE01
 426          DT   DE01I
 427          DI       0       1      50     100     200     300     400     500    1000    2000
 428          DQ       0       1      20      40     139     239     339     439     939    1939
              *
              * DIVERSION RECALL E01
              *

 429          KK   DRE01
```

```
430          DR   DE01I
             *
             *
             * Route is a Subdivision Road.
             *

431          KK   RE01S
432          RS       9    FLOW       0
433          RC   0.035   0.015   0.035    2567  0.0032
434          RX       0       1      28      29      57      58      86      87
435          RY       8       2       1     0.5     0.5       1       2       8
             *

436          KK     D05   BASIN
437          KM
438          KM    This basin's original area was 0.168 sq mi.  The infield area is bermed
439          KM    so it is self-detained.  The infield area (0.01 sq mi) was subtracted
440          KM    from the subbasin calculations to account for the storage.
441          KM
442          BA   0.158
443          LG    0.23    0.25    4.80    0.38      51
444          UC   0.692   0.540
445          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
446          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE01.
             * THE HARD-CODE VALUE IS 70% OF CE01'S CONTRIBUTING AREA.
             * SEE DIVERSION DE01.
             *
             * DDM   ***** Preserved *****

447          KK    CD05
448          HC       2   0.284
             *
             * *** DIVERSION DD05 ************************************************************
             *
             *  THIS DIVERSION IS AT GRANITE REEF ROAD AND OSBORN ROAD.
             *  THE MAIN PATH IS SOUTH ON GRANITE REEF ROAD.
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****
1                                  HEC-1 INPUT                                          PAGE
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

449          KK    DD05
450          DT   DD05I
451          DI       0       5      16      50      93     112     174     217     270     311
452          DQ       0       2       8      25      47      58      95     121     154     194
             *
             *
             * Route is a Minor Arterial Road.
             *

453          KK   RD05S
454          RS       8    FLOW       0
455          RC   0.035   0.015   0.035    2669  0.0026
456          RX       0       1      26      27      62      63      88      89
457          RY       8       2       1     0.5     0.5       1       2       8
             *

458          KK     D04   BASIN
459          BA   0.060
460          LG    0.23    0.25    4.80    0.36      53
461          UC   0.638   0.762
462          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
463          UA     100
             *
             *
             * Route is a Major Arterial Road.
             *

464          KK    RD04
465          RS       2    FLOW       0
466          RC   0.035   0.015   0.035    1084  0.0018
467          RX       0       1      40      41     104     105     145     146
468          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
```

```
 469          KK     D01   BASIN
 470          BA   0.082
 471          LG    0.24    0.25    4.80    0.36      53
 472          UC   0.667   0.622
 473          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 474          UA     100
              *
              * DDM   ***** Preserved *****

 475          KK    CD01
 476          HC       3   .2556
              *
              *
              *
              * *** DIVERSION DD01 ***********************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                        PAGE
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 LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 477          KK    DD01
 478          DT   DD01I
 479          DI       0       9      28      89     168     259     392     475     568     672
 480          DQ       0       4      13      41      73     104     152     182     217     256
              *
              *
              *
              * Route is a Major Arterial Road.
              *
 481          KK   RD01E
 482          RS       1    FLOW       0
 483          RC   0.035   0.015   0.035    1315  0.0024
 484          RX       0       1      40      41     104     105     145     146
 485          RY       8       3     1.5     .75    0.75     1.5       3       8
              *
              *
              * DIVERSION RECALL D05
              *
 486          KK   DRD05
 487          DR   DD05I
              *
              *
              * Route is a Minor Arterial Road.
              *
              *
 488          KK   RD05E
 489          RS       2    FLOW       0
 490          RC   0.035   0.015   0.035     560  0.0018
 491          RX       0       1      26      27      62      63      88      89
 492          RY       8       3       2       0       0       2       3       8
              *
              * *** DIVERSION DD052   ***************************************************
              *
              *  THIS DIVERSION IS AT GRANITE REEF ROAD AND MULBERRY.
              *  THE MAIN PATH IS SOUTH ON MULBERRY.
              *  SEE APPENDIX D FOR DIVERSION CALCULATIONS.
              *
              * DDM   ***** Preserved *****

 493          KK   DD052
 494          DT  DD052I
 495          DI       0      37      44      59      80     110     147     178     222     281
 496          DQ       0      37      40      47      58      74      95     122     155     195
              *
              *
              * Route is a Subdivision Road. (MULBERRY)
              *
1                                        HEC-1 INPUT                                        PAGE
2

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

```
497          KK  RD05S2
498          RS       1    FLOW       0
499          RC   0.035   0.015   0.035    3035  0.0030
500          RX       0       1      28      29      57      58      86      87
501          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

502          KK     D02   BASIN
503          BA   0.139
504          LG    0.23    0.25    4.80    0.36      51
505          UC   0.592   0.457
506          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
507          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED BECAUSE OF DIVERSION DD01 & DD052.
             * THE HARD-CODE VALUE IS 60% OF CD01 AND 40% OF DD052'S CONTRIBUTING AREA.
             * SEE DIVERSION DD01 AND DD052.
             *
             * DDM   ***** Preserved *****

508          KK    CD02
509          HC       3   0.361
             *
             *
             * Route is a Major Arterial Road.
             *

510          KK    RD02
511          RS       2    FLOW       0
512          RC   0.035   0.015   0.035    1063  0.0045
513          RX       0       1      40      41     104     105     145     146
514          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
             * DIVERSION RECALL E02
             *

515          KK   DRE02
516          DR   DE02I
             *
             *
             * Route is a Subdivision Road.
             *

517          KK   RE02S
518          RS       6    FLOW       0
519          RC   0.035   0.015   0.035    2617  0.0028
520          RX       0       1      28      29      57      58      86      87
521          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * DIVERSION RECALL D052
             *
```



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

522          KK  DRD052
523          DR  DD052I
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

524          KK  RD05E2
525          RS       1    FLOW       0
526          RC   0.035   0.015   0.035     767  0.0013
527          RX       0       1      26      27      62      63      88      89
528          RY       8       3       2       0       0       2       3       8
             *
             *

529          KK     D06   BASIN
530          BA   0.109
531          LG    0.24    0.25    4.80    0.35      52
```

```
532          UC   0.671   0.602
533          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
534          UA     100
             *
             * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE02 & DD052.
             * THE HARD-CODE VALUE IS 80% OF CE02 AND 60% OF DD052'S CONTRIBUTING AREA.
             * SEE DIVERSION DE02 AND DD052.
             *
             * DDM   ***** Preserved *****

535          KK    CD06
536          HC       3   0.358
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

537          KK    RD06
538          RS       1    FLOW       0
539          RC   0.035   0.015   0.035     609  0.0033
540          RX       0       1      26      27      62      63      88      89
541          RY       8       3       2       0       0       2       3       8
             *

542          KK     D07   BASIN
543          BA   0.049
544          LG    0.25    0.25    4.80    0.35      51
545          UC   0.508   0.576
546          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
547          UA     100
             *
             *
             * DDM   ***** Preserved *****
```



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

548          KK    CD07
549          HC       2
             *
             *
             * Route is a Minor Arterial Road.
             *

550          KK    RD07
551          RS       8    FLOW       0
552          RC   0.035   0.015   0.035    3657   0.003
553          RX       0       1      26      27      62      63      88      89
554          RY       8       2       1     0.5     0.5       1       2       8
             *
             * DIVERSION RECALL DE03
             *

555          KK   DRE03
556          DR   DE03I
             *
             *
             *
             * Route is a Subdivision Road.
             *

557          KK   RE03S
558          RS       6    FLOW       0
559          RC   0.035   0.015   0.035    3444  0.0032
560          RX       0       1      28      29      57      58      86      87
561          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

562          KK     D08   BASIN
563          BA   0.054
564          LG    0.24    0.25    4.80    0.36      53
565          UC   0.658   0.955
566          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
567          UA     100
             *
             *
             * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE03.
```

```
                * THE HARD-CODE VALUE IS 95% OF CE03'S CONTRIBUTING AREA.
                * SEE DIVERSION DE03.
                *
                * DDM   ***** Preserved *****

  568           KK    CD08
  569           HC       2   0.877
                *
                *
                * Route is a Minor Arterial Road with a wall on the west side.
                *
1                                       HEC-1 INPUT                                                    PAGE
25

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


  570           KK    RD08
  571           RS       4    FLOW       0
  572           RC   0.035   0.015   0.035    2751  0.0037
  573           RX       0       1      19      25      30      49      79      80
  574           RY      10     1.5       0       0       0       0     1.5       8
                *
                *
                *

  575           KK     D03   BASIN
  576           BA   0.103
  577           LG    0.20    0.25    4.50    0.45      52
  578           UC   0.613   0.608
  579           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  580           UA     100
                *
                *
                *
                *
                * DIVERSION RECOVER DE09
                *

  581           KK  DRE09I
  582           DR   DE09I
                *
                *
                * Route is a Minor Arterial Road along Pima Rd.
                *

  583           KK   RE09S
  584           RS       7    FLOW       0
  585           RC   0.035   0.015   0.035    5501  0.0037
  586           RX       0       1      26      27      62      63      88      89
  587           RY       8       2       1     0.5     0.5       1       2       8
                *
                *

  588           KK     D09   BASIN
  589           BA   0.216
  590           LG    0.10    0.29    2.65    1.70      80
  591           UC   0.463   0.379
  592           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  593           UA     100
                *
                *
                * *** STORAGE ROUTING LD09 ***********************************************
                *
                * See the detention calculations in the Appendix.
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                                    PAGE
26

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


  594           KK    LD09
  595           DT   LD09D    13.6
  596           DI       0     100    1000   10000
  597           DQ       0     100    1000   10000
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION DE09.
                * THE HARD-CODE VALUE IS 90% OF CE09'S CONTRIBUTING AREA.
                * SEE DIVERSION DE09.
```

```
                *
                * DDM   ***** Preserved *****

     598        KK    CD09
     599        HC       2   0.686
                *
                *
                *
                *
                * DDM   ***** Preserved *****

     600        KK    CD03
     601        HC       5
                *
                *
                *
                * Route is a Minor Arterial Road.
                *

     602        KK    RD03
     603        RS       1    FLOW       0
     604        RC   0.035   0.015   0.035    1307   0.004
     605        RX       0       1      26      27      62      63      88      89
     606        RY       8       2       1     0.5     0.5       1       2       8
                *

     607        KK     C11   BASIN
     608        BA   0.050
     609        LG    0.25    0.25    4.40    0.45      49
     610        UC   0.358   0.322
     611        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     612        UA     100
                *

     613        KK     C10   BASIN
     614        BA   0.054
     615        LG    0.25    0.25    4.65    0.38      50
     616        UC   0.433   0.409
     617        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     618        UA     100
                *
                *
                * Route is a Minor Arterial Road.
                *
1                                       HEC-1 INPUT                                         PAGE
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    LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

     619        KK    RC10
     620        RS       1    FLOW       0
     621        RC   0.035   0.015   0.035     688   0.009
     622        RX       0       1      26      27      62      63      88      89
     623        RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * DDM   ***** Preserved *****

     624        KK    CC11
     625        HC       3
                *
                *
                * Route is a Minor Arterial Road.
                *
                *

     626        KK    RC11
     627        RS       1    FLOW       0
     628        RC   0.035   0.015   0.035    1334  0.0015
     629        RX       0       1      26      27      62      63      88      89
     630        RY       8       2       1     0.5     0.5       1       2       8
                *

     631        KK     C08   BASIN
     632        BA   0.118
     633        LG    0.25    0.25    4.40    0.45      51
     634        UC   0.588   0.434
     635        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
     636        UA     100
                *
```

```
                * DDM   ***** Preserved *****

637             KK    CC08
638             HC       2
                *
                *
                *
                * Route is a Minor Arterial Road.
                *
639             KK    RC08
640             RS       4    FLOW       0
641             RC   0.035   0.015   0.035    2205  0.0026
642             RX       0       1      26      27      62      63      88      89
643             RY       8       2       1     0.5     0.5       1       2       8
                *
644             KK     C06   BASIN
645             KM
646             KM    This basin's original area was 0.162 sq mi.  The infield area is bermed
647             KM    so it is self-detained.  The infield area (0.0095 sq mi) was subtracted
648             KM    from the subbasin calculations to account for the storage.
649             KM
1                                          HEC-1 INPUT                                                    PAGE
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LINE            ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

650             BA   0.153
651             LG    0.23    0.25    4.30    0.49      52
652             UC   0.554   0.435
653             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
654             UA     100
                *
                * DDM   ***** Preserved *****

655             KK    CC06
656             HC       2
                *
                *
                *
                * This is a channel.
                *
657             KK    RC06
658             RS       1    FLOW       0
659             RC    0.04   0.035    0.04    1271  0.0056
660             RX       0       1      30      40      70      80     110     111
661             RY      20      10       8       0       0       8      10      20
                *
                *
                * DIVERSION RECALL D01
                *
662             KK   DRD01
663             DR   DD01I
                *
                *
                * Route is a Minor Arterial Road.
                *
664             KK   RD01S
665             RS       8    FLOW       0
666             RC   0.035   0.015   0.035    2611  0.0023
667             RX       0       1      26      27      62      63      88      89
668             RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                *
669             KK     C07   BASIN
670             BA   0.072
671             LG    0.25    0.25    4.80    0.35      50
672             UC   0.667   0.699
673             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
674             UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DD01.
                * THE HARD-CODE VALUE IS 40% OF CD01'S CONTRIBUTING AREA.
                * SEE DIVERSION DD01.
```

```
                *
                * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                                    PAGE
29

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

      675       KK    CC07
      676       HC       2    .174
                *
                *
                *
                * Route is a Minor Arterial Road.
                *
      677       KK    RC07
      678       RS       6    FLOW       0
      679       RC   0.035   0.015   0.035    2638   0.003
      680       RX       0       1      26      27      62      63      88      89
      681       RY       8       2       1     0.5     0.5       1       2       8
                *
                *
      682       KK     C09   BASIN
      683       BA   0.057
      684       LG    0.25    0.25    4.80    0.36      50
      685       UC   0.596   0.646
      686       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      687       UA     100
                *
                *
                * Route is a Minor Arterial Road.
                *
      688       KK    RC09
      689       RS       1    FLOW       0
      690       RC   0.035   0.015   0.035    3368   0.003
      691       RX       0       1      26      27      62      63      88      89
      692       RY       8       2       1       0       0       1       2       8
                *
      693       KK     C05   BASIN
      694       BA   0.137
      695       LG    0.23    0.25    4.70    0.37      54
      696       UC   0.754   0.675
      697       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      698       UA     100
                *
      699       KK     C01   BASIN
      700       BA   0.032
      701       LG    0.22    0.25    4.80    0.37      57
      702       UC   0.546   0.711
      703       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      704       UA     100
                *
                *
                *
                * Route is a Major Arterial Road.
                *
1                                        HEC-1 INPUT                                                    PAGE
30

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

      705       KK    RC01
      706       RS       8    FLOW       0
      707       RC   0.035   0.015   0.035    1217  0.0013
      708       RX       0       1      40      41     104     105     145     146
      709       RY       8       3     1.5     .75    0.75     1.5       3       8
                *
      710       KK     C02   BASIN
      711       BA   0.036
      712       LG    0.15    0.25    4.80    0.40      70
      713       UC   0.554   0.780
      714       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      715       UA     100
                *
```

```
                * DDM   ***** Preserved *****

716             KK    CC02
717             HC       5    .436
                *
                *
                * Route is a Major Arterial Road.
                *
                *

718             KK    RC02
719             RS       1    FLOW       0
720             RC   0.035   0.015   0.035     632  0.0063
721             RX       0       1      40      45     100     105     145     146
722             RY       8       3       2       0       0       2       3       8
                *

723             KK     C03   BASIN
724             BA   0.040
725             LG    0.18    0.25    4.10    0.61      62
726             UC   0.333   0.388
727             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
728             UA     100
                *
                *

729             KK     C12   BASIN
730             BA   0.010
731             LG    0.19    0.25    4.10    0.58      64
732             UC   1.500   4.505
733             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
734             UA     100
                *
                *
                *
                * Route is a Minor Arterial Road with a wall on the west side.
                *
1                                       HEC-1 INPUT                                             PAGE
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


735             KK    RC12
736             RS      22    FLOW       0
737             RC   0.035   0.015   0.035    2693  0.0007
738             RX       0       1      19      25      30      49      79      80
739             RY      10     1.5       0       0       0       0     1.5       8
                *
                *

740             KK     C13   BASIN
741             BA   0.176
742             LG    0.10    0.35    2.65    1.70      80
743             UC   0.546   0.508
744             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
745             UA     100
                *
                * *** STORAGE ROUTING LC13 ***********************************************
                *
                * See the detention calculations in the Appendix.
                * DDM   ***** Preserved *****

746             KK    LC13
747             DT   LC13D    11.2
748             DI       0     100    1000   10000
749             DQ       0     100    1000   10000
                *
                *
                * DDM   ***** Preserved *****

750             KK    CC13
751             HC       2
                *
                *
                * *** DIVERSION DC13 ******************************************************
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 51 CFS.
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                * 20% clogging factor means 41cfs, (51cfs * 0.8 = 41cfs).
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
```

```
                *
                * DDM   ***** Preserved *****

      752       KK    DC13
      753       DT   DC13I
      754       DI       0      10      50     100     200     300     400     500
      755       DQ       0       4      30      59     159     259     359     459
                *
                * ROUTE IS A 42" RCP WITH A SLOPE OF 0.0044 FT/FT.
                *
1                                       HEC-1 INPUT                                                    PAGE
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     LINE       ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

      756       KK   RC13W
      757       RS       5    FLOW      -1
      758       RD    2052   0.005   0.012            CIRC     3.5
                *

      759       KK     C04   BASIN
      760       BA   0.044
      761       LG    0.18    0.28    4.20    0.51      44
      762       UC   0.650   0.830
      763       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      764       UA     100
                *
                *
                *
                * Route is a Major Arterial Road.
                *

      765       KK    RC04
      766       RS       5    FLOW       0
      767       RC   0.035   0.015   0.035    1563  0.0106
      768       RX       0       1      40      41     104     105     145     146
      769       RY       8       3     1.5       0       0     1.5       3       8
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION D13.
                * THE HARD-CODE VALUE IS 20% OF CC13'S CONTRIBUTING AREA.
                * SEE DIVERSION D13.
                *
                * DDM   ***** Preserved *****

      770       KK    CC03
      771       HC       5    3.37
                *
                *
                *
                * This route is a channel.
                *

      772       KK    RC03
      773       RS       2    FLOW       0
      774       RC    0.04    0.03    0.04    1097  0.0009
      775       RX       0       1      30      40      70      80     110     111
      776       RY      20      10       8       0       0       8      10      20
                *

      777       KK     B07   BASIN
      778       BA   0.016
      779       LG    0.13    0.28    4.35    0.51      49
      780       UC   0.192   0.234
      781       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      782       UA     100
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                                    PAGE
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     LINE       ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

      783       KK    CB07
      784       HC       2
                *
                *
                *
                * Route is a Minor Arterial Road.
```

```
                *
          785   KK    RB07
          786   RS       2    FLOW       0
          787   RC   0.035   0.015   0.035    1525  0.0026
          788   RX       0       1      40      41     104     105     145     146
          789   RY       8       3     1.5     .75    0.75     1.5       3       8
                *
          790   KK     B05   BASIN
          791   BA   0.088
          792   LG    0.22    0.26    4.15    0.58      44
          793   UC   0.583   0.685
          794   UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
          795   UA     100
                *
                * *** STORAGE ROUTING LB05 ********************************************
                *
                * DDM   ***** Preserved *****
          796   KK    LB05
          797   DT   LB05D    0.16
          798   DI       0     100    1000   10000
          799   DQ       0     100    1000   10000
                *
          800   KK     B06   BASIN
          801   BA   0.015
          802   LG    0.13    0.26    4.00    0.64      60
          803   UC   0.304   0.589
          804   UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
          805   UA     100
                *
                *
                * DDM   ***** Preserved *****
          806   KK    CB05
          807   HC       3
                *
                *
                *
                * Route is a Minor Arterial Road.
                * Normal Depth Routing did not work for this Route.
1                                       HEC-1 INPUT                                          PAGE
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        LINE    ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

          808   KK    RB05
          809   RD
          810   RC   0.035    0.02   0.035     500  0.0052
          811   RX       0       1      40      51      94     105     145     146
          812   RY       8       3       2       0       0       2       3       8
                *
          813   KK     B04   BASIN
          814   BA   0.077
          815   LG    0.15    0.25    4.45    0.50      71
          816   UC   0.271   0.232
          817   UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
          818   UA     100
                *
                *
                * *** STORAGE ROUTING LB04 ********************************************
                *
                * MOTOROLA DETENTION BASINS (SEE CALCULATIONS)
                *
                * DDM   ***** Preserved *****
          819   KK    LB04
          820   DT   LB04D   12.95
          821   DI       0     100    1000   10000
          822   DQ       0     100    1000   10000
                *
          823   KK     B02   BASIN
          824   BA   0.101
          825   LG    0.15    0.25    4.70    0.41      68
          826   UC   0.363   0.335
          827   UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
```

```
 828          UA     100
              *
              *
              * *** STORAGE ROUTING LB02 ***********************************************
              *
              * DDM   ***** Preserved *****

 829          KK    LB02
 830          DT   LB02D    2.64
 831          DI       0     100    1000   10000
 832          DQ       0     100    1000   10000
              *
              *
              *
              * Route is a Minor Arterial Road.
              * Normal Depth Routing did not work for this Route.
1                                    HEC-1 INPUT                                    PAGE
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

 833          KK    RB02
 834          RD
 835          RC   0.035   0.015   0.035     548  0.0186
 836          RX       0       1      40      41     104     105     145     146
 837          RY       8       3     1.5     .75    0.75     1.5       3       8
              *

 838          KK     B03   BASIN
 839          BA   0.007
 840          LG    0.25    0.35    4.65    0.41      47
 841          UC   0.271   0.474
 842          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 843          UA     100
              *
              *
              * DDM   ***** Preserved *****

 844          KK    CB03
 845          HC       4    3.66
              *
              *
              *
              * Route is a Minor Arterial Road.
              *

 846          KK    RB03
 847          KO                                   21
 848          RS       2    FLOW       0
 849          RC   0.035   0.015   0.035    1348   0.003
 850          RX       0       1      40      41     104     105     145     146
 851          RY       8       3     1.5     .75    0.75     1.5       3       8
              *

 852          KK     B01   BASIN
 853          BA   0.071
 854          LG    0.25    0.25    4.30    0.54      44
 855          UC   0.267   0.188
 856          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 857          UA     100
              *
              *
              * *** STORAGE ROUTING LB01 ***********************************************
              *
              * DDM   ***** Preserved *****

 858          KK    LB01
 859          DT   LB01D    1.15
 860          DI       0     100    1000   10000
 861          DQ       0     100    1000   10000
              *
              *
              *
              * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                    PAGE
36

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

```
862          KK    CB01
863          HC       2
             *
             *
             * Route is a channel.
             *

864          KK    RB01
865          KO                                    21
866          RS       1    FLOW       0
867          RC   0.035   0.015   0.035    1320  0.0019
868          RX       0       1      34      40      50      56      80      81
869          RY      12       6       4       0       0       4       6      12
             *

870          KK     B12   BASIN
871          BA   0.119
872          LG    0.25    0.25    4.80    0.38      39
873          UC   0.442   0.233
874          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
875          UA     100
             *

876          KK     B11   BASIN
877          BA   0.060
878          LG    0.24    0.34    4.80    0.39      37
879          UC   0.400   0.277
880          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
881          UA     100
             *
             * *** STORAGE ROUTING LB11 ***********************************************
             * Pond was assumed to have 1 foot of freeboard.
             * DDM   ***** Preserved *****

882          KK    LB11
883          DT   LB11D    2.87
884          DI       0     100    1000   10000
885          DQ       0     100    1000   10000
             *
             *
             * DIVERSION RECALL DC13I
             *

886          KK  DRDC13
887          DR   DC13I
             *
             *
             * Route is overland flow. (SLOPE ESTIMATED.)
             *
1                                        HEC-1 INPUT                                        PAGE
37

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

888          KK   RC13S
889          RS      33    FLOW       0
890          RC   0.035   0.035   0.035    5197   .0058
891          RX       0     200     300     400     500     600     700     900
892          RY       5       4       3       0       0       3       4       5
             *

893          KK     B13   BASIN
894          BA   0.222
895          LG    0.22    0.26    4.55    0.42      44
896          UC   0.375   0.232
897          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
898          UA     100
             *
             * *** STORAGE ROUTING LB13 ***********************************************
             *
             * DDM   ***** Preserved *****

899          KK    LB13
900          DT   LB13D    18.4
901          DI       0     100    1000   10000
902          DQ       0     100    1000   10000
             *
             *
             * Route is shallow flow. (SLOPE WAS ESTIMATED.)
             *
```

```
903          KK    RB13
904          RS       7    FLOW       0
905          RC   0.035   0.035   0.035    1269   0.004
906          RX       0     200     300     400     500     600     700     900
907          RY       5       4       3       0       0       3       4       5
             *

908          KK     B14   BASIN
909          BA   0.149
910          LG    0.10    0.25    4.60    0.48      80
911          UC   0.608   0.628
912          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
913          UA     100
             *
             * *** STORAGE ROUTING LB14 ********************************************
             *
             * See the detention calculations in the Appendix.
             * DDM   ***** Preserved *****

914          KK    LB14
915          DT   LB14D    10.4
916          DI       0     100    1000   10000
917          DQ       0     100    1000   10000
             *
             * DDM   ***** Preserved *****
1                                      HEC-1 INPUT                                    PAGE
38

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


918          KK    CB14
919          HC       3   0.524
             *
             *
             * Route is a MAJOR ARTERIAL. (SLOPE WAS ESTIMATED.)
             *

920          KK    RB14
921          RS       4    FLOW       0
922          RC   0.035   0.015   0.035    2746   0.004
923          RX       0       1      30      40     100     110     145     300
924          RY       8       4       3       0       0       3       4       5
             *
             *
             * DDM   ***** Preserved *****

925          KK    CB12
926          HC       4
             *
             *
             * Route is a channel. (SLOPE ESTIMATED FROM UPSTREAM CHANNEL'S SLOPE.)
             *

927          KK    RB12
928          KO       3
929          RS       6    FLOW       0
930          RC   0.035    .035   0.035    4395  0.0019
931          RX       0     200     330     340     370     380     410     600
932          RY       9       8       6       0       0       6       8       9
             *

933          KK     A01   BASIN
934          BA   0.507
935          LG    0.10    0.25    5.40    0.32      80
936          UC   0.542   0.238
937          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
938          UA     100
             *
             * *** STORAGE ROUTING LA01 ********************************************
             *
             * See the detention calculations in the Appendix.
             * DDM   ***** Preserved *****

939          KK    LA01
940          DT   LA01D    35.2
941          DI       0     100    1000   10000
942          DQ       0     100    1000   10000
             *
             * DDM   ***** Preserved *****
```

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

 943          KK    CA01
 944          HC       2
              *
 945          KK     B10   BASIN
 946          BA   0.110
 947          LG    0.21    0.25    4.60    0.49      28
 948          UC   0.742   0.765
 949          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 950          UA     100
              *
              * *** STORAGE ROUTING LB10 ********************************************
              *
              * DDM   ***** Preserved *****

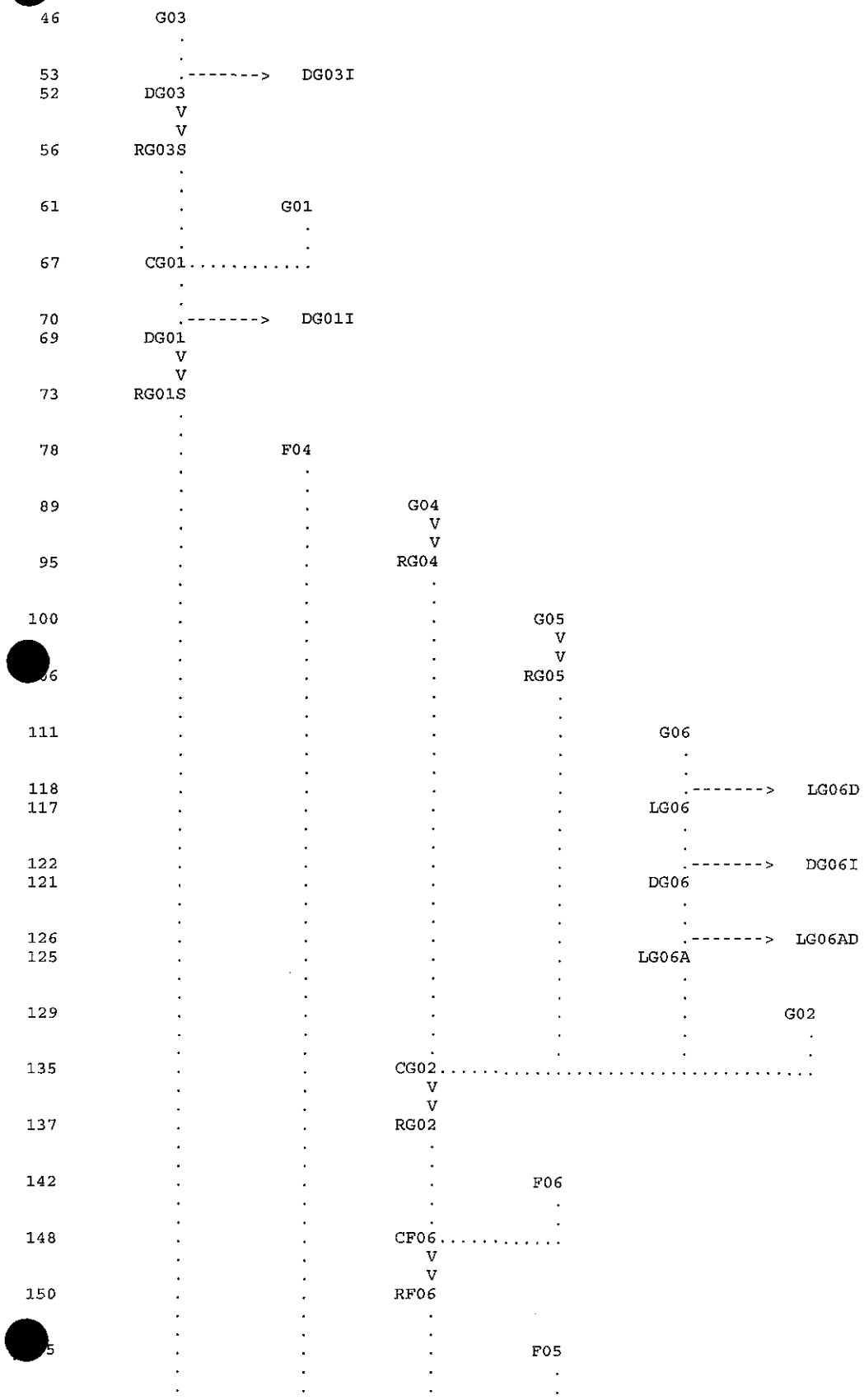
 951          KK    LB10
 952          DT   LB10D    10.5
 953          DI       0     100    1000   10000
 954          DQ       0     100    1000   10000
              *
 955          ZZ
```

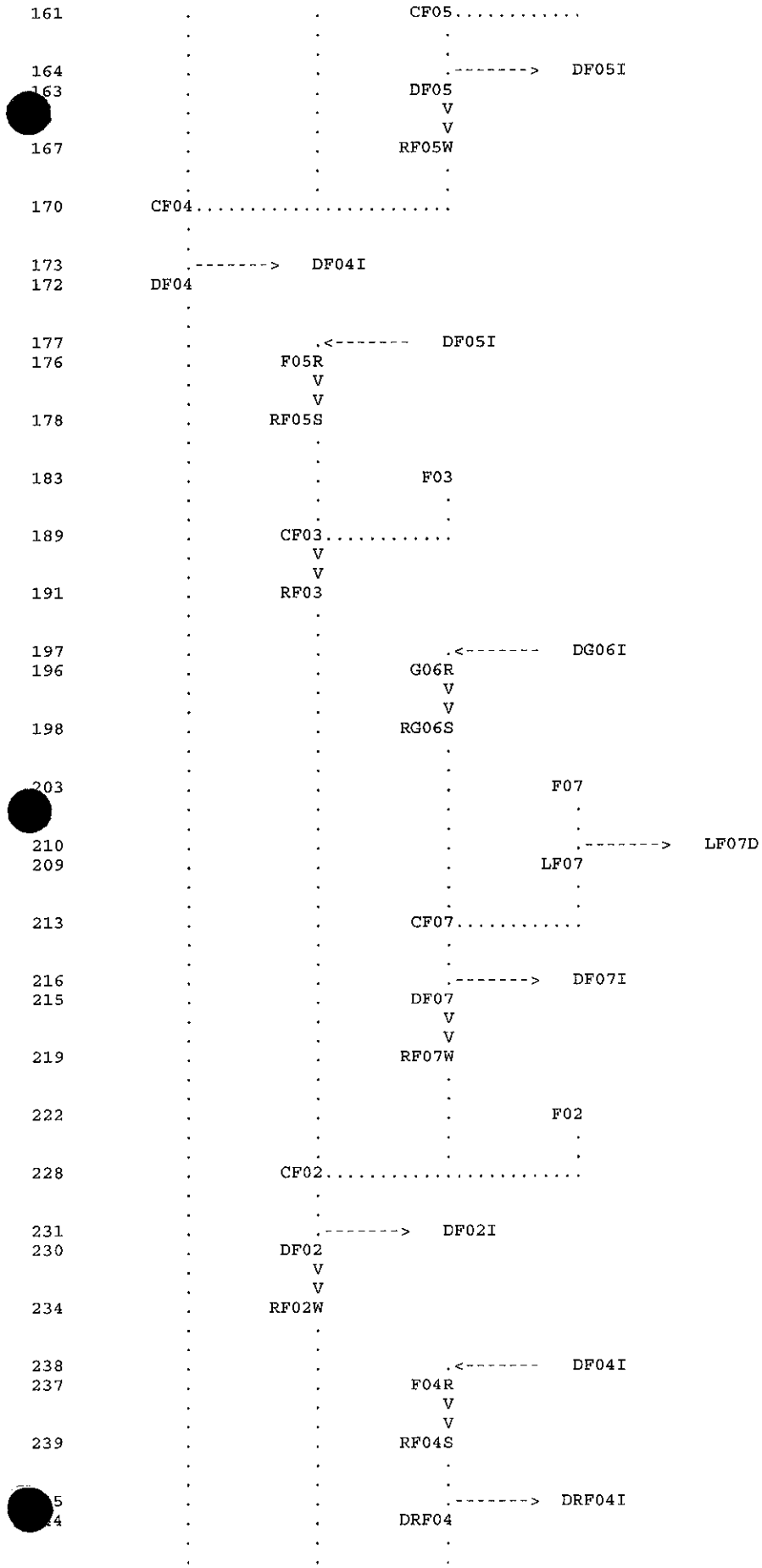
SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW

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163 DF05
167 RF05W
170 CF04
173 DF04I
172 DF04
177 DF05I
176 F05R
178 RF05S
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189 CF03
191 RF03
197 DG06I
196 G06R
198 RG06S
203 F07
210 LF07D
209 LF07
213 CF07
216 DF07I
215 DF07
219 RF07W
222 F02
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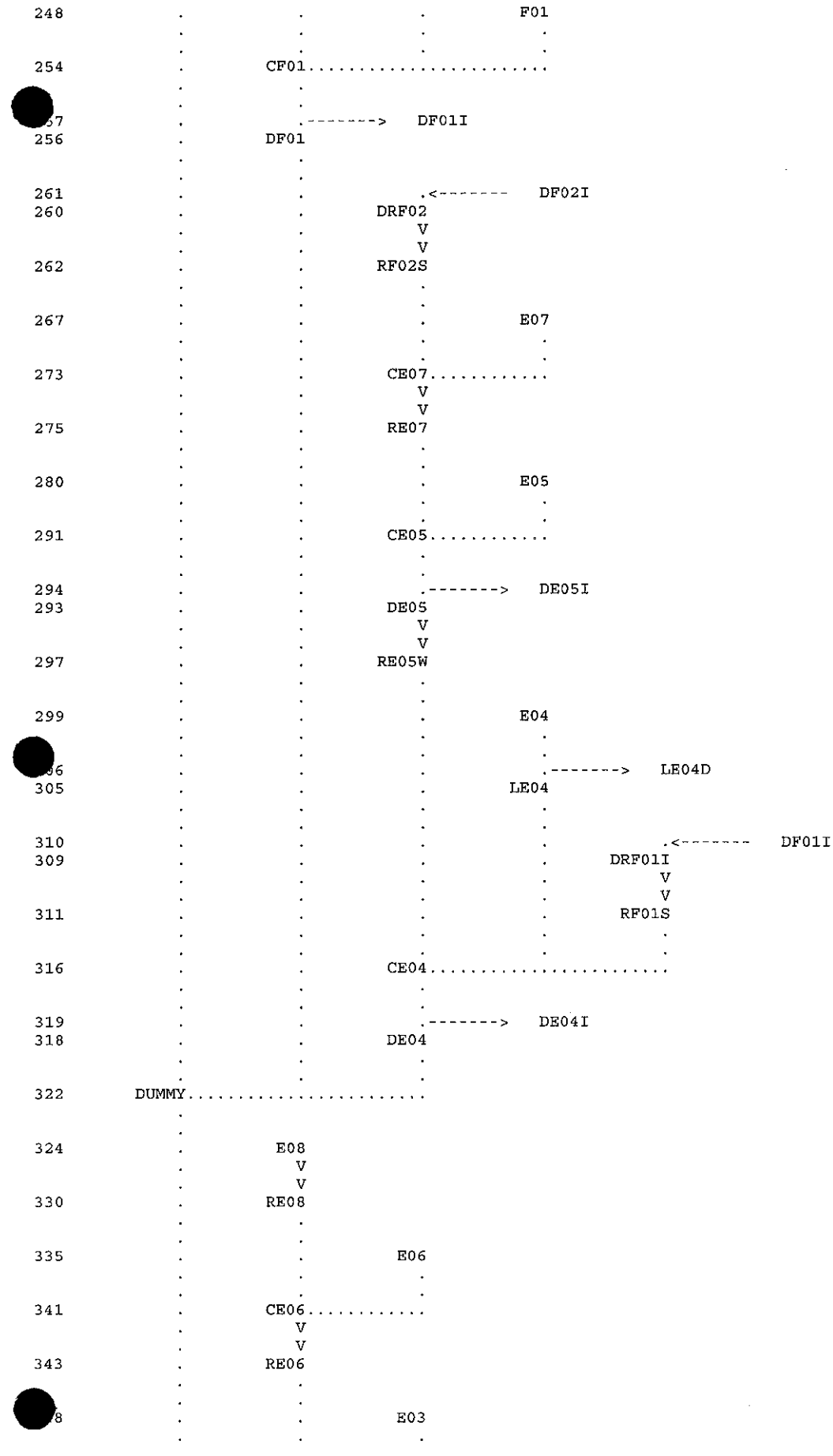
231 DF02I
230 DF02
234 RF02W
238 DF04I
237 F04R
239 RF04S
DRF04I
DRF04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DF01
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DRF02
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CE07
RE07
E05
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E04
LE04D
LE04
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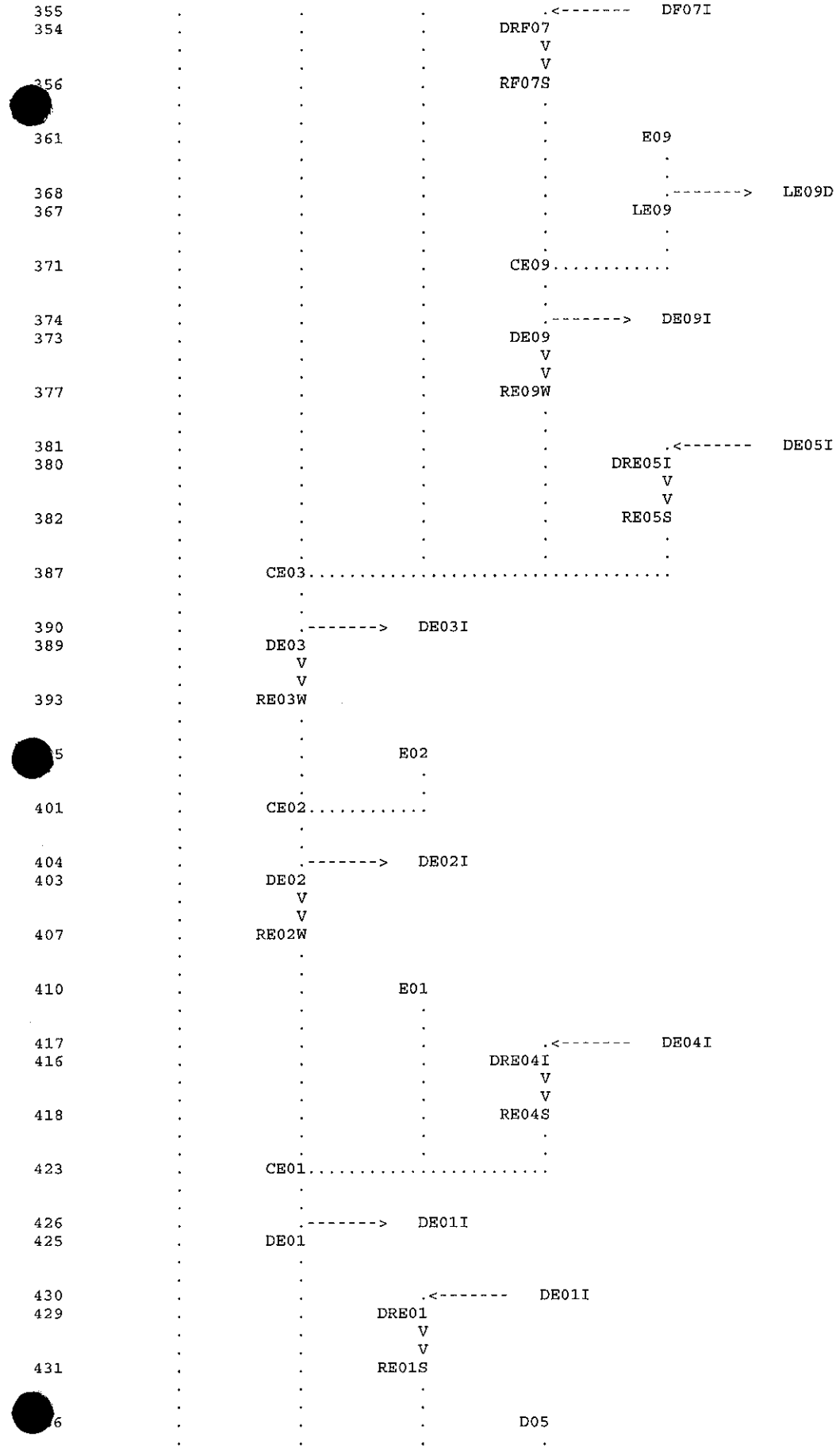
DE04
DUMMY
E08
RE08
E06
CE06
RE06
E03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425
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429
431
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DF07I
DRF07
RF07S
E09
LE09D
LE09
CE09
DE09I
DE09
RE09W
DE05I
DRE05I
RE05S
CE03
DE03I
DE03
RE03W
E02
CE02
DE02I
DE02
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DE04I
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CE01
DE01I
DE01
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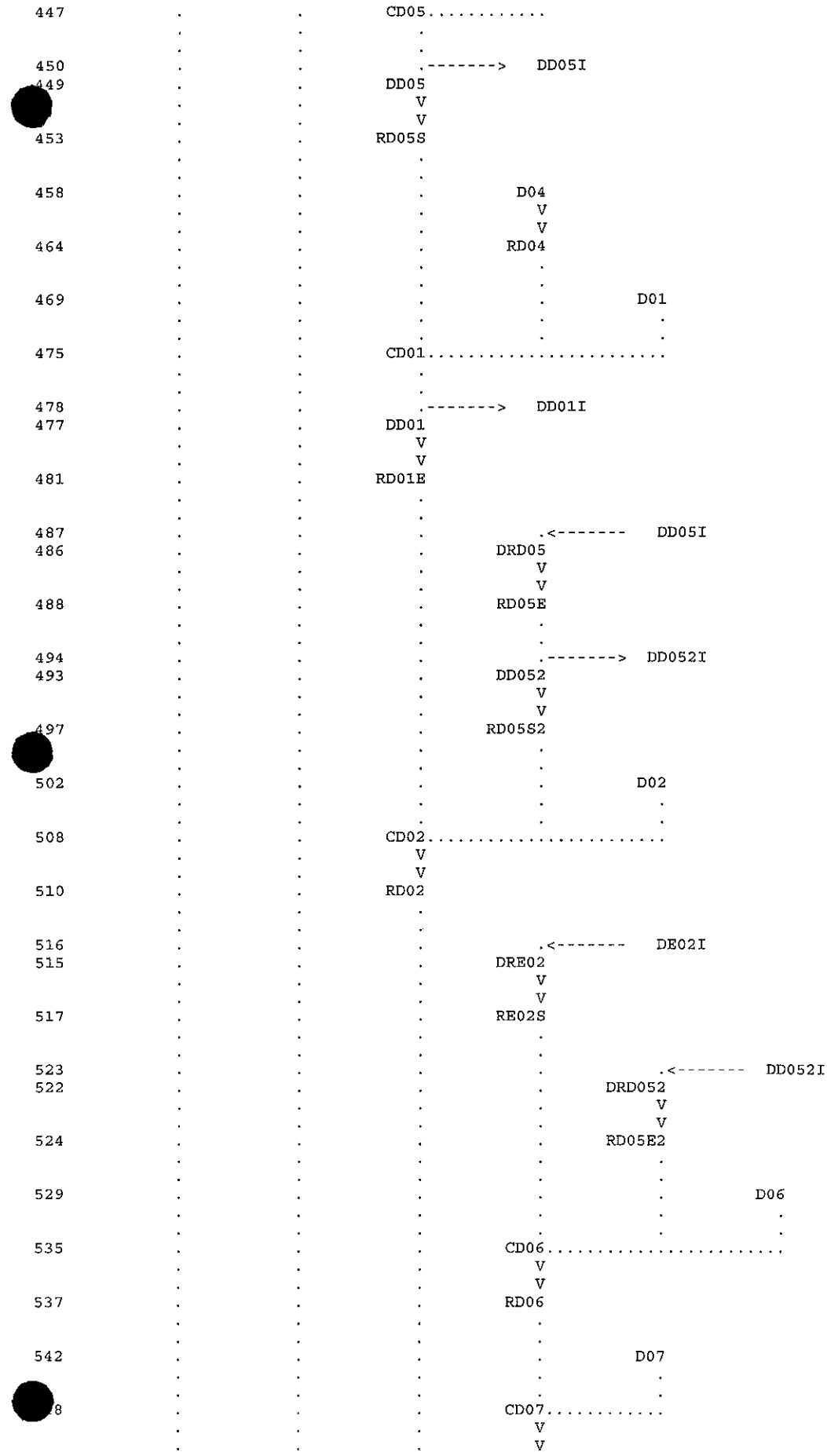
DRE01
RE01S
D05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486 DRD05
488 RD05E
494 DD052I
493 DD052
497 RD05S2
502 D02
508 CD02
510 RD02
516 DE02I
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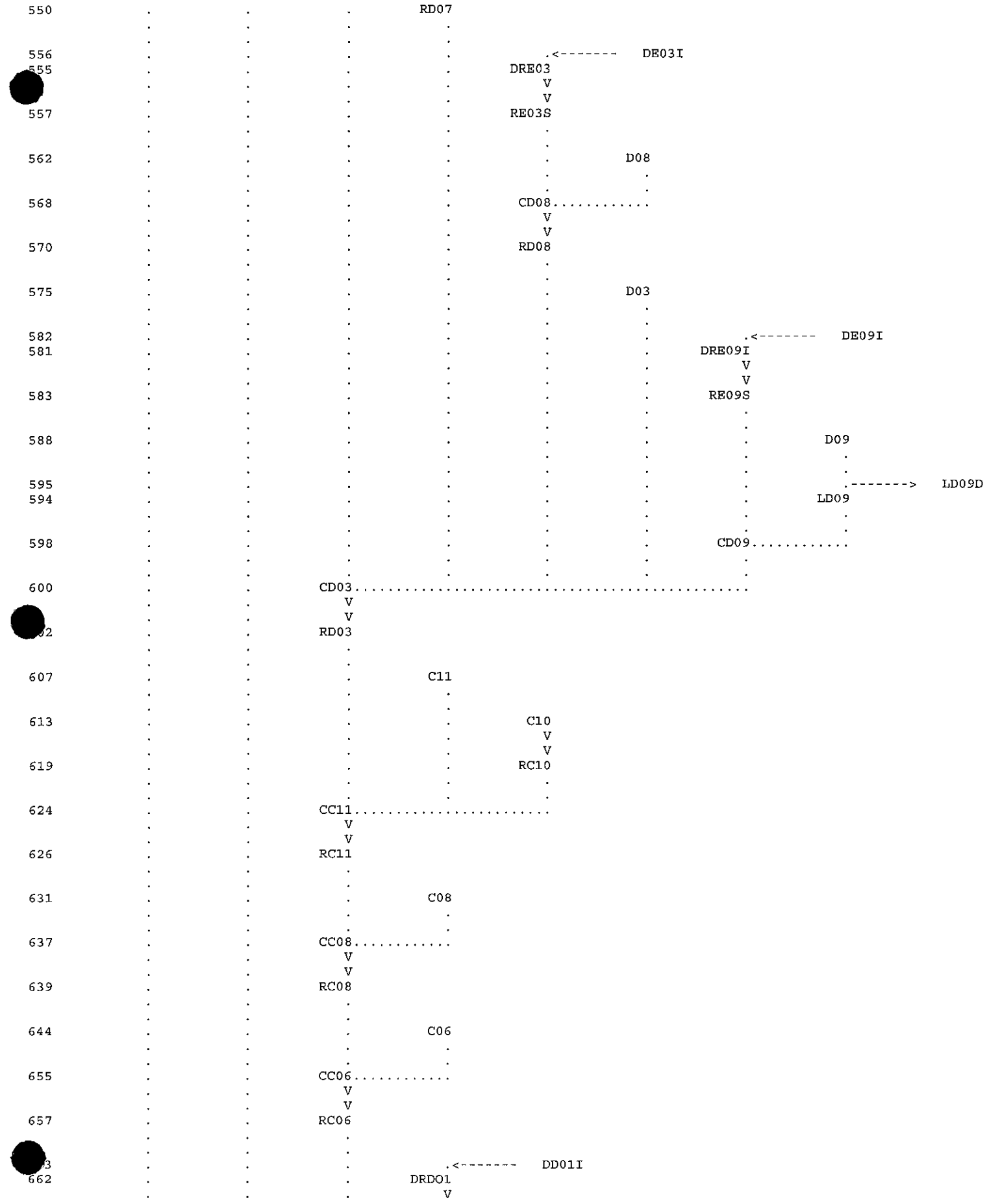
523 DD052I
522 DRD052
524 RD05E2
529 D06
535 CD06
537 RD06
542 D07
CD07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DRE03
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D08
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DRE09I
RE09S
D09
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LD09
CD09
CD03
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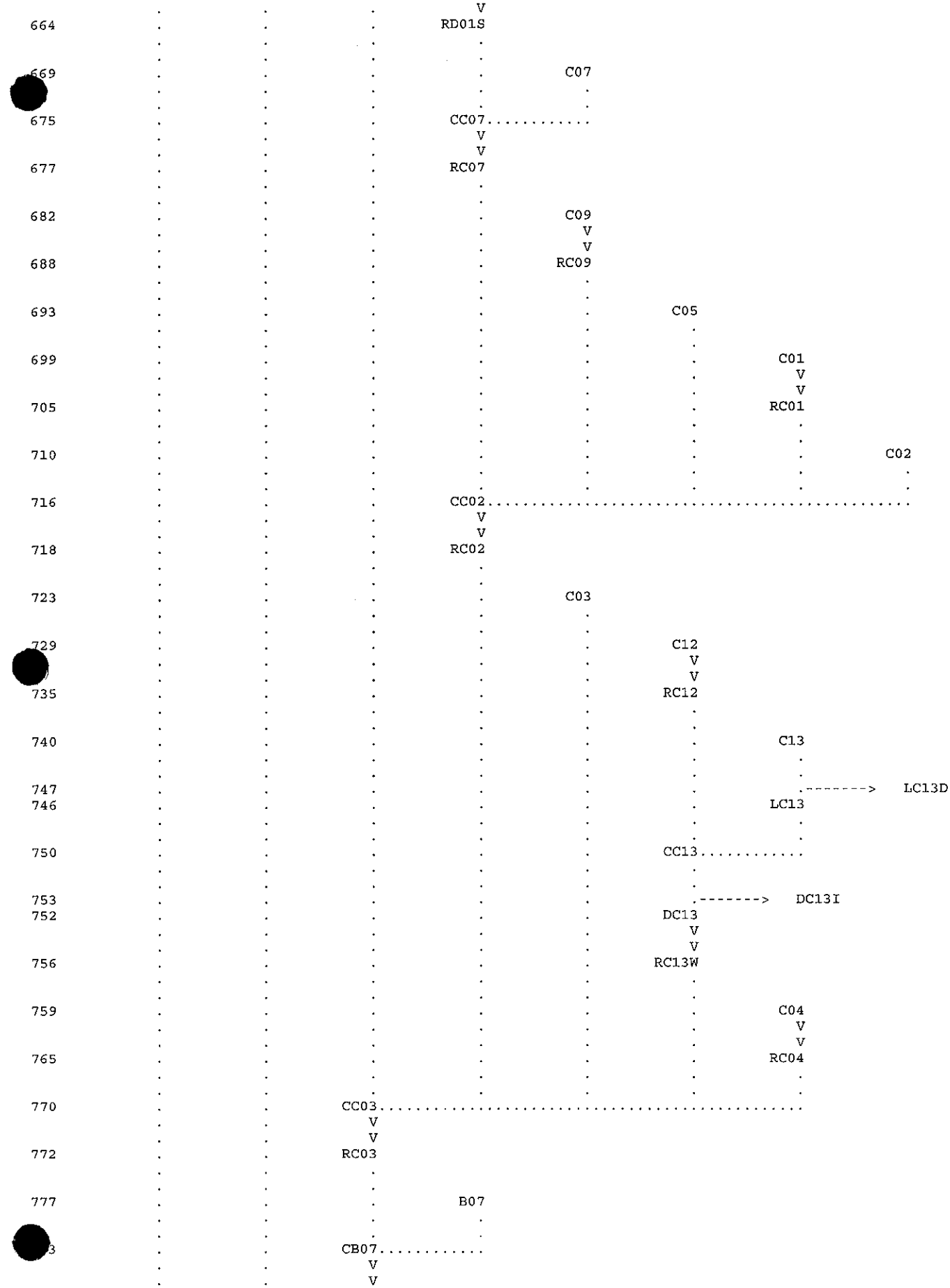
RC11
C08
CC08
RC08
C06
CC06
RC06
DD01I
DRDO1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CC07
RC07
C09
RC09
C05
C01
RC01
C02
CC02
RC02
C03
C12
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LC13
CC13
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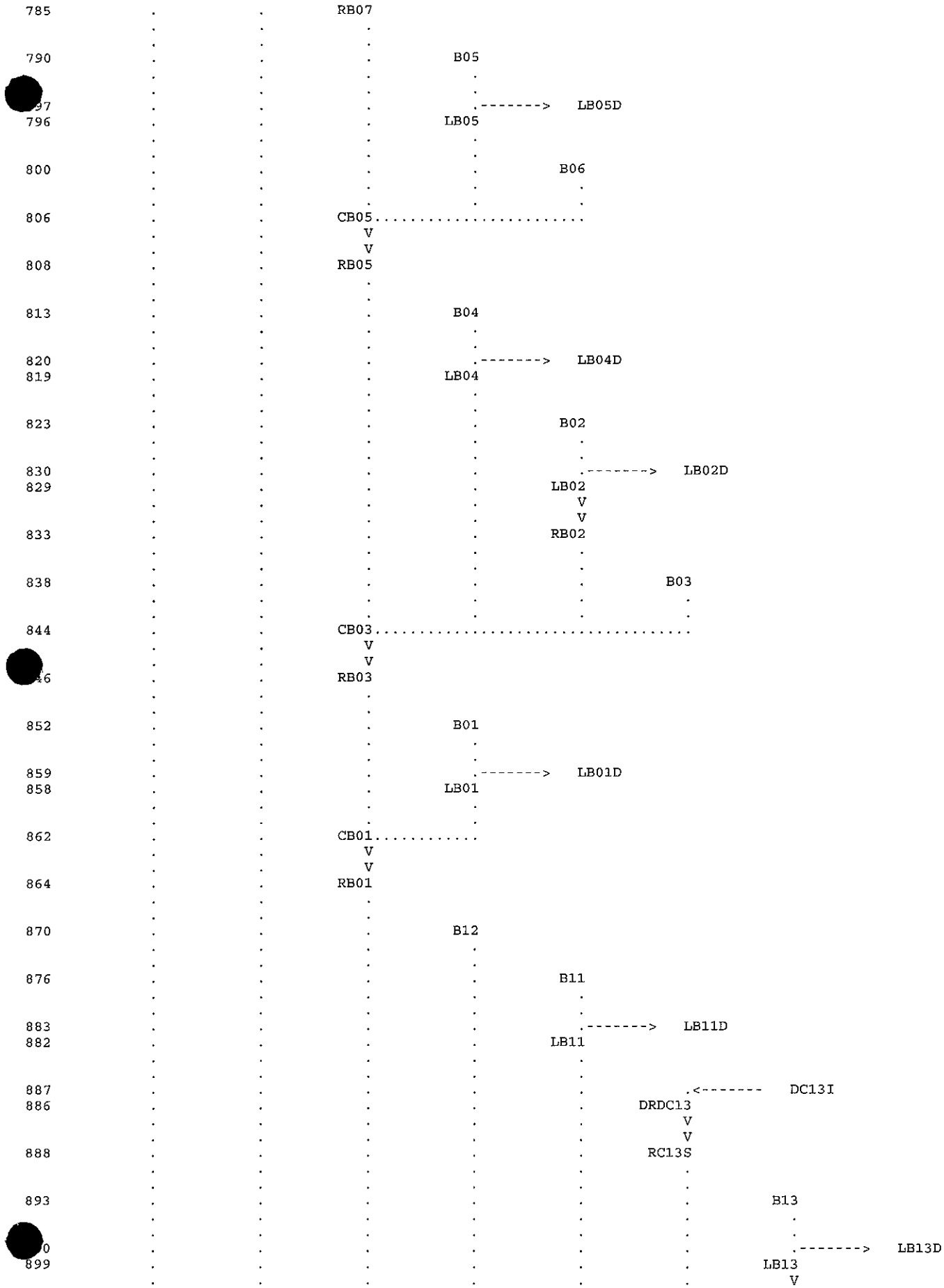
DC13
RC13W
C04
RC04
CC03
RC03
B07
CB07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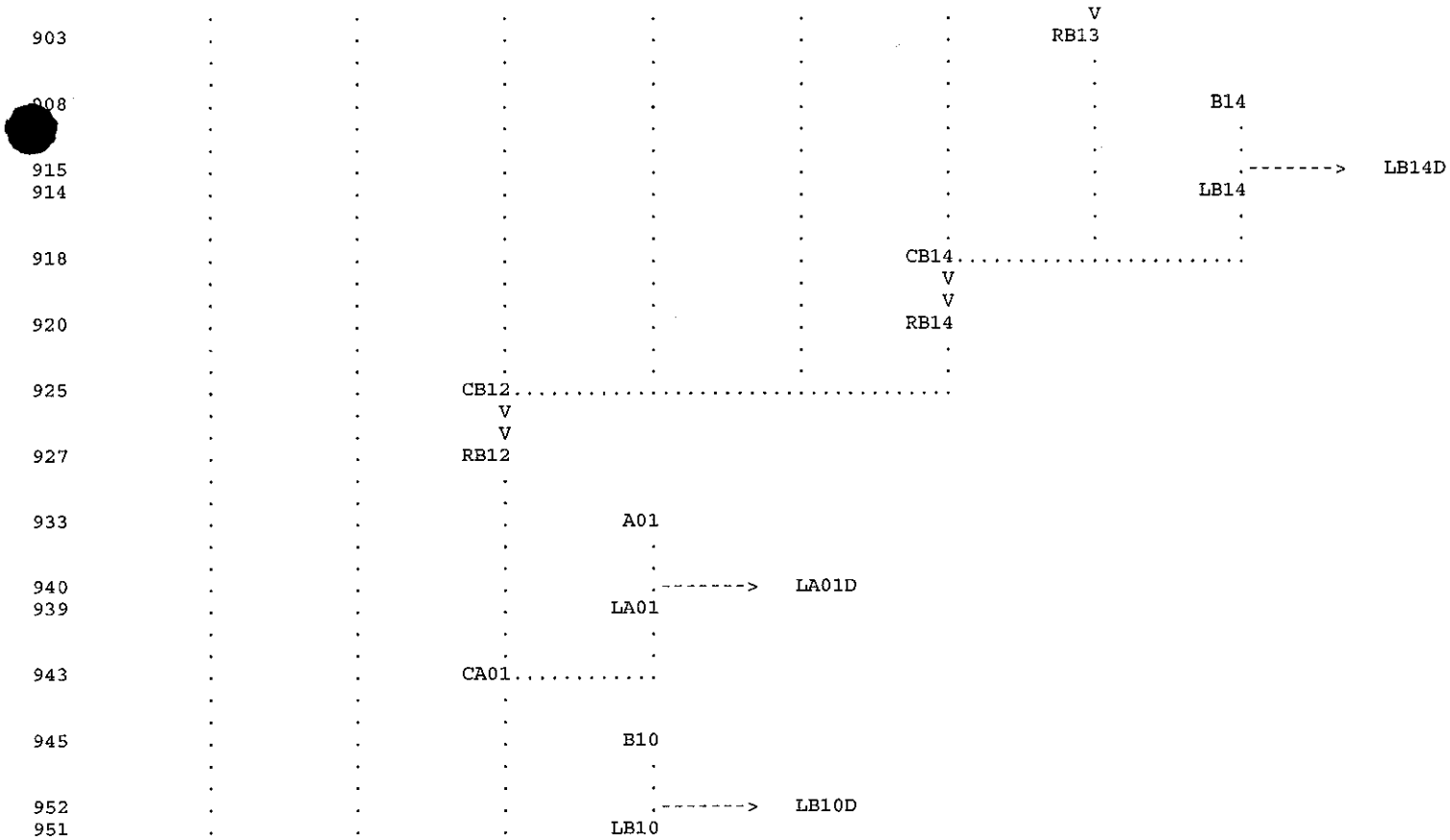
806 CB05
808 RB05
813 B04
820 LB04D
819 LB04
823 B02
830 LB02D
829 LB02
833 RB02
838 B03
844 CB03
846 RB03
852 B01
859 LB01D
858 LB01
862 CB01
864 RB01
870 B12
876 B11
883 LB11D
882 LB11
887 DC13I
886 DRDC13
888 RC13S
893 B13
900 LB13D
899 LB13



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	G03	188.	4.17	25.	6.	2.	0.09	
+	DIVERSION TO	DG03I	96.	4.17	13.	3.	1.	0.09	
+	HYDROGRAPH AT	DG03	92.	4.17	12.	3.	1.	0.09	
+	ROUTED TO	RG03S	84.	4.25	12.	3.	1.	0.09	
+	HYDROGRAPH AT	G01	62.	4.25	13.	3.	1.	0.05	
+	2 COMBINED AT	CG01	146.	4.25	25.	6.	2.	0.10	
+	DIVERSION TO	DG01I	104.	4.25	18.	5.	2.	0.10	
+	HYDROGRAPH AT	DG01	42.	4.25	7.	2.	1.	0.10	
+	ROUTED TO	RG01S	39.	4.67	7.	2.	1.	0.10	
+	HYDROGRAPH AT	F04	74.	4.25	17.	4.	1.	0.06	
+	HYDROGRAPH AT	G04	94.	4.08	11.	3.	1.	0.05	
+	ROUTED TO	RG04	92.	4.17	11.	3.	1.	0.05	
+	HYDROGRAPH AT	G05	96.	4.08	13.	3.	1.	0.05	
+	ROUTED TO	RG05	95.	4.25	13.	3.	1.	0.05	
+	HYDROGRAPH AT	G06	333.	4.08	37.	9.	3.	0.13	
+	DIVERSION TO	LG06D	226.	3.92	16.	4.	1.	0.13	
+	HYDROGRAPH AT	LG06	333.	4.08	21.	5.	2.	0.13	
+	DIVERSION TO	DG06I	142.	4.08	9.	2.	1.	0.13	
+	HYDROGRAPH AT	DG06	191.	4.08	12.	3.	1.	0.13	
+	DIVERSION TO	LG06AD	191.	4.08	9.	2.	1.	0.13	
+	HYDROGRAPH AT	LG06A	43.	4.42	3.	1.	0.	0.13	
+	HYDROGRAPH AT	G02	100.	4.25	19.	5.	2.	0.08	
+	4 COMBINED AT	CG02	283.	4.25	46.	12.	4.	0.23	
+	ROUTED TO	RG02	283.	4.33	46.	12.	4.	0.23	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	F06	151.	4.25	26.	6.	2.	0.10	
+	2 COMBINED AT	CF06	427.	4.33	71.	18.	6.	0.33	
+	ROUTED TO	RF06	425.	4.33	71.	18.	6.	0.33	
+	HYDROGRAPH AT	F05	137.	4.25	22.	6.	2.	0.09	
+	2 COMBINED AT	CF05	552.	4.33	94.	24.	8.	0.42	
+	DIVERSION TO	DF05I	503.	4.33	68.	17.	6.	0.42	
+	HYDROGRAPH AT	DF05	49.	3.92	25.	6.	2.	0.42	
+	ROUTED TO	RF05W	49.	4.08	25.	6.	2.	0.42	
+	3 COMBINED AT	CF04	147.	4.50	49.	12.	4.	0.17	
+	DIVERSION TO	DF04I	80.	4.50	26.	7.	2.	0.17	
+	HYDROGRAPH AT	DF04	67.	4.50	23.	6.	2.	0.17	
+	HYDROGRAPH AT	F05R	503.	4.33	68.	17.	6.	0.42	
+	ROUTED TO	RF05S	492.	4.42	68.	17.	6.	0.42	
+	HYDROGRAPH AT	F03	243.	4.25	45.	11.	4.	0.17	
+	2 COMBINED AT	CF03	705.	4.42	112.	28.	9.	0.56	
+	ROUTED TO	RF03	700.	4.42	112.	28.	9.	0.56	
+	HYDROGRAPH AT	G06R	142.	4.08	9.	2.	1.	0.13	
+	ROUTED TO	RG06S	127.	4.42	9.	2.	1.	0.13	
+	HYDROGRAPH AT	F07	392.	4.25	72.	18.	6.	0.25	
+	DIVERSION TO	LF07D	381.	4.17	31.	8.	3.	0.25	
+	HYDROGRAPH AT	LF07	370.	4.33	42.	10.	3.	0.25	
+	2 COMBINED AT	CF07	462.	4.42	51.	13.	4.	0.31	
+	DIVERSION TO	DF07I	449.	4.42	45.	11.	4.	0.31	
+	HYDROGRAPH AT	DF07	16.	6.33	6.	2.	1.	0.31	
+	ROUTED TO	RF07W	16.	6.33	6.	2.	1.	0.31	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		F02	62.	4.25	12.	3.	1.	0.05	
+	3 COMBINED AT	CF02	751.	4.42	129.	33.	11.	0.63	
+	DIVERSION TO	DF02I	701.	4.42	102.	26.	9.	0.63	
+	HYDROGRAPH AT	DF02	50.	3.92	27.	7.	2.	0.63	
+	ROUTED TO	RF02W	50.	4.00	27.	7.	2.	0.63	
+	HYDROGRAPH AT	F04R	80.	4.50	26.	7.	2.	0.17	
+	ROUTED TO	RF04S	80.	4.67	26.	7.	2.	0.17	
+	DIVERSION TO	DRF04I	40.	4.67	13.	3.	1.	0.17	
+	HYDROGRAPH AT	DRF04	40.	4.67	13.	3.	1.	0.17	
+	HYDROGRAPH AT	F01	42.	4.25	8.	2.	1.	0.03	
+	3 COMBINED AT	CF01	127.	4.25	48.	12.	4.	0.10	
+	DIVERSION TO	DF01I	3.	4.25	0.	0.	0.	0.10	
+	HYDROGRAPH AT	DF01	123.	4.25	48.	12.	4.	0.10	
+	HYDROGRAPH AT	DRF02	701.	4.42	102.	26.	9.	0.63	
+	ROUTED TO	RF02S	699.	4.50	102.	26.	9.	0.63	
+	HYDROGRAPH AT	E07	153.	4.17	21.	5.	2.	0.08	
+	2 COMBINED AT	CE07	773.	4.42	122.	31.	10.	0.66	
+	ROUTED TO	RE07	771.	4.50	122.	31.	10.	0.66	
+	HYDROGRAPH AT	E05	91.	4.17	12.	3.	1.	0.05	
+	2 COMBINED AT	CE05	804.	4.50	133.	33.	11.	0.71	
+	DIVERSION TO	DE05I	779.	4.50	120.	30.	10.	0.71	
+	HYDROGRAPH AT	DE05	25.	3.83	13.	3.	1.	0.71	
+	ROUTED TO	RE05W	25.	3.92	13.	3.	1.	0.71	
+	HYDROGRAPH AT	E04	42.	4.25	9.	2.	1.	0.04	
+	DIVERSION TO	LE04D	40.	4.25	3.	1.	0.	0.04	
+	HYDROGRAPH AT	LE04	42.	4.33	6.	2.	1.	0.04	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	DRF01I	3.	4.25	0.	0.	0.	0.10	
+	ROUTED TO	RF01S	3.	4.58	0.	0.	0.	0.10	
+	3 COMBINED AT	CE04	68.	4.33	19.	5.	2.	0.07	
+	DIVERSION TO	DE04I	0.	0.08	0.	0.	0.	0.07	
+	HYDROGRAPH AT	DE04	68.	4.33	19.	5.	2.	0.07	
+	3 COMBINED AT	DUMMY	255.	4.33	89.	23.	8.	0.34	
+	HYDROGRAPH AT	E08	42.	4.25	8.	2.	1.	0.03	
+	ROUTED TO	RE08	41.	4.33	8.	2.	1.	0.03	
+	HYDROGRAPH AT	E06	48.	4.25	9.	2.	1.	0.04	
+	2 COMBINED AT	CE06	87.	4.33	17.	4.	1.	0.07	
+	ROUTED TO	RE06	85.	4.58	17.	4.	1.	0.07	
+	HYDROGRAPH AT	E03	47.	4.58	17.	5.	2.	0.07	
+	HYDROGRAPH AT	DRF07	449.	4.42	45.	11.	4.	0.31	
+	ROUTED TO	RF07S	404.	4.67	45.	11.	4.	0.31	
+	HYDROGRAPH AT	E09	338.	4.25	64.	16.	5.	0.22	
+	DIVERSION TO	LE09D	325.	4.17	27.	7.	2.	0.22	
+	HYDROGRAPH AT	LE09	321.	4.33	37.	9.	3.	0.22	
+	2 COMBINED AT	CE09	596.	4.67	82.	20.	7.	0.51	
+	DIVERSION TO	DE09I	581.	4.67	76.	19.	6.	0.51	
+	HYDROGRAPH AT	DE09	15.	4.33	6.	1.	0.	0.51	
+	ROUTED TO	RE09W	15.	4.42	6.	1.	0.	0.51	
+	HYDROGRAPH AT	DRE05I	779.	4.50	120.	30.	10.	0.71	
+	ROUTED TO	RE05S	766.	4.58	120.	30.	10.	0.71	
+	4 COMBINED AT	CE03	877.	4.58	157.	40.	13.	0.86	
+	DIVERSION TO	DE03I	846.	4.58	138.	35.	12.	0.86	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		DE03	31.	4.00	18.	5.	2.	0.86	
+	ROUTED TO	RE03W	31.	4.17	18.	5.	2.	0.86	
+	HYDROGRAPH AT	E02	186.	4.33	37.	9.	3.	0.15	
+	2 COMBINED AT	CE02	217.	4.33	55.	14.	5.	0.18	
+	DIVERSION TO	DE02I	171.	4.33	34.	9.	3.	0.18	
+	HYDROGRAPH AT	DE02	46.	4.25	21.	5.	2.	0.18	
+	ROUTED TO	RE02W	46.	4.42	21.	5.	2.	0.18	
+	HYDROGRAPH AT	E01	84.	4.25	15.	4.	1.	0.06	
+	HYDROGRAPH AT	DRE04I	0.	0.08	0.	0.	0.	0.07	
+	ROUTED TO	RE04S	0.	0.08	0.	0.	0.	0.07	
+	3 COMBINED AT	CE01	130.	4.25	36.	9.	3.	0.17	
+	DIVERSION TO	DE01I	69.	4.25	16.	4.	1.	0.17	
+	HYDROGRAPH AT	DE01	60.	4.25	21.	5.	2.	0.17	
+	HYDROGRAPH AT	DRE01	69.	4.25	16.	4.	1.	0.17	
+	ROUTED TO	RE01S	68.	4.33	16.	4.	1.	0.17	
+	HYDROGRAPH AT	D05	197.	4.33	39.	10.	3.	0.16	
+	2 COMBINED AT	CD05	265.	4.33	55.	14.	5.	0.28	
+	DIVERSION TO	DD05I	151.	4.33	29.	7.	2.	0.28	
+	HYDROGRAPH AT	DD05	114.	4.33	26.	7.	2.	0.28	
+	ROUTED TO	RD05S	114.	4.50	26.	7.	2.	0.28	
+	HYDROGRAPH AT	D04	63.	4.33	15.	4.	1.	0.06	
+	ROUTED TO	RD04	63.	4.42	15.	4.	1.	0.06	
+	HYDROGRAPH AT	D01	97.	4.33	21.	5.	2.	0.08	
+	3 COMBINED AT	CD01	266.	4.42	62.	16.	5.	0.26	
+	DIVERSION TO	DD01I	106.	4.42	27.	7.	2.	0.26	
+	HYDROGRAPH AT	DD01	159.	4.42	35.	9.	3.	0.26	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	ROUTED TO	RD01E	156.	4.50	35.	9.	3.	0.26	
+	HYDROGRAPH AT	DRD05	151.	4.33	29.	7.	2.	0.28	
+	ROUTED TO	RD05E	151.	4.33	29.	7.	2.	0.28	
+	DIVERSION TO	DD052I	98.	4.33	23.	6.	2.	0.28	
+	HYDROGRAPH AT	DD052	52.	4.33	6.	2.	1.	0.28	
+	ROUTED TO	RD05S2	42.	4.58	6.	2.	1.	0.28	
+	HYDROGRAPH AT	D02	199.	4.25	35.	9.	3.	0.14	
+	3 COMBINED AT	CD02	358.	4.42	76.	19.	6.	0.36	
+	ROUTED TO	RD02	356.	4.42	76.	19.	6.	0.36	
+	HYDROGRAPH AT	DRE02	171.	4.33	34.	9.	3.	0.18	
+	ROUTED TO	RE02S	168.	4.50	34.	9.	3.	0.18	
+	HYDROGRAPH AT	DRD052	98.	4.33	23.	6.	2.	0.28	
+	ROUTED TO	RD05E2	97.	4.42	23.	6.	2.	0.28	
+	HYDROGRAPH AT	D06	130.	4.33	28.	7.	2.	0.11	
+	3 COMBINED AT	CD06	391.	4.42	84.	22.	7.	0.36	
+	ROUTED TO	RD06	389.	4.42	84.	22.	7.	0.36	
+	HYDROGRAPH AT	D07	63.	4.25	12.	3.	1.	0.05	
+	2 COMBINED AT	CD07	446.	4.42	96.	25.	8.	0.41	
+	ROUTED TO	RD07	439.	4.58	96.	25.	8.	0.41	
+	HYDROGRAPH AT	DRE03	846.	4.58	138.	35.	12.	0.86	
+	ROUTED TO	RE03S	844.	4.75	138.	35.	12.	0.86	
+	HYDROGRAPH AT	D08	49.	4.33	13.	3.	1.	0.05	
+	2 COMBINED AT	CD08	878.	4.75	151.	38.	13.	0.88	
+	ROUTED TO	RD08	874.	4.83	151.	38.	13.	0.88	
+	HYDROGRAPH AT	D03	122.	4.25	25.	6.	2.	0.10	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		DRE09I	581.	4.67	76.	19.	6.	0.51	
+	ROUTED TO	RE09S	518.	4.92	76.	19.	6.	0.51	
+	HYDROGRAPH AT	D09	360.	4.17	62.	16.	5.	0.22	
+	DIVERSION TO	LD09D	346.	4.17	27.	7.	2.	0.22	
+	HYDROGRAPH AT	LD09	352.	4.25	35.	9.	3.	0.22	
+	2 COMBINED AT	CD09	591.	4.92	108.	27.	9.	0.69	
+	5 COMBINED AT	CD03	1767.	4.83	416.	106.	35.	2.43	
+	ROUTED TO	RD03	1762.	4.83	416.	106.	35.	2.43	
+	HYDROGRAPH AT	C11	90.	4.17	12.	3.	1.	0.05	
+	HYDROGRAPH AT	C10	85.	4.17	13.	3.	1.	0.05	
+	ROUTED TO	RC10	85.	4.17	13.	3.	1.	0.05	
+	3 COMBINED AT	CC11	1799.	4.83	437.	111.	37.	2.54	
+	ROUTED TO	RC11	1797.	4.92	437.	111.	37.	2.54	
+	HYDROGRAPH AT	C08	170.	4.25	29.	7.	2.	0.12	
+	2 COMBINED AT	CC08	1843.	4.92	462.	118.	39.	2.66	
+	ROUTED TO	RC08	1837.	4.92	462.	118.	39.	2.66	
+	HYDROGRAPH AT	C06	222.	4.25	38.	9.	3.	0.15	
+	2 COMBINED AT	CC06	1895.	4.92	493.	126.	42.	2.81	
+	ROUTED TO	RC06	1894.	5.00	493.	126.	42.	2.81	
+	HYDROGRAPH AT	DRD01	106.	4.42	27.	7.	2.	0.26	
+	ROUTED TO	RD01S	106.	4.58	27.	7.	2.	0.26	
+	HYDROGRAPH AT	C07	78.	4.33	18.	5.	2.	0.07	
+	2 COMBINED AT	CC07	175.	4.50	44.	11.	4.	0.17	
+	ROUTED TO	RC07	174.	4.67	44.	11.	4.	0.17	
+	HYDROGRAPH AT	C09	66.	4.25	14.	4.	1.	0.06	
+	ROUTED TO	RC09	56.	4.50	14.	4.	1.	0.06	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	C05	151.	4.33	35.	9.	3.	0.14	
+	HYDROGRAPH AT	C01	37.	4.25	8.	2.	1.	0.03	
+	ROUTED TO	RC01	36.	4.50	8.	2.	1.	0.03	
+	HYDROGRAPH AT	C02	41.	4.25	10.	3.	1.	0.04	
+	5 COMBINED AT	CC02	436.	4.50	111.	28.	9.	0.44	
+	ROUTED TO	RC02	435.	4.50	111.	28.	9.	0.44	
+	HYDROGRAPH AT	C03	68.	4.17	11.	3.	1.	0.04	
+	HYDROGRAPH AT	C12	3.	5.25	2.	1.	0.	0.01	
+	ROUTED TO	RC12	3.	5.75	2.	1.	0.	0.01	
+	HYDROGRAPH AT	C13	248.	4.25	50.	13.	4.	0.18	
+	DIVERSION TO	LC13D	248.	4.25	23.	6.	2.	0.18	
+	HYDROGRAPH AT	LC13	224.	4.42	28.	7.	2.	0.18	
+	2 COMBINED AT	CC13	224.	4.42	30.	8.	3.	0.19	
+	DIVERSION TO	DC13I	183.	4.42	20.	5.	2.	0.19	
+	HYDROGRAPH AT	DC13	41.	4.33	10.	3.	1.	0.19	
+	ROUTED TO	RC13W	41.	4.58	10.	3.	1.	0.19	
+	HYDROGRAPH AT	C04	40.	4.33	10.	3.	1.	0.04	
+	ROUTED TO	RC04	40.	4.42	10.	3.	1.	0.04	
+	5 COMBINED AT	CC03	2204.	5.00	615.	158.	53.	3.37	
+	ROUTED TO	RC03	2203.	5.00	615.	158.	53.	3.37	
+	HYDROGRAPH AT	B07	35.	4.08	4.	1.	0.	0.02	
+	2 COMBINED AT	CB07	2204.	5.00	618.	158.	53.	3.39	
+	ROUTED TO	RB07	2199.	5.08	618.	158.	53.	3.39	
+	HYDROGRAPH AT	B05	91.	4.25	20.	5.	2.	0.09	
+	DIVERSION TO	LB05D	2.	1.50	0.	0.	0.	0.09	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		LB05	91.	4.25	20.	5.	2.	0.09	
+	HYDROGRAPH AT	B06	20.	4.17	4.	1.	0.	0.01	
+	3 COMBINED AT	CB05	2230.	5.08	636.	163.	54.	3.49	
+	ROUTED TO	RB05	2227.	5.08	636.	163.	54.	3.49	
+	HYDROGRAPH AT	B04	178.	4.08	22.	6.	2.	0.08	
+	DIVERSION TO	LB04D	178.	4.08	22.	6.	2.	0.08	
+	HYDROGRAPH AT	LB04	0.	0.08	0.	0.	0.	0.08	
+	HYDROGRAPH AT	B02	191.	4.17	28.	7.	2.	0.10	
+	DIVERSION TO	LB02D	50.	3.75	5.	1.	0.	0.10	
+	HYDROGRAPH AT	LB02	191.	4.17	23.	6.	2.	0.10	
+	ROUTED TO	RB02	189.	4.17	23.	6.	2.	0.10	
+	HYDROGRAPH AT	B03	10.	4.17	2.	0.	0.	0.01	
+	4 COMBINED AT	CB03	2247.	5.08	656.	168.	56.	3.66	
+	ROUTED TO	RB03	2243.	5.08	656.	168.	56.	3.66	
+	HYDROGRAPH AT	B01	162.	4.08	16.	4.	1.	0.07	
+	DIVERSION TO	LB01D	25.	3.67	2.	1.	0.	0.07	
+	HYDROGRAPH AT	LB01	162.	4.08	14.	3.	1.	0.07	
+	2 COMBINED AT	CB01	2244.	5.08	667.	171.	57.	3.73	
+	ROUTED TO	RB01	2235.	5.17	667.	171.	57.	3.73	
+	HYDROGRAPH AT	B12	233.	4.17	27.	7.	2.	0.12	
+	HYDROGRAPH AT	B11	107.	4.17	13.	3.	1.	0.06	
+	DIVERSION TO	LB11D	103.	4.08	6.	1.	0.	0.06	
+	HYDROGRAPH AT	LB11	95.	4.25	7.	2.	1.	0.06	
+	HYDROGRAPH AT	DRDC13	183.	4.42	20.	5.	2.	0.19	
+	ROUTED TO	RC13S	166.	5.08	20.	5.	2.	0.19	
+	HYDROGRAPH AT	B13	445.	4.08	52.	13.	4.	0.22	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	DIVERSION TO	LB13D	445.	4.08	37.	9.	3.	0.22	
+	HYDROGRAPH AT	LB13	224.	4.42	15.	4.	1.	0.22	
+	ROUTED TO	RB13	216.	4.58	15.	4.	1.	0.22	
+	HYDROGRAPH AT	B14	195.	4.25	44.	11.	4.	0.15	
+	DIVERSION TO	LB14D	195.	4.25	21.	5.	2.	0.15	
+	HYDROGRAPH AT	LB14	174.	4.50	24.	6.	2.	0.15	
+	3 COMBINED AT	CB14	367.	4.58	59.	15.	5.	0.52	
+	ROUTED TO	RB14	336.	4.67	59.	15.	5.	0.52	
+	4 COMBINED AT	CB12	2349.	5.08	731.	187.	62.	4.43	
+	ROUTED TO	RB12	2315.	5.42	731.	187.	62.	4.43	
+	HYDROGRAPH AT	A01	1075.	4.17	154.	39.	13.	0.51	
+	DIVERSION TO	LA01D	953.	4.08	71.	18.	6.	0.51	
+	HYDROGRAPH AT	LA01	1041.	4.25	84.	21.	7.	0.51	
+	2 COMBINED AT	CA01	2349.	5.42	799.	204.	68.	4.94	
+	HYDROGRAPH AT	B10	95.	4.33	22.	6.	2.	0.11	
+	DIVERSION TO	LB10D	95.	4.33	21.	5.	2.	0.11	
+	HYDROGRAPH AT	LB10	7.	6.75	1.	0.	0.	0.11	

*** NORMAL END OF HEC-1 ***

APPENDIX G 10-year, 6-hour future conditions HEC-1 SUMMARY

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY   1991                *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*  RUN DATE  04/30/02  TIME  10:25:31   *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*            (916) 551-1748             *
*                                       *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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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


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

    1         ID   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
    2         ID   ********************************************************************************
    3         ID   **                                                                            **
    4         ID   **                     Granite Reef ADMP                                      **
    5         ID   **                                                                            **
    6         ID   ********************************************************************************
    7         ID   ********************************************************************************
    8         ID   PROJECT:                 Granite Reef ADMP
    9         ID   CLIENT:                  Flood Control District of Maricopa County
   10         ID   PREPARED BY:             Entellus, Inc.
   11         ID   PROJECT No:              FCD                Entellus 310.021
   12         ID   FILE NAME: FUT-10.DAT                          CREATED DATE: MARCH 28, 2002
   13         ID   MODIFIED:
   14         ID   STORM:                   10-year 6-hour Storm
   15         ID   DEVELOPMENT CONDITIONS: Future Conditions
   16         ID
   17         ID
   18         ID
   19         ID
   20         ID   DDM MCUHP1
              *
              *
              *
   21         ID
   22         IT       5                      500
   23         IO       5
              *
              *DIAGRAM
              *
   24         IN      15
   25         JD    2.03     0.01
   26         PC   0.000    0.008    0.016    0.025    0.033    0.041    0.050    0.058    0.066    0.074
   27         PC   0.087    0.099    0.118    0.138    0.216    0.377    0.834    0.911    0.931    0.950
   28         PC   0.962    0.972    0.983    0.991    1.000
   29         JD   2.017     0.50
   30         JD   1.979     2.80
   31         PC   0.000    0.009    0.016    0.025    0.034    0.042    0.051    0.059    0.067    0.076
   32         PC   0.087    0.100    0.120    0.163    0.252    0.451    0.694    0.837    0.900    0.938
   33         PC   0.950    0.963    0.975    0.988    1.000
   34         JD   1.872     16.0
   35         PC   0.000    0.009    0.020    0.030    0.048    0.063    0.076    0.090    0.105    0.119
   36         PC   0.135    0.152    0.175    0.222    0.304    0.472    0.670    0.796    0.868    0.912
   37         PC   0.946    0.960    0.973    0.987    1.000
   38         JD   1.648     90.0
   39         PC   0.000    0.021    0.035    0.051    0.071    0.087    0.105    0.125    0.143    0.160
   40         PC   0.179    0.201    0.232    0.281    0.364    0.500    0.658    0.773    0.841    0.888
   41         PC   0.927    0.945    0.964    0.982    1.000
   42         JD   1.157    500.0
   43         PC   0.000    0.024    0.043    0.059    0.078    0.098    0.119    0.141    0.162    0.186
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   44          PC   0.212   0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
   45          PC   0.907   0.930   0.954   0.977   1.000
               *
               *
1                                        HEC-1 INPUT                                                PAGE
2

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


   46          KK     G03   BASIN
   47          BA    .093
   48          LG    0.23    0.25    5.60    0.26      55
   49          UC   0.488   0.378
   50          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   51          UA     100
               *
               *
               * *** DIVERSION DG03 ************************************************************
               *
               * See Diversion Calculation in Appendix D of Hydrology Report.
               *
               * DDM   ***** Preserved *****

   52          KK    DG03
   53          DT   DG03I
   54          DI       0       7      22      43      70     101     124     180     217     264
   55          DQ       0     3.5      11      22      35      51      63      92     112     137
               *
               *
               * Route is a Minor Arterial Road with a median.
               *

   56          KK   RG03S
   57          RS       7    FLOW       0
   58          RC    .035   0.015    .035    1322  0.0024
   59          RX       0       1      40      41     105     106     146     147
   60          RY       8       2       1      .5      .5       1       2       8
               *

   61          KK     G01   BASIN
   62          BA    .049
   63          LG    0.21    0.25    4.80    0.38      57
   64          UC   0.792   0.832
   65          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
   66          UA     100
               *
               *
               *
               * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG03.
               * THE HARD-CODE VALUE IS 50% OF CG03'S CONTRIBUTING AREA.
               * SEE DIVERSION DG03.
               *
               * DDM   ***** Preserved *****

   67          KK    CG01
   68          HC       2   0.096
               *
               *
               * *** DIVERSION DG01 ************************************************************
               *
               * See Diversion Calculation in Appendix D of Hydrology Report.
               *
               * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                                PAGE
3

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


   69          KK    DG01
   70          DT   DG01I
   71          DI       0      10      29      57      92     134     164     194     233     333
   72          DQ       0       7      21      41      66      96     117     139     166     236
               *
               *
               * Route is a Minor Arterial Road.
               *

   73          KK   RG01S
   74          RS       1    FLOW       0
   75          RC   0.035   0.015   0.035    2625  0.0014
   76          RX       0       1      40      41     105     106     146     147
```

```
 77          RY       8       2       1      .5      .5       1       2       8
             *

 78          KK     F04   BASIN
 79          KM
 80          KM    This basin's original area was 0.073 sq mi.  The infield area is bermed
 81          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
 82          KM    from the subbasin calculations to account for the storage.
 83          KM
 84          BA    .060
 85          LG   0.15    0.25    4.80    0.42      68
 86          UC  0.750   0.899
 87          UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 88          UA    100
             *
             *

 89          KK     G04   BASIN
 90          BA    .045
 91          LG   0.25    0.25    4.80    0.35      51
 92          UC  0.396   0.360
 93          UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 94          UA    100
             *
             *
             * Route is a Subdivision Road.
             * N steps Calculation didn't work for this Route.
             *

 95          KK    RG04
 96          RS       1    FLOW       0
 97          RC    .035   0.015   0.035    1336  0.0033
 98          RX       0       1      28      29      57      58      86      87
 99          RY       8       2       1     0.5     0.5       1       2       8
             *
1                                        HEC-1 INPUT                                    PAGE
4

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

100          KK     G05   BASIN
101          BA    .045
102          LG   0.24    0.15    7.00    0.14      53
103          UC  0.404   0.370
104          UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
105          UA    100
             *
             *
             * Route is a Subdivision Road.
             * N steps Calculation didn't work for this Route.
             *

106          KK    RG05
107          RS       1    FLOW       0
108          RC  0.035   0.015   0.035    1994  0.0026
109          RX       0       1      28      29      57      58      86      87
110          RY       8       2       1     0.5     0.5       1       2       8
             *

111          KK     G06   BASIN
112          BA    .127
113          LG   0.10    0.29    2.65    1.70      80
114          UC  0.329   0.186
115          UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
116          UA    100
             *
             *
             *
             * *** STORAGE ROUTING LG06 ***********************************************
             *
             * See the detention calculations in the Appendix.
             * DDM    ***** Preserved *****

117          KK    LG06
118          DT   LG06D     8.0
119          DI       0     100    1000   10000
120          DQ       0     100    1000   10000
             *
             *
             * *** DIVERSION DG06 *****************************************************
```

```
                *
                * THIS DIVESION IS DUE TO THE DETENTION BASIN.
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****

  121           KK    DG06
  122           DT   DG06I
  123           DI       0      50     100     200     300     500     700     900    1000
  124           DQ       0      25      49      75     132     195     230     259     287
                *
                *
                * *** STORAGE ROUTING LG06A ********************************************
                *
                * THE STORAGE CALCULATIONS CAN BE FOUND IN THE APPENDIX.
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                     PAGE
5

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

  125           KK   LG06A
  126           DT  LG06AD    4.25
  127           DI       0     100    1000   10000
  128           DQ       0     100    1000   10000
                *
                *

  129           KK     G02   BASIN
  130           BA    .075
  131           LG    0.21    0.25    4.80    0.38      52
  132           UC   1.558   1.512
  133           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  134           UA     100
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG06.
                * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
                * SEE DIVERSION DG06.
                *
                * DDM   ***** Preserved *****

  135           KK    CG02
  136           HC       4   0.229
                *
                *
                * Route is a Minor Arterial Road.
                * N steps calculation did not work for this route.

  137           KK    RG02
  138           RS       1    FLOW       0
  139           RC   0.035   0.015   0.035    1358  0.0018
  140           RX       0       1      26      27      62      63      88      89
  141           RY       8       2       1     0.5     0.5       1       2       8
                *

  142           KK     F06   BASIN
  143           BA    .103
  144           LG    0.23    0.25    4.80    0.36      49
  145           UC   0.833   0.610
  146           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  147           UA     100
                *
                *
                * DDM   ***** Preserved *****

  148           KK    CF06
  149           HC       2
                *
                *
                * Route is a Minor Arterial Road.
                *
1                                       HEC-1 INPUT                                     PAGE
6

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

  150           KK    RF06
  151           RS       4    FLOW       0
```

```
152          RC   0.035   0.015   0.035    1299   0.002
153          RX       0       1      26      27      62      63      88      89
154          RY       8       2       1     0.5     0.5       1       2       8
             *
155          KK     F05   BASIN
156          BA    .088
157          LG    0.24    0.25    4.80    0.36      52
158          UC   0.758   0.568
159          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
160          UA     100
             *
             * DDM   ***** Preserved *****

161          KK    CF05
162          HC       2
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * ALL EXCESS OVERLAND AMOUNT FLOWS SOUTH.
             *
             *
             * STORM DRAIN ANALYSIS SHOWS A CAPACITY OF 185 CFS, 1/3 IS CARRIED AT
             * THIS LOCATION.(61 cfs) 20% Clogging Factor means 49 cfs here.
             * (61 x .8 = 49cfs)
             *
             * *** DIVERSION DF05 ***********************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****

163          KK    DF05
164          DT   DF05I
165          DI       0       1      50     100     200     300     400     500    1000    2000
166          DQ       0      .9      10      51     151     251     351     451     951    1951
             *
             *
             * THE INFORMATION FOR THE STORM DRAIN WAS MEASURED IN THE FIELD.
             * THE PIPE IS A 66" RCP, SLOPE WAS ESTIMATED TO BE 0.004 FT/FT.
             *

167          KK   RF05W
168          KO       3
169          RK    1302   0.001    0.02            CIRC       3
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05 & DG01.
             * THE HARD-CODE VALUE IS 20% OF CG01 AND 20% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DG01 AND DF05.
             *
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                        PAGE
7

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

170          KK    CF04
171          HC       3   0.162
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * SEE SPLIT FLOW CALCULATIONS IN APPENDIX.
             *
             *
             * *** DIVERSION DF04 ***********************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****

172          KK    DF04
173          DT   DF04I
174          DI       0       9      30      57      93     136     150     198     336     400
175          DQ       0       5      16      30      50      73      82     105     170     200
             *
             *
             * DIVERSION RECOVER D05
             *

176          KK    F05R
```

```
 177          DR   DF05I
              *
              * Route is a Minor Arterial Road.
              * N steps calculation did not work for this route.

 178          KK   RF05S
 179          RS       1    FLOW       0
 180          RC   0.035   0.015   0.035    2167  0.0032
 181          RX       0       1      26      27      62      63      88      89
 182          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              *

 183          KK     F03   BASIN
 184          BA    .170
 185          LG    0.21    0.25    4.80    0.37      58
 186          UC   0.921   0.619
 187          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 188          UA     100
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05.
              * THE HARD-CODE VALUE IS 80% OF CF05'S CONTRIBUTING AREA.
              * SEE DIVERSION DF05.
              *
              * DDM   ***** Preserved *****
1                                      HEC-1 INPUT                                      PAGE
8

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

 189          KK    CF03
 190          HC       2    0.51
              *
              *
              * Route is a Minor Arterial Road.
              *
              *

 191          KK    RF03
 192          RS       1    FLOW       0
 193          RC   0.035   0.015   0.035     482  0.0035
 194          RX       0       1      26      27      62      63      88      89
 195          RY       8       3       2       0       0       2       3       8
              *
              *
              *
              * DIVERSION RECOVER G06
              *

 196          KK    G06R
 197          DR   DG06I
              *
              *
              * Route is a Minor Arterial Road along Pima Road.
              *
              *

 198          KK   RG06S
 199          RS      29    FLOW       0
 200          RC   0.035   0.015   0.035    5286  0.0028
 201          RX       0       1      26      27      62      63      88      89
 202          RY       8       3       2       0       0       2       3       8
              *

 203          KK     F07   BASIN
 204          BA    .250
 205          LG    0.10    0.29    2.65    1.70      80
 206          UC   0.704   0.559
 207          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 208          UA     100
              *
              *
              * *** STORAGE ROUTING LF07 ***********************************************
              *
              * See the detention calculations in the Appendix.
              * DDM   ***** Preserved *****

 209          KK    LF07
```

```
210          DT   LF07D    15.2
211          DI       0     100    1000   10000
212          DQ       0     100    1000   10000
             *
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DG06.
             * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
             * SEE DIVERSION DG06.
             *
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                    PAGE
9

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


213          KK    CF07
214          HC       2   0.314
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANAYLSIS SHOWS THE MAXIMUM FLOW IN THE STORM DRAIN AT THIS
             * LOCATION IS 16 CFS.  20% clogging factor  means 13 cfs (16cfs * .8 = 13 cfs).
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             *
             *
             * *** DIVERSION DF07 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****

215          KK    DF07
216          DT   DF07I
217          DI       0       1      13     100     200     400     600     800    1000    2000
218          DQ       0       0       0      87     187     387     587     787     987    1987
             *
             *
             * Route is a Storm Drain 36" RCP with a Slope of 0.001 ft/ft
             *
             *

219          KK   RF07W
220          KO       3
221          RD    1315   0.001   0.013            CIRC       3
             *

222          KK     F02   BASIN
223          BA    .046
224          LG    0.23    0.25    4.80    0.36      55
225          UC   0.708   0.756
226          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
227          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF07.
             * THE HARD-CODE VALUE IS 10% OF CF07'S CONTRIBUTING AREA.
             * SEE DIVERSION DF07.
             *
             * DDM   ***** Preserved *****

228          KK    CF02
229          HC       3   0.586
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THIS STORM DRAIN
             * AT THIS LOCATION IS 63 CFS AND 16 CFS IS IN THE STORMDRAIN FROM THE EAST.
             * 20% clogging factor means 50 cfs (63cfs * 0.8 = 50cfs).
             *
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             *
             * *** DIVERSION DF02 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                    PAGE
1

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

```
230          KK    DF02
231          DT   DF02I
232          DI       0       1      50     100     200     300     400     500    1000    2000
233          DQ       0       1      40      60     160     260     360     460     960    1960
             *
             *
             *
             * ROUTE IS A 5FT RCP STORM DRAIN WITH A SLOPE OF 0.001 FT/FT
             *

234          KK   RF02W
235          KO       3
236          RS       5    FLOW       0
237          RD    1310   0.001    0.02            CIRC       5
             *
             *
             * DIVERSION RECOVER F04
             *

238          KK    F04R
239          DR   DF04I
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

240          KK   RF04S
241          RS      12    FLOW       0
242          RC   0.035   0.013   0.035    2652  0.0023
243          RX       0       1      26      27      62      63      88      89
244          RY       8       3       2       0       0       2       3       8
             *
             *
             * THE WEST SIDE OF THE ROAD IS DIVERTED WEST AND THE EAST SIDE OF THE ROAD
             * FLOWS SOUTH INTO CF01.  THE TOTAL FLOW DOES NOT EXCEED THE CROWN OF THE ROAD
             * SO THE SPLIT IS 50-50.
             *
             * *** DIVERSION DRF04 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****

245          KK   DRF04
246          DT  DRF04I
247          DI       0       1      20      50     100     200     300
248          DQ       0      .5      10      25      50     100     150
             *
```



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

249          KK     F01   BASIN
250          BA    .030
251          LG    0.22    0.25    4.80    0.39      53
252          UC   0.637   0.692
253          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
254          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF04 & DF02.
             * THE HARD-CODE VALUE IS 25% OF CF04 AND 20% OF CF02'S CONTRIBUTING AREA.
             * SEE DIVERSION DF04 AND DF02.
             *
             * DDM   ***** Preserved *****

255          KK    CF01
256          HC       3    0.19
             *
             *
             * THE DIVERSION AT THIS LOCATION IS SOUTH (SEE SPLITFLOW ANALYSIS)
             *
             *
             *
             * *** DIVERSION DF01 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
```

```
                *
                * DDM   ***** Preserved *****

  257           KK    DF01
  258           DT   DF01I
  259           DI       0       7      21      42      75     111     139     188     254     335
  260           DQ       0       0       0       0       0       0       6      18      35      57
                *
                *
                * DIVERSION RECOVER DF02
                *

  261           KK   DRF02
  262           DR   DF02I
                *
                *
                * Route is a Minor Arterial Road.
                * N steps Calculation did not work for this route.

  263           KK   RF02S
  264           RS       1    FLOW       0
  265           RC   0.035   0.015   0.035    1338  0.0022
  266           RX       0       1      26      27      62      63      88      89
  267           RY       8       2       1     0.5     0.5       1       2       8
                *
                *
1                                       HEC-1 INPUT                                          PAGE
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 LINE           ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


  268           KK     E07   BASIN
  269           BA    .084
  270           LG    0.25    0.25    4.80    0.36      49
  271           UC   0.600   0.429
  272           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  273           UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF02.
                * THE HARD-CODE VALUE IS 80% OF CF02'S CONTRIBUTING AREA.
                * SEE DIVERSION DF02.
                *
                * DDM   ***** Preserved *****

  274           KK    CE07
  275           HC       2   0.554
                *
                *
                * Route is a Minor Arterial Road.
                * N steps calculation did not work for this route.

  276           KK    RE07
  277           RS       1    FLOW       0
  278           RC   0.035   0.015   0.035    1335  0.0025
  279           RX       0       1      26      27      62      63      88      89
  280           RY       8       2       1     0.5     0.5       1       2       8
                *

  281           KK     E05   BASIN
  282           KM
  283           KM    This basin's original area was 0.060 sq mi.  The infield area is bermed
  284           KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
  285           KM    from the subbasin calculations to account for the storage.
  286           KM
  287           BA    .047
  288           LG    0.21    0.25    4.80    0.37      57
  289           UC   0.496   0.399
  290           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  291           UA     100
                *
                * DDM   ***** Preserved *****

  292           KK    CE05
  293           HC       2
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 92 CFS.
                * THE TOTAL FLOW WAS DIVIDED BY E05, E04, AND THE BASIN WEST OF THE PROJECT
```

```
                * AREA, SO 31 CFS AT THIS LOCATION.
                * 20% clogging factor means 25cfs at this location (31cfs * 0.8 = 25cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DE05 ********************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                                  PAGE
13

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

         294    KK    DE05
         295    DT   DE05I
         296    DI       0       1      50     100     200     300     400     500    1000    2000
         297    DQ       0       0      25      75     175     275     375     475     975    1975
                *
                *
                *
                * ROUTE IS A 5FT RCP WITH A SLOPE OF 0.0021 FT/FT.
                *
         298    KK   RE05W
         299    RK    1490  0.0021    0.02            CIRC       5
                *
         300    KK     E04   BASIN
         301    BA    .038
         302    LG    0.22    0.25    4.80    0.39      47
         303    UC   0.858   0.938
         304    UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
         305    UA     100
                *
                *
                *
                * *** STORAGE ROUTING LE04 ***************************************************
                *
                * DDM   ***** Preserved *****
         306    KK    LE04
         307    DT   LE04D     1.5
         308    DI       0     100    1000   10000
         309    DQ       0     100    1000   10000
                *
                * DIVERSION RECOVER DF01
                *
         310    KK  DRF01I
         311    DR   DF01I
                *
                *
                *
                * Route is a Minor Arterial Road.
                *
         312    KK   RF01S
         313    RS       1    FLOW       0
         314    RC   0.035   0.015   0.035    2619  0.0031
         315    RX       0       1      26      27      62      63      88      89
         316    RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF01 & DE05.
                * THE HARD-CODE VALUE IS 0% OF CF01 AND 10% OF CE05'S CONTRIBUTING AREA.
                * SEE DIVERSION DF01 AND DE05.
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                                  PAGE
14

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

         317    KK    CE04
         318    HC       3   0.098
                *
                *
                * THERE IS A DIVERSION SOUTH (SEE SPLITFLOW CALCULATIONS)
```

```
                *
                * *** DIVERSION DE04 ***********************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****
      319       KK    DE04
      320       DT   DE04I
      321       DI       0       3      31      59      91     126     151     184     222     267
      322       DQ       0       0       0       0       0       0       3       9      18      30
                *
                *
                * DDM   ***** Preserved *****

      323       KK   DUMMY
      324       HC       3
                *

      325       KK     E08   BASIN
      326       BA    .031
      327       LG    0.24    0.25    4.80    0.35      51
      328       UC   0.671   0.757
      329       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      330       UA     100
                *
                *
                *
                * Route is a Minor Arterial Road with a wall on the west side.
                *

      331       KK    RE08
      332       RS       7    FLOW       0
      333       RC   0.035   0.015   0.035    1326  0.0029
      334       RX       0       1      19      25      30      49      79      80
      335       RY      10     1.5       0       0       0       0     1.5       8
                *

      336       KK     E06   BASIN
      337       BA    .036
      338       LG    0.24    0.25    4.80    0.36      53
      339       UC   0.683   0.774
      340       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      341       UA     100
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                          PAGE
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     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

      342       KK    CE06
      343       HC       2
                *
                *
                *
                * Route is a Minor Arterial Road with a wall on the west side.
                *

      344       KK    RE06
      345       RS      16    FLOW       0
      346       RC   0.035   0.015   0.035    3333  0.0014
      347       RX       0       1      19      25      30      49      79      80
      348       RY      10     1.5       0       0       0       0     1.5       8
                *

      349       KK     E03   BASIN
      350       BA    .070
      351       LG    0.23    0.25    4.80    0.36      53
      352       UC   1.267   1.965
      353       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      354       UA     100
                *
                *
                * DIVERSION RECALL DF07
                *

      355       KK   DRF07
      356       DR   DF07I
                *
```

```
                * Route is a minor arterial along Pima Rd.
                *
  357           KK   RF07S
  358           RS      23    FLOW       0
  359           RC   0.035   0.015   0.035    5280  0.0023
  360           RX       0       1      40      41     104     105     145     146
  361           RY       8       3     1.5     .75    0.75     1.5       3       8
                *
                *
                *

  362           KK     E09   BASIN
  363           BA    .223
  364           LG    0.10    0.29    2.65    1.70      80
  365           UC   0.712   0.599
  366           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  367           UA     100
                *
                *
                * *** STORAGE ROUTING LE09 *********************************************
                *
                * See the detention calculations in the Appendix.
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE
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      LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  368           KK    LE09
  369           DT   LE09D    13.6
  370           DI       0     100    1000   10000
  371           DQ       0     100    1000   10000
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF07.
                * THE HARD-CODE VALUE IS 90% OF CF07'S CONTRIBUTING AREA.
                * SEE DIVERSION DF07.
                *
                * DDM   ***** Preserved *****

  372           KK    CE09
  373           HC       2   0.499
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
                * BASIN EAST OF THE PROJECT AREA, WHICH IS 19 CFS AT THIS LOCATION.
                *
                * 20% clogging factor means 15cfs, (19cfs * 0.8 = 15cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH AT THIS DIVERSION LOCATION.
                *
                * *** DIVERSION DE09 *****************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****

  374           KK    DE09
  375           DT   DE09I
  376           DI       0       1      50     100     200     300     400     500    1000    2000
  377           DQ       0       0      35      85     185     285     385     485     985    1985
                *
                *
                *
                * ROUTE IS A 6FT RCP WITH A SLOPE OF 0.0009 FT/FT.
                *
                *

  378           KK   RE09W
  379           KO       3
  380           RD     779  0.0009   0.013            CIRC       6
                *
                *
                *
                * DIVERSION RECOVER DE05
                *
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```

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

 381          KK  DRE05I
 382          DR   DE05I
              *
              *
              * Route is a Minor Arterial Road.
              *
 383          KK   RE05S
 384          RS       8    FLOW       0
 385          RC   0.035   0.015   0.035    3053  0.0021
 386          RX       0       1      26      27      62      63      88      89
 387          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE05 & DE09.
              * THE HARD-CODE VALUE IS 90% OF CE05 AND 10% OF CE09'S CONTRIBUTING AREA.
              * SEE DIVERSION DE05 AND DE09.
              *
              * DDM   ***** Preserved *****

 388          KK    CE03
 389          HC       4    0.73
              *
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
              *
              * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
              * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
              * BASIN EAST OF THE PROJECT AREA, WHICH IS 38cfs AT THIS LOCATION.
              *
              * 20% clogging factor means that 31cfs (38.4 cfs * 0.8 = 31cfs)
              * ALL OVERLAND FLOWS CONTINUE SOUTH.
              *
              * *** DIVERSION DE03 ************************************************************
              *
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****

 390          KK    DE03
 391          DT   DE03I
 392          DI       0       1      50     100     200     300     400     500    1000    2000
 393          DQ       0       0      19      69     169     269     369     469     969    1969
              *
              *
              *
              * ROUTE IS A 6FT RCP WITH A SLOPE OF 0.0009 FT/FT.
              *
```



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

 394          KK   RE03W
 395          RK    1504  0.0009    0.02            CIRC       6
              *

 396          KK     E02   BASIN
 397          BA    .149
 398          LG    0.24    0.25    4.80    0.37      50
 399          UC   0.933   0.762
 400          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 401          UA     100
              *
              * THE CONTRIBUTING AREA IS HARD-CODED DUE TO DIVERSION DE03.
              * THE HARD-CODE VALUE IS 10% OF CE03'S CONTRIBUTING AREA.
              * SEE DIVERSION DE03.
              *
              * DDM   ***** Preserved *****

 402          KK    CE02
 403          HC       2   0.156
              *
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
              *
              * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
```

```
                * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
                * BASIN EAST OF THE PROJECT AREA, 58cfs AT THIS LOCATION.
                *
                * 20% clogging factor means 46cfs (58cfs * 0.8 = 46cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DE02 ********************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****

 404            KK    DE02
 405            DT   DE02I
 406            DI       0       1      50     100     200     300     400     500    1000    2000
 407            DQ       0       0       4      54     154     254     354     454     954    1954
                *
                *
                *
                * ROUTE IS A 6FT RCP WITH A SLOPE OF 0.0009 FT/FT.
                *

 408            KK   RE02W
 409            KO       3
 410            RD     355  0.0009    0.02            CIRC       6
                *
1                                       HEC-1 INPUT                                        PAGE
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 LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


 411            KK     E01   BASIN
 412            BA    .058
 413            LG    0.20    0.25    4.80    0.38      60
 414            UC   0.658   0.682
 415            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 416            UA     100
                *
                *
                * DIVERSION RECOVER DE04
                *

 417            KK  DRE04I
 418            DR   DE04I
                *
                *
                * Route is a Minor Arterial Road.
                *

 419            KK   RE04S
 420            RS       1    FLOW       0
 421            RC   0.035   0.015   0.035    2636  0.0026
 422            RX       0       1      26      27      62      63      88      89
 423            RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE04 & DE02.
                * THE HARD-CODE VALUE IS 0% OF CE04 AND 40% OF CE02'S CONTRIBUTING AREA.
                * SEE DIVERSION DE04 AND DE02.
                *
                * DDM   ***** Preserved *****

 424            KK    CE01
 425            HC       3    0.12
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                *
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                * THIS AMOUNT IS DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE
                * BASIN EAST OF THE PROJECT AREA, 76.8 cfs AT THIS LOCATION.
                *
                * 20% clogging factor means 61cfs (76.8cfs * 0.8 = 61.4 cfs)
                * THIS DIVERSION IS STORMDRAIN ONLY, ALL OVERLAND FLOW IS SOUTH.
                *
                * *** DIVERSION DE01 ********************************************************
                *
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                        PAGE
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```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 426          KK    DE01
 427          DT   DE01I
 428          DI       0       1      61     100     200     300     400     500    1000    2000
 429          DQ       0       0       0      39     139     239     339     439     939    1939
              *
              * DIVERSION RECALL E01
              *

 430          KK   DRE01
 431          DR   DE01I
              *
              *
              * Route is a Subdivision Road.
              *

 432          KK   RE01S
 433          RS      12    FLOW       0
 434          RC   0.035   0.015   0.035    2567  0.0032
 435          RX       0       1      28      29      57      58      86      87
 436          RY       8       2       1     0.5     0.5       1       2       8
              *

 437          KK     D05   BASIN
 438          KM
 439          KM    This basin's original area was 0.168 sq mi.  The infield area is bermed
 440          KM    so it is self-detained.  The infield area (0.01 sq mi) was subtracted
 441          KM    from the subbasin calculations to account for the storage.
 442          KM
 443          BA    .158
 444          LG    0.23    0.25    4.80    0.38      51
 445          UC   0.942   0.760
 446          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 447          UA     100
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE01.
              * THE HARD-CODE VALUE IS 30% OF CE01'S CONTRIBUTING AREA.
              * SEE DIVERSION DE01.
              *
              * DDM   ***** Preserved *****

 448          KK    CD05
 449          HC       2     0.2
              *
              * *** DIVERSION DD05 ********************************************************
              *
              *  THIS DIVERSION IS AT GRANITE REEF ROAD AND OSBORN ROAD.
              *  THE MAIN PATH IS SOUTH ON GRANITE REEF ROAD.
              * See Diversion Calculation in Appendix D of Hydrology Report.
              *
              * DDM   ***** Preserved *****
```



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

 450          KK    DD05
 451          DT   DD05I
 452          DI       0       5      16      50      93     112     174     217     270     311
 453          DQ       0       2       8      25      47      58      95     121     154     194
              *
              *
              * Route is a Minor Arterial Road.
              * N steps calculation did not work for this route.

 454          KK   RD05S
 455          RS       5    FLOW       0
 456          RC   0.035   0.015   0.035    2669  0.0026
 457          RX       0       1      26      27      62      63      88      89
 458          RY       8       2       1     0.5     0.5       1       2       8
              *

 459          KK     D04   BASIN
 460          BA    .060
 461          LG    0.23    0.25    4.80    0.36      53
```

```
462          UC   0.871   1.076
463          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
464          UA     100
             *
             *
             * Route is a Major Arterial Road.
             *

465          KK    RD04
466          RS       7    FLOW       0
467          RC   0.035   0.015   0.035    1084  0.0018
468          RX       0       1      40      41     104     105     145     146
469          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

470          KK     D01   BASIN
471          BA    .082
472          LG    0.24    0.25    4.80    0.36      53
473          UC   0.904   0.872
474          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
475          UA     100
             *
             * DDM   ***** Preserved *****

476          KK    CD01
477          HC       3
             *
             *
             *
             * *** DIVERSION DD01 ************************************************************
             *
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****
1                                      HEC-1 INPUT                                          PAGE
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        LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

478          KK    DD01
479          DT   DD01I
480          DI       0       9      28      89     168     259     392     475     568     672
481          DQ       0       4      13      41      73     104     152     182     217     256
             *
             *
             *
             * Route is a Major Arterial Road.
             * N steps calculation did not work for this route.

482          KK   RD01E
483          RS       1    FLOW       0
484          RC   0.035   0.015   0.035    1315  0.0024
485          RX       0       1      40      41     104     105     145     146
486          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
             * DIVERSION RECALL D05
             *

487          KK   DRD05
488          DR   DD05I
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

489          KK   RD05E
490          RS       2    FLOW       0
491          RC   0.035   0.015   0.035     560  0.0018
492          RX       0       1      26      27      62      63      88      89
493          RY       8       3       2       0       0       2       3       8
             *
             * *** DIVERSION DD052   *********************************************************
             *
             *  THIS DIVERSION IS AT GRANITE REEF ROAD AND MULBERRY.
             *  THE MAIN PATH IS SOUTH ON MULBERRY.
             * See Diversion Calculation in Appendix D of Hydrology Report.
             *
             * DDM   ***** Preserved *****
```

```
494          KK   DD052
495          DT  DD052I
496          DI       0      37      44      59      80     110     147     178     222     281
497          DQ       0      37      40      47      58      74      95     122     155     195
             *
             *
             * Route is a Subdivision Road. (MULBERRY)
             *
1                                          HEC-1 INPUT                                        PAGE
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        LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


498          KK  RD05S2
499          RS      15    FLOW       0
500          RC   0.035   0.015   0.035    3035  0.0030
501          RX       0       1      28      29      57      58      86      87
502          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

503          KK     D02   BASIN
504          BA    .139
505          LG    0.23    0.25    4.80    0.36      51
506          UC   0.808   0.645
507          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
508          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED BECAUSE OF DIVERSION DD01 & DD052.
             * THE HARD-CODE VALUE IS 60% OF CD01 AND 20% OF DD052'S CONTRIBUTING AREA.
             * SEE DIVERSION DD01 AND DD052.
             *
             * DDM   ***** Preserved *****

509          KK    CD02
510          HC       3   0.304
             *
             *
             * Route is a Major Arterial Road.
             *

511          KK    RD02
512          RS       3    FLOW       0
513          RC   0.035   0.015   0.035    1063  0.0045
514          RX       0       1      40      41     104     105     145     146
515          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
             * DIVERSION RECALL E02
             *

516          KK   DRE02
517          DR   DE02I
             *
             *
             * Route is a Subdivision Road.
             * N steps calculation did not work for this route.

518          KK   RE02S
519          RS       1    FLOW       0
520          RC   0.035   0.015   0.035    2617  0.0028
521          RX       0       1      28      29      57      58      86      87
522          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * DIVERSION RECALL D052
             *
1                                          HEC-1 INPUT                                        PAGE
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        LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


523          KK  DRD052
524          DR  DD052I
             *
             *
             * Route is a Minor Arterial Road.
```

```
                *
                *
525             KK  RD05E2
526             RS       4     FLOW        0
527             RC   0.035    0.015    0.035      767  0.0013
528             RX       0        1       26       27      62       63       88       89
529             RY       8        3        2        0       0        2        3        8
                *
                *
530             KK     D06    BASIN
531             BA    .109
532             LG    0.24     0.25     4.80     0.35      52
533             UC   0.913    0.847
534             UA       0      5.0     16.0     30.0     65.0     77.0     84.0     90.0     94.0     97.0
535             UA     100
                *
                * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE02 & DD052.
                * THE HARD-CODE VALUE IS 60% OF CE02 AND 80% OF DD052'S CONTRIBUTING AREA.
                * SEE DIVERSION DE02 AND DD052.
                *
                * DDM    ***** Preserved *****
536             KK     CD06
537             HC        3   0.283
                *
                *
                * Route is a Minor Arterial Road.
                *
                * N steps calculation did not work for this route.
538             KK     RD06
539             RD
540             RC   0.035    0.015    0.035      609  0.0033
541             RX       0        1       26       27      62       63       88       89
542             RY       8        3        2        0       0        2        3        8
                *
543             KK     D07    BASIN
544             BA    .049
545             LG    0.25     0.25     4.80     0.35      51
546             UC   0.696    0.817
547             UA       0      5.0     16.0     30.0     65.0     77.0     84.0     90.0     94.0     97.0
548             UA     100
                *
                *
                * DDM    ***** Preserved *****
1                                                HEC-1 INPUT                                                    PAGE
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          LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

549             KK     CD07
550             HC        2
                *
                *
                * Route is a Minor Arterial Road.
                *
551             KK     RD07
552             RS       10     FLOW        0
553             RC   0.035    0.015    0.035     3657   0.003
554             RX       0        1       26       27      62       63       88       89
555             RY       8        2        1      0.5     0.5        1        2        8
                *
                * DIVERSION RECALL DE03
                *
556             KK    DRE03
557             DR    DE03I
                *
                *
                *
                * Route is a Subdivision Road.
                *
558             KK    RE03S
559             RS       8     FLOW        0
560             RC   0.035    0.015    0.035     3444  0.0032
```

```
 561          RX       0       1      28      29      57      58      86      87
 562          RY       8       2       1     0.5     0.5       1       2       8
              *
              *

 563          KK     D08   BASIN
 564          BA    .054
 565          LG    0.24    0.25    4.80    0.36      53
 566          UC   0.896   1.346
 567          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 568          UA     100
              *
              *
              * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE03.
              * THE HARD-CODE VALUE IS 90% OF CE03'S CONTRIBUTING AREA.
              * SEE DIVERSION DE03.
              *
              * DDM   ***** Preserved *****

 569          KK    CD08
 570          HC       2   0.714
              *
              *
              * Route is a Minor Arterial Road with a wall on the west side.
              *
1                                        HEC-1 INPUT                                        PAGE
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     LINE     ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 571          KK    RD08
 572          RS       5    FLOW       0
 573          RC   0.035   0.015   0.035    2751  0.0037
 574          RX       0       1      19      25      30      49      79      80
 575          RY      10     1.5       0       0       0       0     1.5       8
              *
              *
              *

 576          KK     D03   BASIN
 577          BA    .103
 578          LG    0.20    0.25    4.50    0.45      52
 579          UC   0.837   0.860
 580          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 581          UA     100
              *
              *
              *
              *
              * DIVERSION RECOVER DE09
              *

 582          KK  DRE09I
 583          DR   DE09I
              *
              *
              * Route is a Minor Arterial Road along Pima Rd.
              *

 584          KK   RE09S
 585          RS      10    FLOW       0
 586          RC   0.035   0.015   0.035    5501  0.0037
 587          RX       0       1      26      27      62      63      88      89
 588          RY       8       2       1     0.5     0.5       1       2       8
              *
              *

 589          KK     D09   BASIN
 590          BA    .216
 591          LG    0.10    0.29    2.65    1.70      80
 592          UC   0.604   0.510
 593          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 594          UA     100
              *
              *
              * *** STORAGE ROUTING LD09 ***********************************************
              *
              * See the detention calculations in the Appendix.
              * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                        PAGE
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 595          KK    LD09
 596          DT   LD09D    13.6
 597          DI       0     100    1000   10000
 598          DQ       0     100    1000   10000
              *
              *
              * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION DE09.
              * THE HARD-CODE VALUE IS 90% OF CE09'S CONTRIBUTING AREA.
              * SEE DIVERSION DE09.
              *
              * DDM   ***** Preserved *****

 599          KK    CD09
 600          HC       2   0.666
              *
              *
              *
              *
              * DDM   ***** Preserved *****

 601          KK    CD03
 602          HC       5
              *
              *
              *
              * Route is a Minor Arterial Road.
              * N steps calculation did not work for this route.

 603          KK    RD03
 604          RS       1    FLOW       0
 605          RC   0.035   0.015   0.035    1307   0.004
 606          RX       0       1      26      27      62      63      88      89
 607          RY       8       2       1     0.5     0.5       1       2       8
              *

 608          KK     C11   BASIN
 609          BA    .050
 610          LG    0.25    0.25    4.40    0.45      49
 611          UC   0.483   0.448
 612          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 613          UA     100
              *

 614          KK     C10   BASIN
 615          BA    .054
 616          LG    0.25    0.25    4.65    0.38      50
 617          UC   0.592   0.579
 618          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 619          UA     100
              *
              *
              * Route is a Minor Arterial Road.
              *
```



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

 620          KK    RC10
 621          RS      13    FLOW       0
 622          RC   0.035   0.015   0.035     688   0.009
 623          RX       0       1      26      27      62      63      88      89
 624          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * DDM   ***** Preserved *****

 625          KK    CC11
 626          HC       3
              *
              *
              * Route is a Minor Arterial Road.
              *
              *
```

```
627          KK    RC11
628          RS       3    FLOW       0
629          RC   0.035   0.015   0.035    1334  0.0015
630          RX       0       1      26      27      62      63      88      89
631          RY       8       2       1     0.5     0.5       1       2       8
             *

632          KK     C08   BASIN
633          BA    .118
634          LG    0.25    0.25    4.40    0.45      51
635          UC   0.804   0.615
636          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
637          UA     100
             *
             * DDM   ***** Preserved *****

638          KK    CC08
639          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

640          KK    RC08
641          RS       4    FLOW       0
642          RC   0.035   0.015   0.035    2205  0.0026
643          RX       0       1      26      27      62      63      88      89
644          RY       8       2       1     0.5     0.5       1       2       8
             *

645          KK     C06   BASIN
646          KM
647          KM    This basin's original area was 0.162 sq mi.  The infield area is bermed
648          KM    so it is self-detained.  The infield area (0.0095 sq mi) was subtracted
649          KM    from the subbasin calculations to account for the storage.
650          KM
```



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

651          BA    .153
652          LG    0.23    0.25    4.30    0.49      52
653          UC   0.758   0.616
654          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
655          UA     100
             *
             * DDM   ***** Preserved *****

656          KK    CC06
657          HC       2
             *
             *
             *
             * This is a channel.
             * N steps calculation did not work for htis route.

658          KK    RC06
659          RS       1    FLOW       0
660          RC    0.04   0.035    0.04    1271  0.0056
661          RX       0       1      30      40      70      80     110     111
662          RY      20      10       8       0       0       8      10      20
             *
             *
             * DIVERSION RECALL D01
             *

663          KK   DRD01
664          DR   DD01I
             *
             *
             * Route is a Minor Arterial Road.
             *

665          KK   RD01S
666          RS      15    FLOW       0
667          RC   0.035   0.015   0.035    2611  0.0023
668          RX       0       1      26      27      62      63      88      89
669          RY       8       2       1     0.5     0.5       1       2       8
             *
```

```
                *
                *
  670           KK     C07   BASIN
  671           BA    .072
  672           LG    0.25    0.25    4.80    0.35      50
  673           UC   0.913   0.990
  674           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  675           UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DD01.
                * THE HARD-CODE VALUE IS 40% OF CD01'S CONTRIBUTING AREA.
                * SEE DIVERSION DD01.
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE
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     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


  676           KK    CC07
  677           HC       2
                *
                *
                *
                * Route is a Minor Arterial Road.
                *

  678           KK    RC07
  679           RS       8    FLOW       0
  680           RC   0.035   0.015   0.035    2638   0.003
  681           RX       0       1      26      27      62      63      88      89
  682           RY       8       2       1     0.5     0.5       1       2       8
                *
                *

  683           KK     C09   BASIN
  684           BA    .057
  685           LG    0.25    0.25    4.80    0.36      50
  686           UC   0.817   0.917
  687           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  688           UA     100
                *
                *
                * Route is a Minor Arterial Road.
                *

  689           KK    RC09
  690           RS      10    FLOW       0
  691           RC   0.035   0.015   0.035    3368   0.003
  692           RX       0       1      26      27      62      63      88      89
  693           RY       8       2       1       0       0       1       2       8
                *

  694           KK     C05   BASIN
  695           BA    .137
  696           LG    0.23    0.25    4.70    0.37      54
  697           UC   1.021   0.945
  698           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  699           UA     100
                *

  700           KK     C01   BASIN
  701           BA    .032
  702           LG    0.22    0.25    4.80    0.37      57
  703           UC   0.742   0.999
  704           UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  705           UA     100
                *
                *
                *
                * Route is a Major Arterial Road.
                *
1                                          HEC-1 INPUT                                          PAGE
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     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
706          KK    RC01
707          RS      11    FLOW       0
708          RC   0.035   0.015   0.035    1217  0.0013
709          RX       0       1      40      41     104      105      145      146
710          RY       8       3     1.5     .75    0.75      1.5        3        8
             *

711          KK     C02   BASIN
712          BA    .036
713          LG    0.15    0.25    4.80    0.40      70
714          UC   0.733   1.065
715          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
716          UA     100
             *
             * DDM   ***** Preserved *****

717          KK    CC02
718          HC       5   0.431
             *
             *
             * Route is a Major Arterial Road.
             *
             *

719          KK    RC02
720          RS       1    FLOW       0
721          RC   0.035   0.015   0.035     632  0.0063
722          RX       0       1      40      45     100      105      145      146
723          RY       8       3       2       0       0        2        3        8
             *

724          KK     C03   BASIN
725          BA    .040
726          LG    0.18    0.25    4.10    0.61      62
727          UC   0.438   0.526
728          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
729          UA     100
             *
             *

730          KK     C12   BASIN
731          BA    .010
732          LG    0.19    0.25    4.10    0.58      64
733          UC   1.500   4.505
734          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
735          UA     100
             *
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *
1                                        HEC-1 INPUT                                    PAGE
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        LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

736          KK    RC12
737          RS      45    FLOW       0
738          RC   0.035   0.015   0.035    2693  0.0007
739          RX       0       1      19      25      30       49       79       80
740          RY      10     1.5       0       0       0        0      1.5        8
             *
             *

741          KK     C13   BASIN
742          BA    .176
743          LG    0.10    0.29    2.65    1.70      80
744          UC   0.712   0.682
745          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
746          UA     100
             *
             * *** STORAGE ROUTING LC13 ***********************************************
             *
             * See the detention calculations in the Appendix.
             * DDM   ***** Preserved *****

747          KK    LC13
748          DT   LC13D    11.2
749          DI       0     100    1000   10000
750          DQ       0     100    1000   10000
```

```
                *
                *
                * DDM   ***** Preserved *****

      751       KK    CC13
      752       HC       2
                *
                *
                * *** DIVERSION DC13 ********************************************************
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 51 CFS.
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                * 20% clogging factor means 41cfs, (51cfs * 0.8 = 41cfs).
                * See Diversion Calculation in Appendix D of Hydrology Report.
                *
                * DDM   ***** Preserved *****

      753       KK    DC13
      754       DT   DC13I
      755       DI       0      10      41     100     200     300     400     500
      756       DQ       0       0       0      59     159     259     359     459
                *
                * ROUTE IS A 42" RCP WITH A SLOPE OF 0.0044 FT/FT.
                *

      757       KK   RC13W
      758       RK    2052   0.005   0.012            CIRC     3.5
                *
1                                        HEC-1 INPUT                                          PAGE
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     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


      759       KK     C04   BASIN
      760       BA    .044
      761       LG   0.18    0.28    4.20    0.51      44
      762       UC  0.900   1.191
      763       UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      764       UA    100
                *
                *
                *
                * Route is a Major Arterial Road.
                *

      765       KK    RC04
      766       RS       8    FLOW       0
      767       RC   0.035   0.015   0.035    1563  0.0106
      768       RX       0       1      40      41     104     105     145     146
      769       RY       8       3     1.5       0       0     1.5       3       8
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION D13.
                * THE HARD-CODE VALUE IS 40% OF CC13'S CONTRIBUTING AREA.
                * SEE DIVERSION D13.
                *
                * DDM   ***** Preserved *****

      770       KK    CC03
      771       HC       5   3.085
                *
                *
                *
                * This route is a channel.
                *

      772       KK    RC03
      773       RS       3    FLOW       0
      774       RC    0.04    0.03    0.04    1097  0.0009
      775       RX       0       1      30      40      70      80     110     111
      776       RY      20      10       8       0       0       8      10      20
                *

      777       KK     B07   BASIN
      778       BA    .016
      779       LG   0.13    0.28    4.35    0.51      49
      780       UC  0.237   0.295
      781       UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      782       UA    100
                *
                * DDM   ***** Preserved *****
```

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

  783     KK    CB07
  784     HC       2
          *
          *
          *
          * Route is a Minor Arterial Road.
          *
  785     KK    RB07
  786     RS       3    FLOW       0
  787     RC   0.035   0.015   0.035    1525  0.0026
  788     RX       0       1      40      41     104     105     145     146
  789     RY       8       3     1.5     .75    0.75     1.5       3       8
          *

  790     KK     B05   BASIN
  791     BA    .088
  792     LG    0.22    0.26    4.15    0.58      44
  793     UC   0.808   0.984
  794     UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  795     UA     100
          *
          * *** STORAGE ROUTING LB05 ***********************************************
          *
          * DDM   ***** Preserved *****

  796     KK    LB05
  797     DT   LB05D    0.16
  798     DI       0     100    1000   10000
  799     DQ       0     100    1000   10000
          *

  800     KK     B06   BASIN
  801     BA    .015
  802     LG    0.13    0.26    4.00    0.64      60
  803     UC   0.404   0.807
  804     UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  805     UA     100
          *
          *
          * DDM   ***** Preserved *****

  806     KK    CB05
  807     HC       3
          *
          *
          *
          * Route is a Minor Arterial Road.
          * N steps did not work for this route.
```



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

  808     KK    RB05
  809     RD
  810     RC   0.035    0.02   0.035     500  0.0052
  811     RX       0       1      40      51      94     105     145     146
  812     RY       8       3       2       0       0       2       3       8
          *

  813     KK     B04   BASIN
  814     BA    .077
  815     LG    0.15    0.25    4.45    0.50      71
  816     UC   0.350   0.308
  817     UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  818     UA     100
          *
          *
          * *** STORAGE ROUTING LB04 ***********************************************
          *
          * MOTOROLA DETENTION BASINS (SEE CALCULATIONS)
          *
          * DDM   ***** Preserved *****
```

```
819          KK    LB04
820          DT   LB04D   12.95
821          DI       0     100    1000   10000
822          DQ       0     100    1000   10000
             *
823          KK     B02   BASIN
824          BA    .101
825          LG    0.15    0.25    4.70    0.41      68
826          UC   0.475   0.451
827          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
828          UA     100
             *
             *
             * *** STORAGE ROUTING LB02 ***********************************************
             *
             * DDM   ***** Preserved *****

829          KK    LB02
830          DT   LB02D    2.64
831          DI       0     100    1000   10000
832          DQ       0     100    1000   10000
             *
             *
             *
             * Route is a Minor Arterial Road.
             * N steps did not work for this route.
1                                    HEC-1 INPUT                                        PAGE
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

833          KK    RB02
834          RD
835          RC   0.035   0.015   0.035     548  0.0186
836          RX       0       1      40      41     104     105     145     146
837          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
838          KK     B03   BASIN
839          BA    .007
840          LG    0.25    0.25    4.65    0.41      47
841          UC   0.358   0.645
842          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
843          UA     100
             *
             *
             * DDM   ***** Preserved *****

844          KK    CB03
845          HC       4    3.39
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

846          KK    RB03
847          KO                                      21
848          RS       3    FLOW       0
849          RC   0.035   0.015   0.035    1348   0.003
850          RX       0       1      40      41     104     105     145     146
851          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

852          KK     B01   BASIN
853          BA    .071
854          LG    0.25    0.25    4.30    0.54      44
855          UC   0.363   0.264
856          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
857          UA     100
             *
             *
             * *** STORAGE ROUTING LB01 ***********************************************
             *
             * DDM   ***** Preserved *****

858          KK    LB01
859          DT   LB01D    1.15
```

```
 860          DI       0     100    1000   10000
 861          DQ       0     100    1000   10000
              *
              *
              *
              * DDM   ***** Preserved *****
```



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

 862          KK    CB01
 863          HC       2
              *
              *
              * Route is a channel.
              * N steps calculation did not work for this route.

 864          KK    RB01
 865          KO                                    21
 866          RS       1    FLOW       0
 867          RC   0.035   0.015   0.035    1320  0.0019
 868          RX       0       1      34      40      50      56      80      81
 869          RY      12       6       4       0       0       4       6      12
              *

 870          KK     B12   BASIN
 871          BA    .119
 872          LG    0.25    0.25    4.80    0.38      39
 873          UC   0.621   0.340
 874          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 875          UA     100
              *

 876          KK     B11   BASIN
 877          BA    .060
 878          LG    0.24    0.25    4.80    0.39      37
 879          UC   0.550   0.395
 880          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 881          UA     100
              *
              * *** STORAGE ROUTING LB11 ***********************************************
              * Pond was assumed to have 1 foot of freeboard.
              * DDM   ***** Preserved *****

 882          KK    LB11
 883          DT   LB11D    2.87
 884          DI       0     100    1000   10000
 885          DQ       0     100    1000   10000
              *
              *
              * DIVERSION RECALL DC13I
              *

 886          KK  DRDC13
 887          DR   DC13I
              *
              *
              * Route is overland flow. (SLOPE ESTIMATED.)
              *
```



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

 888          KK   RC13S
 889          RS      62    FLOW       0
 890          RC   0.035   0.035   0.035    5197   .0058
 891          RX       0     200     300     400     500     600     700     900
 892          RY       5       4       3       0       0       3       4       5
              *

 893          KK     B13   BASIN
 894          BA    .222
 895          LG    0.22    0.26    4.55    0.42      44
 896          UC   0.517   0.331
 897          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 898          UA     100
              *
```

```
                * *** STORAGE ROUTING LB13 ***********************************************
                *
                * DDM   ***** Preserved *****

      899       KK    LB13
      900       DT   LB13D    18.4
      901       DI       0     100    1000   10000
      902       DQ       0     100    1000   10000
                *
                *
                * Route is shallow flow. (SLOPE WAS ESTIMATED.)
                *

      903       KK    RB13
      904       RS       1    FLOW       0
      905       RC   0.035   0.035   0.035    1269   0.004
      906       RX       0     200     300     400     500     600     700     900
      907       RY       5       4       3       0       0       3       4       5
                *

      908       KK     B14   BASIN
      909       BA    .149
      910       LG    0.10    0.25    4.60    0.48      80
      911       UC   0.792   0.842
      912       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      913       UA     100
                *
                * *** STORAGE ROUTING LB14 ***********************************************
                *
                * See the detention calculations in the Appendix.
                * DDM   ***** Preserved *****

      914       KK    LB14
      915       DT   LB14D    10.4
      916       DI       0     100    1000   10000
      917       DQ       0     100    1000   10000
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                     PAGE
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     LINE       ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


      918       KK    CB14
      919       HC       3   0.484
                *
                *
                * Route is a MAJOR ARTERIAL. (SLOPE WAS ESTIMATED.)
                *

      920       KK    RB14
      921       RS      12    FLOW       0
      922       RC   0.035   0.015   0.035    2746   0.004
      923       RX       0       1      30      40     100     110     145     300
      924       RY       8       4       3       0       0       3       4       5
                *
                *
                * DDM   ***** Preserved *****

      925       KK    CB12
      926       HC       4
                *
                *
                * Route is a channel. (SLOPE ESTIMATED FROM UPSTREAM CHANNEL'S SLOPE.)
                *

      927       KK    RB12
      928       KO                                    21
      929       RS       8    FLOW       0
      930       RC   0.035    .035   0.035    4395  0.0019
      931       RX       0     200     330     340     370     380     410     600
      932       RY       9       8       6       0       0       6       8       9
                *

      933       KK     A01   BASIN
      934       BA    .507
      935       LG    0.10    0.25    5.40    0.32      80
      936       UC   0.704   0.318
      937       UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
      938       UA     100
```

```
                *
                * *** STORAGE ROUTING LA01 ***********************************************
                *
                * See the detention calculations in the Appendix.
                * DDM   ***** Preserved *****

 939            KK    LA01
 940            DT   LA01D    35.2
 941            DI       0     100    1000   10000
 942            DQ       0     100    1000   10000
                *
                * DDM   ***** Preserved *****
1                                       HEC-1 INPUT                                          PAGE
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          LINE  ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 943            KK    CA01
 944            HC       2
                *

 945            KK     B10   BASIN
 946            BA    .110
 947            LG    0.21    0.25    4.60    0.49      28
 948            UC   1.075   1.154
 949            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 950            UA     100
                *
                * *** STORAGE ROUTING LB10 ***********************************************
                *
                * DDM   ***** Preserved *****

 951            KK    LB10
 952            DT   LB10D    10.5
 953            DI       0     100    1000   10000
 954            DQ       0     100    1000   10000
                *
 955            ZZ
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1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE
				6-HOUR	24-HOUR	72-HOUR		
HYDROGRAPH AT	G03	90.	4.17	14.	4.	2.	0.09	
DIVERSION TO	DG03I	45.	4.17	7.	2.	1.	0.09	
HYDROGRAPH AT	DG03	45.	4.17	7.	2.	1.	0.09	
ROUTED TO	RG03S	44.	4.33	7.	2.	1.	0.09	
HYDROGRAPH AT	G01	27.	4.42	7.	2.	1.	0.05	
2 COMBINED AT	CG01	71.	4.33	14.	4.	2.	0.10	
DIVERSION TO	DG01I	51.	4.33	10.	3.	2.	0.10	
HYDROGRAPH AT	DG01	20.	4.33	4.	1.	1.	0.10	
ROUTED TO	RG01S	15.	4.67	4.	1.	1.	0.10	
HYDROGRAPH AT	F04	35.	4.42	10.	3.	1.	0.06	
HYDROGRAPH AT	G04	45.	4.17	7.	2.	1.	0.05	
ROUTED TO	RG04	41.	4.25	7.	2.	1.	0.05	
HYDROGRAPH AT	G05	50.	4.17	7.	2.	1.	0.05	
ROUTED TO	RG05	43.	4.33	7.	2.	1.	0.05	
HYDROGRAPH AT	G06	178.	4.08	22.	6.	3.	0.13	
DIVERSION TO	LG06D	178.	4.08	16.	4.	2.	0.13	
HYDROGRAPH AT	LG06	101.	4.33	6.	2.	1.	0.13	
DIVERSION TO	DG06I	49.	4.33	3.	1.	0.	0.13	
HYDROGRAPH AT	DG06	52.	4.33	3.	1.	0.	0.13	
DIVERSION TO	LG06AD	52.	4.33	3.	1.	0.	0.13	
HYDROGRAPH AT	LG06A	0.	0.08	0.	0.	0.	0.13	
HYDROGRAPH AT	G02	24.	4.83	10.	3.	2.	0.08	
4 COMBINED AT	CG02	96.	4.33	23.	6.	4.	0.23	
ROUTED TO	RG02	92.	4.42	23.	6.	4.	0.23	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	F06	65.	4.33	14.	4.	2.	0.10	
+	2 COMBINED AT	CF06	157.	4.42	38.	10.	6.	0.33	
+	ROUTED TO	RF06	156.	4.50	38.	10.	6.	0.33	
+	HYDROGRAPH AT	F05	60.	4.33	13.	3.	2.	0.09	
+	2 COMBINED AT	CF05	212.	4.50	50.	13.	8.	0.42	
+	DIVERSION TO	DF05I	163.	4.50	27.	7.	4.	0.42	
+	HYDROGRAPH AT	DF05	49.	4.17	23.	6.	4.	0.42	
+	ROUTED TO	RF05W	49.	4.25	23.	6.	4.	0.42	
+	3 COMBINED AT	CF04	97.	4.50	37.	10.	6.	0.16	
+	DIVERSION TO	DF04I	52.	4.50	20.	5.	3.	0.16	
+	HYDROGRAPH AT	DF04	45.	4.50	17.	5.	3.	0.16	
+	HYDROGRAPH AT	F05R	163.	4.50	27.	7.	4.	0.42	
+	ROUTED TO	RF05S	155.	4.58	27.	7.	4.	0.42	
+	HYDROGRAPH AT	F03	111.	4.42	26.	7.	4.	0.17	
+	2 COMBINED AT	CF03	258.	4.58	52.	14.	8.	0.51	
+	ROUTED TO	RF03	259.	4.58	52.	14.	8.	0.51	
+	HYDROGRAPH AT	G06R	49.	4.33	3.	1.	0.	0.13	
+	ROUTED TO	RG06S	33.	4.92	3.	1.	0.	0.13	
+	HYDROGRAPH AT	F07	192.	4.33	43.	11.	6.	0.25	
+	DIVERSION TO	LF07D	192.	4.33	31.	8.	4.	0.25	
+	HYDROGRAPH AT	LF07	102.	4.92	14.	3.	2.	0.25	
+	2 COMBINED AT	CF07	135.	4.92	17.	4.	2.	0.31	
+	DIVERSION TO	DF07I	122.	4.92	12.	3.	2.	0.31	
+	HYDROGRAPH AT	DF07	13.	4.75	5.	1.	1.	0.31	
+	ROUTED TO	RF07W	13.	5.33	5.	1.	1.	0.31	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		F02	28.	4.33	7.	2.	1.	0.05	
+	3 COMBINED AT	CF02	277.	4.58	63.	16.	9.	0.59	
+	DIVERSION TO	DF02I	237.	4.58	50.	13.	7.	0.59	
+	HYDROGRAPH AT	DF02	40.	4.17	14.	3.	2.	0.59	
+	ROUTED TO	RF02W	40.	5.25	14.	3.	2.	0.59	
+	HYDROGRAPH AT	F04R	52.	4.50	20.	5.	3.	0.16	
+	ROUTED TO	RF04S	54.	4.50	20.	5.	3.	0.16	
+	DIVERSION TO	DRF04I	27.	4.50	10.	3.	2.	0.16	
+	HYDROGRAPH AT	DRF04	27.	4.50	10.	3.	2.	0.16	
+	HYDROGRAPH AT	F01	19.	4.33	4.	1.	1.	0.03	
+	3 COMBINED AT	CF01	84.	4.50	28.	7.	4.	0.19	
+	DIVERSION TO	DF01I	0.	0.08	0.	0.	0.	0.19	
+	HYDROGRAPH AT	DF01	84.	4.50	28.	7.	4.	0.19	
+	HYDROGRAPH AT	DRF02	237.	4.58	50.	13.	7.	0.59	
+	ROUTED TO	RF02S	232.	4.67	50.	13.	7.	0.59	
+	HYDROGRAPH AT	E07	69.	4.25	12.	3.	2.	0.08	
+	2 COMBINED AT	CE07	279.	4.58	62.	16.	9.	0.55	
+	ROUTED TO	RE07	274.	4.67	62.	16.	9.	0.55	
+	HYDROGRAPH AT	E05	43.	4.25	7.	2.	1.	0.05	
+	2 COMBINED AT	CE05	291.	4.67	68.	18.	10.	0.60	
+	DIVERSION TO	DE05I	266.	4.67	53.	13.	8.	0.60	
+	HYDROGRAPH AT	DE05	25.	4.00	15.	4.	2.	0.60	
+	ROUTED TO	RE05W	25.	4.08	15.	4.	2.	0.60	
+	HYDROGRAPH AT	E04	18.	4.42	5.	1.	1.	0.04	
+	DIVERSION TO	LE04D	18.	4.42	3.	1.	0.	0.04	
+	HYDROGRAPH AT	LE04	12.	5.08	2.	1.	0.	0.04	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	DRF01I	0.	0.08	0.	0.	0.	0.19	
+	ROUTED TO	RF01S	0.	0.08	0.	0.	0.	0.19	
+	3 COMBINED AT	CE04	37.	5.08	17.	5.	3.	0.10	
+	DIVERSION TO	DE04I	0.	0.08	0.	0.	0.	0.10	
+	HYDROGRAPH AT	DE04	37.	5.08	17.	5.	3.	0.10	
+	3 COMBINED AT	DUMMY	153.	4.50	62.	16.	9.	0.45	
+	HYDROGRAPH AT	E08	18.	4.33	4.	1.	1.	0.03	
+	ROUTED TO	RE08	18.	4.50	4.	1.	1.	0.03	
+	HYDROGRAPH AT	E06	21.	4.33	5.	1.	1.	0.04	
+	2 COMBINED AT	CE06	39.	4.42	10.	2.	1.	0.07	
+	ROUTED TO	RE06	38.	4.92	10.	2.	1.	0.07	
+	HYDROGRAPH AT	E03	20.	4.83	9.	3.	2.	0.07	
+	HYDROGRAPH AT	DRF07	122.	4.92	12.	3.	2.	0.31	
+	ROUTED TO	RF07S	111.	5.42	12.	3.	2.	0.31	
+	HYDROGRAPH AT	E09	165.	4.33	39.	10.	6.	0.22	
+	DIVERSION TO	LE09D	165.	4.33	27.	7.	4.	0.22	
+	HYDROGRAPH AT	LE09	86.	4.92	12.	3.	2.	0.22	
+	2 COMBINED AT	CE09	158.	5.42	23.	6.	3.	0.50	
+	DIVERSION TO	DE09I	143.	5.42	19.	5.	3.	0.50	
+	HYDROGRAPH AT	DE09	15.	4.92	5.	1.	1.	0.50	
+	ROUTED TO	RE09W	15.	5.25	5.	1.	1.	0.50	
+	HYDROGRAPH AT	DRE05I	266.	4.67	53.	13.	8.	0.60	
+	ROUTED TO	RE05S	263.	4.83	53.	13.	8.	0.60	
+	4 COMBINED AT	CE03	306.	4.83	74.	19.	11.	0.73	
+	DIVERSION TO	DE03I	275.	4.83	55.	14.	8.	0.73	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		DE03	31.	4.25	19.	5.	3.	0.73	
+	ROUTED TO	RE03W	31.	4.42	19.	5.	3.	0.73	
+	HYDROGRAPH AT	E02	81.	4.42	21.	5.	3.	0.15	
+	2 COMBINED AT	CE02	112.	4.42	39.	10.	6.	0.16	
+	DIVERSION TO	DE02I	66.	4.42	12.	3.	2.	0.16	
+	HYDROGRAPH AT	DE02	46.	4.08	27.	7.	4.	0.16	
+	ROUTED TO	RE02W	46.	4.92	27.	7.	4.	0.16	
+	HYDROGRAPH AT	E01	39.	4.33	9.	2.	1.	0.06	
+	HYDROGRAPH AT	DRE04I	0.	0.08	0.	0.	0.	0.10	
+	ROUTED TO	RE04S	0.	0.08	0.	0.	0.	0.10	
+	3 COMBINED AT	CE01	84.	4.33	36.	10.	6.	0.12	
+	DIVERSION TO	DE01I	23.	4.33	3.	1.	0.	0.12	
+	HYDROGRAPH AT	DE01	61.	4.08	34.	9.	5.	0.12	
+	HYDROGRAPH AT	DRE01	23.	4.33	3.	1.	0.	0.12	
+	ROUTED TO	RE01S	23.	4.58	3.	1.	0.	0.12	
+	HYDROGRAPH AT	D05	86.	4.42	22.	6.	3.	0.16	
+	2 COMBINED AT	CD05	107.	4.50	25.	6.	4.	0.20	
+	DIVERSION TO	DD05I	55.	4.50	12.	3.	2.	0.20	
+	HYDROGRAPH AT	DD05	52.	4.50	13.	3.	2.	0.20	
+	ROUTED TO	RD05S	52.	4.67	13.	3.	2.	0.20	
+	HYDROGRAPH AT	D04	27.	4.50	9.	2.	1.	0.06	
+	ROUTED TO	RD04	27.	4.58	9.	2.	1.	0.06	
+	HYDROGRAPH AT	D01	42.	4.42	12.	3.	2.	0.08	
+	3 COMBINED AT	CD01	119.	4.67	33.	8.	5.	0.34	
+	DIVERSION TO	DD01I	53.	4.67	15.	4.	2.	0.34	
+	HYDROGRAPH AT	DD01	66.	4.67	18.	5.	3.	0.34	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	ROUTED TO	RD01E	62.	4.83	18.	5.	3.	0.34	
+	HYDROGRAPH AT	DRD05	55.	4.50	12.	3.	2.	0.20	
+	ROUTED TO	RD05E	55.	4.58	12.	3.	2.	0.20	
+	DIVERSION TO	DD052I	45.	4.58	12.	3.	2.	0.20	
+	HYDROGRAPH AT	DD052	10.	4.58	1.	0.	0.	0.20	
+	ROUTED TO	RD05S2	9.	4.83	1.	0.	0.	0.20	
+	HYDROGRAPH AT	D02	87.	4.33	20.	5.	3.	0.14	
+	3 COMBINED AT	CD02	136.	4.67	38.	10.	6.	0.30	
+	ROUTED TO	RD02	136.	4.75	38.	10.	6.	0.30	
+	HYDROGRAPH AT	DRE02	66.	4.42	12.	3.	2.	0.16	
+	ROUTED TO	RE02S	59.	4.67	12.	3.	2.	0.16	
+	HYDROGRAPH AT	DRD052	45.	4.58	12.	3.	2.	0.20	
+	ROUTED TO	RD05E2	45.	4.67	12.	3.	2.	0.20	
+	HYDROGRAPH AT	D06	57.	4.42	16.	4.	2.	0.11	
+	3 COMBINED AT	CD06	157.	4.67	39.	10.	6.	0.28	
+	ROUTED TO	RD06	157.	4.67	39.	10.	6.	0.28	
+	HYDROGRAPH AT	D07	27.	4.33	7.	2.	1.	0.05	
+	2 COMBINED AT	CD07	180.	4.67	46.	12.	7.	0.33	
+	ROUTED TO	RD07	179.	4.83	46.	12.	7.	0.33	
+	HYDROGRAPH AT	DRE03	275.	4.83	55.	14.	8.	0.73	
+	ROUTED TO	RE03S	273.	5.00	55.	14.	8.	0.73	
+	HYDROGRAPH AT	D08	21.	4.50	8.	2.	1.	0.05	
+	2 COMBINED AT	CD08	292.	5.00	63.	16.	9.	0.71	
+	ROUTED TO	RD08	290.	5.17	63.	16.	9.	0.71	
+	HYDROGRAPH AT	D03	53.	4.42	14.	4.	2.	0.10	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		DRE09I	143.	5.42	19.	5.	3.	0.50	
+	ROUTED TO	RE09S	116.	5.67	19.	5.	3.	0.50	
+	HYDROGRAPH AT	D09	179.	4.25	38.	10.	6.	0.22	
+	DIVERSION TO	LD09D	179.	4.25	27.	7.	4.	0.22	
+	HYDROGRAPH AT	LD09	92.	4.83	11.	3.	2.	0.22	
+	2 COMBINED AT	CD09	132.	5.67	29.	7.	4.	0.67	
+	5 COMBINED AT	CD03	541.	5.00	164.	42.	24.	2.12	
+	ROUTED TO	RD03	534.	5.08	164.	42.	24.	2.12	
+	HYDROGRAPH AT	C11	41.	4.25	7.	2.	1.	0.05	
+	HYDROGRAPH AT	C10	38.	4.25	8.	2.	1.	0.05	
+	ROUTED TO	RC10	38.	4.33	8.	2.	1.	0.05	
+	3 COMBINED AT	CC11	553.	5.08	175.	45.	26.	2.22	
+	ROUTED TO	RC11	549.	5.17	175.	45.	26.	2.22	
+	HYDROGRAPH AT	C08	74.	4.33	17.	4.	2.	0.12	
+	2 COMBINED AT	CC08	572.	5.17	188.	49.	28.	2.34	
+	ROUTED TO	RC08	565.	5.25	188.	49.	28.	2.34	
+	HYDROGRAPH AT	C06	97.	4.33	22.	5.	3.	0.15	
+	2 COMBINED AT	CC06	591.	5.25	205.	53.	31.	2.49	
+	ROUTED TO	RC06	589.	5.33	205.	53.	31.	2.49	
+	HYDROGRAPH AT	DRD01	53.	4.67	15.	4.	2.	0.34	
+	ROUTED TO	RD01S	53.	4.83	15.	4.	2.	0.34	
+	HYDROGRAPH AT	C07	34.	4.50	10.	3.	2.	0.07	
+	2 COMBINED AT	CC07	84.	4.67	25.	6.	4.	0.07	
+	ROUTED TO	RC07	84.	4.83	25.	6.	4.	0.07	
+	HYDROGRAPH AT	C09	28.	4.42	8.	2.	1.	0.06	
+	ROUTED TO	RC09	28.	4.75	8.	2.	1.	0.06	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	C05	66.	4.50	20.	5.	3.	0.14	
+	HYDROGRAPH AT	C01	16.	4.42	5.	1.	1.	0.03	
+	ROUTED TO	RC01	16.	4.58	5.	1.	1.	0.03	
+	HYDROGRAPH AT	C02	19.	4.42	6.	2.	1.	0.04	
+	5 COMBINED AT	CC02	200.	4.83	63.	16.	9.	0.43	
+	ROUTED TO	RC02	200.	4.83	63.	16.	9.	0.43	
+	HYDROGRAPH AT	C03	32.	4.17	6.	2.	1.	0.04	
+	HYDROGRAPH AT	C12	2.	5.25	1.	0.	0.	0.01	
+	ROUTED TO	RC12	2.	5.75	1.	0.	0.	0.01	
+	HYDROGRAPH AT	C13	121.	4.33	30.	8.	4.	0.18	
+	DIVERSION TO	LC13D	121.	4.33	23.	6.	3.	0.18	
+	HYDROGRAPH AT	LC13	55.	5.17	9.	2.	1.	0.18	
+	2 COMBINED AT	CC13	56.	5.17	10.	3.	1.	0.19	
+	DIVERSION TO	DC13I	15.	5.17	1.	0.	0.	0.19	
+	HYDROGRAPH AT	DC13	41.	5.08	9.	2.	1.	0.19	
+	ROUTED TO	RC13W	41.	5.17	9.	2.	1.	0.19	
+	HYDROGRAPH AT	C04	17.	4.50	5.	1.	1.	0.04	
+	ROUTED TO	RC04	17.	4.58	5.	1.	1.	0.04	
+	5 COMBINED AT	CC03	742.	5.33	272.	71.	41.	3.09	
+	ROUTED TO	RC03	738.	5.42	272.	71.	41.	3.09	
+	HYDROGRAPH AT	B07	18.	4.08	2.	1.	0.	0.02	
+	2 COMBINED AT	CB07	738.	5.42	273.	71.	41.	3.10	
+	ROUTED TO	RB07	732.	5.50	273.	71.	41.	3.10	
+	HYDROGRAPH AT	B05	38.	4.42	11.	3.	2.	0.09	
+	DIVERSION TO	LB05D	1.	2.25	0.	0.	0.	0.09	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		LB05	38.	4.42	11.	3.	2.	0.09	
+	HYDROGRAPH AT	B06	9.	4.25	2.	1.	0.	0.01	
+	3 COMBINED AT	CB05	744.	5.50	283.	74.	42.	3.20	
+	ROUTED TO	RB05	744.	5.50	283.	74.	42.	3.20	
+	HYDROGRAPH AT	B04	91.	4.17	13.	3.	2.	0.08	
+	DIVERSION TO	LB04D	91.	4.17	13.	3.	2.	0.08	
+	HYDROGRAPH AT	LB04	0.	0.08	0.	0.	0.	0.08	
+	HYDROGRAPH AT	B02	93.	4.25	17.	4.	2.	0.10	
+	DIVERSION TO	LB02D	74.	4.08	5.	1.	1.	0.10	
+	HYDROGRAPH AT	LB02	93.	4.25	12.	3.	2.	0.10	
+	ROUTED TO	RB02	93.	4.25	12.	3.	2.	0.10	
+	HYDROGRAPH AT	B03	5.	4.17	1.	0.	0.	0.01	
+	4 COMBINED AT	CB03	750.	5.50	292.	76.	44.	3.39	
+	ROUTED TO	RB03	750.	5.50	292.	76.	44.	3.39	
+	HYDROGRAPH AT	B01	74.	4.17	9.	2.	1.	0.07	
+	DIVERSION TO	LB01D	35.	3.92	2.	1.	0.	0.07	
+	HYDROGRAPH AT	LB01	74.	4.17	7.	2.	1.	0.07	
+	2 COMBINED AT	CB01	750.	5.50	296.	77.	44.	3.46	
+	ROUTED TO	RB01	746.	5.58	296.	77.	44.	3.46	
+	HYDROGRAPH AT	B12	101.	4.25	15.	4.	2.	0.12	
+	HYDROGRAPH AT	B11	48.	4.25	7.	2.	1.	0.06	
+	DIVERSION TO	LB11D	48.	4.25	6.	1.	1.	0.06	
+	HYDROGRAPH AT	LB11	17.	4.83	2.	0.	0.	0.06	
+	HYDROGRAPH AT	DRDC13	15.	5.17	1.	0.	0.	0.19	
+	ROUTED TO	RC13S	8.	6.42	1.	0.	0.	0.19	
+	HYDROGRAPH AT	B13	201.	4.25	29.	7.	4.	0.22	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	DIVERSION TO	LB13D	201.	4.25	29.	7.	4.	0.22	
+	HYDROGRAPH AT	LB13	0.	0.08	0.	0.	0.	0.22	
+	ROUTED TO	RB13	0.	0.08	0.	0.	0.	0.22	
+	HYDROGRAPH AT	B14	96.	4.42	27.	7.	4.	0.15	
+	DIVERSION TO	LB14D	96.	4.42	21.	5.	3.	0.15	
+	HYDROGRAPH AT	LB14	39.	5.50	7.	2.	1.	0.15	
+	3 COMBINED AT	CB14	39.	5.50	7.	2.	1.	0.48	
+	ROUTED TO	RB14	37.	5.83	7.	2.	1.	0.48	
+	4 COMBINED AT	CB12	746.	5.58	311.	81.	47.	4.12	
+	ROUTED TO	RB12	725.	5.75	307.	80.	46.	4.12	
+	HYDROGRAPH AT	A01	556.	4.25	95.	24.	14.	0.51	
+	DIVERSION TO	LA01D	556.	4.25	71.	18.	10.	0.51	
+	HYDROGRAPH AT	LA01	249.	4.75	24.	6.	4.	0.51	
+	2 COMBINED AT	CA01	753.	5.67	321.	84.	48.	4.63	
+	HYDROGRAPH AT	B10	35.	4.58	11.	3.	2.	0.11	
+	DIVERSION TO	LB10D	35.	4.58	11.	3.	2.	0.11	
+	HYDROGRAPH AT	LB10	0.	0.08	0.	0.	0.	0.11	

*** NORMAL END OF HEC-1 ***

APPENDIX H 100-year, 24-hour future conditions HEC-1 SUMMARY

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY   1991                *
*          VERSION 4.0.1E               *
*     Lahey F77L-EM/32 version 5.01     *
*       Dodson & Associates, Inc.       *
*    RUN DATE  04/30/02  TIME  10:38:11 *
*****************************************
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*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 551-1748          *
*                                   *
*************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

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

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


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1         ID   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
    2         ID   ************************************************************************
    3         ID   **                                                                    **
    4         ID   **                    Granite Reef ADMP                               **
    5         ID   **                                                                    **
    6         ID   ************************************************************************
    7         ID   ************************************************************************
    8         ID   PROJECT:                Granite Reef ADMP
    9         ID   CLIENT:                 Flood Control District of Maricopa County
   10         ID   PREPARED BY:            Entellus, Inc.
   11         ID   PROJECT No:             FCD              Entellus 310.021
   12         ID   FILE NAME: FUT-24.DAT                    CREATED DATE: Mar 28, 2002
   13         ID   MODIFIED:
   14         ID   STORM:                  100-year 24-hour Storm
   15         ID   DEVELOPMENT CONDITIONS: Existing Conditions
   16         ID
   17         ID
```

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	G03	133.	12.17	21.	7.	5.	0.09	
+	DIVERSION TO	DG03I	68.	12.17	10.	3.	2.	0.09	
+	HYDROGRAPH AT	DG03	65.	12.17	10.	3.	2.	0.09	
+	ROUTED TO	RG03S	59.	12.33	10.	3.	2.	0.09	
+	HYDROGRAPH AT	G01	42.	12.25	11.	4.	3.	0.05	
+	2 COMBINED AT	CG01	101.	12.33	21.	7.	5.	0.10	
+	DIVERSION TO	DG01I	101.	12.33	21.	7.	5.	0.10	
+	HYDROGRAPH AT	DG01	0.	0.08	0.	0.	0.	0.10	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	ROUTED TO	RG01S	0.	0.08	0.	0.	0.	0.10	
+	HYDROGRAPH AT	F04	52.	12.33	14.	5.	4.	0.06	
+	HYDROGRAPH AT	G04	65.	12.08	10.	3.	2.	0.05	
+	ROUTED TO	RG04	64.	12.17	10.	3.	2.	0.05	
+	HYDROGRAPH AT	G05	68.	12.17	11.	3.	2.	0.05	
+	ROUTED TO	RG05	66.	12.25	11.	3.	2.	0.05	
+	HYDROGRAPH AT	G06	236.	12.08	31.	11.	8.	0.13	
+	DIVERSION TO	LG06D	112.	11.92	13.	4.	3.	0.13	
+	HYDROGRAPH AT	LG06	236.	12.08	24.	7.	5.	0.13	
+	DIVERSION TO	DG06I	96.	12.08	11.	3.	2.	0.13	
+	HYDROGRAPH AT	DG06	141.	12.08	13.	4.	3.	0.13	
+	DIVERSION TO	LG06AD	141.	12.08	9.	2.	2.	0.13	
+	HYDROGRAPH AT	LG06A	18.	12.50	5.	2.	1.	0.13	
+	HYDROGRAPH AT	G02	69.	12.25	16.	5.	4.	0.08	
+	4 COMBINED AT	CG02	194.	12.25	39.	13.	9.	0.23	
+	ROUTED TO	RG02	189.	12.33	39.	13.	9.	0.23	
+	HYDROGRAPH AT	F06	104.	12.25	21.	7.	5.	0.10	
+	2 COMBINED AT	CF06	288.	12.33	60.	20.	14.	0.33	
+	ROUTED TO	RF06	278.	12.42	60.	20.	14.	0.33	
+	HYDROGRAPH AT	F05	95.	12.25	19.	6.	4.	0.09	
+	2 COMBINED AT	CF05	360.	12.33	78.	26.	19.	0.42	
+	DIVERSION TO	DF05I	310.	12.33	45.	11.	8.	0.42	
+	HYDROGRAPH AT	DF05	50.	11.83	33.	14.	11.	0.42	
+	ROUTED TO	RF05W	50.	12.00	33.	14.	11.	0.42	
+	3 COMBINED AT	CF04	101.	12.33	48.	19.	14.	0.17	
+	DIVERSION TO	DF04I	54.	12.33	25.	10.	8.	0.17	
	HYDROGRAPH AT								

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
	DF04	47.	12.33	22.	9.	6.	0.17	
HYDROGRAPH AT	F05R	310.	12.33	45.	11.	8.	0.42	
ROUTED TO	RF05S	304.	12.50	45.	11.	8.	0.42	
HYDROGRAPH AT	F03	167.	12.33	37.	12.	9.	0.17	
2 COMBINED AT	CF03	453.	12.42	81.	23.	17.	0.56	
ROUTED TO	RF03	452.	12.50	81.	23.	17.	0.56	
HYDROGRAPH AT	G06R	96.	12.08	11.	3.	2.	0.13	
ROUTED TO	RG06S	71.	12.42	11.	3.	2.	0.13	
HYDROGRAPH AT	F07	268.	12.25	61.	21.	15.	0.25	
DIVERSION TO	LF07D	214.	12.08	25.	8.	6.	0.25	
HYDROGRAPH AT	LF07	268.	12.25	48.	14.	10.	0.25	
2 COMBINED AT	CF07	308.	12.42	58.	17.	12.	0.31	
DIVERSION TO	DF07I	295.	12.42	45.	11.	8.	0.31	
HYDROGRAPH AT	DF07	13.	12.17	13.	6.	4.	0.31	
ROUTED TO	RF07W	13.	12.92	13.	6.	4.	0.31	
HYDROGRAPH AT	F02	44.	12.25	10.	3.	2.	0.05	
3 COMBINED AT	CF02	502.	12.42	101.	32.	23.	0.63	
DIVERSION TO	DF02I	472.	12.42	81.	23.	17.	0.63	
HYDROGRAPH AT	DF02	30.	11.92	20.	9.	6.	0.63	
ROUTED TO	RF02W	30.	12.00	20.	9.	6.	0.63	
HYDROGRAPH AT	F04R	54.	12.33	25.	10.	8.	0.17	
ROUTED TO	RF04S	52.	12.50	25.	10.	8.	0.17	
DIVERSION TO	DRF04I	26.	12.50	13.	5.	4.	0.17	
HYDROGRAPH AT	DRF04	26.	12.50	13.	5.	4.	0.17	
HYDROGRAPH AT	F01	30.	12.25	6.	2.	2.	0.03	
3 COMBINED AT	CF01	82.	12.33	39.	16.	12.	0.10	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	DIVERSION TO HYDROGRAPH AT	DF01I	0.	0.08	0.	0.	0.	0.10	
+		DF01	82.	12.33	39.	16.	12.	0.10	
+	HYDROGRAPH AT	DRF02	472.	12.42	81.	23.	17.	0.63	
+	ROUTED TO	RF02S	466.	12.50	81.	23.	17.	0.63	
+	HYDROGRAPH AT	E07	107.	12.17	17.	6.	4.	0.08	
+	2 COMBINED AT	CE07	528.	12.50	97.	29.	21.	0.66	
+	ROUTED TO	RE07	523.	12.58	97.	29.	21.	0.66	
+	HYDROGRAPH AT	E05	65.	12.17	10.	3.	2.	0.05	
+	2 COMBINED AT	CE05	554.	12.50	107.	32.	23.	0.71	
+	DIVERSION TO	DE05I	529.	12.50	92.	25.	18.	0.71	
+	HYDROGRAPH AT	DE05	25.	11.92	15.	7.	5.	0.71	
+	ROUTED TO	RE05W	25.	12.08	15.	7.	5.	0.71	
+	HYDROGRAPH AT	E04	30.	12.33	8.	2.	2.	0.04	
+	DIVERSION TO	LE04D	26.	12.17	2.	1.	1.	0.04	
+	HYDROGRAPH AT	LE04	30.	12.33	6.	2.	1.	0.04	
+	HYDROGRAPH AT	DRF01I	0.	0.08	0.	0.	0.	0.10	
+	ROUTED TO	RF01S	0.	0.08	0.	0.	0.	0.10	
+	3 COMBINED AT	CE04	54.	12.33	21.	9.	6.	0.07	
+	DIVERSION TO	DE04I	0.	0.08	0.	0.	0.	0.07	
+	HYDROGRAPH AT	DE04	54.	12.33	21.	9.	6.	0.07	
+	3 COMBINED AT	DUMMY	182.	12.33	82.	33.	24.	0.34	
+	HYDROGRAPH AT	E08	30.	12.25	7.	2.	2.	0.03	
+	ROUTED TO	RE08	28.	12.42	7.	2.	2.	0.03	
+	HYDROGRAPH AT	E06	34.	12.25	8.	3.	2.	0.04	
+	2 COMBINED AT	CE06	61.	12.33	14.	5.	3.	0.07	
	ROUTED TO								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		RE06	57.	12.67	14.	5.	3.	0.07	
+	HYDROGRAPH AT	E03	32.	12.67	14.	5.	4.	0.07	
+	HYDROGRAPH AT	DRF07	295.	12.42	45.	11.	8.	0.31	
+	ROUTED TO	RF07S	276.	12.67	45.	11.	8.	0.31	
+	HYDROGRAPH AT	E09	230.	12.25	55.	19.	14.	0.22	
+	DIVERSION TO	LE09D	181.	12.08	22.	7.	5.	0.22	
+	HYDROGRAPH AT	LE09	230.	12.25	42.	12.	9.	0.22	
+	2 COMBINED AT	CE09	427.	12.67	87.	23.	17.	0.51	
+	DIVERSION TO	DE09I	412.	12.67	77.	20.	15.	0.51	
+	HYDROGRAPH AT	DE09	15.	12.25	10.	3.	2.	0.51	
+	ROUTED TO	RE09W	15.	12.58	10.	3.	2.	0.51	
+	HYDROGRAPH AT	DRE05I	529.	12.50	92.	25.	18.	0.71	
+	ROUTED TO	RE05S	516.	12.67	92.	25.	18.	0.71	
+	4 COMBINED AT	CE03	617.	12.67	128.	37.	27.	0.86	
+	DIVERSION TO	DE03I	586.	12.67	106.	28.	20.	0.86	
+	HYDROGRAPH AT	DE03	31.	12.08	22.	9.	7.	0.86	
+	ROUTED TO	RE03W	31.	12.25	22.	9.	7.	0.86	
+	HYDROGRAPH AT	E02	129.	12.33	31.	10.	7.	0.15	
+	2 COMBINED AT	CE02	160.	12.33	52.	19.	14.	0.18	
+	DIVERSION TO	DE02I	114.	12.33	20.	5.	4.	0.18	
+	HYDROGRAPH AT	DE02	46.	11.92	33.	14.	10.	0.18	
+	ROUTED TO	RE02W	46.	12.83	33.	14.	10.	0.18	
+	HYDROGRAPH AT	E01	59.	12.25	13.	4.	3.	0.06	
+	HYDROGRAPH AT	DRE04I	0.	0.08	0.	0.	0.	0.07	
+	ROUTED TO	RE04S	0.	0.08	0.	0.	0.	0.07	
+	3 COMBINED AT	CE01	105.	12.25	45.	18.	13.	0.17	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	DIVERSION TO	DE01I	44.	12.25	5.	1.	1.	0.17	
+	HYDROGRAPH AT	DE01	61.	11.92	40.	17.	12.	0.17	
+	HYDROGRAPH AT	DRE01	44.	12.25	5.	1.	1.	0.17	
+	ROUTED TO	RE01S	42.	12.42	5.	1.	1.	0.17	
+	HYDROGRAPH AT	D05	136.	12.33	33.	11.	8.	0.16	
+	2 COMBINED AT	CD05	173.	12.42	38.	12.	9.	0.28	
+	DIVERSION TO	DD05I	94.	12.42	19.	6.	4.	0.28	
+	HYDROGRAPH AT	DD05	79.	12.42	18.	6.	4.	0.28	
+	ROUTED TO	RD05S	76.	12.58	18.	6.	4.	0.28	
+	HYDROGRAPH AT	D04	44.	12.33	13.	4.	3.	0.06	
+	ROUTED TO	RD04	43.	12.50	13.	4.	3.	0.06	
+	HYDROGRAPH AT	D01	67.	12.33	17.	6.	4.	0.08	
+	3 COMBINED AT	CD01	180.	12.50	48.	16.	11.	0.26	
+	DIVERSION TO	DD01I	77.	12.50	22.	7.	5.	0.26	
+	HYDROGRAPH AT	DD01	103.	12.50	27.	9.	6.	0.26	
+	ROUTED TO	RD01E	102.	12.58	27.	9.	6.	0.26	
+	HYDROGRAPH AT	DRD05	94.	12.42	19.	6.	4.	0.28	
+	ROUTED TO	RD05E	93.	12.42	19.	6.	4.	0.28	
+	DIVERSION TO	DD052I	65.	12.42	16.	5.	4.	0.28	
+	HYDROGRAPH AT	DD052	28.	12.42	3.	1.	1.	0.28	
+	ROUTED TO	RD05S2	24.	12.75	3.	1.	1.	0.28	
+	HYDROGRAPH AT	D02	137.	12.25	29.	9.	7.	0.14	
+	3 COMBINED AT	CD02	230.	12.50	58.	19.	14.	0.36	
+	ROUTED TO	RD02	228.	12.50	58.	19.	14.	0.36	
+	HYDROGRAPH AT	DRE02	114.	12.33	20.	5.	4.	0.18	
	ROUTED TO								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		RE02S	110.	12.50	20.	5.	4.	0.18	
+	HYDROGRAPH AT	DRD052	65.	12.42	16.	5.	4.	0.28	
+	ROUTED TO	RD05E2	65.	12.50	16.	5.	4.	0.28	
+	HYDROGRAPH AT	D06	91.	12.33	23.	7.	5.	0.11	
+	3 COMBINED AT	CD06	257.	12.50	59.	18.	13.	0.36	
+	ROUTED TO	RD06	257.	12.50	59.	18.	13.	0.36	
+	HYDROGRAPH AT	D07	44.	12.25	10.	3.	2.	0.05	
+	2 COMBINED AT	CD07	293.	12.50	69.	21.	15.	0.41	
+	ROUTED TO	RD07	283.	12.67	69.	21.	15.	0.41	
+	HYDROGRAPH AT	DRE03	586.	12.67	106.	28.	20.	0.86	
+	ROUTED TO	RE03S	569.	12.83	106.	28.	20.	0.86	
+	HYDROGRAPH AT	D08	34.	12.42	11.	4.	3.	0.05	
+	2 COMBINED AT	CD08	596.	12.83	117.	32.	23.	0.88	
+	ROUTED TO	RD08	585.	12.92	117.	32.	23.	0.88	
+	HYDROGRAPH AT	D03	84.	12.33	21.	7.	5.	0.10	
+	HYDROGRAPH AT	DRE09I	412.	12.67	77.	20.	15.	0.51	
+	ROUTED TO	RE09S	362.	12.92	77.	20.	15.	0.51	
+	HYDROGRAPH AT	D09	246.	12.25	53.	18.	13.	0.22	
+	DIVERSION TO	LD09D	207.	12.08	22.	7.	5.	0.22	
+	HYDROGRAPH AT	LD09	246.	12.25	40.	12.	8.	0.22	
+	2 COMBINED AT	CD09	459.	12.83	116.	32.	23.	0.69	
+	5 COMBINED AT	CD03	1484.	12.83	369.	108.	78.	2.43	
+	ROUTED TO	RD03	1482.	12.92	369.	108.	78.	2.43	
+	HYDROGRAPH AT	C11	63.	12.17	10.	3.	2.	0.05	
+	HYDROGRAPH AT	C10	59.	12.17	11.	4.	3.	0.05	
+	ROUTED TO	RC10	59.	12.25	11.	4.	3.	0.05	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	3 COMBINED AT	CC11	1517.	12.92	389.	114.	83.	2.54	
+	ROUTED TO	RC11	1506.	12.92	389.	114.	83.	2.54	
+	HYDROGRAPH AT	C08	117.	12.25	24.	8.	6.	0.12	
+	2 COMBINED AT	CC08	1555.	12.92	411.	122.	88.	2.66	
+	ROUTED TO	RC08	1538.	13.00	411.	122.	88.	2.66	
+	HYDROGRAPH AT	C06	153.	12.25	31.	10.	7.	0.15	
+	2 COMBINED AT	CC06	1592.	13.00	441.	132.	95.	2.81	
+	ROUTED TO	RC06	1589.	13.00	441.	132.	95.	2.81	
+	HYDROGRAPH AT	DRDO1	77.	12.50	22.	7.	5.	0.26	
+	ROUTED TO	RD01S	76.	12.67	22.	7.	5.	0.26	
+	HYDROGRAPH AT	C07	54.	12.33	15.	5.	4.	0.07	
+	2 COMBINED AT	CC07	124.	12.58	36.	12.	9.	0.17	
+	ROUTED TO	RC07	122.	12.75	36.	12.	9.	0.17	
+	HYDROGRAPH AT	C09	46.	12.33	12.	4.	3.	0.06	
+	ROUTED TO	RC09	41.	12.67	12.	4.	3.	0.06	
+	HYDROGRAPH AT	C05	103.	12.42	29.	10.	7.	0.14	
+	HYDROGRAPH AT	C01	26.	12.33	7.	2.	2.	0.03	
+	ROUTED TO	RC01	25.	12.50	7.	2.	2.	0.03	
+	HYDROGRAPH AT	C02	29.	12.33	9.	3.	2.	0.04	
+	5 COMBINED AT	CC02	297.	12.67	92.	30.	22.	0.44	
+	ROUTED TO	RC02	297.	12.67	92.	30.	22.	0.44	
+	HYDROGRAPH AT	C03	47.	12.17	9.	3.	2.	0.04	
+	HYDROGRAPH AT	C12	3.	12.83	2.	1.	1.	0.01	
+	ROUTED TO	RC12	3.	13.33	2.	1.	1.	0.01	
+	HYDROGRAPH AT	C13	170.	12.25	43.	15.	11.	0.18	
	DIVERSION TO								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		LC13D	159.	12.17	18.	6.	4.	0.18	
+	HYDROGRAPH AT	LC13	167.	12.33	33.	9.	7.	0.18	
+	2 COMBINED AT	CC13	168.	12.33	35.	10.	7.	0.19	
+	DIVERSION TO	DC13I	127.	12.33	13.	3.	2.	0.19	
+	HYDROGRAPH AT	DC13	41.	12.33	21.	7.	5.	0.19	
+	ROUTED TO	RC13W	41.	12.42	21.	7.	5.	0.19	
+	HYDROGRAPH AT	C04	28.	12.33	8.	3.	2.	0.04	
+	ROUTED TO	RC04	28.	12.50	8.	3.	2.	0.04	
+	5 COMBINED AT	CC03	1899.	13.00	565.	173.	125.	3.37	
+	ROUTED TO	RC03	1884.	13.00	565.	173.	125.	3.37	
+	HYDROGRAPH AT	B07	25.	12.08	3.	1.	1.	0.02	
+	2 COMBINED AT	CB07	1886.	13.00	568.	174.	126.	3.39	
+	ROUTED TO	RB07	1881.	13.08	568.	174.	126.	3.39	
+	HYDROGRAPH AT	B05	62.	12.33	16.	5.	4.	0.09	
+	DIVERSION TO	LB05D	1.	2.58	0.	0.	0.	0.09	
+	HYDROGRAPH AT	LB05	62.	12.33	16.	5.	4.	0.09	
+	HYDROGRAPH AT	B06	14.	12.17	3.	1.	1.	0.01	
+	3 COMBINED AT	CB05	1916.	13.08	586.	180.	131.	3.49	
+	ROUTED TO	RB05	1915.	13.08	586.	180.	131.	3.49	
+	HYDROGRAPH AT	B04	125.	12.08	19.	6.	5.	0.08	
+	DIVERSION TO	LB04D	125.	12.08	19.	6.	5.	0.08	
+	HYDROGRAPH AT	LB04	0.	0.08	0.	0.	0.	0.08	
+	HYDROGRAPH AT	B02	134.	12.17	24.	8.	6.	0.10	
+	DIVERSION TO	LB02D	7.	10.42	4.	1.	1.	0.10	
+	HYDROGRAPH AT	LB02	134.	12.17	24.	7.	5.	0.10	
+	ROUTED TO	RB02	133.	12.17	24.	7.	5.	0.10	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	B03	8.	12.17	1.	0.	0.	0.01	
+	4 COMBINED AT	CB03	1944.	13.08	609.	187.	135.	3.66	
+	ROUTED TO	RB03	1933.	13.08	609.	187.	135.	3.66	
+	HYDROGRAPH AT	B01	113.	12.08	13.	4.	3.	0.07	
+	DIVERSION TO	LB01D	3.	10.00	2.	1.	0.	0.07	
+	HYDROGRAPH AT	LB01	113.	12.08	13.	4.	3.	0.07	
+	2 COMBINED AT	CB01	1940.	13.08	621.	190.	138.	3.73	
+	ROUTED TO	RB01	1938.	13.17	621.	190.	138.	3.73	
+	HYDROGRAPH AT	B12	164.	12.17	22.	7.	5.	0.12	
+	HYDROGRAPH AT	B11	78.	12.17	11.	3.	2.	0.06	
+	DIVERSION TO	LB11D	74.	12.08	5.	1.	1.	0.06	
+	HYDROGRAPH AT	LB11	71.	12.25	7.	2.	1.	0.06	
+	HYDROGRAPH AT	DRDC13	127.	12.33	13.	3.	2.	0.19	
+	ROUTED TO	RC13S	81.	13.17	13.	3.	2.	0.19	
+	HYDROGRAPH AT	B13	310.	12.17	43.	14.	10.	0.22	
+	DIVERSION TO	LB13D	310.	12.17	34.	9.	7.	0.22	
+	HYDROGRAPH AT	LB13	95.	12.58	14.	4.	3.	0.22	
+	ROUTED TO	RB13	72.	12.83	14.	4.	3.	0.22	
+	HYDROGRAPH AT	B14	135.	12.33	38.	13.	10.	0.15	
+	DIVERSION TO	LB14D	132.	12.25	17.	5.	4.	0.15	
+	HYDROGRAPH AT	LB14	126.	12.50	28.	8.	6.	0.15	
+	3 COMBINED AT	CB14	185.	13.08	53.	15.	11.	0.52	
+	ROUTED TO	RB14	181.	13.17	53.	15.	11.	0.52	
+	4 COMBINED AT	CB12	2122.	13.17	695.	213.	154.	4.43	
+	ROUTED TO	RB12	2019.	13.42	695.	213.	154.	4.43	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		A01	745.	12.17	131.	45.	33.	0.51	
	DIVERSION TO								
+		LA01D	619.	12.08	58.	18.	13.	0.51	
	HYDROGRAPH AT								
+		LA01	741.	12.25	95.	27.	20.	0.51	
	2 COMBINED AT								
+		CA01	2096.	13.42	784.	239.	173.	4.94	
	HYDROGRAPH AT								
+		B10	65.	12.42	17.	5.	4.	0.11	
	DIVERSION TO								
+		LB10D	65.	12.42	17.	5.	4.	0.11	
	HYDROGRAPH AT								
+		LB10	1.	20.50	0.	0.	0.	0.11	

*** NORMAL END OF HEC-1 ***

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1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             MAY   1991                *
 *          VERSION 4.0.1E               *
 *     Lahey F77L-EM/32 version 5.01     *
 *       Dodson & Associates, Inc.       *
 *    RUN DATE  04/30/02  TIME  10:38:11 *
 *****************************************
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 551-1748               *
*                                       *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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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


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 LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
    1          ID   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
    2          ID   ********************************************************************************
    3          ID   **                                                                            **
    4          ID   **                      Granite Reef ADMP                                     **
    5          ID   **                                                                            **
    6          ID   ********************************************************************************
    7          ID   ********************************************************************************
    8          ID   PROJECT:                 Granite Reef ADMP
    9          ID   CLIENT:                  Flood Control District of Maricopa County
   10          ID   PREPARED BY:             Entellus, Inc.
   11          ID   PROJECT No:              FCD                Entellus 310.021
   12          ID   FILE NAME: FUT-24.DAT                       CREATED DATE: Mar 28, 2002
   13          ID   MODIFIED:
   14          ID   STORM:                   100-year 24-hour Storm
   15          ID   DEVELOPMENT CONDITIONS: Existing Conditions
   16          ID
   17          ID
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1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
HYDROGRAPH AT	G03	133.	12.17	21.	7.	5.	0.09	
DIVERSION TO	DG03I	68.	12.17	10.	3.	2.	0.09	
HYDROGRAPH AT	DG03	65.	12.17	10.	3.	2.	0.09	
ROUTED TO	RG03S	59.	12.33	10.	3.	2.	0.09	
HYDROGRAPH AT	G01	42.	12.25	11.	4.	3.	0.05	
2 COMBINED AT	CG01	101.	12.33	21.	7.	5.	0.10	
DIVERSION TO	DG01I	101.	12.33	21.	7.	5.	0.10	
HYDROGRAPH AT	DG01	0.	0.08	0.	0.	0.	0.10	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	ROUTED TO	RG01S	0.	0.08	0.	0.	0.	0.10	
+	HYDROGRAPH AT	F04	52.	12.33	14.	5.	4.	0.06	
+	HYDROGRAPH AT	G04	65.	12.08	10.	3.	2.	0.05	
+	ROUTED TO	RG04	64.	12.17	10.	3.	2.	0.05	
+	HYDROGRAPH AT	G05	68.	12.17	11.	3.	2.	0.05	
+	ROUTED TO	RG05	66.	12.25	11.	3.	2.	0.05	
+	HYDROGRAPH AT	G06	236.	12.08	31.	11.	8.	0.13	
+	DIVERSION TO	LG06D	112.	11.92	13.	4.	3.	0.13	
+	HYDROGRAPH AT	LG06	236.	12.08	24.	7.	5.	0.13	
+	DIVERSION TO	DG06I	96.	12.08	11.	3.	2.	0.13	
+	HYDROGRAPH AT	DG06	141.	12.08	13.	4.	3.	0.13	
+	DIVERSION TO	LG06AD	141.	12.08	9.	2.	2.	0.13	
+	HYDROGRAPH AT	LG06A	18.	12.50	5.	2.	1.	0.13	
+	HYDROGRAPH AT	G02	69.	12.25	16.	5.	4.	0.08	
+	4 COMBINED AT	CG02	194.	12.25	39.	13.	9.	0.23	
+	ROUTED TO	RG02	189.	12.33	39.	13.	9.	0.23	
+	HYDROGRAPH AT	F06	104.	12.25	21.	7.	5.	0.10	
+	2 COMBINED AT	CF06	288.	12.33	60.	20.	14.	0.33	
+	ROUTED TO	RF06	278.	12.42	60.	20.	14.	0.33	
+	HYDROGRAPH AT	F05	95.	12.25	19.	6.	4.	0.09	
+	2 COMBINED AT	CF05	360.	12.33	78.	26.	19.	0.42	
+	DIVERSION TO	DF05I	310.	12.33	45.	11.	8.	0.42	
+	HYDROGRAPH AT	DF05	50.	11.83	33.	14.	11.	0.42	
+	ROUTED TO	RF05W	50.	12.00	33.	14.	11.	0.42	
+	3 COMBINED AT	CF04	101.	12.33	48.	19.	14.	0.17	
+	DIVERSION TO	DF04I	54.	12.33	25.	10.	8.	0.17	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		DF04	47.	12.33	22.	9.	6.	0.17	
+	HYDROGRAPH AT	F05R	310.	12.33	45.	11.	8.	0.42	
+	ROUTED TO	RF05S	304.	12.50	45.	11.	8.	0.42	
+	HYDROGRAPH AT	F03	167.	12.33	37.	12.	9.	0.17	
+	2 COMBINED AT	CF03	453.	12.42	81.	23.	17.	0.56	
+	ROUTED TO	RF03	452.	12.50	81.	23.	17.	0.56	
+	HYDROGRAPH AT	G06R	96.	12.08	11.	3.	2.	0.13	
+	ROUTED TO	RG06S	71.	12.42	11.	3.	2.	0.13	
+	HYDROGRAPH AT	F07	268.	12.25	61.	21.	15.	0.25	
+	DIVERSION TO	LF07D	214.	12.08	25.	8.	6.	0.25	
+	HYDROGRAPH AT	LF07	268.	12.25	48.	14.	10.	0.25	
+	2 COMBINED AT	CF07	308.	12.42	58.	17.	12.	0.31	
+	DIVERSION TO	DF07I	295.	12.42	45.	11.	8.	0.31	
+	HYDROGRAPH AT	DF07	13.	12.17	13.	6.	4.	0.31	
+	ROUTED TO	RF07W	13.	12.92	13.	6.	4.	0.31	
+	HYDROGRAPH AT	F02	44.	12.25	10.	3.	2.	0.05	
+	3 COMBINED AT	CF02	502.	12.42	101.	32.	23.	0.63	
+	DIVERSION TO	DF02I	472.	12.42	81.	23.	17.	0.63	
+	HYDROGRAPH AT	DF02	30.	11.92	20.	9.	6.	0.63	
+	ROUTED TO	RF02W	30.	12.00	20.	9.	6.	0.63	
+	HYDROGRAPH AT	F04R	54.	12.33	25.	10.	8.	0.17	
+	ROUTED TO	RF04S	52.	12.50	25.	10.	8.	0.17	
+	DIVERSION TO	DRF04I	26.	12.50	13.	5.	4.	0.17	
+	HYDROGRAPH AT	DRF04	26.	12.50	13.	5.	4.	0.17	
+	HYDROGRAPH AT	F01	30.	12.25	6.	2.	2.	0.03	
+	3 COMBINED AT	CF01	82.	12.33	39.	16.	12.	0.10	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	DIVERSION TO	DF01I	0.	0.08	0.	0.	0.	0.10	
+	HYDROGRAPH AT	DF01	82.	12.33	39.	16.	12.	0.10	
+	HYDROGRAPH AT	DRF02	472.	12.42	81.	23.	17.	0.63	
+	ROUTED TO	RF02S	466.	12.50	81.	23.	17.	0.63	
+	HYDROGRAPH AT	E07	107.	12.17	17.	6.	4.	0.08	
+	2 COMBINED AT	CE07	528.	12.50	97.	29.	21.	0.66	
+	ROUTED TO	RE07	523.	12.58	97.	29.	21.	0.66	
+	HYDROGRAPH AT	E05	65.	12.17	10.	3.	2.	0.05	
+	2 COMBINED AT	CE05	554.	12.50	107.	32.	23.	0.71	
+	DIVERSION TO	DE05I	529.	12.50	92.	25.	18.	0.71	
+	HYDROGRAPH AT	DE05	25.	11.92	15.	7.	5.	0.71	
+	ROUTED TO	RE05W	25.	12.08	15.	7.	5.	0.71	
+	HYDROGRAPH AT	E04	30.	12.33	8.	2.	2.	0.04	
+	DIVERSION TO	LE04D	26.	12.17	2.	1.	1.	0.04	
+	HYDROGRAPH AT	LE04	30.	12.33	6.	2.	1.	0.04	
+	HYDROGRAPH AT	DRF01I	0.	0.08	0.	0.	0.	0.10	
+	ROUTED TO	RF01S	0.	0.08	0.	0.	0.	0.10	
+	3 COMBINED AT	CE04	54.	12.33	21.	9.	6.	0.07	
+	DIVERSION TO	DE04I	0.	0.08	0.	0.	0.	0.07	
+	HYDROGRAPH AT	DE04	54.	12.33	21.	9.	6.	0.07	
+	3 COMBINED AT	DUMMY	182.	12.33	82.	33.	24.	0.34	
+	HYDROGRAPH AT	E08	30.	12.25	7.	2.	2.	0.03	
+	ROUTED TO	RE08	28.	12.42	7.	2.	2.	0.03	
+	HYDROGRAPH AT	E06	34.	12.25	8.	3.	2.	0.04	
+	2 COMBINED AT	CE06	61.	12.33	14.	5.	3.	0.07	
	ROUTED TO								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		RE06	57.	12.67	14.	5.	3.	0.07	
+	HYDROGRAPH AT	E03	32.	12.67	14.	5.	4.	0.07	
+	HYDROGRAPH AT	DRF07	295.	12.42	45.	11.	8.	0.31	
+	ROUTED TO	RF07S	276.	12.67	45.	11.	8.	0.31	
+	HYDROGRAPH AT	E09	230.	12.25	55.	19.	14.	0.22	
+	DIVERSION TO	LE09D	181.	12.08	22.	7.	5.	0.22	
+	HYDROGRAPH AT	LE09	230.	12.25	42.	12.	9.	0.22	
+	2 COMBINED AT	CE09	427.	12.67	87.	23.	17.	0.51	
+	DIVERSION TO	DE09I	412.	12.67	77.	20.	15.	0.51	
+	HYDROGRAPH AT	DE09	15.	12.25	10.	3.	2.	0.51	
+	ROUTED TO	RE09W	15.	12.58	10.	3.	2.	0.51	
+	HYDROGRAPH AT	DRE05I	529.	12.50	92.	25.	18.	0.71	
+	ROUTED TO	RE05S	516.	12.67	92.	25.	18.	0.71	
+	4 COMBINED AT	CE03	617.	12.67	128.	37.	27.	0.86	
+	DIVERSION TO	DE03I	586.	12.67	106.	28.	20.	0.86	
+	HYDROGRAPH AT	DE03	31.	12.08	22.	9.	7.	0.86	
+	ROUTED TO	RE03W	31.	12.25	22.	9.	7.	0.86	
+	HYDROGRAPH AT	E02	129.	12.33	31.	10.	7.	0.15	
+	2 COMBINED AT	CE02	160.	12.33	52.	19.	14.	0.18	
+	DIVERSION TO	DE02I	114.	12.33	20.	5.	4.	0.18	
+	HYDROGRAPH AT	DE02	46.	11.92	33.	14.	10.	0.18	
+	ROUTED TO	RE02W	46.	12.83	33.	14.	10.	0.18	
+	HYDROGRAPH AT	E01	59.	12.25	13.	4.	3.	0.06	
+	HYDROGRAPH AT	DRE04I	0.	0.08	0.	0.	0.	0.07	
+	ROUTED TO	RE04S	0.	0.08	0.	0.	0.	0.07	
+	3 COMBINED AT	CE01	105.	12.25	45.	18.	13.	0.17	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
	DIVERSION TO								
+	HYDROGRAPH AT	DE01I	44.	12.25	5.	1.	1.	0.17	
+		DE01	61.	11.92	40.	17.	12.	0.17	
+	HYDROGRAPH AT	DRE01	44.	12.25	5.	1.	1.	0.17	
+	ROUTED TO	RE01S	42.	12.42	5.	1.	1.	0.17	
+	HYDROGRAPH AT	D05	136.	12.33	33.	11.	8.	0.16	
+	2 COMBINED AT	CD05	173.	12.42	38.	12.	9.	0.28	
+	DIVERSION TO	DD05I	94.	12.42	19.	6.	4.	0.28	
+	HYDROGRAPH AT	DD05	79.	12.42	18.	6.	4.	0.28	
+	ROUTED TO	RD05S	76.	12.58	18.	6.	4.	0.28	
+	HYDROGRAPH AT	D04	44.	12.33	13.	4.	3.	0.06	
+	ROUTED TO	RD04	43.	12.50	13.	4.	3.	0.06	
+	HYDROGRAPH AT	D01	67.	12.33	17.	6.	4.	0.08	
+	3 COMBINED AT	CD01	180.	12.50	48.	16.	11.	0.26	
+	DIVERSION TO	DD01I	77.	12.50	22.	7.	5.	0.26	
+	HYDROGRAPH AT	DD01	103.	12.50	27.	9.	6.	0.26	
+	ROUTED TO	RD01E	102.	12.58	27.	9.	6.	0.26	
+	HYDROGRAPH AT	DRD05	94.	12.42	19.	6.	4.	0.28	
+	ROUTED TO	RD05E	93.	12.42	19.	6.	4.	0.28	
+	DIVERSION TO	DD052I	65.	12.42	16.	5.	4.	0.28	
+	HYDROGRAPH AT	DD052	28.	12.42	3.	1.	1.	0.28	
+	ROUTED TO	RD05S2	24.	12.75	3.	1.	1.	0.28	
+	HYDROGRAPH AT	D02	137.	12.25	29.	9.	7.	0.14	
+	3 COMBINED AT	CD02	230.	12.50	58.	19.	14.	0.36	
+	ROUTED TO	RD02	228.	12.50	58.	19.	14.	0.36	
+	HYDROGRAPH AT	DRE02	114.	12.33	20.	5.	4.	0.18	
	ROUTED TO								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		RE02S	110.	12.50	20.	5.	4.	0.18	
+	HYDROGRAPH AT	DRD052	65.	12.42	16.	5.	4.	0.28	
+	ROUTED TO	RD05E2	65.	12.50	16.	5.	4.	0.28	
+	HYDROGRAPH AT	D06	91.	12.33	23.	7.	5.	0.11	
+	3 COMBINED AT	CD06	257.	12.50	59.	18.	13.	0.36	
+	ROUTED TO	RD06	257.	12.50	59.	18.	13.	0.36	
+	HYDROGRAPH AT	D07	44.	12.25	10.	3.	2.	0.05	
+	2 COMBINED AT	CD07	293.	12.50	69.	21.	15.	0.41	
+	ROUTED TO	RD07	283.	12.67	69.	21.	15.	0.41	
+	HYDROGRAPH AT	DRE03	586.	12.67	106.	28.	20.	0.86	
+	ROUTED TO	RE03S	569.	12.83	106.	28.	20.	0.86	
+	HYDROGRAPH AT	D08	34.	12.42	11.	4.	3.	0.05	
+	2 COMBINED AT	CD08	596.	12.83	117.	32.	23.	0.88	
+	ROUTED TO	RD08	585.	12.92	117.	32.	23.	0.88	
+	HYDROGRAPH AT	D03	84.	12.33	21.	7.	5.	0.10	
+	HYDROGRAPH AT	DRE09I	412.	12.67	77.	20.	15.	0.51	
+	ROUTED TO	RE09S	362.	12.92	77.	20.	15.	0.51	
+	HYDROGRAPH AT	D09	246.	12.25	53.	18.	13.	0.22	
+	DIVERSION TO	LD09D	207.	12.08	22.	7.	5.	0.22	
+	HYDROGRAPH AT	LD09	246.	12.25	40.	12.	8.	0.22	
+	2 COMBINED AT	CD09	459.	12.83	116.	32.	23.	0.69	
+	5 COMBINED AT	CD03	1484.	12.83	369.	108.	78.	2.43	
+	ROUTED TO	RD03	1482.	12.92	369.	108.	78.	2.43	
+	HYDROGRAPH AT	C11	63.	12.17	10.	3.	2.	0.05	
+	HYDROGRAPH AT	C10	59.	12.17	11.	4.	3.	0.05	
+	ROUTED TO	RC10	59.	12.25	11.	4.	3.	0.05	

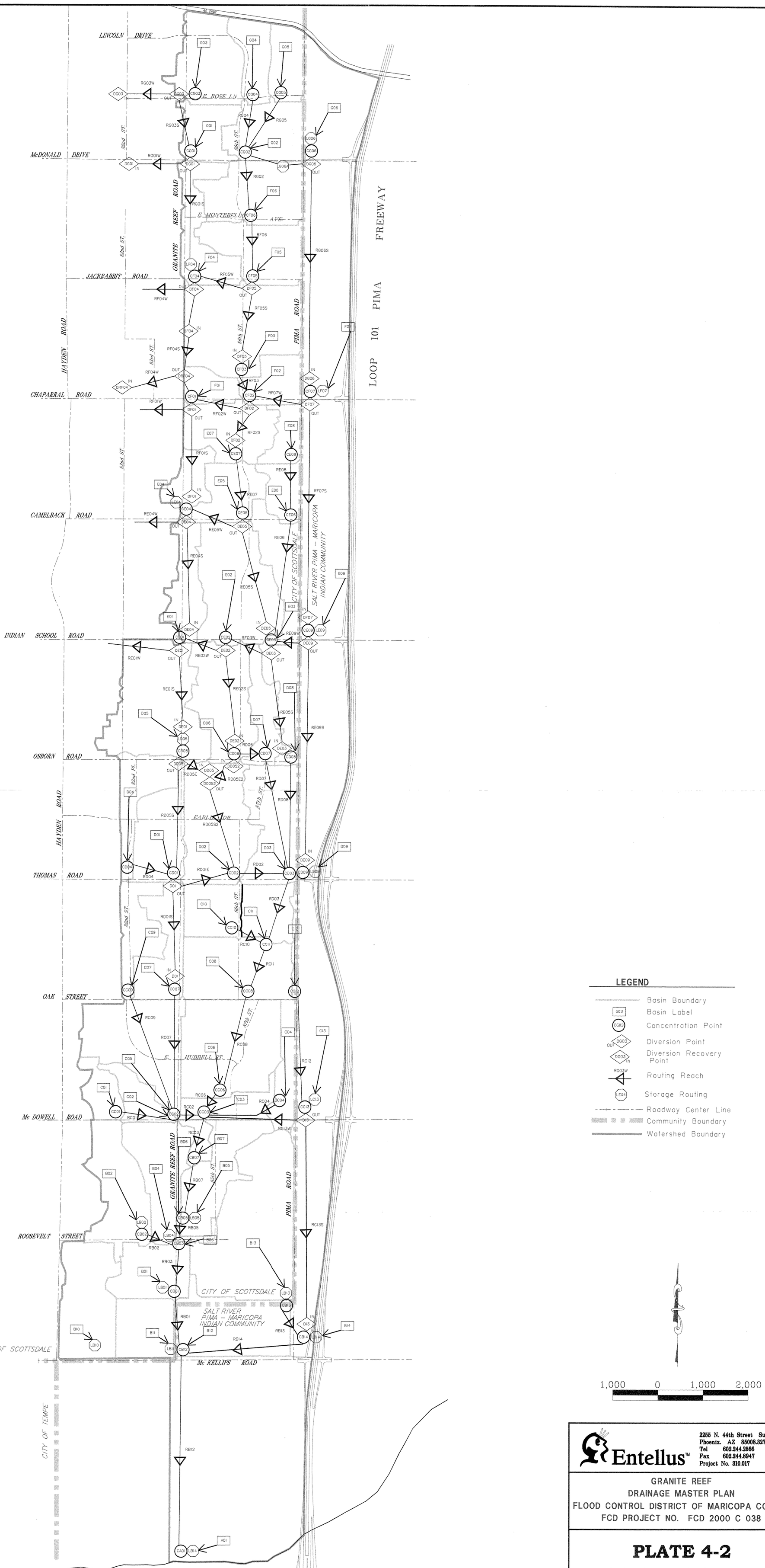
	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	3 COMBINED AT	CC11	1517.	12.92	389.	114.	83.	2.54	
+	ROUTED TO	RC11	1506.	12.92	389.	114.	83.	2.54	
+	HYDROGRAPH AT	C08	117.	12.25	24.	8.	6.	0.12	
+	2 COMBINED AT	CC08	1555.	12.92	411.	122.	88.	2.66	
+	ROUTED TO	RC08	1538.	13.00	411.	122.	88.	2.66	
+	HYDROGRAPH AT	C06	153.	12.25	31.	10.	7.	0.15	
+	2 COMBINED AT	CC06	1592.	13.00	441.	132.	95.	2.81	
+	ROUTED TO	RC06	1589.	13.00	441.	132.	95.	2.81	
+	HYDROGRAPH AT	DRD01	77.	12.50	22.	7.	5.	0.26	
+	ROUTED TO	RD01S	76.	12.67	22.	7.	5.	0.26	
+	HYDROGRAPH AT	C07	54.	12.33	15.	5.	4.	0.07	
+	2 COMBINED AT	CC07	124.	12.58	36.	12.	9.	0.17	
+	ROUTED TO	RC07	122.	12.75	36.	12.	9.	0.17	
+	HYDROGRAPH AT	C09	46.	12.33	12.	4.	3.	0.06	
+	ROUTED TO	RC09	41.	12.67	12.	4.	3.	0.06	
+	HYDROGRAPH AT	C05	103.	12.42	29.	10.	7.	0.14	
+	HYDROGRAPH AT	C01	26.	12.33	7.	2.	2.	0.03	
+	ROUTED TO	RC01	25.	12.50	7.	2.	2.	0.03	
+	HYDROGRAPH AT	C02	29.	12.33	9.	3.	2.	0.04	
+	5 COMBINED AT	CC02	297.	12.67	92.	30.	22.	0.44	
+	ROUTED TO	RC02	297.	12.67	92.	30.	22.	0.44	
+	HYDROGRAPH AT	C03	47.	12.17	9.	3.	2.	0.04	
+	HYDROGRAPH AT	C12	3.	12.83	2.	1.	1.	0.01	
+	ROUTED TO	RC12	3.	13.33	2.	1.	1.	0.01	
+	HYDROGRAPH AT	C13	170.	12.25	43.	15.	11.	0.18	
	DIVERSION TO								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		LC13D	159.	12.17	18.	6.	4.	0.18	
+	HYDROGRAPH AT	LC13	167.	12.33	33.	9.	7.	0.18	
+	2 COMBINED AT	CC13	168.	12.33	35.	10.	7.	0.19	
+	DIVERSION TO	DC13I	127.	12.33	13.	3.	2.	0.19	
+	HYDROGRAPH AT	DC13	41.	12.33	21.	7.	5.	0.19	
+	ROUTED TO	RC13W	41.	12.42	21.	7.	5.	0.19	
+	HYDROGRAPH AT	C04	28.	12.33	8.	3.	2.	0.04	
+	ROUTED TO	RC04	28.	12.50	8.	3.	2.	0.04	
+	5 COMBINED AT	CC03	1899.	13.00	565.	173.	125.	3.37	
+	ROUTED TO	RC03	1884.	13.00	565.	173.	125.	3.37	
+	HYDROGRAPH AT	B07	25.	12.08	3.	1.	1.	0.02	
+	2 COMBINED AT	CB07	1886.	13.00	568.	174.	126.	3.39	
+	ROUTED TO	RB07	1881.	13.08	568.	174.	126.	3.39	
+	HYDROGRAPH AT	B05	62.	12.33	16.	5.	4.	0.09	
+	DIVERSION TO	LB05D	1.	2.58	0.	0.	0.	0.09	
+	HYDROGRAPH AT	LB05	62.	12.33	16.	5.	4.	0.09	
+	HYDROGRAPH AT	B06	14.	12.17	3.	1.	1.	0.01	
+	3 COMBINED AT	CB05	1916.	13.08	586.	180.	131.	3.49	
+	ROUTED TO	RB05	1915.	13.08	586.	180.	131.	3.49	
+	HYDROGRAPH AT	B04	125.	12.08	19.	6.	5.	0.08	
+	DIVERSION TO	LB04D	125.	12.08	19.	6.	5.	0.08	
+	HYDROGRAPH AT	LB04	0.	0.08	0.	0.	0.	0.08	
+	HYDROGRAPH AT	B02	134.	12.17	24.	8.	6.	0.10	
+	DIVERSION TO	LB02D	7.	10.42	4.	1.	1.	0.10	
+	HYDROGRAPH AT	LB02	134.	12.17	24.	7.	5.	0.10	
+	ROUTED TO	RB02	133.	12.17	24.	7.	5.	0.10	

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
	HYDROGRAPH AT	B03	8.	12.17	1.	0.	0.	0.01	
+	4 COMBINED AT	CB03	1944.	13.08	609.	187.	135.	3.66	
+	ROUTED TO	RB03	1933.	13.08	609.	187.	135.	3.66	
+	HYDROGRAPH AT	B01	113.	12.08	13.	4.	3.	0.07	
+	DIVERSION TO	LB01D	3.	10.00	2.	1.	0.	0.07	
+	HYDROGRAPH AT	LB01	113.	12.08	13.	4.	3.	0.07	
+	2 COMBINED AT	CB01	1940.	13.08	621.	190.	138.	3.73	
+	ROUTED TO	RB01	1938.	13.17	621.	190.	138.	3.73	
+	HYDROGRAPH AT	B12	164.	12.17	22.	7.	5.	0.12	
+	HYDROGRAPH AT	B11	78.	12.17	11.	3.	2.	0.06	
+	DIVERSION TO	LB11D	74.	12.08	5.	1.	1.	0.06	
+	HYDROGRAPH AT	LB11	71.	12.25	7.	2.	1.	0.06	
+	HYDROGRAPH AT	DRDC13	127.	12.33	13.	3.	2.	0.19	
+	ROUTED TO	RC13S	81.	13.17	13.	3.	2.	0.19	
+	HYDROGRAPH AT	B13	310.	12.17	43.	14.	10.	0.22	
+	DIVERSION TO	LB13D	310.	12.17	34.	9.	7.	0.22	
+	HYDROGRAPH AT	LB13	95.	12.58	14.	4.	3.	0.22	
+	ROUTED TO	RB13	72.	12.83	14.	4.	3.	0.22	
+	HYDROGRAPH AT	B14	135.	12.33	38.	13.	10.	0.15	
+	DIVERSION TO	LB14D	132.	12.25	17.	5.	4.	0.15	
+	HYDROGRAPH AT	LB14	126.	12.50	28.	8.	6.	0.15	
+	3 COMBINED AT	CB14	185.	13.08	53.	15.	11.	0.52	
+	ROUTED TO	RB14	181.	13.17	53.	15.	11.	0.52	
+	4 COMBINED AT	CB12	2122.	13.17	695.	213.	154.	4.43	
+	ROUTED TO	RB12	2019.	13.42	695.	213.	154.	4.43	
	HYDROGRAPH AT								

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+		A01	745.	12.17	131.	45.	33.	0.51	
+	DIVERSION TO	LA01D	619.	12.08	58.	18.	13.	0.51	
+	HYDROGRAPH AT	LA01	741.	12.25	95.	27.	20.	0.51	
+	2 COMBINED AT	CA01	2096.	13.42	784.	239.	173.	4.94	
+	HYDROGRAPH AT	B10	65.	12.42	17.	5.	4.	0.11	
+	DIVERSION TO	LB10D	65.	12.42	17.	5.	4.	0.11	
+	HYDROGRAPH AT	LB10	1.	20.50	0.	0.	0.	0.11	

*** NORMAL END OF HEC-1 ***



Entellus™
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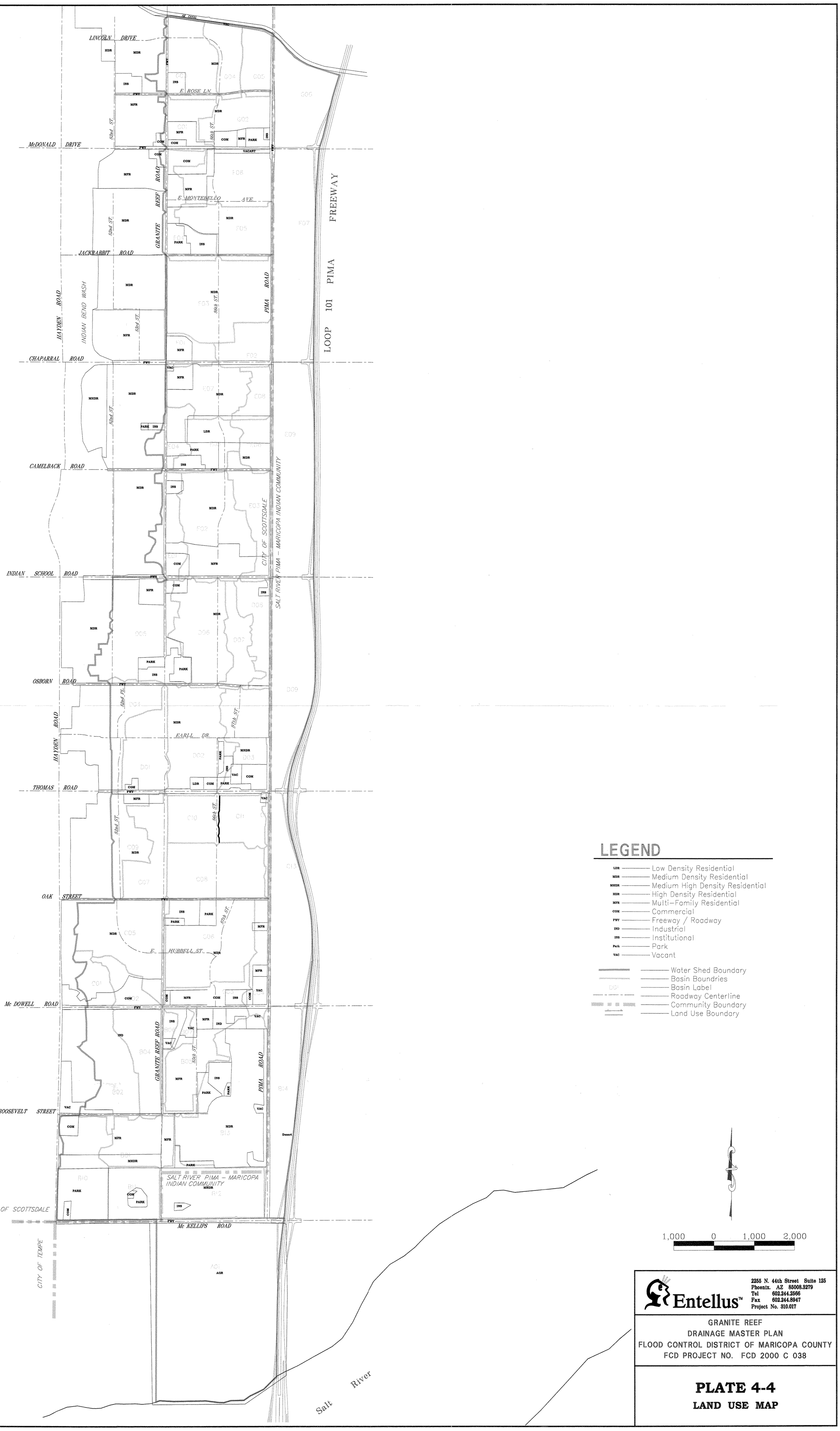
Project No. 310.017

GRANITE REEF
DRAINAGE MASTER PLAN
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

PLATE 4-2

HEC-1 SCHEMATIC DRAWING



LEGEND

- LDR — Low Density Residential
- MDR — Medium Density Residential
- MHDR — Medium High Density Residential
- HDR — High Density Residential
- MFR — Multi–Family Residential
- COM — Commercial
- FWY — Freeway / Roadway
- IND — Industrial
- INS — Institutional
- Park — Park
- VAC — Vacant

- Water Shed Boundary
- Basin Boundries
- D01 — Basin Label
- Roadway Centerline
- Community Boundary
- Land Use Boundary

1,000 0 1,000 2,000

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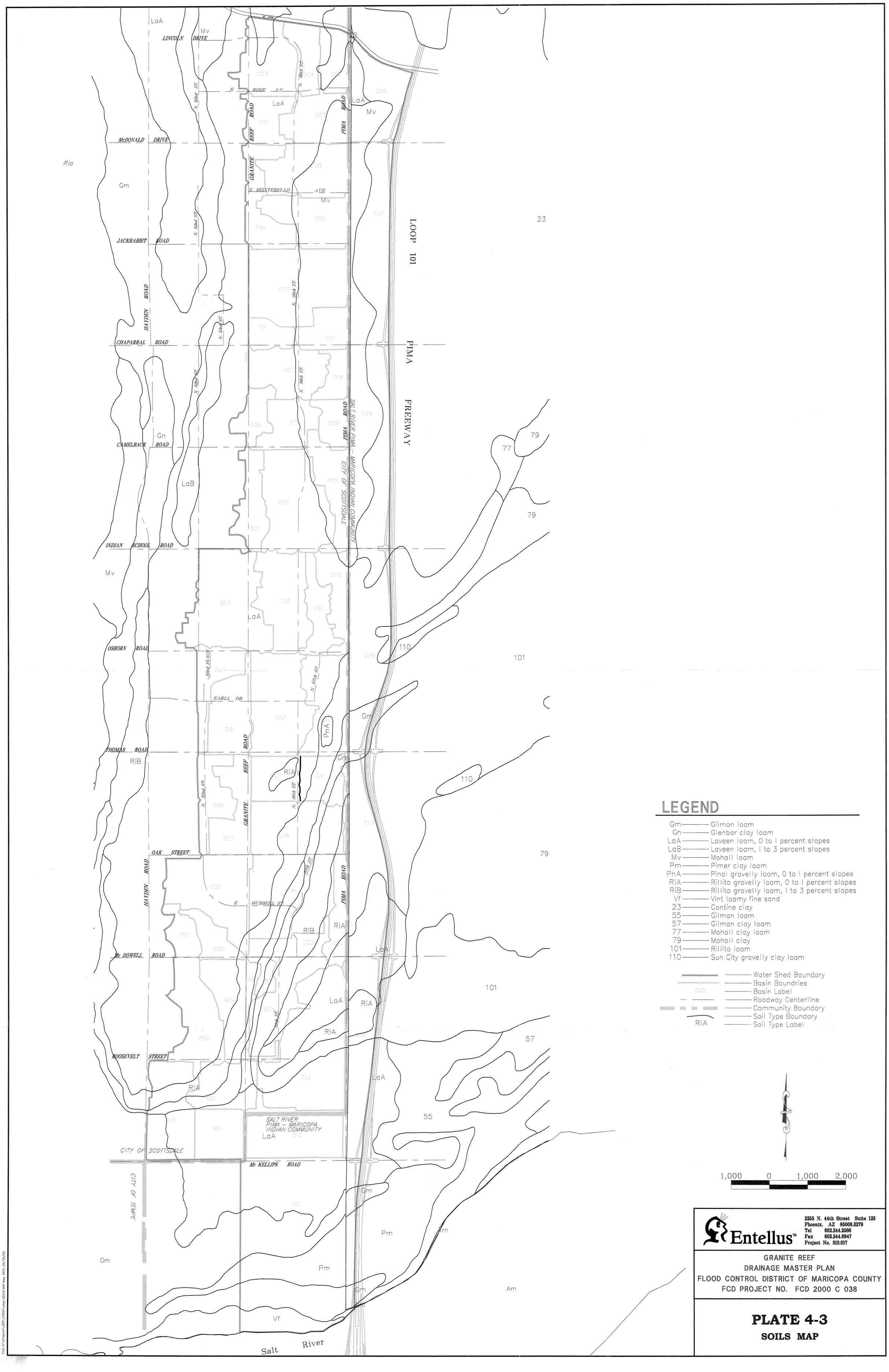
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

PLATE 4-4
LAND USE MAP

FILE: N:\Projects\3005_3\0031\dwg\LAND USE.dwg DATE: 04/30/02



LEGEND

Gm	Gilman loam
Gn	Glenbar clay loam
LaA	Laveen loam, 0 to 1 percent slopes
LaB	Laveen loam, 1 to 3 percent slopes
Mv	Mohall loam
Pm	Pimer clay loam
PnA	Pinal gravelly loam, 0 to 1 percent slopes
RiA	Rillito gravelly loam, 0 to 1 percent slopes
RiB	Rillito gravelly loam, 1 to 3 percent slopes
Vf	Vint loamy fine sand
23	Contine clay
55	Gilman loam
57	Gilman clay loam
77	Mohall clay loam
79	Mohall clay
101	Rillito loam
110	Sun City gravelly clay loam

- Water Shed Boundary
- Basin Boundries
- 602 — Basin Label
- Roadway Centerline
- Community Boundary
- Soil Type Boundary
- RiA — Soil Type Label

1,000 0 1,000 2,000

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PLATE 4-3
SOILS MAP

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