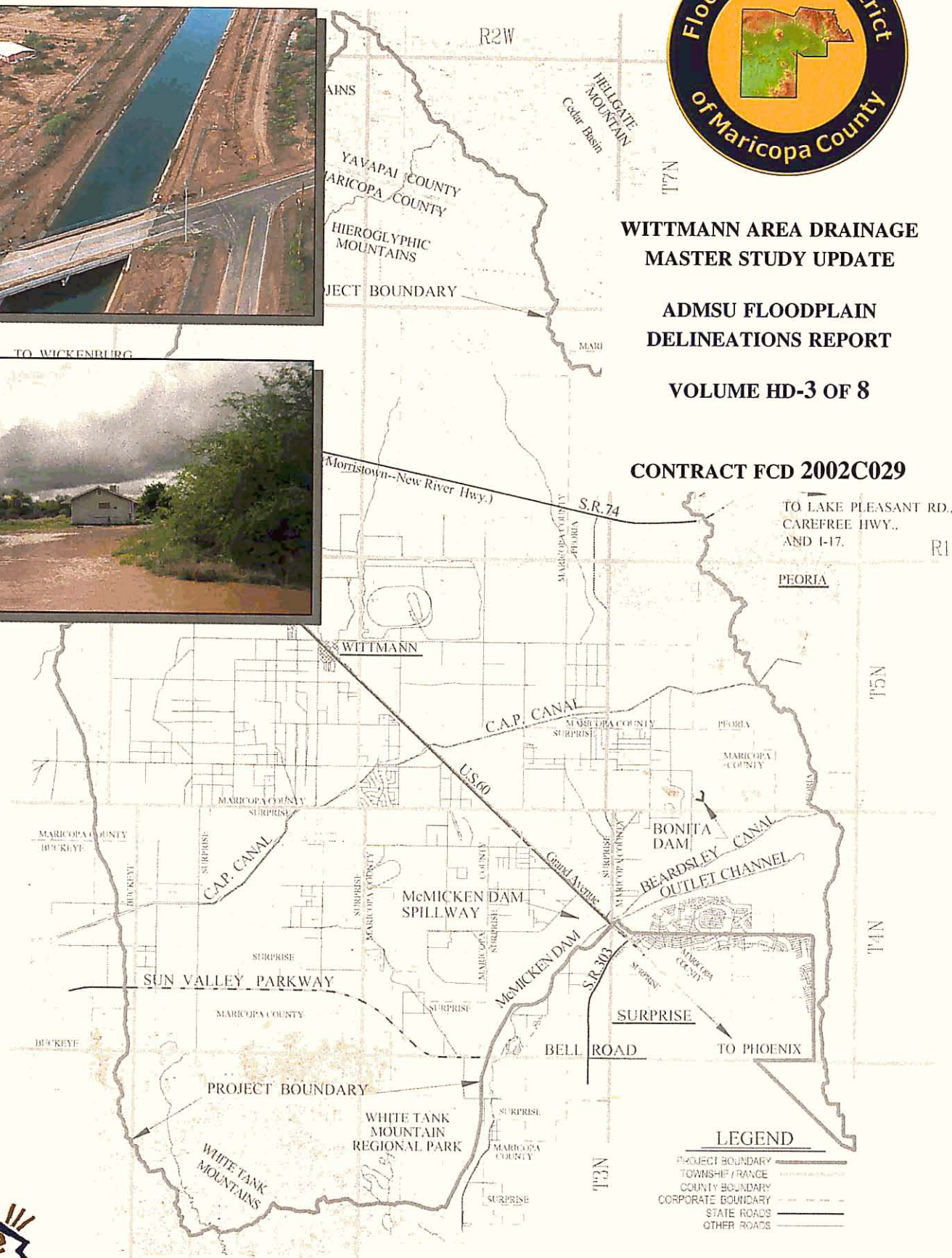


Flood Control District of Maricopa County

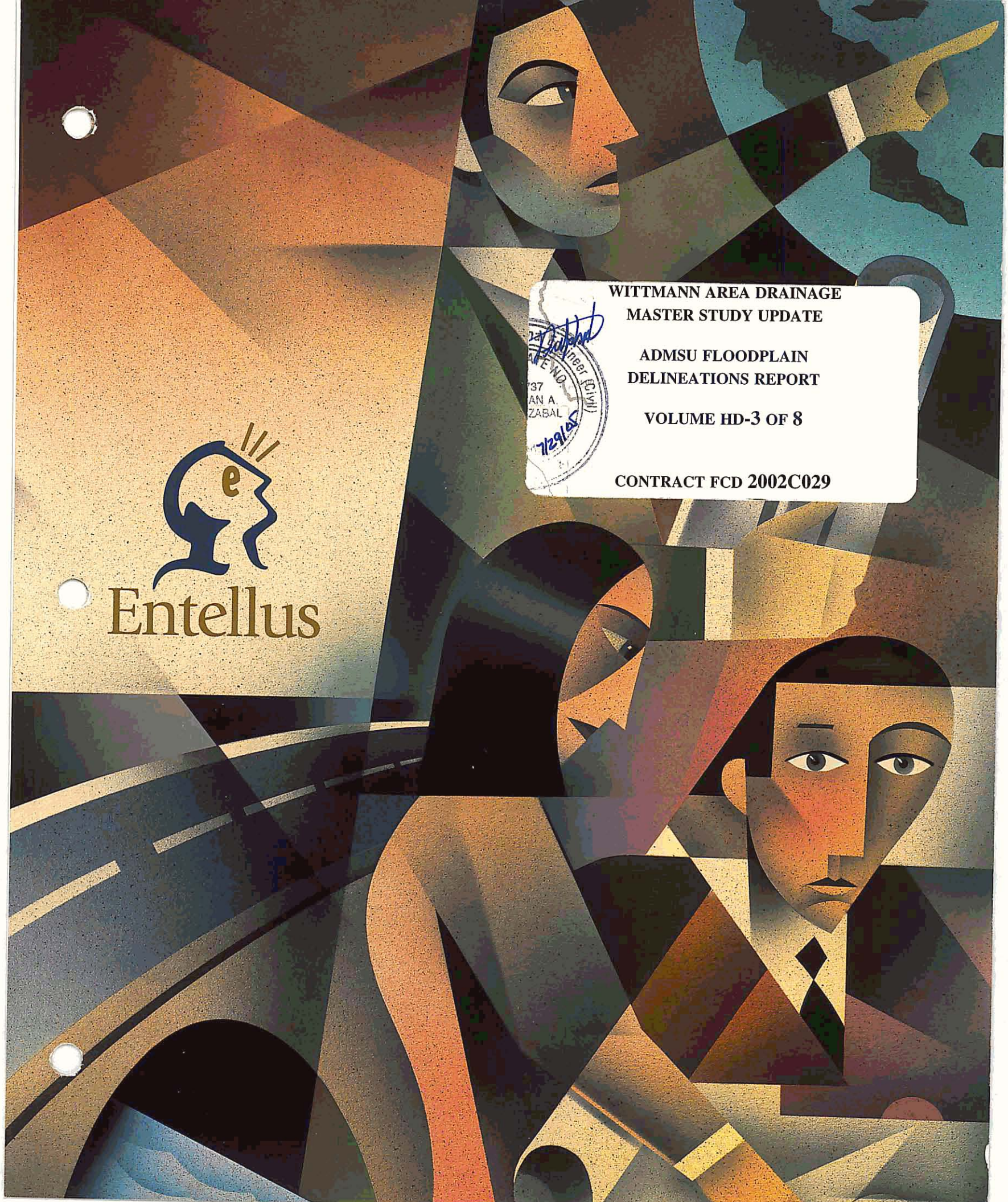
WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

ADMSU FLOODPLAIN DELINEATIONS REPORT

VOLUME HD-3 OF 8

CONTRACT FCD 2002C029

Entellus™



WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

ADMSU FLOODPLAIN DELINEATIONS REPORT

VOLUME HD-3 OF 8

CONTRACT FCD 2002C029

Entellus

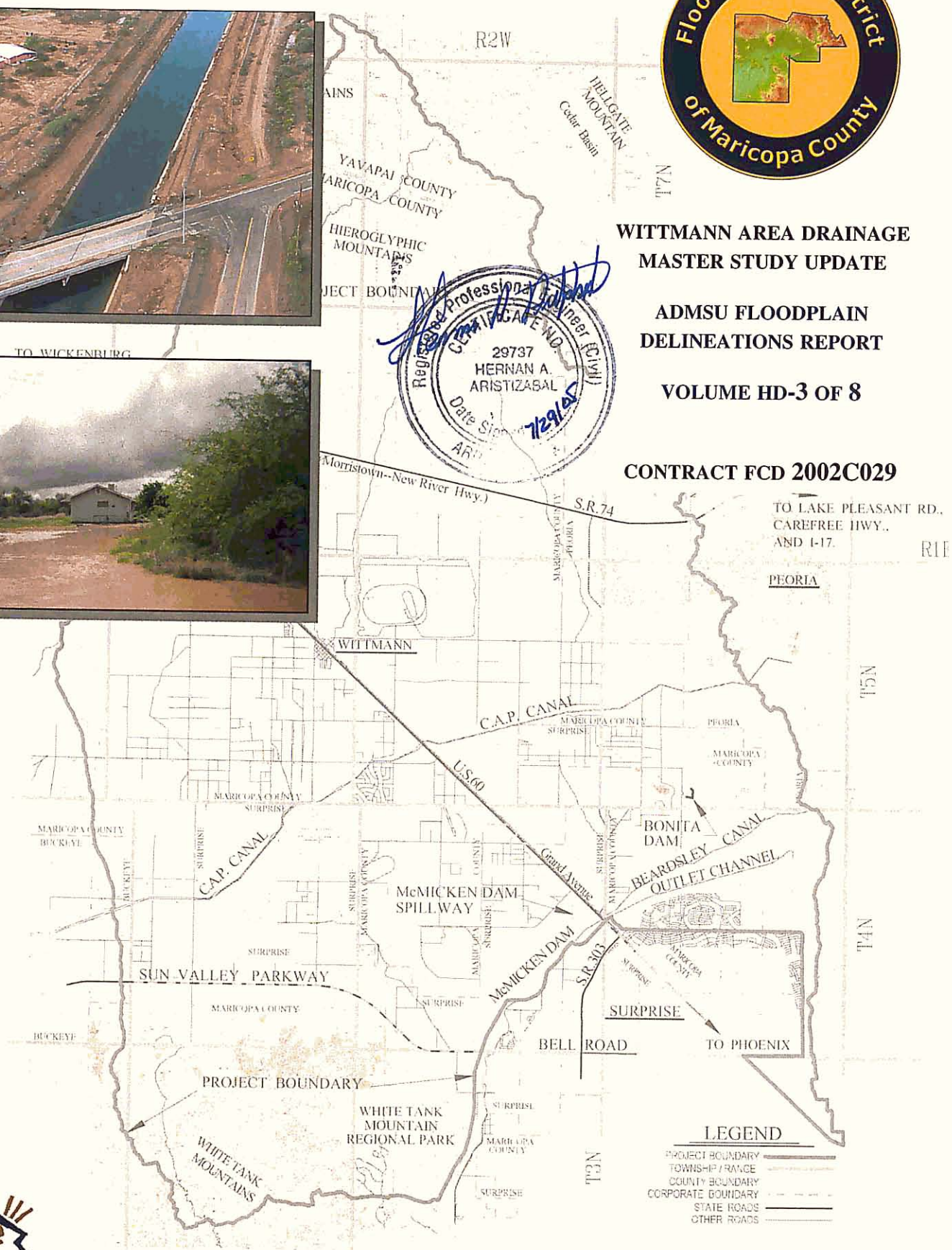
WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

ADMSU FLOODPLAIN DELINEATIONS REPORT

VOLUME HD-3 OF 8

CONTRACT FCD 2002C029

Registered Professional Engineer (Civil)
CERTIFICATE NO. 29737
HERNAN A. ARISTIZABAL
Date Signed 7/29/05
ARIZONA



Entellus™

WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

CONTRACT 2002C029

VOLUME NAME	VOLUME ID
EXISTING CONDITIONS ANALYSIS (PART I)	EC
ADMSU HYDROLOGY	HY
GEOMORPHOLOGY REPORT	GR
SUBSIDENCE REPORT	SU
ALTERNATIVES IDENTIFICATION (PART II)	AI
RULES OF DEVELOPMENT (PART III)	RD
ALTERNATIVE ANALYSIS MCMICKEN DAM	MA
MCMICKEN DAM HYDROLOGY	MD
MCMICKEN DAM FINAL LANDSCAPE CHARACTER COMPATABILITY ANALYSIS REPORT	LA
FLOODPLAIN DELINEATION	HD
REPORT OF SURVEY	SR
SUN VALLEY PARKWAY CULVERT EVALUATION	SV
ADMINISTRATIVE REPORT	AR

Note: Volume ID will be used for Section, Plate, Figure, and Table Identifiers.

WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

FCD 2002C029

TABLE OF CONTENTS

TECHNICAL DATA NOTEBOOK

FLOODPLAIN DELINEATION REPORT – VOLUME HD

SECTION 1: INTRODUCTION ..... VOL I

1.1 Project Location ..... Vol I

1.2 Hydraulic Methodology and Results ..... Vol I

SECTION 2: ADWR/FEMA FORMS ..... VOL I

SECTION 3: MAPPING AND SURVEY INFORMATION ..... VOL I

3.1 Field Survey Information ..... Vol I

3.2 Mapping ..... Vol I

3.2.1 Hydrology Mapping ..... Vol I

3.2.2 Hydraulic Mapping ..... Vol I

SECTION 4: HYDROLOGY ..... VOL I

SECTION 5: HYDRAULICS ..... VOL I

5.1 Method Description ..... VOL I

5.2 Work Study Maps ..... Vol I

5.3.1 Manning's "n" Value ..... Vol I

5.3.1.1 Introduction ..... Vol I

5.3.1.2 Methodology ..... Vol I

5.3.1.3 "n" Value Determination ..... Vol I

5.3.1.4 Bank-Station Placement ..... Vol I

5.3.2 Expansion and Contraction Coefficients ..... Vol I

5.4 Cross-Section Description ..... Vol I

5.4.1 Channels and Overbanks ..... Vol I

5.4.2 Bridges and Constrictions ..... Vol I
5.4.2.1 Minor Hydraulic Structures ..... Vol I
5.4.2.2 Major Hydraulic Structures ..... Vol I
5.5 Modeling Considerations ..... Vol I
5.5.1 Hydraulic Jumps and Drop Analysis ..... Vol I
5.5.2 Bridges and Culverts ..... Vol I
5.5.3 Levees and Dikes ..... Vol I
5.5.4 Islands and Flow Splits ..... Vol I
5.5.5 Ineffective Flow Areas ..... Vol I
5.5.6 Supercritical Flow ..... Vol I
5.5.7 Blocked Obstructions ..... Vol I
5.5.8 Special Modeling Considerations South of the CAP ..... Vol I
5.5.8.1 Wash 1 East ..... Vol I
5.5.8.2 Wash 2 East ..... Vol I
5.5.8.3 Wash 3 East ..... Vol I
5.5.8.4 Wash 3 East (Zone A) ..... Vol I
5.5.8.5 Wash 4 East ..... Vol I
5.5.8.6 Wash 5 East ..... Vol I
5.5.8.7 Wash 5 East (Zone AO) ..... Vol I
5.5.8.8 Wash 6 East ..... Vol I
5.5.8.9 Wash 6 East-South ..... Vol I
5.5.8.10 Wash 6 East (Zone A) ..... Vol I
5.5.8.11 Wash 7 East (East Split) ..... Vol I
5.5.8.12 Wash 7 East (West Split) ..... Vol I
5.5.8.13 Wash 8 East ..... Vol I
5.5.8.14 Wash 7 East and 8 East (Zone A) ..... Vol I
5.5.8.15 Wash 9 East ..... Vol I
5.5.8.16 Wash 9 East-Split ..... Vol I
5.5.8.17 Wash 10 East ..... Vol I
5.5.8.18 Wash 10 East (East Split-1) ..... Vol I
5.5.8.19 Wash 10 East (East Split-2) ..... Vol I
5.5.8.20 Wash 11 East ..... Vol I
5.5.8.21 Wash 11 East Failure (At Beardsley Canal) ..... Vol I
5.5.8.22 Bonita Dike Channel ..... Vol I
5.5.8.23 Wash 12 East ..... Vol I
5.5.8.24 Wash 12 East Split ..... Vol I
5.5.8.25 Wash 13 East ..... Vol I

5.5.8.26 Wash 14 East ..... Vol I
5.5.8.27 Wash 1 West ..... Vol I
5.5.8.28 Wash 2 West ..... Vol I
5.5.8.29 Iona East ..... Vol I
5.5.8.30 Iona West ..... Vol I
5.5.8.31 Iona East Split-1 ..... Vol I
5.5.8.32 Iona East Split-2 ..... Vol I
5.5.8.33 Iona Wash North ..... Vol I
5.5.8.34 Iona North West Split-1 ..... Vol I
5.5.8.35 Iona Wash ..... Vol I
5.5.8.36 Iona Zone AO ..... Vol I
5.5.8.37 Iona Tributary ..... Vol I
5.5.8.38 Wittmann Wash ..... Vol I
5.5.8.39 Wittmann Wash (North Split) ..... Vol I
5.5.8.40 Wittmann Wash (South Split) ..... Vol I
5.5.8.41 Wittmann Tributary Wash ..... Vol I
5.5.8.42 Wash 7 East Tributary ..... Vol I
5.5.8.43 Wash 7 East ..... Vol I
5.5.8.44 Wash 2 East (North of CAP) ..... Vol I
5.5.8.45 Wash 2 East Tributary (North of CAP) ..... Vol I
5.5.8.46 Wash T5N-R2W-S19E ..... Vol I
5.5.8.47 Wash T5N-R2W-S19W ..... Vol I
5.5.8.48 Wash T5N-R3W-S24E ..... Vol I
5.5.8.49 Wash T5N-R3W-S01S ..... Vol I
5.5.8.50 Wash T5N-R2W-S07 ..... Vol I
5.5.8.51 Trilby Wash ..... Vol I
5.5.8.52 Circle City Area Wash-1 ..... Vol I
5.5.8.53 Wash 2 West (North of CAP) ..... Vol I
5.5.8.54 Wash 2 West Tributary-1 ..... Vol I
5.5.8.55 Wash 2 West Tributary-2 ..... Vol I
5.5.8.56 Wash 3 West ..... Vol I
5.5.8.57 Wash T4N-R3W-S08E ..... Vol I
5.5.8.58 Wash T5N-R3W-S19 ..... Vol I
5.5.8.59 T5N-R2W-S14N ..... Vol I
5.5.8.60 T5N-R2W-S14S ..... Vol I
5.5.8.61 T5N-R2W-S14W ..... Vol I
5.5.8.62 T5N-R2W-S11 ..... Vol I

5.6 Floodway Modeling ..... Vol I
5.7 Problems Encountered During Modeling ..... Vol I
5.7.1 Special Problems and Solutions ..... Vol I
5.7.2 Modeling Warning and Errors ..... Vol I
5.8 Calibration ..... Vol I
5.9 Final Results ..... Vol I
5.9.1 Hydraulic Analysis Results ..... Vol I

SECTION 6: EROSION AND SEDIMENT TRANSPORT ..... VOL I

SECTION 7: DRAFT FIS DATA ..... VOL II

7.1 Summary of Discharges ..... Vol II
7.2 Floodway Data ..... Vol II
7.3 Annotated Flood Insurance Maps ..... Vol II
7.4 Flood Profiles ..... Vol II

APPENDIX A. REFERENCES ..... VOL III

A.1 Data Collection Summary ..... Vol III
A.2 Reference Documents ..... Vol III

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDENCE ..... VOL AR

APPENDIX C. SURVEY AND FIELD NOTES ..... VOL SR

APPENDIX D. HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION .. VOL III

D.1 Modified 24-Hour, Existing Conditions HEC-1 Model ..... Vol III
D.2 Modified 6-Hour, Existing Conditions HEC-1 Model ..... Vol III
D.3 Flow Spreadsheets ..... Vol III
D.4 Split Flow Calculation and Optimization ..... Vol III

APPENDIX E. HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION ..... VOL IV

E.1 Roughness Coefficient Estimation ..... Vol IV
E.2 Cross-Section Plots ..... Vol IV, V, VI, VII
E.3 Expansion and Contraction Coefficients ..... Vol VII
E.4 Analysis of Structures ..... Vol VII
E.5 Hydraulic Calculations ..... Vol VII
E.6 HEC-RAS Output ..... Vol VII
E.7 CHECK-RAS Output ..... Vol VII, VIII

E.8 Summary of Errors and Warnings ..... Vol VIII
E.9 Effective FIS Models ..... Vol VIII
APPENDIX F. DVD ..... VOL VIII

List of Figures

Figure HD 1.1 - Vicinity Map ..... Vol I
Figure HD 3.1 -- Mapping Coverage ..... Vol I
Figures 7.1 - Flood Profiles ..... Vol II
Figures E.1 - Manning's Roughness ..... Vol IV

List of Tables

Table 7.1 – Summary of Discharges ..... Vol II
Tables E.1 – Manning's Roughness ..... Vol IV

List of Plates

Plates 1 - 151 – Floodplain Map Exhibits (Reduced Scale) ..... Vol I
Plates 1 - 151 – Floodplain Map Exhibits (Full Size) ..... Bound Separately
Plates E.1.1 - 3 -- Manning's Roughness ..... Vol IV

APPENDIX A. REFERENCES

A.1 Data Collection Summary

All the data collected to obtain the information in this report are identified in the Data Collection Report. This report includes complete bibliographic information of the documents and references used in this report.

A.2 Reference Documents

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

1 USGS DEM contour mapping composed ASCI Grid file for portions of the study area, by *Landata Inc.*, June 2002.

2 10ft contour mapping composed ASCI Grid file for portions of the study area, by Landata Inc., June 2002.

3 4ft contour mapping composed ASCI Grid file for portions of the study area, by Landata Inc., June 2002.

4 2ft contour mapping composed ASCI Grid file for portions of the study area, by Landata Inc., June 2002

5 Soil Survey of Maricopa County, Arizona-Central Part, by *U.S. Department of Agriculture*, April 1986.

6 U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, *HEC-RAS User's Manual,* Davis, California, April 1997.

7 U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, *HEC-RAS, River Analysis System, Version 3.1.1,* May 2003.

8 Boss International, *River Modeling System (RMS) for AutoCAD 2000,* Version 2000 Windows, 2002.

9 FEMA Website, www.fema.gov, 2004.

10 Wittmann ADMP Structure Surveys (Highway 74 structures), by *DTM Inc.*, September 2001.

11 Wittmann ADMP Structure Surveys (Highway 60-Railroad), by *DTM Inc.*, September 2001.

12 Wittmann ADMP Structure Surveys (Sun Valley Parkway), by *DTM Inc.*, October 2001.

13 Wittmann ADMP CAP Canal Structure Surveys, by *DTM Inc.*, March 2003.

14 *Wittmann Area Drainage Master Study – Part A: Hydrology and hydraulics* by The WLB Group for the Flood Control District of Maricopa County, 1989.

15 AutoCAD 2000i, by *Autodesk, Inc.,* 2000.

APPENDIX B. GENERAL DOCUMENTATION AND CORRESPONDENCE

This appendix is located in

Administrative Report - Volume AR

APPENDIX C. SURVEY AND FIELD NOTES

This appendix is located in

Report of Survey - Volume SR

HEC-1 Model Modifications

The 24- and 6-hour Existing HEC-1 models were modified in order to obtain flows at various locations and of various elements throughout the watershed. For example the detailed hydrology might combine 2 routes and a basin at a given concentration point, but for the delineation, flow with a single route and the basin might be required. This requires a slight modification of the hydrology models. In addition, if both the aforementioned routes were being delineated, it would be necessary to include each of the routes individually with the basin. This requires 2 separate models:

```
[MODEL1 = Route1 + Basin1
 MODEL2 = Route2 + Basin1]
```

Detailed comments have been placed in the hydrology models explaining exactly what modifications have occurred. These comments are found at the beginning of the model in chronological order beginning with the most recent modifications. Since a single basin cannot be combined twice in a model, as might be required, certain added concentration points have been commented out and are no longer used in the model. Details exist in the model to reproduce said concentration points if needed. The following is a list of concentration points that have been commented out of the HEC-1 models.

1. C480_1
2. C560_1
3. C554_1
4. C576_1
5. C276_1
6. C430_1
7. C350_1
8. C618_1
9. C615_1
10. C612_1
11. C525_1

The following is a copy of the comments found at the beginning of the 24-hour HEC-1 model. Similar comments are found at the beginning of the 6-hour model.

```
ID ---------------------------------------------------------------------------
ID 03-30-2005
ID 3 East
ID The following additional modifications were made to delineate 3 East:
ID
ID 1. Basin WI500 was moved to follow RWI506.
ID 2. A CP called C500_1 was added after WI500 combining 2.
ID 3. A CP called C500_2 was added after RD508 combining 2.
ID 4. CP CWI500 was changed from combining 4 to 2.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-25-2005
ID T5N-R3W-S24E
ID The following edits were made to model.
ID
ID 1. Concentration point C480_1 was commented out.
ID 2. Concentration point C480_4 was added after RTW482 combining 2
ID    [RTW482 & TW480].  No hard coding was needed because all flow is diverted
ID    to CTW480.
ID
ID T5N-R2W-19W
ID The following edits were made to the model.
ID
ID 1. Concentration point C560_1 was commented out.
ID 2. D576 and RD576 were moved to follow RWI574.
ID 3. WI560A and R560A were moved to follow RD576.
ID 4. CP C5602A was added after RWI574 combining 2 [RWI574 & WI560].
ID 5. CP C5602B was added after RD576 combining 2 [C5602A & RD576].
ID 5. CP C5602C was added after R560A combining 2 [C5602B & WI560A].
ID 6. CP CWI560 was changed from combining 5 to 3.
ID
ID 7. Commented out CP C554_1.
ID 8. Moved basin WI554 to follow RWI560.
ID 9. Added CP C554_9 to after WI554 combining 2 [WI554 & RWI560].
ID 10. Moved WI556 and RWI556 to follow C554_9.
ID 11. Added CP C5541B combining 2.
ID 12. Changed CWI554 to combine 2.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-19-2005
ID T5N-R2W-S07
ID A concentration point was added after WI576, called C576_1 combining 2
ID [RD576B & WI576] and CP CWI576 was changed from combining 3 to 2.
ID
ID Also, basin WI560 was moved to follow RD576 and concentration point C560_1
ID combining 2 [RD576 & WI560] was added after WI560. CP CWI560 was changed
ID from combining 6 to 5.
ID
ID T5N-R3W-S01
ID The following modifications were made for the delineation of T5N-R3W-S01.
ID
ID 1. Basin WI576 was moved to follow RWI580.
ID 2. A concentration point was added after WI576 called C576_2 combining 2.
ID 3. CP C576_1 was commented out.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-18-2005
ID T5N-R2W-19E
ID A concentration point was added after WI554, called C5554_1 combining 2
ID [CWI556 & WI554] and CP CWI554 was changed from combining 4 to 3.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-17-2005
ID T4N-R3W-S08E
ID Concentration point C276_1 was added after SV276 to combine RSV294 and SV276.
ID in addition CSV276 was changed from combining 3 to 2 [C276_1 & RSV272].
ID
```

```
ID 3 West
ID The following modifications were made for the delineation of wash 3 West.
ID
ID  1. Basin SV272 was moved to follow RSV284.
ID  2. Concentration point C272_2 was added after SV272 HC=2 [SV272 & RSV272].
ID  3. CP CSV272 was changed from combining 3 to 2.
ID  4. CP C276_1 was commented out.
ID  5. Basin SV276 was moved to follow RSV272.
ID  6. CP C276_2 was added after SV276, HC=2 [SV276 & RSV272].
ID  7. CP C280_1 was added after SV280 HC=2 [RSV276 SV280].
ID  8. CP CSV280 was changed from combining 3 to 2.
ID  9. Basin SV260 was moved to come before SV268.
ID 10. CP C260_1 was added after SV260 combining 2 [SV260 & RSV280].
ID 11. CP CSV260 was changed from combining 4 to 3.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-15-2005
ID 7 EAST
ID The following modifications were made for the delineation of 7 EaSt.
ID
ID 1. Basin PI645 was moved to follow RPI651.
ID 2. A concentration point was added after PI645 called C645_1 combining 2
ID    [RPI651 & PI645]
ID 3. Concentration point CPI645 was changed from combining 4 to 3.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-14-2005
ID IONA WASH (North of the CAP)
ID The model was delineated for the delineation of Iona Wash North of the CAP.
ID The following modifications were made.
ID
ID 1. A concentration point called C388_1 was added after Basin IW388.  This
ID    concentration point combines 2 [IW388 & RIW390].  Concentration point
ID    CIW388 was changed from combining 3 to 2 [C388_1 & RIW389].
ID
ID 2. Basin IW363 was moved to follow RD357.  A concentration point called
ID    C363_2 was then added after basin IW363.
ID
ID 3. Concentration point CIW363 was changed from combining 5 to combine
ID    4 [RIW312, RIW365, RIW369 & C363_2].
ID
ID 4. Concentration point C361_1 was added following basin IW361 combining
ID    3 [IW361, D302 & RIW363].  This was hard coded for an area of 3.346 sq.mi.
ID    Concentration point CIW361 was changed from combining 4 to 2.
ID
ID T5N-R2W-S14 & T5N-R2W-S14N
ID For the above delineation a basin PI648 was moved to follow PI651, a
ID concentration point was placed after PI651 to combine 2 [PI651 & RPI654].
ID concentration point CPI651 was changed fro combining 3 to 2.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-11-2005
ID IONA ES-1
ID The model was modified for the delineation of Iona ES-1.  A concentration
ID point called C346_1 was added after IW346 to combine 2 [RIW351 & IW346].
ID This concentration point was hard coded for an area of 3.73.  In addition
ID concentration point CIW346 was changed from combining three (3) to
ID combine two (2): [C346_1 & CIW342].
ID
ID 2 West & 2 West Tributary-2
ID It was necessary to have basin TW430 combined solely with CTW434 for 2 West.
ID However, it was also necessary to combine TW430 solely with RTW436 for the
ID delineation of 2 West Tributary-2.  To accomplish this, TW430 was first
ID combined with RTW436, with a concentration point called C430_1.  This CP
ID was then commented out and basin TW430 was moved to follow CTW434.  A
ID concentration point was then added called C430_2 which combines TW430
ID and CTW434.
ID
```

```
ID 2 West Tributary-1
ID An additional concentration point was added following TW434 called C434_1
ID that combines C442* and TW434.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-10-2005
ID 2 WEST-TRIB and 2 EAST
ID The model has been modified for the delineation of washes 2 WEST-TRIB
ID and 2 EAST.  The following three (3) series of revisions, in order
ID have been made:
ID
ID 1.) A concentration point was added following basin WI530 called C530_1
ID     to combine two (2): R530* and WI530.  Concentration point CWI530
ID     was changed from combining four (4) [RWI538, R530*, WI530 & RD544]
ID     to combine three (3) [RWI538, C530_1 & RD544].
ID
ID 2.) Concentration point C530_1 was commented out.  Basin WI530 was moved
ID     to be follow RWI538.  A concentration point was added after basin
ID     WI530 called C530_2 and combines two (2): RWI538 and WI530.
ID
ID 3.) A concentration point was added after R530* called C530_3 and combines
ID     C530_2 and R530*.  Concentration point CWI530 was changed from
ID     combining three (3) [C530_2, R530* & RD544] to combine two (2)
ID     [C530_3 & RD544]
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 03-09-2005
ID 10 EAST (EAST SPLIT-2)
ID Model was modified for the delineation of 10 EAST (EAST SPLIT-2).
ID Basin PI603 was moved to be before PD744.  Then a concentration
ID point was added that combines only RPI604, RPI606 and PI603.
ID Finally the HC card of CPI603 was adjusted to combine 3: RD600A,
ID PD744 and C603_1.
ID
ID IONA EAST & IONA WEST
ID Model was modified for the delineation of IONA EAST & IONA WEST.
ID Basin SV202 and route RSV202 were moved from preceding C210* to
ID follow RIW300. An additional concentration point (C300_1) was added after
ID RSV202 to combine RIW300 and RSV202.  Concentration point C210*
ID was changed from combining three (3) to combining two (2). In addition
ID concentration point C302* changed the hard coding from
ID 54.75 to 56.19 (54.75 + 1.44 [SV202]).
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 02-22-2005
ID 7EAST
ID The model was modified for the delineation of Wash 7 East and 8 East.
ID Concentration point C618_1 was commented out and C6181a was added
ID after RD618 to combine RD618 and PI618.
ID
ID Concentration point C615_1 was added to combine RD618 and PI615 in order
ID to develop an area vs flow relationship for the stretch of wash that does
ID not include routed flow from RDCP13.
ID
ID 8 EAST
ID Concentration point C615_1 was commented out and Concentration Point
ID C6151A was added before DO618 to combine RDCAP13 and PI615.  This was
ID done to get a Q/A relationship for 8 East, excluding the flow from DO618.
ID
ID Concentration point C612_1 was commented out in order to determine the
ID flows through Wash 8 East without the routed flow from RPI618.
ID Concentration points C6121a was added after RPI615 in order to combine
ID the flow from RPI615 and PI612.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 02-21-2005
ID The model was modified for the delineation of Wash 6 and 7 East. The split
```

```
ID that was in the original model at CPI618 actually occurred further upstream.
ID The split is better modeled directly after DCAP12. The diversion card was
ID moved, but retained its original name: D618.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 02-17-2005
ID Model was modified for the delineation of Wash 4 East, south of the CAP.
ID The concentration point C525_1 was commented out, and C5251b was added
ID after RDCP09 in order to determine the flow through Wash 4E without the
ID flow from wash 3E.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 02-16-2005
ID Model was modified for the delineation of Wash 3 East, south of the CAP.
ID The concentration point C525_1 was added before CWI525 to not include
ID the routed flow from DCAP09 and RD527. The HC of CWI525 was changed to 2.
ID C5251a was added to combine C525_1 and RDCP09 in order to determine the
ID flow along the reach north of the 60.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 02-15-2005
ID Model was modified for the delineation of Wash 2 East, south of the CAP.
ID The concentration point C506_1 was added before CWI506 to not include
ID the routed flow from CWI524. The HC of CWI506 was changed to 2.WI506 was
ID also moved before WI524 in order to achieve this.
ID ---------------------------------------------------------------------------
ID 02-14-2005
ID Model was modified for the delineation of Wash 1 East, south of the CAP.
ID The concentration point C516_1 was added before CWI516 to not include
ID the routed flow from CWI514. The HC of CWI516 was changed to 2.
ID In order to delineate wash 2 east, cards DOCP07 - RWI528 were moved to be
ID directly before WI518. Concentration Point C518_1 was added in order to
ID determine the flow through Wash 2 East (excludes RWI527). CWI518 HC was set
ID to 2.
ID D529 was moved before WI528 and DOCP07 and C528_1 was added in order to
ID delineate Wash 2 East.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 02-3-2005
ID Model was modified for the delineation of Wash 1 West, south of the CAP.
ID The concentration point C502_1 was added before CWI502 to not include
ID the routed flow from CWI504. The HC of CWI504 was changed to 2.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 01-24-2005
ID Model was modified for the delineation of Wittmann Wash, north of the CAP.
ID The concentration point CTW485_1 was added before CTW485 to not include
ID CPI618 HC was set to 2. TW485 was moved to be after RD454 in order to
ID estimate the flow at CTW485_1 without the routed flow RD454. Concentration
ID point C480_1 was added before CTW480 to not include flow from RTW482.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 01-20-2005
ID Model was modified for the delineation of Wash 6E.
ID The concentration point C618_1 was added before CPI618 to not include
ID RDCP12. CPI618 HC was set to 2. The concentration point C612_1 was added
ID before CPI612 to not include RPI615. CPI612 HC was set to 2. The
ID concentration point C609_1 was added before CPI609 to not include RDCP14.
ID CPI609 HC was set to 2.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 01-17-2005
ID Model was modified for the delineation of Wash 2W.
ID The concentration point C400_2 was added before CTW400 to not include
```

```
ID CTW402, and CTW400 was adjusted to combine 2.  Also TW422 was moved to be
ID before TW424, a concentration point was added, C422_1 after TW422, HC=2,
ID and CTW422 was adjusted to combine 2.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 12-01-2004
ID Iona Wash.
ID A slight reordering of cards was done as well as the addition of a
ID concentration point.  A concentration point (C314_1) was added that included
ID only RIW322 and IW314.  To achieve this IW314 was moved from after RIW310 to
ID follow RIW322 and precede C314_1, which combines 2 cards, RIW322 and IW314.
ID CIW314 was changed to combine only 2 cards, C314_1 and RIW310, however the
ID net outcome for CIW314 is unchanged: RIW322, RIW310 and IW314 all
ID contribute.
ID
ID Iona Tributary
ID Also concentration point C353_3 was added.  This concentration point includes
ID Route RIW359 and Basin IW353.  Concentration point CIW353 was modified to
ID combine 3.
ID combine
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 09-14-2004
ID Model was modified for the delineation of wash 11E.
ID A concentration point was added to include only RDCP16 and PD740, this
ID new concentration point is called C740_1.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 09-09-2004
ID Model was modified for the delineation of wash 14E.
ID A concentration point was added after basin PD726A, but before the
ID confluence with CPD736.  The new concentration point is called C14E.
ID ---------------------------------------------------------------------------
ID
ID ---------------------------------------------------------------------------
ID 08-26-2004
ID This model was modified for the delineation of Wash 11E.
ID A concentration point was added at the Beardsley canal at basin PD726
ID that did not contain the flow from basin PD716.
ID ---------------------------------------------------------------------------
ID
```

APPENDIX D. HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION

D.1 Modified 24-Hour, Existing Conditions HEC-1 Model

D.2 Modified 6-Hour, Existing Conditions HEC-1 Model

D.3 Flow Spreadsheets

D.4 Split Flow Calculation and Optimization

D.1 Modified 24-Hour, Existing Conditions HEC-1 Model

Wittmann ADMSU HEC-1 Modifications
100-year 24-hour Existing Conditions

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN  1998                *
*           VERSION 4.1                *
*                                      *
* RUN DATE   01AUG05  TIME  16:36:04   *
*                                      *
****************************************
```

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

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

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

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

1
PAGE 1

HEC-1 INPUT

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

  1           ID   ------------------------------------------------------------------------------
  2           ID   03-30-2005
  3           ID   3 East
  4           ID   The following additional modifications were made to delineate 3 East:
  5           ID
  6           ID   1. Basin WI500 was moved to follow RWI506.
  7           ID   2. A CP called C500_1 was added after WI500 combining 2.
  8           ID   3. A CP called C500_2 was added after RD508 combining 2.
  9           ID   4. CP CWI500 was changed from combining 4 to 2.
 10           ID   ------------------------------------------------------------------------------
 11           ID
 12           ID   ------------------------------------------------------------------------------
 13           ID   03-25-2005
 14           ID   T5N-R3W-S24E
 15           ID   The following edits were made to model.
 16           ID
 17           ID   1. Concentration point C480_1 was commented out.
 18           ID   2. Concentration point C480_4 was added after RTW482 combining 2
 19           ID      [RTW482 & TW480].  No hard coding was needed because all flow is diverted
 20           ID      to CTW480.
 21           ID
 22           ID   T5N-R2W-19W
 23           ID   The following edits were made to the model.
 24           ID
 25           ID   1. Concentration point C560_1 was commented out.
 26           ID   2. D576 and RD576 were moved to follow RWI574.
 27           ID   3. WI560A and R560A were moved to follow RD576.
 28           ID   4. CP C5602A was added after RWI574 combining 2 [RWI574 & WI560].
 29           ID   5. CP C5602B was added after RD576 combining 2 [C5602A & RD576].
 30           ID   5. CP C5602C was added after R560A combining 2 [C5602B & WI560A].
 31           ID   6. CP CWI560 was changed from combining 5 to 3.
 32           ID
 33           ID   7. Commented out CP C554_1.
 34           ID   8. Moved basin WI554 to follow RWI560.
 35           ID   9. Added CP C554_9 to after WI554 combining 2 [WI554 & RWI560].
 36           ID   10. Moved WI556 and RWI556 to follow C554_9.
 37           ID   11. Added CP C5541B combining 2.
 38           ID   12. Changed CWI554 to combine 2.
 39           ID   ------------------------------------------------------------------------------
 40           ID
 41           ID   ------------------------------------------------------------------------------
 42           ID   03-19-2005
 43           ID   T5N-R2W-S07
 44           ID   A concentration point was added after WI576, called C576_1 combining 2
```

```
 45          ID   [RD576B & WI576] and CP CWI576 was changed from combining 3 to 2.
 46          ID
 47          ID   Also, basin WI560 was moved to follow RD576 and concentration point C560_1
 48          ID   combining 2 [RD576 & WI560] was added after WI560. CP CWI560 was changed
 49          ID   from combining 6 to 5.
 50          ID
 51          ID   T5N-R3W-S01
 52          ID   The following modifications were made for the delineation of T5N-R3W-S01.
 53          ID
 54          ID   1. Basin WI576 was moved to follow RWI580.
 55          ID   2. A concentration point was added after WI576 called C576_2 combining 2.
1                                        HEC-1 INPUT
PAGE  2

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

 56          ID   3. CP C576_1 was commented out.
 57          ID   ------------------------------------------------------------------------------
 58          ID
 59          ID   ------------------------------------------------------------------------------
 60          ID   03-18-2005
 61          ID   T5N-R2W-19E
 62          ID   A concentration point was added after WI554, called C5554_1 combining 2
 63          ID   [CWI556 & WI554] and CP CWI554 was changed from combining 4 to 3.
 64          ID   ------------------------------------------------------------------------------
 65          ID
 66          ID   ------------------------------------------------------------------------------
 67          ID   03-17-2005
 68          ID   T4N-R3W-S08E
 69          ID   Concentration point C276_1 was added after SV276 to combine RSV294 and SV276.
 70          ID   in addition CSV276 was changed from combining 3 to 2 [C276_1 & RSV272].
 71          ID
 72          ID   3 West
 73          ID   The following modifications were made for the delineation of wash 3 West.
 74          ID
 75          ID    1. Basin SV272 was moved to follow RSV284.
 76          ID    2. Concentration point C272_2 was added after SV272 HC=2 [SV272 & RSV272].
 77          ID    3. CP CSV272 was changed from combining 3 to 2.
 78          ID    4. CP C276_1 was commented out.
 79          ID    5. Basin SV276 was moved to follow RSV272.
 80          ID    6. CP C276_2 was added after SV276, HC=2 [SV276 & RSV272].
 81          ID    7. CP C280_1 was added after SV280 HC=2 [RSV276 SV280].
 82          ID    8. CP CSV280 was changed from combining 3 to 2.
 83          ID    9. Basin SV260 was moved to come before SV268.
 84          ID   10. CP C260_1 was added after SV260 combining 2 [SV260 & RSV280].
 85          ID   11. CP CSV260 was changed from combining 4 to 3.
 86          ID   ------------------------------------------------------------------------------
 87          ID
 88          ID   ------------------------------------------------------------------------------
 89          ID   03-15-2005
 90          ID   7 EAST
 91          ID   The following modifications were made for the delineation of 7 EaSt.
 92          ID
 93          ID   1. Basin PI645 was moved to follow RPI651.
 94          ID   2. A concentration point was added after PI645 called C645_1 combining 2
 95          ID      [RPI651 & PI645]
 96          ID   3. Concentration point CPI645 was changed from combining 4 to 3.
 97          ID   ------------------------------------------------------------------------------
 98          ID
 99          ID   ------------------------------------------------------------------------------
100          ID   03-14-2005
101          ID   IONA WASH (North of the CAP)
102          ID   The model was delineated for the delineation of Iona Wash North of the CAP.
103          ID   The following modifications were made.
104          ID
105          ID   1. A concentration point called C388_1 was added after Basin IW388.  This
106          ID      concentration point combines 2 [IW388 & RIW390].  Concentration point
107          ID      CIW388 was changed from combining 3 to 2 [C388_1 & RIW389].
108          ID
109          ID   2. Basin IW363 was moved to follow RD357.  A concentration point called
110          ID      C363_2 was then added after basin IW363.
1                                        HEC-1 INPUT
PAGE  3
```

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

 111          ID
 112          ID   3. Concentration point CIW363 was changed from combining 5 to combine
 113          ID      4 [RIW312, RIW365, RIW369 & C363_2].
 114          ID
 115          ID   4. Concentration point C361_1 was added following basin IW361 combining
 116          ID      3 [IW361, D302 & RIW363].  This was hard coded for an area of 3.346 sq.mi.
 117          ID      Concentration point CIW361 was changed from combining 4 to 2.
 118          ID
 119          ID   T5N-R2W-S14 & T5N-R2W-S14N
 120          ID   For the above delineation a basin PI648 was moved to follow PI651, a
 121          ID   concentration point was placed after PI651 to combine 2 [PI651 & RPI654].
 122          ID   concentration point CPI651 was changed fro combining 3 to 2.
 123          ID   ---------------------------------------------------------------------------
 124          ID
 125          ID   ---------------------------------------------------------------------------
 126          ID   03-11-2005
 127          ID   IONA ES-1
 128          ID   The model was modified for the delineation of Iona ES-1.  A concentration
 129          ID   point called C346_1 was added after IW346 to combine 2 [RIW351 & IW346].
 130          ID   This concentration point was hard coded for an area of 3.73.  In addition
 131          ID   concentration point CIW346 was changed from combining three (3) to
 132          ID   combine two (2): [C346_1 & CIW342].
 133          ID
 134          ID   2 West & 2 West Tributary-2
 135          ID   It was necessary to have basin TW430 combined solely with CTW434 for 2 West.
 136          ID   However, it was also necessary to combine TW430 solely with RTW436 for the
 137          ID   delineation of 2 West Tributary-2.  To accomplish this, TW430 was first
 138          ID   combined with RTW436, with a concentration point called C430_1.  This CP
 139          ID   was then commented out and basin TW430 was moved to follow CTW434.  A
 140          ID   concentration point was then added called C430_2 which combines TW430
 141          ID   and CTW434.
 142          ID
 143          ID   2 West Tributary-1
 144          ID   An additional concentration point was added following TW434 called C434_1
 145          ID   that combines C442* and TW434.
 146          ID   ---------------------------------------------------------------------------
 147          ID
 148          ID   ---------------------------------------------------------------------------
 149          ID   03-10-2005
 150          ID   2 WEST-TRIB and 2 EAST
 151          ID   The model has been modified for the delineation of washes 2 WEST-TRIB
 152          ID   and 2 EAST.  The following three (3) series of revisions, in order
 153          ID   have been made:
 154          ID
 155          ID   1.) A concentration point was added following basin WI530 called C530_1
 156          ID       to combine two (2): R530* and WI530.  Concentration point CWI530
 157          ID       was changed from combining four (4) [RWI538, R530*, WI530 & RD544]
 158          ID       to combine three (3) [RWI538, C530_1 & RD544].
 159          ID
 160          ID   2.) Concentration point C530_1 was commented out.  Basin WI530 was moved
 161          ID       to be follow RWI538.  A concentration point was added after basin
 162          ID       WI530 called C530_2 and combines two (2): RWI538 and WI530.
 163          ID
 164          ID   3.) A concentration point was added after R530* called C530_3 and combines
 165          ID       C530_2 and R530*.  Concentration point CWI530 was changed from
1                                          HEC-1 INPUT
PAGE  4

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

 166          ID       combining three (3) [C530_2, R530* & RD544] to combine two (2)
 167          ID       [C530_3 & RD544]
 168          ID   ---------------------------------------------------------------------------
 169          ID
 170          ID   ---------------------------------------------------------------------------
 171          ID   03-09-2005
 172          ID   10 EAST (EAST SPLIT-2)
 173          ID   Model was modified for the delineation of 10 EAST (EAST SPLIT-2).
 174          ID   Basin PI603 was moved to be before PD744.  Then a concentration
 175          ID   point was added that combines only RPI604, RPI606 and PI603.
 176          ID   Finally the HC card of CPI603 was adjusted to combine 3: RD600A,
 177          ID   PD744 and C603_1.
```

```
178          ID
179          ID   IONA EAST & IONA WEST
180          ID   Model was modified for the delineation of IONA EAST & IONA WEST.
181          ID   Basin SV202 and route RSV202 were moved from preceding C210* to
182          ID   follow RIW300. An additional concentration point (C300_1) was added after
183          ID   RSV202 to combine RIW300 and RSV202.  Concentration point C210*
184          ID   was changed from combining three (3) to combining two (2). In addition
185          ID   concentration point C302* changed the hard coding from
186          ID   54.75 to 56.19 (54.75 + 1.44 [SV202]).
187          ID   ---------------------------------------------------------------------------
188          ID
189          ID   ---------------------------------------------------------------------------
190          ID   02-22-2005
191          ID   7EAST
192          ID   The model was modified for the delineation of Wash 7 East and 8 East.
193          ID   Concentration point C618_1 was commented out and C6181a was added
194          ID   after RD618 to combine RD618 and PI618.
195          ID
196          ID   Concentration point C615_1 was added to combine RD618 and PI615 in order
197          ID   to develop an area vs flow relationship for the stretch of wash that does
198          ID   not include routed flow from RDCP13.
199          ID
200          ID   8 EAST
201          ID   Concentration point C615_1 was commented out and Concentration Point
202          ID   C6151A was added before DO618 to combine RDCAP13 and PI615.  This was
203          ID   done to get a Q/A relationship for 8 East, excluding the flow from DO618.
204          ID
205          ID   Concentration point C612_1 was commented out in order to determine the
206          ID   flows through Wash 8 East without the routed flow from RPI618.
207          ID   Concentration points C6121a was added after RPI615 in order to combine
208          ID   the flow from RPI615 and PI612.
209          ID   ---------------------------------------------------------------------------
210          ID
211          ID   ---------------------------------------------------------------------------
212          ID   02-21-2005
213          ID   The model was modified for the delineation of Wash 6 and 7 East. The split
214          ID   that was in the original model at CPI618 actually occurred further upstream.
215          ID   The split is better modeled directly after DCAP12. The diversion card was
216          ID   moved, but retained its original name: D618.
217          ID   ---------------------------------------------------------------------------
218          ID
219          ID   ---------------------------------------------------------------------------
220          ID   02-17-2005
1                                          HEC-1 INPUT
PAGE  5

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

221          ID   Model was modified for the delineation of Wash 4 East, south of the CAP.
222          ID   The concentration point C525_1 was commented out, and C5251b was added
223          ID   after RDCP09 in order to determine the flow through Wash 4E without the
224          ID   flow from wash 3E.
225          ID   ---------------------------------------------------------------------------
226          ID
227          ID   ---------------------------------------------------------------------------
228          ID   02-16-2005
229          ID   Model was modified for the delineation of Wash 3 East, south of the CAP.
230          ID   The concentration point C525_1 was added before CWI525 to not include
231          ID   the routed flow from DCAP09 and RD527. The HC of CWI525 was changed to 2.
232          ID   C5251a was added to combine C525_1 and RDCP09 in order to determine the
233          ID   flow along the reach north of the 60.
234          ID   ---------------------------------------------------------------------------
235          ID
236          ID   ---------------------------------------------------------------------------
237          ID   02-15-2005
238          ID   Model was modified for the delineation of Wash 2 East, south of the CAP.
239          ID   The concentration point C506_1 was added before CWI506 to not include
240          ID   the routed flow from CWI524. The HC of CWI506 was changed to 2.WI506 was
241          ID   also moved before WI524 in order to achieve this.
242          ID   ---------------------------------------------------------------------------
243          ID   02-14-2005
244          ID   Model was modified for the delineation of Wash 1 East, south of the CAP.
245          ID   The concentration point C516_1 was added before CWI516 to not include
246          ID   the routed flow from CWI514. The HC of CWI516 was changed to 2.
```

```
 247          ID   In order to delineate wash 2 east, cards DOCP07 - RWI528 were moved to be
 248          ID   directly before WI518. Concentration Point C518_1 was added in order to
 249          ID   determine the flow through Wash 2 East (excludes RWI527). CWI518 HC was set
 250          ID   to 2.
 251          ID   D529 was moved before WI528 and DOCP07 and C528_1 was added in order to
 252          ID   delineate Wash 2 East.
 253          ID   ---------------------------------------------------------------------------
 254          ID
 255          ID   ---------------------------------------------------------------------------
 256          ID   02-3-2005
 257          ID   Model was modified for the delineation of Wash 1 West, south of the CAP.
 258          ID   The concentration point C502_1 was added before CWI502 to not include
 259          ID   the routed flow from CWI504. The HC of CWI504 was changed to 2.
 260          ID   ---------------------------------------------------------------------------
 261          ID
 262          ID   ---------------------------------------------------------------------------
 263          ID   01-24-2005
 264          ID   Model was modified for the delineation of Wittmann Wash, north of the CAP.
 265          ID   The concentration point CTW485_1 was added before CTW485 to not include
 266          ID   CPI618 HC was set to 2. TW485 was moved to be after RD454 in order to
 267          ID   estimate the flow at CTW485_1 without the routed flow RD454. Concentration
 268          ID   point C480_1 was added before CTW480 to not include flow from RTW482.
 269          ID   ---------------------------------------------------------------------------
 270          ID
 271          ID   ---------------------------------------------------------------------------
 272          ID   01-20-2005
 273          ID   Model was modified for the delineation of Wash 6E.
 274          ID   The concentration point C618_1 was added before CPI618 to not include
 275          ID   RDCP12. CPI618 HC was set to 2. The concentration point C612_1 was added
1                                        HEC-1 INPUT
PAGE  6

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

 276          ID   before CPI612 to not include RPI615. CPI612 HC was set to 2. The
 277          ID   concentration point C609_1 was added before CPI609 to not include RDCP14.
 278          ID   CPI609 HC was set to 2.
 279          ID   ---------------------------------------------------------------------------
 280          ID
 281          ID   ---------------------------------------------------------------------------
 282          ID   01-17-2005
 283          ID   Model was modified for the delineation of Wash 2W.
 284          ID   The concentration point C400_2 was added before CTW400 to not include
 285          ID   CTW402, and CTW400 was adjusted to combine 2.  Also TW422 was moved to be
 286          ID   before TW424, a concentration point was added, C422_1 after TW422, HC=2,
 287          ID   and CTW422 was adjusted to combine 2.
 288          ID   ---------------------------------------------------------------------------
 289          ID
 290          ID   ---------------------------------------------------------------------------
 291          ID   12-01-2004
 292          ID   Iona Wash.
 293          ID   A slight reordering of cards was done as well as the addition of a
 294          ID   concentration point.  A concentration point (C314_1) was added that included
 295          ID   only RIW322 and IW314.  To achieve this IW314 was moved from after RIW310 to
 296          ID   follow RIW322 and precede C314_1, which combines 2 cards, RIW322 and IW314.
 297          ID   CIW314 was changed to combine only 2 cards, C314_1 and RIW310, however the
 298          ID   net outcome for CIW314 is unchanged: RIW322, RIW310 and IW314 all
 299          ID   contribute.
 300          ID
 301          ID   Iona Tributary
 302          ID   Also concentration point C353_3 was added.  This concentration point includes
 303          ID   Route RIW359 and Basin IW353.  Concentration point CIW353 was modified to
 304          ID   combine 3.
 305          ID   combine
 306          ID   ---------------------------------------------------------------------------
 307          ID
 308          ID   ---------------------------------------------------------------------------
 309          ID   09-14-2004
 310          ID   Model was modified for the delineation of wash 11E.
 311          ID   A concentration point was added to include only RDCP16 and PD740, this
 312          ID   new concentration point is called C740_1.
 313          ID   ---------------------------------------------------------------------------
 314          ID
 315          ID   ---------------------------------------------------------------------------
```

```
 316          ID   09-09-2004
 317          ID   Model was modified for the delineation of wash 14E.
 318          ID   A concentration point was added after basin PD726A, but before the
 319          ID   confluence with CPD736.  The new concentration point is called C14E.
 320          ID   ---------------------------------------------------------------------------
 321          ID
 322          ID   ---------------------------------------------------------------------------
 323          ID   08-26-2004
 324          ID   This model was modified for the delineation of Wash 11E.
 325          ID   A concentration point was added at the Beardsley canal at basin PD726
 326          ID   that did not contain the flow from basin PD716.
 327          ID   ---------------------------------------------------------------------------
 328          ID
 329          ID
 330          ID   ***************************************************************************
1                                          HEC-1 INPUT
PAGE  7

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

 331          ID   ***************************************************************************
 332          ID   **                                                                       **
 333          ID   **    WITTMANN AREA DRAINAGE MASTER STUDY UPDATE-HYDROLOGY MODEL 2004    **
 334          ID   **                                                                       **
 335          ID   ***************************************************************************
 336          ID   ***************************************************************************
 337          ID
 338          ID   PROJECT:                Wittmann ADMS Update
 339          ID   CLIENT:                 Flood Control District of Maricopa County
 340          ID   PREPARED BY:            Entellus, Inc.
 341          ID   PROJECT No:             FCD 2002C029              Entellus 310.032
 342          ID   FILE NAME: 24HourMod.hc1                   CREATED DATE: FEB 01, 2004
 343          ID                                             MODIFIED DATE: JUL 30, 2005
 344          ID
 345          ID   STORM:
 346          ID                       100-year 24-hour Storm
 347          ID
 348          ID   DEVELOPMENT CONDITIONS:
 349          ID                       Existing Conditions
 350          ID
 351          ID   MODELING ASSUMPTIONS:
 352          ID                       It was assumed that the US60 did not have adequate
 353          ID                       storage to cause any significant attenuation.
 354          ID
 355          ID                       The assumption was made that the CAP Canal embankment
 356          ID                       would not be breached under a large flood event.
 357          ID
 358          ID                       The assumption was made that the Beardsley Canal would
 359          ID                       not fail under a large storm event (Per District
 360          ID                       Instruction).  In addition, the berm north of the
 361          ID                       Beardsley canal and east of US60 was assumed to fail
 362          ID                       (per district Instruction).
 363          ID
 364          ID                       For both the CAP and Beardsley Canals, once the berm
 365          ID                       elevation was reached weir flow was assumed.  It was
 366          ID                       also assumed that any weir flow over the canal that
 367          ID                       might enter the canal and be diverted out of the study
 368          ID                       area was insignificant, and thus was ignored.  In other
 369          ID                       words all weir flow over the canal embankment reaches
 370          ID                       the downstream concentration point.
 371          ID
 372          ID                       Typical X-sects were developed, and it was assumed
 373          ID                       that a typical x-sect could adequately represent
 374          ID                       various reaches.
 375          ID
 376          ID                       Time-Area Relations were used base on the District's
 377          ID                       Hydrology Manual criteria.  Two Time-Area Relation
 378          ID                       Curves were utilized:
 379          ID                               -Urban
 380          ID                               -Natural
 381          ID                       The Time-Area Relation Curves were taken directly
 382          ID                       from the manual
 383          ID
 384          ID   MODELING METHODS:
```

```
 385          ID                        This model utilizes QI cards to input the Padelford
                                            HEC-1 INPUT
1
PAGE  8

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

 386          ID                        hydrographs from the A-N West INc. Padelford Wash
 387          ID                        Floodplain Delineation Study.  The hydrograph was
 388          ID                        altered from its original form (2 minute interval to
 389          ID                        5-minute interval) through simple interpolation.
 390          ID
 391          ID                        Clark Unit Hydrographs were used for all subbasins
 392          ID                        except the two subbasins directly upstream of the
 393          ID                        Bonita Dam (PD726B and PD740 use S-graphs).  The UC
 394          ID                        parameters were calculated using the WMS7.0 software.
 395          ID
 396          ID                        For Basins PD726B and PD740 S-Graphs were utilized per
 397          ID                        the request of the FCDMC.  Limited details regarding
 398          ID                        the calculations of the S-graphs can be found in the
 399          ID                        model by the basin KK card.  For full details of the
 400          ID                        S-graph calculations refer to the Appendix.
 401          ID
 402          ID                        Normal Depth routing was used for all routing reaches.
 403          ID
 404          ID                        Hard coding was used to account for the percentage of
 405          ID                        area associated with a diversion.  Because of the use
 406          ID                        of JD cards and aereal reduction, hard coding  was
 407          ID                        necessary to properly account for area.  For a given
 408          ID                        diversion a percentage of the flow is routed to two
 409          ID                        different locations.  The same percentage of area
 410          ID                        follows that diverted flow.  In addition the area
 411          ID                        downstream of the main path is reduced or increased and
 412          ID                        is hard coded to account for the loss or gain of area.
 413          ID                        Hard coding was performed based on the 24-hour existing
 414          ID                        conditions model.
 415          ID
 416          ID                        Stage-storage was developed for all the structures
 417          ID                        along the CAP Canal, as well as along the Beardsley
 418          ID                        Canal.  In addition several stage-storage locations
 419          ID                        were developed for areas with significant storage
 420          ID                        along the SR74.  No storage was modeled along the US60
 421          ID                        and railroad, but the culverts were analyzed for
 422          ID                        diversion potential.  Diversions were placed in the
 423          ID                        model where deemed appropriate.  See appendix for
 424          ID                        details.
 425          ID
 426          ID                        FLO-2D was utilized to calculate the split flows at
 427          ID                        concentration points CIW351. CIW357, CIW363 and CWI576.
 428          ID                        See appendix for modeling details.
 429          ID
 430          ID   ***************************************************************************
 431          ID   ***************************************************************************
 432          ID
              *DIAGRAM
 433          IT       5                0    1500
 434          IO       5
 435          IN      15                0
 436          JD    4.18     0.01
              * 24-hour distribution
 437          PC     0.0    0.002    0.005    0.008    0.011    0.014    0.017     0.02    0.023    0.026
 438          PC   0.029    0.032    0.035    0.038    0.041    0.044    0.048    0.052    0.056     0.06
1                                              HEC-1 INPUT
PAGE  9

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

 439          PC   0.064    0.068    0.072    0.076     0.08    0.085     0.09    0.095      0.1    0.105
 440          PC    0.11    0.115     0.12    0.126    0.133     0.14    0.147    0.155    0.163    0.172
 441          PC   0.181    0.191    0.203    0.218    0.236    0.257    0.283    0.387    0.663    0.707
 442          PC   0.735    0.758    0.776    0.791    0.804    0.815    0.825    0.834    0.842    0.849
 443          PC   0.856    0.863    0.869    0.875    0.881    0.887    0.893    0.898    0.903    0.908
 444          PC   0.913    0.918    0.922    0.926     0.93    0.934    0.938    0.942    0.946     0.95
 445          PC   0.953    0.956    0.959    0.962    0.965    0.968    0.971    0.974    0.977     0.98
 446          PC   0.983    0.986    0.989    0.992    0.995    0.998      1.0
```

```
447          JD   3.929    10.0
448          JD   3.856    20.0
449          JD   3.725    40.0
450          JD   3.599    80.0
451          JD   3.532   120.0
452          JD   3.444   200.0
453          JD   3.385   300.0
454          JD   3.289   500.0
             *
             *
             *
             *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * ************************************************************************ *
             * ************ BEGINNING OF WEST PORTION OF DETAILED MODEL ******************** *
             * ************************************************************************ *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             *
             *
             *
             *
             * ************************************************************************ *
             * ************************************************************************ *
             * ****************** BEGINNING OF WHITE TANKS SUBAREA ************************ *
             * ************************************************************************ *
             * ************************************************************************ *
             *

455          KK   WT140
456          KO       0       0     0.0       1      22
457          BA  3.7893
458          LG    0.35    0.35   4.071   0.385  19.488
459          UC   1.375   0.969
             * Natural Time-Area Relation
460          UA       0       3       5       8      12      20      43      75      90      96
461          UA     100
             *
             *
             * ROUTE UPDATED 4/14/04
```

1
PAGE 10

```
                                    HEC-1 INPUT

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

462          KK  RWT140
463          KO       0       0     0.0       0      21
464          RS       4    FLOW     0.0     0.0
465          RC    0.06   0.035    0.06   13053  0.0192
             * WTTS20_1
466          RX       0      33     134     180     213     256     496     507
467          RY    1394    1394    1392    1388    1388    1392    1394    1394
             *
             *

468          KK   WT130
469          KO       0       0     0.0       1      22
470          BA  2.5672
471          LG    0.35   0.331   4.724   0.282  10.801
472          UC   0.908   0.676
             * Natural Time-Area Relation
473          UA       0       3       5       8      12      20      43      75      90      96
474          UA     100
             *
             *
             * Combines RWT140 and WT130

475          KK  CWT130
476          KO       0       0     0.0       0      22
477          HC       2
```

```
                    *
                    *
                    * ROUTE UPDATED 4/14/04

 478                KK  RWT130
 479                KO       0       0     0.0       0      22
 480                RS       5    FLOW     0.0     0.0
 481                RC   0.045   0.035   0.045    5750   0.001
                    * McMicken Dam Channel
 482                RX       0      46     101     121     171     181    1421    3621
 483                RY      25      14       4       0       0       4      14      25
                    *
                    *

 484                KK   WT160
 485                KO       0       0     0.0       1      22
 486                BA  0.8126
 487                LG    0.35    0.35    4.39   0.335  17.815
 488                UC   0.829   0.730
                    * Natural Time-Area Relation
 489                UA       0       3       5       8      12      20      43      75      90      96
 490                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE 11

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

 491                KK  RWT160
 492                KO       0       0     0.0       0      22
 493                RS      12    FLOW     0.0     0.0
 494                RC    0.06   0.035    0.06   18961  0.0116
                    * WTTS10_1
 495                RX       0     280     475     520     570     618     803    1036
 496                RY  1424.5    1422    1422    1421    1421    1422  1422.5    1424
                    *
                    *

 497                KK  WT150A
 498                KO       0       0     0.0       1      22
 499                BA  4.7509
 500                LG    0.35    0.35    3.95     0.4    20.0
 501                UC   1.308   0.769
                    * Natural Time-Area Relation
 502                UA       0       3       5       8      12      20      43      75      90      96
 503                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/4

 504                KK   R150A
 505                KO       0       0     0.0       0      22
 506                RS       2    FLOW     0.0     0.0
 507                RC    0.06   0.035    0.06    9557  0.0209
                    * WTTS20_2
 508                RX       0      62     124     140     161     193     217     336
 509                RY    1410    1408    1402    1401    1402    1406    1408    1410
                    *
                    *

 510                KK   WT150
 511                KO       0       0     0.0       1      22
 512                BA  1.0865
 513                LG    0.35    0.35   4.476   0.316   15.69
 514                UC   0.771   0.550
                    * Natural Time-Area Relation
 515                UA       0       3       5       8      12      20      43      75      90      96
 516                UA     100
                    *
                    *
                    * Combines WT150 and R150A
```

```
517          KK  CWT150
518          KO       0       0     0.0       0      22
519          HC       2
             *
             *
             * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 12

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

520          KK  RWT150
521          KO       0       0     0.0       0      22
522          RS       9    FLOW     0.0     0.0
523          RC    0.06   0.035    0.06   16082  0.0133
             * WTTS20_1
524          RX       0      33     134     180     213     256     496     507
525          RY    1394    1394    1392    1388    1388    1392    1394    1394
             *
             *

526          KK   WT120
527          KO       0       0     0.0       1      22
528          BA  2.8034
529          LG    0.35   0.301   5.261   0.243   3.944
530          UC   1.029   0.766
             * Natural Time-Area Relation
531          UA       0       3       5       8      12      20      43      75      90      96
532          UA     100
             *
             *
             * Combines WT120, RWT150, RWT160 and RWT130

533          KK  CWT120
534          KO       0       0     0.0       0      22
535          HC       4
             *
             *
             * ROUTE UPDATED 4/14/04

536          KK  RWT120
537          KO       0       0     0.0       0      22
538          RS       7    FLOW     0.0     0.0
539          RC   0.045   0.035   0.045    6168   0.001
             * McMicken Dam Channel
540          RX       0      46     101     121     171     181    1421    3621
541          RY      25      14       4       0       0       4      14      25
             *
             *

542          KK   WT110
543          KO       0       0     0.0       1      22
544          BA  2.8957
545          LG    0.35   0.287   4.795   0.285   7.191
546          UC   0.846   0.535
             * Natural Time-Area Relation
547          UA       0       3       5       8      12      20      43      75      90      96
548          UA     100
             *
             *
             * Combines WT100 and RWT110
1                                          HEC-1 INPUT
PAGE 13

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

549          KK  CWT110
550          KO       0       0     0.0       0      22
551          HC       2
             *
             *
```

```
                 * ROUTE UPDATED 4/14/04

552              KK  RWT110
553              KO       0       0     0.0       0      22
554              RS       5    FLOW     0.0     0.0
555              RC   0.045   0.035   0.045    7640   0.001
                 * McMicken Dam Channel
556              RX       0      46     101     121     171     181    1421    3621
557              RY      25      14       4       0       0       4      14      25
                 *
                 *

558              KK   WT100
559              KO       0       0     0.0       1      22
560              BA  3.8475
561              LG   0.346   0.287   4.578   0.316  16.889
562              UC   0.958   0.628
                 * Natural Time-Area Relation
563              UA       0       3       5       8      12      20      43      75      90      96
564              UA     100
                 *
                 *
                 * Combines WT100 and RWT110

565              KK  CWT100
566              KO       0       0     0.0       0      22
567              HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04

568              KK  RWT100
569              KO       0       0     0.0       0      22
570              RS       1    FLOW     0.0     0.0
571              RC   0.045   0.035   0.045    4778   0.001
                 * McMicken Dam Channel
572              RX       0      46     101     121     171     181    1421    3621
573              RY      25      14       4       0       0       4      14      25
                 *
                 *

574              KK   TW406
575              KO       0       0     0.0       1      22
576              BA  0.1632
577              LG   0.343    0.25   5.689   0.208   14.42
578              UC   0.179   0.099
                 * Natural Time-Area Relation
579              UA       0       3       5       8      12      20      43      75      90      96
580              UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/04
```



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

581              KK  RTW406
582              KO       0       0     0.0       0      22
583              RS       6    FLOW     0.0     0.0
584              RC    0.04    0.04    0.04   14969  0.0078
                 * TSR408
585              RX       0     301     727     900    1200    1413    1590    1949
586              RY    1370    1369    1368    1368    1368    1368    1369    1370
                 *
                 *

587              KK   TW408
588              KO       0       0     0.0       1      22
589              BA  0.9100
590              LG   0.349   0.324   4.317   0.353  21.505
591              UC   1.129   1.308
                 * Natural Time-Area Relation
```

```
592          UA       0       3       5       8      12      20      43      75      90      96
593          UA     100
             *
             *
             * ROUTE UPDATED 4/14/04

594          KK  RTW408
595          KO       0       0     0.0       0      22
596          RS      10    FLOW     0.0     0.0
597          RC    0.04    0.04    0.04   16567  0.0072
             * TSR408
598          RX       0     301     727     900    1200    1413    1590    1949
599          RY    1370    1369    1368    1368    1368    1368    1369    1370
             *
             *

600          KK   TW404
601          KO       0       0     0.0       1      22
602          BA  2.0927
603          LG   0.347    0.25   4.926   0.261   6.179
604          UC   0.638   0.320
             * Natural Time-Area Relation
605          UA       0       3       5       8      12      20      43      75      90      96
606          UA     100
             *
             *
             * Combines TW404, RTW408, RTW406 and RWT100

607          KK  CTW404
608          KO       0       0     0.0       0      22
609          HC       4
             *
             *
             * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 15

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


610          KK  RTW404
611          KO       0       0     0.0       0      22
612          RS       2    FLOW     0.0     0.0
613          RC   0.045   0.035   0.045    2936   0.001
             * McMicken Dam Channel
614          RX       0      46     101     121     171     181    1421    3621
615          RY      25      14       4       0       0       4      14      25
             *
             *
             *
             * ******************************************************************************
             * ******************************************************************************
             * ********************** END OF WHITE TANKS SUBAREA ****************************
             * ******************************************************************************
             * ******************************************************************************
             *
             * ------------------------------------------------------------------------------
             *
             * ******************************************************************************
             * ******************************************************************************
             * ********************* BEGINNING OF IONA WASH SUBAREA *************************
             * ******************************************************************************
             * ******************************************************************************
             *
             *
             * ******************************************************************************
             * ********************* BEGINNING OF IONA WASH REGION 1 ************************
             * ******************************************************************************
             *
             *

616          KK   IW371
617          KO       0       0     0.0       1      22
618          BA  0.0529
```

```
619          LG   0.275    0.25    4.15   0.473   26.25
620          UC   0.308   0.327
             * Urban Time-Area Relation
621          UA       0       5      16      30      65      77      84      90      94      97
622          UA     100
             *
             * Railroad Diversion: Main path to CIW366, Diversion to CIW374
             * From Structure RR40, See Appendix D.5 for analysis

623          KK    D371
624          KO       0       0     0.0       0      22
625          DT   DO371     0.0     0.0
626          DI     0.0      14      79     208     383     823    1374    2014    2724
627          DQ     0.0       0      55     173     335     763    1302    1930    2632
             *
             *
             * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 16

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


628          KK  RIW371
629          KO       0       0     0.0       0      22
630          RS      15    FLOW     0.0     0.0
631          RC    0.04    0.04    0.04   11583  0.0088
             * TSR371
632          RX       0     142     486     525     651     770    1000    1518
633          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
             *
             *

634          KK   IW366
635          KO       0       0     0.0       1      22
636          BA  1.0558
637          LG   0.343    0.25   5.762   0.202   7.207
638          UC   0.796   0.622
             * Natural Time-Area Relation
639          UA       0       3       5       8      12      20      43      75      90      96
640          UA     100
             *
             *
             * Combines IW366 and RIW371

641          KK  CIW366
642          KO       0       0     0.0       0      22
             * hard coded
643          HC       2    1.08
             *
             *
             * ROUTE UPDATED 4/14/4

644          KK  RIW366
645          KO       0       0     0.0       0      22
646          RS       6    FLOW     0.0     0.0
647          RC    0.04    0.04    0.04    9657   0.007
             * IWTS30_2
648          RX       0     6.5      13      57     102     104     109     110
649          RY    1728  1725.5    1724    1723    1724  1725.5    1727    1728
             *
             *

650          KK   IW377
651          KO       0       0     0.0       1      22
652          BA  0.1125
653          LG   0.304   0.382   5.921   0.188   5.357
654          UC   0.442   0.566
             * Natural Time-Area Relation
655          UA       0       3       5       8      12      20      43      75      90      96
656          UA     100
             *
             *
             * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR010 (HWY74 CULVERT)
```

```
1                                                HEC-1 INPUT
PAGE 17

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

  657         KK  SSR010
  658         RS       1    STOR       0
  659         SQ       0      36     100     160
  660         SA       0     .05     .41    1.98
  661         SE  2021.3    2024    2026    2028
              *
              *
              * ROUTE UPDATED 4/14/4

  662         KK  RIW377
  663         KO       0       0     0.0       0      22
  664         RS       6    FLOW     0.0     0.0
  665         RC    0.04    0.04    0.04    6588  0.0096
              * TSR371
  666         RX       0     142     486     525     651     770    1000    1518
  667         RY    1900    1900    1899    1897    1896    1899  1899.5    1900
              *
              *

  668         KK   IW374
  669         KO       0       0     0.0       1      22
  670         BA  0.3874
  671         LG   0.315   0.161   8.147   0.086  12.602
  672         UC   0.475   0.374
              * Natural Time-Area Relation
  673         UA       0       3       5       8      12      20      43      75      90      96
  674         UA     100
              *
              *
              * RAILROAD DIVERSION RECOVERY: ALONG RAILROAD FROM STRUCTURE RR40

  675         KK    D371
  676         KO       0       0     0.0       0      22
  677         DR   DO371
              *
              *
              * ROUTE UPDATED 4/14/4

  678         KK   RD371
  679         KO       0       0     0.0       0      22
  680         RS       1    FLOW     0.0     0.0
  681         RC   0.043   0.035   0.043    1409  0.0014
              * WITS130
  682         RX       0     400     456     575     620     650     660     682
  683         RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD371, IW374 and RIW377
1                                                HEC-1 INPUT
PAGE 18

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

  684         KK  CIW374
  685         KO       0       0     0.0       0      22
              * Hard Coded
  686         HC       3    0.53
              *
              *
              * ROUTE UPDATED 4/14/4

  687         KK  RIW374
  688         KO       0       0     0.0       0      22
  689         RS      15    FLOW     0.0     0.0
  690         RC    0.04    0.04    0.04   20437  0.0081
              * TSR371
  691         RX       0     142     486     525     651     770    1000    1518
```

```
692          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
             *
             *

693          KK   IW386
694          KO       0       0     0.0       1      22
695          BA  0.3731
696          LG   0.334   0.192   8.439   0.072   5.278
697          UC   0.917   0.945
             * Natural Time-Area Relation
698          UA       0       3       5       8      12      20      43      75      90      96
699          UA     100
             *
             *
             * ROUTE UPDATED 4/14/4

700          KK  RIW386
701          KO       0       0     0.0       0      22
702          RS       6    FLOW     0.0     0.0
703          RC   0.043   0.035   0.043   10311  0.0078
             * IWTS20_1
704          RX       0      21      75      93     234     280     301     391
705          RY    1952    1949    1948    1946    1945    1948  1948.5    1952
             *
             *

706          KK   IW382
707          KO       0       0     0.0       1      22
708          BA  0.6196
709          LG   0.322   0.275   6.319   0.164   8.175
710          UC   0.688   0.599
             * Urban Time-Area Relation
711          UA       0       5      16      30      65      77      84      90      94      97
712          UA     100
             *
             *
             * Combines IW382 and RIW386
```

PAGE 19

```
                                    HEC-1 INPUT

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


713          KK  CIW382
714          KO       0       0     0.0       0      22
715          HC       2
             *
             * US60 Diversion: Main path to D382A, Diversion to  CIW381
             * From Structures US006 and US007, See Appendix D.5 for analysis

716          KK   D382B
717          KO       0       0     0.0       0      22
718          DT  DO382B     0.0     0.0
719          DI       0      24     180   10000
720          DQ       0      24     180     180
             *
             * Railroad Diversion: Main path to C359*, Diversion to CIW384
             * From Structure RR90 and RR100, See Appendix D.5 for analysis

721          KK   D382A
722          KO       0       0     0.0       0      22
723          DT  DO382A     0.0     0.0
724          DI       0      14      60     200     315     448     629    1371
725          DQ       0       0       0       0      55     174     338    1045
             *
             *
             * ROUTE UPDATED 4/14/4

726          KK  RIW382
727          KO       0       0     0.0       0      22
728          RS       3    FLOW     0.0     0.0
729          RC    0.04    0.04    0.04    4964   0.012
             * TSR371
730          RX       0     142     486     525     651     770    1000    1518
```

```
 731          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
              *
              *

 732          KK   IW384
 733          KO       0       0     0.0       1      22
 734          BA  0.0825
 735          LG   0.343    0.15   8.675   0.065   7.206
 736          UC   0.338   0.327
              * Natural Time-Area Relation
 737          UA       0       3       5       8      12      20      43      75      90      96
 738          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structures RR90 AND RR100

 739          KK   D382A
 740          KO       0       0     0.0       0      22
 741          DR  DO382A
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 20

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


 742          KK  RD382A
 743          KO       0       0     0.0       0      22
 744          RS       1    FLOW     0.0     0.0
 745          RC   0.043   0.035   0.043    1172  0.0068
              * WITS130
 746          RX       0     400     456     575     620     650     660     682
 747          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD382A and IW384

 748          KK  CIW384
 749          KO       0       0     0.0       0      22
              * Hard Coded
 750          HC       2    0.23
              *
              *
              * ROUTE UPDATED 4/14/4

 751          KK  RIW384
 752          KO       0       0     0.0       0      22
 753          RS       3    FLOW     0.0     0.0
 754          RC    0.04    0.04    0.04    4694  0.0124
              * TSR371
 755          RX       0     142     486     525     651     770    1000    1518
 756          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
              *
              *

 757          KK   IW381
 758          KO       0       0     0.0       1      22
 759          BA  0.3841
 760          LG   0.309    0.19   9.152   0.056  11.882
 761          UC   0.704   0.873
              * Natural Time-Area Relation
 762          UA       0       3       5       8      12      20      43      75      90      96
 763          UA     100
              *
              *
              *
              * This diversion is not routed because the distance traveled from the actual
              * point of diversion (not CIW382) to CIW382 is approximately the same as the
              * distance from the same point of diversion to CIW381.  Thus to avoid double
              * counting storage in the routes, a route for the diversion was not included
              * in the model.
              *
```

```
                    * US60 Diversion Recovery: Outflow from structures US006 and US007

 764                KK   D382B
 765                KO       0       0     0.0       0      22
 766                DR  DO382B
                    *
                    *
                    * Combines D382B and IW381
1                                                HEC-1 INPUT
PAGE 21

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


 767                KK  CIW381
                    * Hard Coded
 768                HC       2    0.72
                    *
                    *
                    * ROUTE UPDATED 4/14/4

 769                KK  RIW381
 770                KO       0       0     0.0       0      22
 771                RS       3    FLOW     0.0     0.0
 772                RC    0.04    0.04    0.04    4964  0.0096
                    * TSR371
 773                RX       0     142     486     525     651     770    1000    1518
 774                RY    1900    1900    1899    1897    1896    1899  1899.5    1900
                    *
                    *
                    * Combines RIW381, RIW382 and RIW384

 775                KK   C359*
 776                KO       0       0     0.0       0      22
                    * Hard Coded
 777                HC       3    1.45
                    *
                    *
                    * ROUTE UPDATED 4/14/4

 778                KK   R359*
 779                KO       0       0     0.0       0      22
 780                RS       4    FLOW     0.0     0.0
 781                RC    0.04    0.04    0.04    9280  0.0103
                    * IWTS30_2
 782                RX       0     6.5      13      57     102     104     109     110
 783                RY    1728  1725.5    1724    1723    1724  1725.5    1727    1728
                    *
                    *

 784                KK   IW359
 785                KO       0       0     0.0       1      22
 786                BA   2.912
 787                LG   0.345    0.25   5.939   0.187   6.181
 788                UC   0.979   0.571
                    * Natural Time-Area Relation
 789                UA       0       3       5       8      12      20      43      75      90      96
 790                UA     100
                    *
                    *
                    * Combines IW359, R359*, RIW374 and RIW366

 791                KK  CIW359
 792                KO       0       0     0.0       0      22
 793                HC       4
                    *
                    *
                    * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 22

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

```
794          KK  RIW359
795          KO       0       0     0.0       0      22
796          RS       5    FLOW     0.0     0.0
797          RC    0.04    0.04    0.04   13031  0.0059
             * IWTS30_2 modified
798          RX       0     6.5      13      57     102     104     109     110
799          RY  1728.5  1725.5    1724    1723    1724  1725.5    1727  1728.5
             *

800          KK   IW353
801          KO       0       0     0.0       1      22
802          BA  2.8030
803          LG    0.35    0.15   7.596   0.098   5.084
804          UC   1.004   0.717
             * Natural Time-Area Relation
805          UA       0       3       5       8      12      20      43      75      90      96
806          UA     100
             *
             *

807          KK  C353_3
808          HC       2
             *
             * ************************************************************************ *
             * ********************** END OF IONA WASH REGION 1 ************************** *
             * ************************************************************************ *
             *
             *
             *
             * ************************************************************************ *
             * ******************* BEGINNING OF IONA WASH REGION 2 ************************ *
             * ************************************************************************ *
             *
             *
             *

809          KK   IW389
810          KO       0       0     0.0       1      22
811          BA  0.1312
812          LG   0.348    0.13    10.1   0.037   5.526
813          UC   0.638   0.825
             * Natural Time-Area Relation
814          UA       0       3       5       8      12      20      43      75      90      96
815          UA     100
             *
             *
             * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR190 (HWY74 CULVERT)

816          KK  SSR190
817          RS       1    STOR       0
818          SQ       0      69     161     184     207     230
819          SE  2053.8  2055.5 2056.83  2057.1  2057.4  2057.7
820          SA       0     .01     .08     .22     .39    1.13
821          SE    2052    2054    2056    2058    2060    2062
             *
             *
             * ROUTE UPDATED 4/14/4
```

1
PAGE 23

HEC-1 INPUT

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

822          KK  RIW389
823          KO       0       0     0.0       0      22
824          RS       6    FLOW     0.0     0.0
825          RC    0.04    0.04    0.04   11459  0.0124
             * TSR371
826          RX       0     142     486     525     651     770    1000    1518
827          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
             *
             *

828          KK   IW394
```

```
829          KO       0       0     0.0       1      22
830          BA  4.1731
831          LG    0.35   0.327   6.166   0.173  16.632
832          UC   1.367   0.857
             * Natural Time-Area Relation
833          UA       0       3       5       8      12      20      43      75      90      96
834          UA     100
             *
             *
             * ROUTE UPDATED 4/14/4

835          KK  RIW394
836          KO       0       0     0.0       0      22
837          RS       3    FLOW     0.0     0.0
838          RC   0.043   0.035   0.043    7697  0.0133
             * IWTS10_1
839          RX       0      34      89     134     161     198     298     333
840          RY    2160    2158    2154    2152    2154    2156    2158    2160
             *
             *

841          KK  IW390A
842          KO       0       0     0.0       1      22
843          BA  0.9003
844          LG    0.35    0.25   6.134   0.172  17.033
845          UC   1.033   0.963
             * Natural Time-Area Relation
846          UA       0       3       5       8      12      20      43      75      90      96
847          UA     100
             *
             *
             * Combines IW390A and RIW394

848          KK   C390A
849          KO       0       0     0.0       0      22
850          HC       2
             *
             *
             * ROUTE UPDATED 4/14/4
```


HEC-1 INPUT

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

851          KK   R390A
852          KO       0       0     0.0       0      22
853          RS       4    FLOW     0.0     0.0
854          RC   0.043   0.035   0.043    8577  0.0134
             * IWTS10_1
855          RX       0      34      89     134     161     198     298     333
856          RY    2160    2158    2154    2152    2154    2156    2158    2160
             *
             *

857          KK   IW390
858          KO       0       0     0.0       1      22
859          BA  0.3110
860          LG   0.349    0.25   5.071   0.258   5.221
861          UC   1.021   1.302
             * Natural Time-Area Relation
862          UA       0       3       5       8      12      20      43      75      90      96
863          UA     100
             *
             *

864          KK   IW392
865          KO       0       0     0.0       1      22
866          BA  1.1135
867          LG    0.35    0.15   7.459   0.103   8.347
868          UC   0.500   0.278
             * Natural Time-Area Relation
869          UA       0       3       5       8      12      20      43      75      90      96
870          UA     100
```

```
                 *
                 *
                 * Combines IW392, IW390 and R390A

871              KK  CIW390
872              KO       0       0     0.0       0      22
873              HC       3
                 *
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR160 (HWY74 CULVERT)

874              KK  SSR160
875              RS       1    STOR       0
876              SQ       0     762    1440    2640    3840    5040
877              SA     0.0    0.04    0.36    3.17    4.85    6.69
878              SE    2033    2036    2038    2040    2042    2044
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 25

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


879              KK  RIW390
880              KO       0       0     0.0       0      22
881              RS       5    FLOW     0.0     0.0
882              RC   0.043   0.035   0.043   11626  0.0101
                 * IWTS20_1
883              RX       0      21      75      93     234     280     301     391
884              RY    1952    1949    1948    1946    1945    1948  1948.5    1952
                 *
                 *

885              KK   IW388
886              KO       0       0     0.0       1      22
887              BA  1.2256
888              LG   0.337   0.156   8.775   0.061   9.239
889              UC   1.200   0.958
                 * Natural Time-Area Relation
890              UA       0       3       5       8      12      20      43      75      90      96
891              UA     100
                 *
                 * ------------------------------------------------------------------------------
                 * ----------------------------BEGIN 03-14-2005 -------------------------------
                 * ------------------------------------------------------------------------------

892              KK  C388_1
893              HC       2
                 * * changed combine from 3 to 2
                 * *** Combines IW388, RIW390 and RIW389 * ***

894              KK  CIW388
895              KO       0       0     0.0       0      22
896              HC       2
                 *
                 * ------------------------------------------------------------------------------
                 * ---------------------------- END 03-14-2005 ---------------------------------
                 * ------------------------------------------------------------------------------
                 *
                 *
                 *
                 * ROUTE UPDATED 4/14/4

897              KK  RIW388
898              KO       0       0     0.0       0      22
899              RS       4    FLOW     0.0     0.0
900              RC    0.04    0.04    0.04    7726  0.0094
                 * IWTS20_2
901              RX       0      79     201     242     303     327     346     350
902              RY    1940    1938    1936  1933.5    1936  1936.5    1940    1940
                 *
                 *
```

```
1                                                HEC-1 INPUT
PAGE 26

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

  903         KK   IW357
  904         KO       0       0     0.0       1      21
  905         BA  0.7456
  906         LG    0.33   0.156   8.059   0.083  11.106
  907         UC   0.742   0.752
              * Natural Time-Area Relation
  908         UA       0       3       5       8      12      20      43      75      90      96
  909         UA     100
              *
              *
              * Combines IW357 and RIW388

  910         KK  CIW357
  911         KO       0       0     0.0       0      22
  912         HC       2
              *
              *
              * This split was determined using FLO-2D.  The model is titled "WEST" and
              * details and documentation about the model are contained in the Appendix D 5.4.

  913         KK    D357
  914         DT   DO357     0.0     0.0
  915         DI       0     258     530     766     975    1140    1340    1556    1789    1937
  916         DI    2120    2357    2514    2736    2992    3255    3301    3472    3610    5000
  917         DQ       0      56     144     211     291     357     437     383     451     502
  918         DQ     532     601     633     705     737     793     854     930     947    1312
              *
              *
              * ROUTE UPDATED 4/14/4

  919         KK  RIW357
  920         KO       0       0     0.0       0      22
  921         RS       9    FLOW     0.0     0.0
  922         RC    0.04    0.04    0.04   16693  0.0079
              * IWTS30_1 modified
  923         RX       0      50      96     135     160     177     190     206
  924         RY    1881    1879    1878    1876    1876    1878    1879    1881
              *
              *
              *
              * ************************************************************************ *
              * ********************** END OF IONA WASH REGION 2 *************************** *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ******************** BEGINNING OF IONA WASH REGION 3 ********************** *
              * ************************************************************************ *
              *
              *
              *
1                                                HEC-1 INPUT
PAGE 27

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

  925         KK   IW358
  926         KO       0       0     0.0       1      22
  927         BA  0.1641
  928         LG    0.35    0.25   4.638   0.333     5.0
  929         UC   0.683   0.953
              * Natural Time-Area Relation
  930         UA       0       3       5       8      12      20      43      75      90      96
  931         UA     100
              *
              *
```

```
                 *
                 * Combines IW353, IW358, RIW357 and RIW359

 932             KK  CIW353
 933             KO       0       0     0.0       0      22
                 * Hard Coded
 934             HC       3   15.24
                 *
                 *
                 * ROUTE UPDATED 4/14/4

 935             KK  RIW353
 936             KO       0       0     0.0       0      22
 937             RS       2    FLOW     0.0     0.0
 938             RC    0.04    0.04    0.04    7496  0.0053
                 * IWTS40_1
 939             RX       0     147     714     840     930    1073    1087    1417
 940             RY    1708    1704    1700    1696    1696    1700    1704    1708
                 *
                 *

 941             KK   IW350
 942             KO       0       0     0.0       1      22
 943             BA  2.1750
 944             LG    0.35   0.171   6.789   0.135     5.0
 945             UC   1.363   1.203
                 * Natural Time-Area Relation
 946             UA       0       3       5       8      12      20      43      75      90      96
 947             UA     100
                 *
                 *
                 * Combines IW350 and RIW353

 948             KK  CIW350
 949             KO       0       0     0.0       0      22
 950             HC       2
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ********************* END OF IONA WASH REGION 3 ************************** *
                 * ************************************************************************ *
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ****************** BEGINNING OF IONA WASH REGION 4 ************************ *
                 * ************************************************************************ *
                 *
                 *
1                                                HEC-1 INPUT
PAGE 28

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


 951             KK   IW312
 952             KO       0       0     0.0       1      22
 953             BA  0.5682
 954             LG   0.344   0.139   9.923   0.042    6.86
 955             UC   1.104   1.303
                 * Natural Time-Area Relation
 956             UA       0       3       5       8      12      20      43      75      90      96
 957             UA     100
                 *
                 *
                 * Railroad Diversion: Main path to CIW363, Diversion to CIW365
                 * From Structure RR170, See Appendix D.5 for analysis

 958             KK    D312
 959             KO       0       0     0.0       0      21
 960             DT   DO312     0.0     0.0
 961             DI       0      14      60     116     168     200     240     288     503     650
 962             DQ       0       0       0       0       0       0       0      41     243     386
```

```
                 *
                 *
                 * ROUTE UPDATED 4/14/4

963              KK  RIW312
964              KO       0       0     0.0       0      22
965              RS       1    FLOW     0.0     0.0
966              RC    0.04    0.04    0.04    8292  0.0096
                 * TSR375
967              RX       0      43      62      75     137     142     237     278
968              RY    1788    1782    1780    1778    1776    1778    1780    1786
                 *
                 *

969              KK   IW365
970              KO       0       0     0.0       1      22
971              BA  0.4728
972              LG   0.345    0.13    10.1   0.037   6.579
973              UC   1.113   1.447
                 * Natural Time-Area Relation
974              UA       0       3       5       8      12      20      43      75      90      96
975              UA     100
                 *
                 *

976              KK    D312
977              KO       0       0     0.0       0      22
978              DR   DO312
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 29

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

979              KK   RD312
980              KO       0       0     0.0       0      22
981              RS       1    FLOW     0.0     0.0
982              RC   0.043   0.035   0.043    1034  0.0077
                 * WITS130
983              RX       0     400     456     575     620     650     660     682
984              RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * Combines RD312 and IW365

985              KK  CIW365
986              KO       0       0     0.0       0      22
                 * Hard Coded
987              HC       2    0.63
                 *
                 *
                 * Railroad Diversion: Main path to CIW363, Diversion to CIW367
                 * From Structure RR190 and RR200, See Appendix D.5 for analysis

988              KK    D365
989              KO       0       0     0.0       0      21
990              DT   DO365     0.0     0.0
991              DI       0     237     281     435     753    1178    1712
992              DQ       0       0       0     141     443     865    1386
                 *
                 *
                 * ROUTE UPDATED 4/14/4

993              KK  RIW365
994              KO       0       0     0.0       0      22
995              RS       5    FLOW     0.0     0.0
996              RC    0.04    0.04    0.04    7351  0.0089
                 * IWTS30_1
997              RX       0      50      96     135     160     177     190     206
998              RY    1880    1879    1878    1876    1876    1878    1879    1880
                 *
```

```
                    *

 999                KK   IW367
1000                KO       0       0     0.0       1      22
1001                BA  0.0511
1002                LG   0.324    0.13    10.1   0.037  12.895
1003                UC   0.371   0.374
                    * Natural Time-Area Relation
1004                UA       0       3       5       8      12      20      43      75      90      96
1005                UA     100
                    *
                    *
                    *
                    * Railroad Diversion Recovery: Outflow from structure RR190
1                                                HEC-1 INPUT
PAGE 30

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


1006                KK    D365
1007                KO       0       0     0.0       0      22
1008                DR   DO365
                    *
                    *
                    * ROUTE UPDATED 4/14/4

1009                KK   RD365
1010                KO       0       0     0.0       0      22
1011                RS       2    FLOW     0.0     0.0
1012                RC   0.043   0.035   0.043    1700  0.0106
                    * WITS130
1013                RX       0     400     456     575     620     650     660     682
1014                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
                    * Combines RD365 and IW367

1015                KK  CIW367
1016                KO       0       0     0.0       0      21
                    * Hard Coded
1017                HC       2    0.17
                    *
                    *

1018                KK   IW369
1019                KO       0       0     0.0       1      22
1020                BA  0.7949
1021                LG   0.348   0.142   9.869   0.044   5.514
1022                UC   1.271   1.462
                    * Natural Time-Area Relation
1023                UA       0       3       5       8      12      20      43      75      90      96
1024                UA     100
                    *
                    *
                    * Railroad Diversion: Main path to CIW363, Diversion to CIW368
                    * From Structure RR240, See Appendix D.5 for analysis

1025                KK    D369
1026                KO       0       0     0.0       0      21
1027                DT   DO369     0.0     0.0
1028                DI       0      30     102     162     191     237     290     353     424
1029                DQ       0       0       0       0      17      51      98     155     220
                    *
                    *
                    * Combines CIW367 and D369

1030                KK   C363*
1031                KO       0       0     0.0       0      22
                    * Hard Coded
1032                HC       2    0.54
                    *
                    *
                    * ROUTE UPDATED 4/14/4
```

```
1                                                HEC-1 INPUT
PAGE 31

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


1033          KK  RIW369
1034          KO       0       0     0.0       0      22
1035          RS       4    FLOW     0.0     0.0
1036          RC    0.04    0.04    0.04    6797  0.0087
              * TSR375
1037          RX       0      43      62      75     137     142     237     278
1038          RY    1788    1782    1780    1778    1776    1778    1780    1786
              *
              *

1039          KK    D357
1040          DR   DO357
              *
              *
              * Route updated 04-15-04

1041          KK   RD357
1042          KO       0       0     0.0       0      22
1043          RS       2    FLOW     0.0     0.0
1044          RC    0.04    0.04    0.04    2791  0.0079
              * IWTS30_1
1045          RX       0      50      96     135     160     177     190     206
1046          RY    1880    1879    1878    1876    1876    1878    1879    1880
              *
              *
              * ------------------------------------------------------------------------
              * ----------------------------- BEGIN 03-14-2005 -------------------------
              * ------------------------------------------------------------------------
              *
              *

1047          KK   IW363
1048          KO       0       0     0.0       1      21
1049          BA  0.6277
1050          LG   0.328    0.15   9.339   0.055  11.655
1051          UC   0.563   0.424
              * Natural Time-Area Relation
1052          UA       0       3       5       8      12      20      43      75      90      96
1053          UA     100
              *
              *

1054          KK  C363_2
1055          HC       2
              *
              * *** Combine changed from 5 to 4 * ***
              * Combines CIW312, IW363, RIW365, RIW369 and RD357

1056          KK  CIW363
1057          KO       0       0     0.0       0      22
              * Hard Coded
1058          HC       4    4.38
              *
              * ------------------------------------------------------------------------
              * ----------------------------- END 03-14-2005 ---------------------------
              * ------------------------------------------------------------------------
              *
              *
              *
              * This split was determined using FLO-2D.  The model is titled "WEST" and
              * details and documentation about the model are contained in the Appendix D 5.4.
1                                                HEC-1 INPUT
PAGE 32

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


1059          KK    D363
```

```
1060          DT   DO363     0.0     0.0
1061          DI       0     272     484     655     755     921    1023    1091    1257    1358
1062          DI    1372    1413    1452    3000
1063          DQ       0      79     107     129     165     251     326     355     399     410
1064          DQ     429     448     460     950
              *
              * ROUTE UPDATED 4/14/4

1065          KK  RIW363
1066          KO       0       0     0.0       0      22
1067          RS       4    FLOW     0.0     0.0
1068          RC    0.04    0.04    0.04   11127  0.0077
              * IWTS30_1
1069          RX       0      50      96     135     160     177     190     206
1070          RY    1880    1879    1878    1876    1876    1878    1879    1880
              *
              *
              * ************************************************************************ *
              * ************************* END OF IONA WASH REGION 4 ************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ******************** BEGINNING OF IONA WASH REGION 6 AND 7 ***************** *
              * ************************************************************************ *
              *
              *

1071          KK   IW368
1072          KO       0       0     0.0       1      22
1073          BA  0.2906
1074          LG   0.344    0.25     4.0   0.477   6.907
1075          UC   0.833   0.784
              * Natural Time-Area Relation
1076          UA       0       3       5       8      12      20      43      75      90      96
1077          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR240

1078          KK    D369
1079          KO       0       0     0.0       0      22
1080          DR   DO369
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 33

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


1081          KK   RD369
1082          KO       0       0     0.0       0      22
1083          RS       1    FLOW     0.0     0.0
1084          RC   0.043   0.035   0.043    1927  0.0052
              * WITS130
1085          RX       0     400     456     575     620     650     660     682
1086          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD369 and IW368

1087          KK  CIW368
1088          KO       0       0     0.0       0      22
              * Hard Coded
1089          HC       2    0.71
              *
              *
              * ROUTE UPDATED 4/14/4

1090          KK  RIW368
1091          KO       0       0     0.0       0      22
```

```
1092          RS       6    FLOW     0.0     0.0
1093          RC    0.04    0.04    0.04   11648  0.0103
              * TSR375
1094          RX       0      43      62      75     137     142     237     278
1095          RY    1788    1782    1780    1778    1776    1778    1780    1786
              *
              *

1096          KK   IW360
1097          KO       0       0     0.0       1      22
1098          BA  0.8306
1099          LG   0.319    0.25   4.127    0.48  13.031
1100          UC   0.683   0.490
              * Urban Time-Area Relation
1101          UA       0       5      16      30      65      77      84      90      94      97
1102          UA     100
              *
              *
              * Combines IW360 and RIW368

1103          KK  CIW360
1104          KO       0       0     0.0       0      22
1105          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1106          KK  RIW360
1107          KO       0       0     0.0       0      22
1108          RS       1    FLOW     0.0     0.0
1109          RC   0.043   0.035   0.043    2593  0.0079
              * TWTS20
1110          RX       0     386     410     430     450     460     471     928
```



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

1111          RY    1965    1964    1962    1960    1960    1962    1964    1965
              *
              *

1112          KK   IW397
1113          KO       0       0     0.0       1      22
1114          BA  4.8148
1115          LG    0.35   0.381    6.39   0.159  39.233
1116          UC   1.217   0.695
              * Natural Time-Area Relation
1117          UA       0       3       5       8      12      20      43      75      90      96
1118          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

1119          KK  RIW397
1120          KO       0       0     0.0       0      22
1121          RS       8    FLOW     0.0     0.0
1122          RC   0.043   0.035   0.043   21294  0.0207
              * TWTS10
1123          RX       0      36     145     269     364     451     605     684
1124          RY    2345    2343  2333.5    2334  2334.5    2341  2343.5    2345
              *
              *

1125          KK   IW395
1126          KO       0       0     0.0       1      22
1127          BA  7.8617
1128          LG    0.35   0.374   6.125   0.175  27.313
1129          UC   1.267   0.579
              * Natural Time-Area Relation
1130          UA       0       3       5       8      12      20      43      75      90      96
1131          UA     100
              *
              *
```

```
                    * Combines IW395 and RIW367

1132                KK  CIW395
1133                KO       0       0     0.0       0      22
1134                HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/4

1135                KK  RIW395
1136                KO       0       0     0.0       0      22
1137                RS       4    FLOW     0.0     0.0
1138                RC   0.043   0.035   0.043   13324  0.0168
                    * TWTS10
1139                RX       0      36     145     269     364     451     605     684
1140                RY    2345    2343  2333.5    2334  2334.5    2341  2343.5    2345
                    *
                    *
1                                                HEC-1 INPUT
PAGE 35

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


1141                KK   IW387
1142                KO       0       0     0.0       1      22
1143                BA  1.3508
1144                LG    0.35    0.25   5.656   0.213    7.45
1145                UC   0.921   0.597
                    * Natural Time-Area Relation
1146                UA       0       3       5       8      12      20      43      75      90      96
1147                UA     100
                    *
                    *
                    * ROUTE UPDATE 4/14/4

1148                KK  RIW387
1149                KO       0       0     0.0       0      22
1150                RS       1    FLOW     0.0     0.0
1151                RC   0.043   0.035   0.043    1005   0.014
                    * TWTS20 modified x-section
1152                RX       0     386     410     430     450     460     471     928
1153                RY    1965    1964    1963    1961    1961    1963    1964    1965
                    *
                    *

1154                KK   IW396
1155                KO       0       0     0.0       1      22
1156                BA  0.5862
1157                LG    0.35    0.25   4.518   0.336   5.192
1158                UC   1.113   1.262
                    * Natural Time-Area Relation
1159                UA       0       3       5       8      12      20      43      75      90      96
1160                UA     100
                    *
                    *
                    * Combines IW396, RIW387 and RIW395

1161                KK  CIW396
1162                KO       0       0     0.0       0      22
1163                HC       3
                    *
                    *
                    * ROUTE UPDATED 4/14/4

1164                KK  RIW396
1165                KO       0       0     0.0       0      22
1166                RS       2    FLOW     0.0     0.0
1167                RC    .043    .035    .043    6512  0.0142
                    * TWTS10
1168                RX       0      36     145     269     364     451     605     684
1169                RY    2345    2343. 2333.5    2334  2334.5    2341  2343.5    2345
                    *
                    *
```

```
1                                                HEC-1 INPUT
PAGE 36

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

1170          KK   IW380
1171          KO       0       0     0.0       1      22
1172          BA  0.4998
1173          LG    0.35    0.15   7.161   0.111    5.14
1174          UC   0.575   0.631
              * Natural Time-Area Relation
1175          UA       0       3       5       8      12      20      43      75      90      96
1176          UA     100
              *
              *
              * Combines IW380 and RIW396

1177          KK  CIW380
1178          KO       0       0     0.0       0      22
1179          HC       2
              *
              *

1180          KK  SSR310
1181          RS       1    STOR       0
1182          SQ       0    1620    2850    4080    4200   10040
1183          SE  2067.7    2072    2074    2076  2076.2    2080
1184          SA       0     .55    3.06    3.07
1185          SE  2067.7    2072    2076    2080
              *
              *
              * SR74 Diversion: Main path to CIW370, Diversion to CTW462
              * Structure SR310: See Appendix D.5 for analysis

1186          KK    D380
1187          KO       0       0     0.0       0      22
1188          DT   DO380     0.0     0.0
1189          DI       0    1620    2850    4080    4200    4638    5078    5740    6541    7348
1190          DI    8154    9013   10040
1191          DQ       0       0       0       0       0      78     338     700    1141    1648
1192          DQ    2214    2833    3500
              *
              *
              * ROUTE UPDATED 4/14/4

1193          KK  RIW380
1194          KO       0       0     0.0       0      22
1195          RS      11    FLOW     0.0     0.0
1196          RC   0.043   0.035   0.043   16914   0.013
              * TWTS20-modified X-sect
1197          RX       0     772     796     822     836     846     857    1771
1198          RY    1966    1964    1962    1960    1960    1962    1964    1966
              *
              *
1                                                HEC-1 INPUT
PAGE 37

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

1199          KK   IW370
1200          KO       0       0     0.0       1      22
1201          BA  0.8794
1202          LG   0.337    0.25   4.616   0.331   7.933
1203          UC   0.967   1.148
              * Natural Time-Area Relation
1204          UA       0       3       5       8      12      20      43      75      90      96
1205          UA     100
              *
              *
              * Combines IW370 and CIW380

1206          KK  CIW370
```

```
1207          KO       0       0     0.0       0      22
              * Hard Coded
1208          HC       2   12.05
              *
              *
              * ROUTE UPDATED 4/14/4

1209          KK  RIW370
1210          KO       0       0     0.0       0      22
1211          RS       3    FLOW     0.0     0.0
1212          RC   0.043   0.035   0.043    7248  0.0095
              * TWTS20-modified X-sect
1213          RX       0     772     796     822     836     846     857    1771
1214          RY    1966    1964    1962    1960    1960    1962    1964    1966
              *
              *

1215          KK   IW349
1216          KO       0       0     0.0       1      22
1217          BA  0.2498
1218          LG   0.315    0.25   4.804   0.321  13.991
1219          UC   0.650   0.840
              * Natural Time-Area Relation
1220          UA       0       3       5       8      12      20      43      75      90      96
1221          UA     100
              *
              *
              * Combines IW349 and RIW370

1222          KK  CIW349
1223          KO       0       0     0.0       0      22
1224          HC       2
              *
              *
              * Diversion Out: Flow split FS1
              * Flow Split Diversion: Main path to IW352, Diversion to IW356
              * 62% of flow is diverted to IW356
                                          HEC-1 INPUT
PAGE 38

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


1225          KK    D349
1226          KO       0       0     0.0       0      22
1227          DT   DO349     0.0     0.0
1228          DI       0   10000
1229          DQ       0    6200
              *
              *
              * ROUTE UPDATED 4/14/4

1230          KK  RIW349
1231          KO       0       0     0.0       0      22
1232          RS       2    FLOW     0.0     0.0
1233          RC   0.043   0.035   0.043    4331  0.0161
              * TWTS20
1234          RX       0     386     410     430     450     460     471     928
1235          RY    1965    1964    1962    1960    1960    1962    1964    1965
              *
              *

1236          KK   IW352
1237          KO       0       0     0.0       1      22
1238          BA  0.0960
1239          LG    0.35    0.25   4.511   0.364     5.0
1240          UC   0.421   0.445
              * Natural Time-Area Relation
1241          UA       0       3       5       8      12      20      43      75      90      96
1242          UA     100
              *
              *
              * Combines IW352, RIW349 and RIW368
```

```
1243          KK  CIW352
1244          KO       0       0     0.0       0      22
              * Hard Coded
1245          HC       3    6.31
              *
              *

1246          KK   IW356
1247          KO       0       0     0.0       1      22
1248          BA  0.2861
1249          LG    0.35    0.15   7.178   0.115     5.0
1250          UC   0.579   0.651
              * Natural Time-Area Relation
1251          UA       0       3       5       8      12      20      43      75      90      96
1252          UA     100
              *
              *
              * Diversion Recovery: Flow split FS1
1                                          HEC-1 INPUT
PAGE 39

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


1253          KK    D349
1254          KO       0       0     0.0       0      22
1255          DR   DO349
              *
              *
              * ROUTE UPDATED 4/14/4

1256          KK   RD349
1257          KO       0       0     0.0       0      22
1258          RS       1    FLOW     0.0     0.0
1259          RC   0.043   0.035   0.043    4244  0.0111
              * TWTS20
1260          RX       0     386     410     430     450     460     471     928
1261          RY    1965    1964    1962    1960    1960    1962    1964    1965
              *
              *
              * Combines RD349, IW356 and CIW352

1262          KK  CIW356
1263          KO       0       0     0.0       0      22
              * Hard Coded
1264          HC       3   14.23
              *
              *
              * ROUTE UPDATED 4/14/4

1265          KK  RIW356
1266          KO       0       0     0.0       0      22
1267          RS       1    FLOW     0.0     0.0
1268          RC     .04     .04     .04    2643  0.0086
              * TSR371
1269          RX       0     142     486     525     651     770    1000    1518
1270          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
              *
              *

1271          KK   IW354
1272          KO       0       0     0.0       1      22
1273          BA  0.3605
1274          LG    0.35    0.15   8.086   0.083     5.0
1275          UC   0.550   0.511
              * Natural Time-Area Relation
1276          UA       0       3       5       8      12      20      43      75      90      96
1277          UA     100
              *
              *
              * Combines IW354 and RIW356

1278          KK  CIW354
1279          KO       0       0     0.0       0      22
```

```
1280          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 40

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


1281          KK  RIW354
1282          KO       0       0     0.0       0      22
1283          RS       2    FLOW     0.0     0.0
1284          RC     .04     .04     .04    4523  0.0072
              * TWTS20
1285          RX       0     142     486     525     651     770    1000    1518
1286          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
              *
              *

1287          KK   IW362
1288          KO       0       0     0.0       1      22
1289          BA  0.1793
1290          LG    0.35    0.15   7.223   0.113     5.0
1291          UC   0.525   0.597
              * Natural Time-Area Relation
1292          UA       0       3       5       8      12      20      43      75      90      96
1293          UA     100
              *
              *
              * Combines IW362 and RIW354

1294          KK  CIW362
1295          KO       0       0     0.0       0      22
1296          HC       2
              *
              *
              * ************************************************************************ *
              * ************************* END OF IONA WASH REGION 6 AND 7 ******************** *
              * ************************************************************************ *
              *
              *
              *
              *
              *
              *
              *
              * ************************************************************************ *
              * ********************* BEGINNING OF IONA WASH REGION 8 ************************ *
              * ************************************************************************ *
              *
              *

1297          KK   IW372
1298          KO       0       0     0.0       1      22
1299          BA  0.3175
1300          LG   0.335    0.25   5.001   0.281   9.357
1301          UC   0.479   0.418
              * Natural Time-Area Relation
1302          UA       0       3       5       8      12      20      43      75      90      96
1303          UA     100
              *
              *
              * Railroad Diversion: Main path to CIW364, Diversion to CIW375
              * From Structure RR340, RR350 and RR360, See Appendix D.5 for analysis
1                                          HEC-1 INPUT
PAGE 41

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


1304          KK    D372
1305          KO       0       0     0.0       0      22
1306          DT   DO372     0.0     0.0
```

```
1307          DI        0      122      685     1662     3069     4920
1308          DQ        0        0      428     1375     2752     4548
              *
              *
              * ROUTE UPDATED 4/14/4

1309          KK  RIW372
1310          KO        0        0      0.0        0       22
1311          RS        9     FLOW      0.0      0.0
1312          RC     0.04     0.04     0.04    15367   0.0096
              * TSR375
1313          RX        0       43       62       75      137      142      237      278
1314          RY     1788     1782     1780     1778     1776     1778     1780     1786
              *
              *

1315          KK   IW375
1316          KO        0        0      0.0        1       22
1317          BA   0.6582
1318          LG    0.348     0.15    7.035    0.121    5.528
1319          UC    1.392    1.824
              * Natural Time-Area Relation
1320          UA        0        3        5        8       12       20       43       75       90       96
1321          UA      100
              *
              *

1322          KK    D372
1323          KO        0        0      0.0        0       22
1324          DR   DO372
              *
              *
              * ROUTE UPDATED 4/14/4

1325          KK   RD372
1326          KO        0        0      0.0        0       22
1327          RS        1     FLOW      0.0      0.0
1328          RC    0.043    0.035    0.043     1828   0.0033
              * WITS130
1329          RX        0      400      456      575      620      650      660      682
1330          RY   1396.5     1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *
              * Combines RD372 and IW375

1331          KK  CIW375
1332          KO        0        0      0.0        0       22
              * Hard Coded
1333          HC        2     0.82
              *
              *
              * ROUTE UPDATED 4/14/4
```



```
                                          HEC-1 INPUT

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


1334          KK  RIW375
1335          KO        0        0      0.0        0       22
1336          RS        8     FLOW      0.0      0.0
1337          RC     0.04     0.04     0.04    13330   0.0099
              * TSR375
1338          RX        0       43       62       75      137      142      237      278
1339          RY     1788     1782     1780     1778     1776     1778     1780     1786
              *
              *

1340          KK   IW364
1341          KO        0        0      0.0        1       22
1342          BA   1.1451
1343          LG    0.342     0.14    9.898    0.043    7.515
1344          UC    0.683    0.489
              * Natural Time-Area Relation
```

```
1345          UA       0       3       5       8      12      20      43      75      90      96
1346          UA     100
              *
              *
              * Combines IW364, RIW375 and RIW372

1347          KK  CIW364
1348          KO       0       0     0.0       0      22
              * Hard Coded
1349          HC       3    2.13
              *
              *
              * Combines CIW364 and CIW362

1350          KK   C364*
1351          KO       0       0     0.0       0      22
1352          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1353          KK  RIW364
1354          KO       0       0     0.0       0      22
1355          RS       7    FLOW     0.0     0.0
1356          RC     .04     .04     .04   10402  0.0074
              * TSR371
1357          RX       0     142     486     525     651     770    1000    1508
1358          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
              *
              *
              *
              * ************************************************************************ *
              * ********************* END OF IONA WASH REGION 8 ************************** *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ******************* BEGINNING OF IONA WASH REGION 9 ********************** *
              * ************************************************************************ *
              *
              *
```


HEC-1 INPUT

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


1359          KK   IW342
1360          KO       0       0     0.0       1      22
1361          BA  0.3535
1362          LG   0.341   0.268   4.586   0.346     5.0
1363          UC   0.888   1.074
              * Natural Time-Area Relation
1364          UA       0       3       5       8      12      20      43      75      90      96
1365          UA     100
              *
              *
              * Combines IW342 and RIW364

1366          KK  CIW342
1367          KO       0       0     0.0       0      22
1368          HC       2
              *
              *

1369          KK   IW351
1370          KO       0       0     0.0       1      21
1371          BA  0.3163
1372          LG   0.338    0.25   4.426   0.393   7.899
1373          UC   0.642   0.658
              * Natural Time-Area Relation
1374          UA       0       3       5       8      12      20      43      75      90      96
1375          UA     100
```

```
                 *
                 *
1376             KK    D363
1377             DR   DO363
                 *
                 *
                 * Route updated 04-15-04

1378             KK   RD363
1379             KO       0       0     0.0       0      22
1380             RS       1    FLOW     0.0     0.0
1381             RC    0.04    0.04    0.04    3820  0.0094
                 * IWTS30_1
1382             RX       0      50      96     135     160     177     190     206
1383             RY    1880    1879    1878    1876    1876    1878    1879    1880
                 *
                 *
                 * Combines IW351 and RD363

1384             KK  CIW351
1385             KO       0       0     0.0       0      22
                 * Hard Coded
1386             HC       2    1.71
                 *
                 *
                 * This split was determined using FLO-2D.  The model is titled "WEST" and
                 * details and documentation about the model are contained in the Appendix D 5.4.
1                                                HEC-1 INPUT
PAGE 44

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


1387             KK    D351
1388             DT   DO351
1389             DI       0      68      77      98     126     159     200     243     275     351
1390             DI     391     440     509     577     634     700     739    2000
1391             DQ       0      56      62      80     106     130     158     195     220     293
1392             DQ     331     370     434     499     547     602     635    1719
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1393             KK  RIW351
1394             KO       0       0     0.0       0      22
1395             RS      10    FLOW     0.0     0.0
1396             RC    0.04    0.04    0.04   24311  0.0076
                 * IWTS30_2
1397             RX       0     6.5      13      57     102     104     109     110
1398             RY    1728  1725.5    1724    1723    1724  1725.5    1727    1728
                 *
                 *

1399             KK   IW346
1400             KO       0       0     0.0       1      22
1401             BA  3.4432
1402             LG   0.349   0.253   5.005   0.281     5.0
1403             UC   1.254   0.854
                 * Natural Time-Area Relation
1404             UA       0       3       5       8      12      20      43      75      90      96
1405             UA     100
                 *
                 *
                 * ---------------------------------------------------------------------------
                 * ----------------------- 03-11-2005 ---------------------------------------
                 * ---------------------------------------------------------------------------
                 *
                 * *** Concentration point C346_1 was added
                 * Combines IW346 and RIW351

1406             KK  C346_1
1407             KO       0       0     0.0       0      22
                 * Hard Coded
```

```
1408          HC       2    3.73
              *
              *
              * Combines IW346, RIW351 and CIW342

1409          KK  CIW346
1410          KO       0       0     0.0       0      22
              * Hard Coded
1411          HC       2   20.92
              *
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 45

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


1412          KK  RIW346
1413          KO       0       0     0.0       0      22
1414          RS       2    FLOW     0.0     0.0
1415          RC    0.04    0.04    0.04    3706  0.0046
              * WITS30
1416          RX       0     216     426     525     583     771    1184    1444
1417          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

1418          KK   IW338
1419          KO       0       0     0.0       1      22
1420          BA  0.3390
1421          LG   0.336    0.25    5.78   0.198   6.399
1422          UC   0.575   0.470
              * Natural Time-Area Relation
1423          UA       0       3       5       8      12      20      43      75      90      96
1424          UA     100
              *
              *
              * Combines IW338 and RIW346

1425          KK  CIW338
1426          KO       0       0     0.0       0      22
1427          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1428          KK  RIW338
1429          KO       0       0     0.0       0      22
1430          RS       5    FLOW     0.0     0.0
1431          RC    0.04    0.04    0.04    7227  0.0055
              * TWTS30
1432          RX       0     219     753     855     880    1110    1198    1380
1433          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *

1434          KK   IW326
1435          KO       0       0     0.0       1      22
1436          BA  0.3330
1437          LG    0.35    0.25   5.374   0.235     5.0
1438          UC   0.588   0.506
              * Natural Time-Area Relation
1439          UA       0       3       5       8      12      20      43      75      90      96
1440          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 46
```

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

1441          KK  RIW326
1442          KO       0       0     0.0       0      22
1443          RS       5    FLOW     0.0     0.0
1444          RC    0.04    0.04    0.04    8066  0.0057
              * TWTS30
1445          RX       0     219     753     855     880    1110    1198    1380
1446          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *

1447          KK   IW334
1448          KO       0       0     0.0       1      22
1449          BA  1.2571
1450          LG   0.341   0.246   5.789   0.196   5.325
1451          UC   0.838   0.523
              * Natural Time-Area Relation
1452          UA       0       3       5       8      12      20      43      75      90      96
1453          UA     100
              *
              *
              * Combines IW334, RIW326 and RIW338

1454          KK  CIW334
1455          KO       0       0     0.0       0      22
1456          HC       3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP030

1457          KK  SCP030
1458          KO       3       0     0.0       0      21
1459          RS       1    STOR       0
1460          SQ       0     430    2188    4690    7755   11296
1461          SE    1547    1548    1550    1552    1554    1556
1462          SA      .3      .7     2.1       6      10    16.1
1463          SE    1547    1548    1550    1552    1554    1556
              *
              *
              * ROUTE UPDATED 4/14/4

1464          KK  RIW334
1465          KO       0       0     0.0       0      22
1466          RS      12    FLOW     0.0     0.0
1467          RC    0.04    0.04    0.04   21501  0.0067
              * TWTS40
1468          RX       0     250     290     491     543     606     920    1197
1469          RY    1535    1531    1529  1528.5    1524  1530.5    1531  1534.5
              *
              *
```

1
PAGE 47

HEC-1 INPUT

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

1470          KK   IW302
1471          KO       0       0     0.0       1      22
1472          BA  1.3264
1473          LG   0.314   0.246   4.918   0.296   12.35
1474          UC   1.467   1.431
              * Natural Time-Area Relation
1475          UA       0       3       5       8      12      20      43      75      90      96
1476          UA     100
              *
              *
              * Combines IW302 and RIW334

1477          KK  CIW302
1478          KO       0       0     0.0       0      22
1479          HC       2
              *
```

```
                 *
                 *
                 * D302 diverts all flow out to C302*.  See "README" note below for details.

1480             KK    D302
1481             DT   DO302     0.0     0.0
1482             DI       0  100000
1483             DQ       0  100000
                 *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ***README**README**README**README**README**README**README**README**README*** *
                 * ***README**README**README**README**README**README**README**README**README*** *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ***** This diversion takes 100% of the flow (100%; all of it!).  The   ***** *
                 * ***** reason for this diversion is to make the logic of the HEC-1      ***** *
                 * ***** model.  The problem arises with the fact that there is an area   ***** *
                 * ***** where flow is split from CIW357 to CIW353 and CIW363.  Then      ***** *
                 * ***** flow is split from CIW363 to CIW361 and CIW351.  Then Flow is    ***** *
                 * ***** split from CIW351 to CIW361 and CIW346.  With the complexity of  ***** *
                 * ***** this model that creates a problem.  A basic schematic is as      ***** *
                 * ***** follows:                                                         ***** *
                 * *****                                                                  ***** *
                 * *****                          CIW357                                  ***** *
                 * *****                          |    |                                  ***** *
                 * *****                         |      |                                 ***** *
                 * *****                    CIW353      CIW363                            ***** *
                 * *****                                |    |                            ***** *
                 * *****                                |     |                           ***** *
                 * *****                                |     CIW351                      ***** *
                 * *****                                |      |   |                      ***** *
                 * *****                                 |    |     |                     ***** *
                 * *****                                  |  |       |                    ***** *
                 * *****                                  CIW361    CIW346                ***** *
                 * *****                                                                  ***** *
                 * *****                                                                  ***** *
                 * ***** The complexity comes in the fact that a lot is happening between ***** *
                 * ***** CIW351 and CIW361.  To compensate, all the flow is diverted out  ***** *
                 * ***** after CIW302, the next combine card is then hard coded to not    ***** *
                 * ***** include any of the diverted area, and then the flow is brought   ***** *
                 * ***** back into the model at C302*, which is hard coded to account for ***** *
                 * ***** all the area diverted out at CIW302.                             ***** *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ***README**README**README**README**README**README**README**README**README*** *
                 * ***README**README**README**README**README**README**README**README**README*** *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 *
                 *
                 *
1                                          HEC-1 INPUT
PAGE 48

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


1484             KK   IW361
1485             KO       0       0     0.0       1      21
1486             BA  0.3547
1487             LG    0.35   0.244   6.061    0.18     5.0
1488             UC   0.804   0.970
                 * Urban Time-Area Relation
1489             UA       0       5      16      30      65      77      84      90      94      97
1490             UA     100
                 *
                 * ---------------------------------------------------------------------------
                 * -------------------------- Begin 03-14-2005 -------------------------------
                 * ---------------------------------------------------------------------------
                 *

1491             KK  C361_1
1492             HC       3   3.346
```

```
                 *
                 *
                 * Recovers diversion from CIW351

1493             KK    D351
1494             DR   DO351
                 *
                 *
                 * Route updated 04-15-2004

1495             KK   RD351
1496             KO       0       0     0.0       0      22
1497             RS       3    FLOW     0.0     0.0
1498             RC    0.04    0.04    0.04    6586  0.0076
                 * IWTS30_1
1499             RX       0      50      96     135     160     177     190     206
1500             RY    1880    1879    1878    1876    1876    1878    1879    1880
                 *
                 *
                 * changed to combine 2 ****
                 * *** Combines RIW363, CIW302, IW361 and RD351

1501             KK  CIW361
1502             KO       0       0     0.0       0      21
                 * Hard Coded
1503             HC       2    4.82
                 *
                 * ------------------------------------------------------------------------
                 * ------------------------- END 03-14-2005 ------------------------------------
                 * ------------------------------------------------------------------------
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 49

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

1504             KK  RIW361
1505             KO       0       0     0.0       0      22
1506             RS      12    FLOW     0.0     0.0
1507             RC    0.04    0.04    0.04   17152  0.0064
                 * IWTS30_1
1508             RX       0      50      96     135     160     177     190     206
1509             RY    1880    1879    1878    1876    1876    1878    1879    1880
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ********************** END OF IONA WASH REGION 9 *************************** *
                 * ************************************************************************ *
                 *
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ************************ BEGINNING OF IONA WASH REGION 5 ******************** *
                 * ************************************************************************ *
                 *
                 *
                 * Combines RIW361 and CIW350

1510             KK   C350*
1511             KO       0       0     0.0       0      22
1512             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1513             KK   R350*
1514             KO       0       0     0.0       0      22
1515             RS       3    FLOW     0.0     0.0
1516             RC    0.04    0.04    0.04    8310   0.006
                 * IWTS40_1
```

```
1517          RX       0     147     714     840     930    1073    1087    1417
1518          RY    1708    1704    1700    1696    1696    1700    1704    1708
              *
              *

1519          KK   IW330
1520          KO       0       0     0.0       1      22
1521          BA  1.0371
1522          LG    0.35    0.25   5.701   0.208     5.0
1523          UC   1.058   0.944
              * Natural Time-Area Relation
1524          UA       0       3       5       8      12      20      43      75      90      96
1525          UA     100
              *
              *
              * Combines IW330 and R350*
1                                          HEC-1 INPUT
PAGE 50

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


1526          KK  CIW330
1527          KO       0       0     0.0       0      22
1528          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1529          KK  RIW330
1530          KO       0       0     0.0       0      22
1531          RS       1    FLOW     0.0     0.0
1532          RC    0.04    0.04    0.04    2771  0.0051
              * IWTS40_2
1533          RX       0     699    1005    1035    1093    1320    1673    1838
1534          RY    1560    1556    1554    1550    1554    1555    1556    1560
              *
              *

1535          KK   IW322
1536          KO       0       0     0.0       1      22
1537          BA  1.8922
1538          LG    0.35    0.15   8.622   0.067     5.0
1539          UC   1.442   1.537
              * Natural Time-Area Relation
1540          UA       0       3       5       8      12      20      43      75      90      96
1541          UA     100
              *
              *
              * Combines IW322 and RIW330

1542          KK  CIW322
1543          KO       0       0     0.0       0      22
1544          HC       2
              *
              *
              * ------------------------------------------------------------------------
              * ------------------------------------------------------------------------
              * ---------------------------- Begin 12-01-2004 edits --------------------------
              * ------------------------------------------------------------------------
              * ------------------------------------------------------------------------
              *
              * ROUTE UPDATED 4/14/4

1545          KK  RIW322
1546          KO       0       0     0.0       0      22
1547          RS      12    FLOW     0.0     0.0
1548          RC    0.04    0.04    0.04   12886  0.0054
              * IWTS40_2
1549          RX       0     699    1005    1035    1093    1320    1673    1838
1550          RY    1560    1556    1554    1550    1554    1555    1556    1560
              *
              *
              * ------------------------------------------
```

```
                    * ------- IW314 moved to this location -------
                    * ---- Previous location was before CIW314 ---
                    * ----------------------------------------
                    *
1                                                HEC-1 INPUT
PAGE 51

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


1551          KK   IW314
1552          KO       0       0     0.0       1      22
1553          BA  2.1754
1554          LG   0.346   0.244   6.048    0.18   5.233
1555          UC   1.383   1.151
              * Natural Time-Area Relation
1556          UA       0       3       5       8      12      20      43      75      90      96
1557          UA     100
              *
              *
              * ----------------------------------------
              * ------- C314_1 added at this location ------
              * ----------------------------------------
              *
              * Combines RIW322 and IW314

1558          KK  C314_1
1559          KO       0       0     0.0       0      22
1560          HC       2
              *
              *

1561          KK   IW318
1562          KO       0       0     0.0       1      22
1563          BA  0.5831
1564          LG   0.338    0.15   8.597    0.07   7.372
1565          UC   0.942   1.018
              * Natural Time-Area Relation
1566          UA       0       3       5       8      12      20      43      75      90      96
1567          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

1568          KK  RIW318
1569          KO       0       0     0.0       0      22
1570          RS      15    FLOW     0.0     0.0
1571          RC    0.04    0.04    0.04   17570  0.0049
              * TSR294
1572          RX       0     100     359     491     535     639     723     950
1573          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
              *

1574          KK   IW310
1575          KO       0       0     0.0       1      22
1576          BA  1.1671
1577          LG   0.331   0.148   8.143   0.081   6.392
1578          UC   1.188   1.167
              * Natural Time-Area Relation
1579          UA       0       3       5       8      12      20      43      75      90      96
1580          UA     100
              *
              *
              * Combines IW310 and RIW18
1                                                HEC-1 INPUT
PAGE 52

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


1581          KK  CIW310
1582          KO       0       0     0.0       0      22
1583          HC       2
```

```
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1584             KK  RIW310
1585             KO       0       0     0.0       0      22
1586             RS       1    FLOW     0.0     0.0
1587             RC    0.04    0.04    0.04     860   0.002
                 * IWTS50
1588             RX       0      52     199     216     234     295     611     700
1589             RY    1536    1535    1534    1530    1529    1534    1536    1536
                 *
                 *
                 * -----------------------------------------
                 * ---- HC changed from 3 to 2 for CIW314 -----
                 * -----------------------------------------
                 *
                 * Combines RIW310 and C314-1

1590             KK  CIW314
1591             KO       0       0     0.0       0      22
1592             HC       2
                 *
                 *
                 * ---------------------------------------------------------------------------
                 * ---------------------------------------------------------------------------
                 * ---------------------------- End 12-01-2004 edits ---------------------------
                 * ---------------------------------------------------------------------------
                 * ---------------------------------------------------------------------------
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP020

1593             KK  SCP020
1594             KO       3       0     0.0       0      22
1595             RS       1    STOR       0
1596             SQ       0      94     662    1502    2002   12536
1597             SE  1547.3    1548    1550    1552    1553    1554
1598             SA     5.5    13.6    17.9      67    99.2   118.3
1599             SE    1546  1547.3    1548    1550    1552    1553
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1600             KK  RIW314
1601             KO       0       0     0.0       0      22
1602             RS      15    FLOW     0.0     0.0
1603             RC    0.04    0.04    0.04   20068  0.0051
                 * IWTS50-modified X-sect
1604             RX       0     104     251     268     286     347     663     821
1605             RY    1537    1535    1534    1530    1529    1534    1536    1537
                 *
                 *
1                                                HEC-1 INPUT
PAGE 53

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


1606             KK   IW300
1607             KO       0       0     0.0       1      22
1608             BA  1.4799
1609             LG   0.333   0.243   5.605   0.213   5.544
1610             UC   1.438   1.251
                 * Natural Time-Area Relation
1611             UA       0       3       5       8      12      20      43      75      90      96
1612             UA     100
                 *
                 *
                 * Combines IW300 and RIW314

1613             KK  CIW300
1614             KO       0       0     0.0       0      22
1615             HC       2
                 *
```

```
                 *
                 * ROUTE UPDATED 4/14/4

1616             KK  RIW300
1617             KO       0       0     0.0       0      22
1618             RS       3    FLOW     0.0     0.0
1619             RC    0.04    0.04    0.04    6125  0.0043
                 * TWTS50
1620             RX       0     465     648     750     760     892    1337    1400
1621             RY  1417.5    1417  1414.5    1409    1409    1415  1415.5    1417
                 *
                 *
                 * ******************************************************************************
                 * ***************************** Begin Edits 03-09-2005 **************************
                 * ******************************************************************************
                 *

1622             KK   SV202
1623             KO       0       0     0.0       1      22
1624             BA  1.4364
1625             LG   0.331   0.153   6.942   0.125   6.369
1626             UC   1.054   0.803
                 * Natural Time-Area Relation
1627             UA       0       3       5       8      12      20      43      75      90      96
1628             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1629             KK  RSV202
1630             KO       0       0     0.0       0      22
1631             RS       5    FLOW     0.0     0.0
1632             RC    0.04    0.04    0.04    6617  0.0044
                 * TWTS50
1633             RX       0     465     648     750     760     892    1337    1400
1634             RY  1417.5    1417  1414.5    1409    1409    1415  1415.5    1417
                 *
                 *
                 * Combines RSV202 and RIW300
1                                              HEC-1 INPUT
PAGE 54

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


1635             KK  C300_1
1636             KO       0       0     0.0       0      22
1637             HC       2
                 *
                 *
                 * Recovers all the flow from CIW302
                 * No route needed because the flow is routed through RCIW302

1638             KK    D302
1639             DR   DO302
                 *
                 *
                 *
                 * 03-09-2005 changed to combine C300_1 and D0302
                 * 03-09-2005 Hard coding was changed from 54.75 to 56.19 (54.72 + 1.44 [SV202])
                 * *** Combines RIW300 and RD302 ***

1640             KK   C302*
1641             KO       0       0     0.0       0      22
                 * Hard Coded
1642             HC       2   56.19
                 *
                 * ******************************************************************************
                 * ***************************** End Edits 03-09-2005 ****************************
                 * ******************************************************************************
                 *
                 * ROUTE UPDATED 4/14/4

1643             KK  RIW302
```

```
1644          KO       0       0     0.0       0      22
1645          RS       3    FLOW     0.0     0.0
1646          RC    0.04    0.04    0.04    5720  0.0044
              * TWTS50
1647          RX       0     465     648     750     760     892    1337    1400
1648          RY  1417.5    1417  1414.5    1409    1409    1415  1415.5    1417
              *
              *
              *
              * ************************************************************************ *
              * ************************* END OF IONA WASH REGION 5 ************************* *
              * ************************************************************************ *
              *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************* END OF IONA WASH SUBAREA ************************** *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ********************BEGINNING OF SUN VALLEY SUBAREA ************************ *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ******************** BEGINNING OF SUN VALLEY REGION 1 ********************** *
              * ************************************************************************ *
              *
              *
```



```
                                        HEC-1 INPUT

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

1649          KK  SV264A
1650          KO       0       0     0.0       1      22
1651          BA  2.8974
1652          LG   0.343   0.149   7.303   0.111   6.272
1653          UC   1.413   1.094
              * Natural Time-Area Relation
1654          UA       0       3       5       8      12      20      43      75      90      96
1655          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

1656          KK   R264A
1657          KO       0       0     0.0       0      22
1658          RS       1    FLOW     0.0     0.0
1659          RC    0.04    0.04    0.04    4042   0.003
              * TSR264A
1660          RX       0      22      32     353     813    1098    1469    1965
1661          RY    1578    1572    1570    1570    1572    1574    1576    1578
              *
              *

1662          KK   SV264
1663          KO       0       0     0.0       1      22
1664          BA  1.9188
1665          LG    0.35    0.15   7.529   0.101   5.012
1666          UC   1.167    0.90
              * Natural Time-Area Relation
1667          UA       0       3       5       8      12      20      43      75      90      96
1668          UA     100
```

```
                    *
                    *
                    * Combines SV264 and R264A

1669                KK  CSV264
1670                KO       0       0     0.0       0      22
1671                HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/04

1672                KK  RSV264
1673                KO       0       0     0.0       0      22
1674                RS       1    FLOW     0.0     0.0
1675                RC    0.04    0.04    0.04    4870  0.0029
                    * TSR264A
1676                RX       0      22      32     353     813    1098    1469    1965
1677                RY    1578    1572    1570    1570    1572    1574    1576    1578
                    *
                    *
1                                                HEC-1 INPUT
PAGE 56

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


1678                KK   SV298
1679                KO       0       0     0.0       1      22
1680                BA  1.0752
1681                LG   0.342    0.15   8.237   0.081   6.631
1682                UC   1.325   1.644
                    * Natural Time-Area Relation
1683                UA       0       3       5       8      12      20      43      75      90      96
1684                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

1685                KK  RSV298
1686                KO       0       0     0.0       0      22
1687                RS      14    FLOW     0.0     0.0
1688                RC    0.04    0.04    0.04   15129   0.006
                    * TSR294
1689                RX       0     100     359     491     535     639     723     950
1690                RY    1600    1598    1596    1592    1592    1594    1596    1600
                    *
                    *

1691                KK   SV286
1692                KO       0       0     0.0       1      22
1693                BA  1.5379
1694                LG    0.35   0.155   6.951   0.125     5.0
1695                UC   1.029   0.779
                    * Natural Time-Area Relation
1696                UA       0       3       5       8      12      20      43      75      90      96
1697                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

1698                KK  RSV286
1699                KO       0       0     0.0       0      22
1700                RS       1    FLOW     0.0     0.0
1701                RC    0.04    0.04    0.04    3544   0.006
                    * TSR294
1702                RX       0     100     359     491     535     639     723     950
1703                RY    1600    1598    1596    1592    1592    1594    1596    1600
                    *
                    *

1704                KK   SV284
1705                KO       0       0     0.0       1      22
1706                BA  0.2833
1707                LG   0.335    0.15   7.759   0.098   8.058
```

```
1708          UC   0.567   0.465
              * Natural Time-Area Relation
1709          UA       0       3       5       8      12      20      43      75      90      96
1710          UA     100
              *
              *
              * Combines SV284 and RSV286
1                                          HEC-1 INPUT
PAGE 57

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


1711          KK  CSV284
1712          KO       0       0     0.0       0      22
1713          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

1714          KK  RSV284
1715          KO       0       0     0.0       0      22
1716          RS       4    FLOW     0.0     0.0
1717          RC    0.04    0.04    0.04   12013  0.0064
              * TSR294
1718          RX       0     100     359     491     535     639     723     950
1719          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
              * ---------------------------------------------------------------------------
              * ------------------------- BEGIN 03-17-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              *

1720          KK   SV272
1721          KO       0       0     0.0       1      22
1722          BA  1.2009
1723          LG   0.345   0.202   6.541   0.152   5.693
1724          UC   0.921   0.680
              * Natural Time-Area Relation
1725          UA       0       3       5       8      12      20      43      75      90      96
1726          UA     100
              *
              *

1727          KK  C272_2
1728          HC       2
              *
              *

1729          KK   SV290
1730          KO       0       0     0.0       1      22
1731          BA   0.814
1732          LG   0.349   0.229   6.207   0.172   5.276
1733          UC   0.854   0.680
              * Natural Time-Area Relation
1734          UA       0       3       5       8      12      20      43      75      90      96
1735          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1736          KK  RSV290
1737          KO       0       0     0.0       0      22
1738          RS       5    FLOW     0.0     0.0
1739          RC    0.04    0.04    0.04   13500  0.0063
              * TSR294
1740          RX       0     100     359     491     535     639     723     950
1                                          HEC-1 INPUT
PAGE 58

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

1741          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
```

```
                 * *** Changed from HC=3 to 2 * ***
                 * Combines SV272, RSV290 and RSV284

1742             KK  CSV272
1743             KO       0       0     0.0       0      22
1744             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1745             KK  RSV272
1746             KO       0       0     0.0       0      22
1747             RS       1    FLOW     0.0     0.0
1748             RC    0.04    0.04    0.04    1628   0.006
                 * SVTS50_1
1749             RX       0      48     170     175     182     198     264     338
1750             RY    1530    1528    1526    1520    1520    1526    1528    1530
                 *

1751             KK   SV276
1752             KO       0       0     0.0       1      22
1753             BA  0.9232
1754             LG   0.347    0.15   7.339   0.109   5.499
1755             UC   0.958   0.870
                 * Natural Time-Area Relation
1756             UA       0       3       5       8      12      20      43      75      90      96
1757             UA     100
                 *

1758             KK  C276_2
1759             HC       2
                 *

1760             KK   SV294
1761             KO       0       0     0.0       1      22
1762             BA  2.6465
1763             LG   0.349    0.15   8.572   0.068   5.247
1764             UC   1.242   0.972
                 * Natural Time-Area Relation
1765             UA       0       3       5       8      12      20      43      75      90      96
1766             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1767             KK  RSV294
1768             KO       0       0     0.0       0      22
1769             RS       5    FLOW     0.0     0.0
1770             RC    0.04    0.04    0.04   14316  0.0063
                 * TSR294
1771             RX       0     100     359     491     535     639     723     950
1772             RY    1600    1598    1596    1592    1592    1594    1596    1600
                 *
                 *
                 * *** commented out for the delineation of 3 West * ***
                 * KKC276_1
                 * HC     2
                 *
                 * * combine was changed from combing 3 to 2 * *
                 * *** Combines SV276, RSV294 and RSV272 * ***
1                                          HEC-1 INPUT
PAGE 59

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

1773             KK  CSV276
1774             KO       0       0     0.0       0      22
1775             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1776             KK  RSV276
```

```
1777          KO       0       0     0.0       0      22
1778          RS       1    FLOW     0.0     0.0
1779          RC    0.04    0.04    0.04    1016  0.0042
              * SVTS50_1
1780          RX       0      48     170     175     182     198     264     338
1781          RY    1530    1528    1526    1520    1520    1526    1528    1530
              *
              *

1782          KK   SV280
1783          KO       0       0     0.0       1      22
1784          BA  1.0563
1785          LG   0.336    0.15   8.395   0.075   6.985
1786          UC   1.088   1.042
              * Natural Time-Area Relation
1787          UA       0       3       5       8      12      20      43      75      90      96
1788          UA     100
              *

1789          KK  C280_1
1790          HC       2
              *
              * *** Changed from combining 3 to 2 * ***
              * Combines SV280, RSV276 and RSV298

1791          KK  CSV280
1792          KO       0       0     0.0       0      22
1793          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

1794          KK  RSV280
1795          KO       0       0     0.0       0      22
1796          RS       3    FLOW     0.0     0.0
1797          RC    0.04    0.04    0.04    6288  0.0032
              * SVTS50_1
1798          RX       0      48     170     175     182     198     264     338
1799          RY    1530    1528    1526    1520    1520    1526    1528    1530
              *
              *
1                                          HEC-1 INPUT
PAGE 60

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

1800          KK   SV260
1801          KO       0       0     0.0       1      22
1802          BA  1.2628
1803          LG   0.342   0.229   6.158   0.173   4.892
1804          UC   0.875   0.535
              * Natural Time-Area Relation
1805          UA       0       3       5       8      12      20      43      75      90      96
1806          UA     100
              *

1807          KK  C260_1
1808          HC       2
              *

1809          KK   SV268
1810          KO       0       0     0.0       1      22
1811          BA  1.3755
1812          LG   0.336   0.146   8.834    0.06   5.262
1813          UC   0.908   0.597
              * Natural Time-Area Relation
1814          UA       0       3       5       8      12      20      43      75      90      96
1815          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1816          KK  RSV268
```

```
1817    KO       0       0     0.0       0      22
1818    RS       1    FLOW     0.0     0.0
1819    RC    0.04    0.04    0.04    2946  0.0014
        * SVTS50_1
1820    RX       0      48     170     175     182     198     264     338
1821    RY    1530    1528    1526    1520    1520    1526    1528    1530
        *
        * *** changed from combining 4 to 3 * ***
        * Combines SV260, RSV268, RSV280 and RSV264

1822    KK  CSV260
1823    KO       0       0     0.0       0      22
1824    HC       3
        *
        * ---------------------------------------------------------------------------
        * -------------------------- END 03-17-2005 ----------------------------------
        * ---------------------------------------------------------------------------
        *
        * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP010

1825    KK  SCP010
1826    KO       3       0     0.0       0      22
1827    RS       1    STOR       0
1828    SQ       0      68     808    1963    3413    5110    5291
1829    SE  1537.5    1538    1540    1542    1544    1546  1546.2
1830    SA     9.9    12.5    26.5    59.2   117.5     184   191.9
1831    SE    1537    1538    1540    1542    1544    1546  1546.2
        *
        *
        * ROUTE UPDATED 4/14/04
```



```
                                    HEC-1 INPUT

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


1832    KK  RSV260
1833    KO       0       0     0.0       0      22
1834    RS       5    FLOW     0.0     0.0
1835    RC    0.04    0.04    0.04    6946  0.0049
        * SVTS50_1
1836    RX       0      48     170     175     182     198     264     338
1837    RY    1530    1528    1526    1520    1520    1526    1528    1530
        *
        *

1838    KK   SV220
1839    KO       0       0     0.0       1      22
1840    BA  0.6003
1841    LG    0.32   0.195   6.363   0.159   4.564
1842    UC   0.567   0.326
        * Natural Time-Area Relation
1843    UA       0       3       5       8      12      20      43      75      90      96
1844    UA     100
        *
        *
        * ************************************************************************ *
        * ******************* END OF SUN VALLEY REGION 1 ***************************** *
        * ************************************************************************ *
        *
        *

1845    KK   SV252
1846    KO       0       0     0.0       1      22
1847    BA  0.1472
1848    LG   0.338    0.25   3.861   0.499   8.516
1849    UC   0.517   0.708
        * Natural Time-Area Relation
1850    UA       0       3       5       8      12      20      43      75      90      96
1851    UA     100
        *
        *
        * ROUTE UPDATED 4/14/04
```

```
1852          KK  RSV252
1853          KO       0       0     0.0       0      22
1854          RS       5    FLOW     0.0     0.0
1855          RC    0.04    0.04    0.04    9744  0.0094
              * SVTS10
1856          RX       0     201     393     430     468     473     500     525
1857          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1858          KK   SV254
1859          KO       0       0     0.0       1      22
1860          BA  0.0971
1861          LG    0.35    0.25    3.91   0.491     5.0
1862          UC   0.375   0.421
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE 62

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

1863          UA       0       3       5       8      12      20      43      75      90      96
1864          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1865          KK  RSV254
1866          KO       0       0     0.0       0      22
1867          RS       6    FLOW     0.0     0.0
1868          RC    0.04    0.04    0.04   10928    0.01
              * SVTS10
1869          RX       0     201     393     430     468     473     500     525
1870          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1871          KK   SV219
1872          KO       0       0     0.0       1      22
1873          BA  0.8971
1874          LG    0.33   0.185   6.542   0.148   4.721
1875          UC   0.596   0.379
              * Natural Time-Area Relation
1876          UA       0       3       5       8      12      20      43      75      90      96
1877          UA     100
              *
              *
              * Combines SV219, RSV254 and RSV252

1878          KK  CSV219
1879          KO       0       0     0.0       0      22
1880          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

1881          KK  RSV219
1882          KO       0       0     0.0       0      22
1883          RS       3    FLOW     0.0     0.0
1884          RC    0.04    0.04    0.04    5058  0.0042
              * SVTS10
1885          RX       0     201     393     430     468     473     500     525
1886          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1887          KK   SV251
1888          KO       0       0     0.0       1      22
1889          BA  0.2674
1890          LG    0.35    0.25   3.914    0.49     5.0
1891          UC   0.546   0.597
              * Natural Time-Area Relation
1892          UA       0       3       5       8      12      20      43      75      90      96
1893          UA     100
```

```
                    *
                    *
                    * ROUTE UPDATED 4/14/04
                                                HEC-1 INPUT
PAGE 63

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

1894                KK  RSV251
1895                KO       0       0     0.0       0      22
1896                RS       8    FLOW     0.0     0.0
1897                RC    0.04    0.04    0.04   12592  0.0102
                    * SVTS10
1898                RX       0     201     393     430     468     473     500     525
1899                RY    1542    1541    1540  1538.5    1540    1540    1541    1542
                    *
                    *

1900                KK   SV250
1901                KO       0       0     0.0       1      22
1902                BA  0.1212
1903                LG    0.35    0.25    4.57   0.348     5.0
1904                UC   0.454   0.579
                    * Natural Time-Area Relation
1905                UA       0       3       5       8      12      20      43      75      90      96
1906                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

1907                KK  RSV250
1908                KO       0       0     0.0       0      22
1909                RS       8    FLOW     0.0     0.0
1910                RC    0.04    0.04    0.04   11765  0.0108
                    * SVTS10
1911                RX       0     201     393     430     468     473     500     525
1912                RY    1542    1541    1540  1538.5    1540    1540    1541    1542
                    *
                    *

1913                KK   SV218
1914                KO       0       0     0.0       1      22
1915                BA  1.2862
1916                LG   0.345   0.246   5.599   0.219   4.927
1917                UC   0.863   0.618
                    * Natural Time-Area Relation
1918                UA       0       3       5       8      12      20      43      75      90      96
1919                UA     100
                    *
                    *
                    * Combines SV218, RSV250, RSV251 and RSV219

1920                KK  CSV218
1921                KO       0       0     0.0       0      22
1922                HC       4
                    *
                    *
                    * ROUTE UPDATED 4/14/04
1
                                                HEC-1 INPUT
PAGE 64

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

1923                KK  RSV218
1924                KO       0       0     0.0       0      22
1925                RS       2    FLOW     0.0     0.0
1926                RC    0.04    0.04    0.04    4698  0.0039
                    * SVTS10
1927                RX       0     201     393     430     468     473     500     525
1928                RY    1542    1541    1540  1538.5    1540    1540    1541    1542
                    *
                    *
```

```
1929          KK   SV248
1930          KO       0       0     0.0       1      22
1931          BA  1.2718
1932          LG    0.35   0.357   5.288    0.22  10.629
1933          UC   0.896   0.922
              * Natural Time-Area Relation
1934          UA       0       3       5       8      12      20      43      75      90      96
1935          UA     100
              *
              *
              * Diversion Out: Flow split FS2
              * Flow Split Diversion: Main path to SV244, Diversion to SV246
              * 47% of flow is diverted to SV246

1936          KK    D248
1937          KO       0       0     0.0       0      22
1938          DT   DO248     0.0     0.0
1939          DI       0   10000
1940          DQ       0    4700
              *
              *
              * ROUTE UPDATED 4/14/04

1941          KK  RSV248
1942          KO       0       0     0.0       0      22
1943          RS       3    FLOW     0.0     0.0
1944          RC    0.06   0.035    0.06    7772  0.0137
              * TSR248
1945          RX       0     362     515     618     765     800     820     841
1946          RY    1664    1662    1662    1660    1660    1662    1663    1664
              *
              *

1947          KK   SV244
1948          KO       0       0     0.0       1      22
1949          BA  0.9461
1950          LG    0.35   0.311   6.728   0.137   3.116
1951          UC   1.179   1.388
              * Natural Time-Area Relation
1952          UA       0       3       5       8      12      20      43      75      90      96
1953          UA     100
              *
              *
              * Combines SV244 and RSV248
```

1
PAGE 65

HEC-1 INPUT

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

1954          KK  CSV244
1955          KO       0       0     0.0       0      22
              * Hard Coded
1956          HC       2    1.62
              *
              *

1957          KK   SV246
1958          KO       0       0     0.0       1      22
1959          BA  0.1567
1960          LG    0.35   0.159   7.525   0.101    4.75
1961          UC   0.404   0.439
              * Natural Time-Area Relation
1962          UA       0       3       5       8      12      20      43      75      90      96
1963          UA     100
              *
              *
              * Diversion Recovery: Flow split FS2

1964          KK    D248
1965          KO       0       0     0.0       0      22
1966          DR   DO248
              *
```

```
                 *
                 * ROUTE UPDATED 4/14/4

1967             KK   RD248
1968             KO       0       0     0.0       0      22
1969             RS       2    FLOW     0.0     0.0
1970             RC    0.04    0.04    0.04    4588  0.0164
                 * SVTS10
1971             RX       0     201     393     430     468     473     500     525
1972             RY    1542    1541    1540  1538.5    1540    1540    1541    1542
                 *
                 *
                 * Combines RD248 and SV246

1973             KK  CSV246
1974             KO       0       0     0.0       0      22
                 * Hard Coded
1975             HC       2    0.76
                 *
                 *
                 * Combines CSV246 and CSV244

1976             KK   C216*
1977             KO       0       0     0.0       0      22
1978             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 66

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


1979             KK  RSV244
1980             KO       0       0     0.0       0      22
1981             RS       8    FLOW     0.0     0.0
1982             RC    0.04    0.04    0.04   11106  0.0095
                 * SVTS10
1983             RX       0     201     393     430     468     473     500     525
1984             RY    1542    1541    1540  1538.5    1540    1540    1541    1542
                 *
                 *

1985             KK   SV216
1986             KO       0       0     0.0       1      22
1987             BA  1.6268
1988             LG   0.348    0.25   5.555   0.222   5.678
1989             UC   0.750   0.454
                 * Natural Time-Area Relation
1990             UA       0       3       5       8      12      20      43      75      90      96
1991             UA     100
                 *
                 *
                 * Combines SV216, C216*, and RSV218

1992             KK  CSV216
1993             KO       0       0     0.0       0      22
1994             HC       3
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1995             KK  RSV216
1996             KO       0       0     0.0       0      22
1997             RS       5    FLOW     0.0     0.0
1998             RC    0.04    0.04    0.04    7196  0.0043
                 * SVTS10-Modified X-sect
1999             RX       0     603     795     832     870     875     902     977
2000             RY    1544    1541    1540  1538.5    1540    1540    1541    1544
                 *
                 *
                 * ************************************************************************ *
                 * ******************* END OF SUN VALLEY REGION 2 ***************************** *
```

```
                    * ************************************************************************ *
                    *
                    *
                    * ************************************************************************ *
                    * **************** BEGINNING OF SUN VALLEY REGION 3 ************************** *
                    * ************************************************************************ *
                    *
                    *
1                                                HEC-1 INPUT
PAGE 67

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


        2001        KK   SV236
        2002        KO       0       0     0.0       1      22
        2003        BA  0.5856
        2004        LG   0.344   0.291   4.176   0.446   4.689
        2005        UC   0.558   0.448
                    * Natural Time-Area Relation
        2006        UA       0       3       5       8      12      20      43      75      90      96
        2007        UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

        2008        KK  RSV236
        2009        KO       0       0     0.0       0      22
        2010        RS       8    FLOW     0.0     0.0
        2011        RC    0.04    0.04    0.04    9734  0.0031
                    * SVTS20_1
        2012        RX       0     120     200     240     251     256     425     450
        2013        RY    1498    1497  1496.5    1496    1492    1496    1498    1498
                    *
                    *

        2014        KK   SV240
        2015        KO       0       0     0.0       1      22
        2016        BA  3.6651
        2017        LG    0.35   0.365   5.199   0.235   9.424
        2018        UC   0.925   0.584
                    * Natural Time-Area Relation
        2019        UA       0       3       5       8      12      20      43      75      90      96
        2020        UA     100
                    *
                    *

        2021        KK   SV242
        2022        KO       0       0     0.0       1      22
        2023        BA  0.0939
        2024        LG    0.35   0.304     4.3   0.416   2.308
        2025        UC   0.496   0.756
                    * Natural Time-Area Relation
        2026        UA       0       3       5       8      12      20      43      75      90      96
        2027        UA     100
                    *
                    *
                    * Combines SV242 and SV240

        2028        KK   C242*
        2029        KO       0       0     0.0       0      22
        2030        HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 68

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


        2031        KK   R242*
        2032        KO       0       0     0.0       0      22
        2033        RS       9    FLOW     0.0     0.0
```

```
2034          RC    0.04    0.04    0.04   13351  0.0099
              * SVTS10
2035          RX       0     201     393     430     468     473     500     525
2036          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

2037          KK   SV214
2038          KO       0       0     0.0       1      22
2039          BA  1.8699
2040          LG   0.349   0.249   5.322   0.242   4.982
2041          UC   0.754   0.415
              * Natural Time-Area Relation
2042          UA       0       3       5       8      12      20      43      75      90      96
2043          UA     100
              *
              *
              * Combines SV214, R242*, RSV236, RSV216, SV220 and RSV260

2044          KK  CSV220
2045          KO       0       0     0.0       0      22
2046          HC       6
              *
              *
              * ROUTE UPDATED 4/14/04

2047          KK  RSV220
2048          KO       0       0     0.0       0      22
2049          RS       6    FLOW     0.0     0.0
2050          RC    0.04    0.04    0.04   10623  0.0038
              * SVTS50_2
2051          RX       0     146     251     256     295     305     347     435
2052          RY    1496    1492    1490    1488    1488    1490    1492    1496
              *
              *
              * ************************************************************************ *
              * *************** END OF SUN VALLEY REGION 3 ******************************** *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * **************BEGINNING OF SUN VALLEY REGION 4***************************** *
              * ************************************************************************ *
              *
              *
```

1
PAGE 69

HEC-1 INPUT

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


2053          KK   SV230
2054          KO       0       0     0.0       1      22
2055          BA  0.8513
2056          LG    0.35   0.264   6.169   0.163  10.472
2057          UC   0.363   0.270
              * Natural Time-Area Relation
2058          UA       0       3       5       8      12      20      43      75      90      96
2059          UA     100
              *
              *

2060          KK   SV232
2061          KO       0       0     0.0       1      22
2062          BA  3.0568
2063          LG    0.35    0.35   5.952   0.174    8.61
2064          UC   0.779   0.471
              * Natural Time-Area Relation
2065          UA       0       3       5       8      12      20      43      75      90      96
2066          UA     100
              *
              *
              * Combines SV232 and SV230
```

```
2067          KK   C230*
2068          KO       0       0     0.0       0      22
2069          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

2070          KK   R230*
2071          KO       0       0     0.0       0      22
2072          RS       6    FLOW     0.0     0.0
2073          RC    0.04    0.04    0.04    8744  0.0089
              * SVTS30
2074          RX       0     237     478     580     726     839     890     941
2075          RY    1520    1519    1518    1516    1516    1518    1519    1520
              *
              *

2076          KK   SV212
2077          KO       0       0     0.0       1      22
2078          BA  4.1391
2079          LG   0.348   0.259   4.856   0.299   5.172
2080          UC   0.942   0.529
              * Natural Time-Area Relation
2081          UA       0       3       5       8      12      20      43      75      90      96
2082          UA     100
              *
              *
              * Combines SV212, R230* and RSV220
1                                          HEC-1 INPUT
PAGE 70

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


2083          KK  CSV212
2084          KO       0       0     0.0       0      22
2085          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2086          KK  RSV212
2087          KO       0       0     0.0       0      22
2088          RS       6    FLOW     0.0     0.0
2089          RC    0.04    0.04    0.04    9922   0.005
              * TSR408
2090          RX       0     301     727     900    1200    1413    1590    1949
2091          RY    1370    1369    1368    1368    1368    1368    1369    1370
              *
              *
              * ------------------------------03-09-2005-----------------------------------
              * ---------- SV202 and RSV202 were removed from this point in the model --------
              * ------------------------------------------------------------------------
              *
              *

2092          KK   SV210
2093          KO       0       0     0.0       1      22
2094          BA  0.7184
2095          LG    0.35    0.25   5.921   0.177   9.038
2096          UC   0.329   0.229
              * Natural Time-Area Relation
2097          UA       0       3       5       8      12      20      43      75      90      96
2098          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2099          KK  RSV210
2100          KO       0       0     0.0       0      22
2101          RS      11    FLOW     0.0     0.0
2102          RC    0.04    0.04    0.04   12156  0.0071
              * SVTS40
2103          RX       0      45     175     345     357     386     559     620
```

```
2104          RY    1476  1475.5    1474    1472    1470    1472    1474    1476
              *
              *
              * *****03-09-2005 changed from combining 3 to 2: RSV210 and RSV212**************
              * *** Combines RSV210, RSV202 and RSV212 ***

2105          KK   C210*
2106          KO       0       0     0.0       0      22
2107          HC       2
              *
              *
1                                          HEC-1 INPUT
PAGE 71

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


2108          KK   SV208
2109          KO       0       0     0.0       1      22
2110          BA  1.0673
2111          LG    0.35   0.319   4.511   0.313  16.724
2112          UC   0.971   0.896
              * Natural Time-Area Relation
2113          UA       0       3       5       8      12      20      43      75      90      96
2114          UA     100
              *
              *

2115          KK   SV205
2116          KO       0       0     0.0       1      22
2117          BA  0.5021
2118          LG    0.35   0.277   6.287   0.156  10.092
2119          UC   0.333   0.288
              * Natural Time-Area Relation
2120          UA       0       3       5       8      12      20      43      75      90      96
2121          UA     100
              *
              *
              * Combines SV205 and SV208

2122          KK   C205*
2123          KO       0       0     0.0       0      22
2124          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

2125          KK   R205*
2126          KO       0       0     0.0       0      22
2127          RS       1    FLOW     0.0     0.0
2128          RC    0.04    0.04    0.04    9517  0.0084
              * SVTS40
2129          RX       0      45     175     345     357     386     559     620
2130          RY    1476  1475.5    1474    1472    1470    1472    1474    1476
              *
              *

2131          KK   SV203
2132          KO       0       0     0.0       1      22
2133          BA  0.0759
2134          LG   0.341    0.25   4.122   0.459   7.679
2135          UC   0.258   0.188
              * Natural Time-Area Relation
2136          UA       0       3       5       8      12      20      43      75      90      96
2137          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 72

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

```
2138          KK  RSV203
2139          KO       0       0     0.0       0      22
2140          RS       7    FLOW     0.0     0.0
2141          RC    0.04    0.04    0.04    7461  0.0085
              * SVTS40
2142          RX       0      45     175     345     357     386     559     620
2143          RY    1476  1475.5    1474    1472    1470    1472    1474    1476
              *
              *
              * Combines RSV203, R205* and C210*

2144          KK   C200*
2145          KO       0       0     0.0       0      22
2146          HC       3
              *
              *

2147          KK   SV200
2148          KO       0       0     0.0       1      22
2149          BA  2.2917
2150          LG   0.349    0.25   4.654   0.323   5.221
2151          UC   0.950   0.480
              * Natural Time-Area Relation
2152          UA       0       3       5       8      12      20      43      75      90      96
2153          UA     100
              *
              *
              * Combines SV200, C200* and RIW302

2154          KK  CSV200
2155          KO       0       0     0.0       0      22
2156          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2157          KK  RSV200
2158          KO       0       0     0.0       0      22
2159          RS       5    FLOW     0.0     0.0
2160          RC    0.04    0.04    0.04    5688  0.0047
              * TWTS50-Modified X-sect
2161          RX       0    1860    2043    2145    2155    2287    2532    2814
2162          RY    1419    1417  1414.5    1409    1409    1415  1415.5    1419
              *
              *
              * ************************************************************************ *
              * ************************* END OF SUNVALLEY REGION 4 ************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************* END OF SUNVALLEY SUBAREA ************************* *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ********************* BEGINNING OF TRILBY WASH SUBAREA ********************* *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ********************* BEGINNING OF TRILBY WASH REGION 1 ******************** *
              * ************************************************************************ *
              *
```

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

2163          KK   TW416
2164          KO       0       0     0.0       1      22
2165          BA  0.5883
2166          LG   0.148   0.254   5.761    0.25  55.508
2167          UC   0.929   0.896
              * Urban Time-Area Relation
2168          UA       0       5      16      30      65      77      84      90      94      97
2169          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2170          KK  RTW416
2171          KO       0       0     0.0       0      22
2172          RS      15    FLOW     0.0     0.0
2173          RC    0.04    0.04    0.04   18065  0.0052
              * WITS30
2174          RX       0     216     426     525     583     771    1184    1444
2175          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

2176          KK   TW420
2177          KO       0       0     0.0       1      22
2178          BA  0.8077
2179          LG    0.34    0.25   5.662   0.215   7.606
2180          UC   0.925   0.765
              * Natural Time-Area Relation
2181          UA       0       3       5       8      12      20      43      75      90      96
2182          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2183          KK  RTW420
2184          KO       0       0     0.0       0      22
2185          RS      10    FLOW     0.0     0.0
2186          RC    0.04    0.04    0.04   12733  0.0047
              * WITS30
2187          RX       0     216     426     525     583     771    1184    1444
2188          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

2189          KK   TW412
2190          KO       0       0     0.0       1      22
2191          BA  2.0636
2192          LG   0.332   0.259   5.787   0.198  11.128
2193          UC   1.238   0.925
              * Natural Time-Area Relation
2194          UA       0       3       5       8      12      20      43      75      90      96
2195          UA     100
              *
              *
              * Combines TW412 and RTW420
```



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

2196          KK  CTW412
2197          KO       0       0     0.0       0      22
2198          HC       2
              *
              *

2199          KK   TW414
2200          KO       0       0     0.0       1      22
2201          BA  1.1684
2202          LG   0.347   0.339   5.371   0.216   8.252
```

```
2203          UC   0.329   0.181
              * Natural Time-Area Relation
2204          UA       0       3       5       8      12      20      43      75      90      96
2205          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2206          KK  RTW414
2207          KO       0       0     0.0       0      22
2208          RS       8    FLOW     0.0     0.0
2209          RC    0.04    0.04    0.04   10139  0.0074
              * TSR408
2210          RX       0     301     727     900    1200    1413    1590    1949
2211          RY    1370    1369    1368    1368    1368    1368    1369    1370
              *
              *

2212          KK   TW410
2213          KO       0       0     0.0       1      22
2214          BA  0.3079
2215          LG   0.348    0.25   4.358   0.373   5.568
2216          UC   0.813   0.925
              * Natural Time-Area Relation
2217          UA       0       3       5       8      12      20      43      75      90      96
2218          UA     100
              *
              *
              * Combines TW410 and CTW412

2219          KK  CTW410
2220          KO       0       0     0.0       0      22
2221          HC       2
              *
              *
              * Combines CTW410, CTW412, RTW416 and RSV200

2222          KK   C410*
2223          KO       0       0     0.0       0      22
2224          HC       4
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 75

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


2225          KK  RTW410
2226          KO       0       0     0.0       0      22
2227          RS       8    FLOW     0.0     0.0
2228          RC    0.04    0.04    0.04   11703  0.0047
              * TWTS50-Modified X-sect
2229          RX       0    1860    2043    2145    2155    2287    2532    2814
2230          RY    1419    1417  1414.5    1409    1409    1415  1415.5    1419
              *
              *

2231          KK   TW402
2232          KO       0       0     0.0       1      22
2233          BA  4.9143
2234          LG   0.335   0.258   5.155   0.251  10.365
2235          UC   1.342   0.727
              * Natural Time-Area Relation
2236          UA       0       3       5       8      12      20      43      75      90      96
2237          UA     100
              *
              *
              * Combines TW402, RTW410 and RTW404

2238          KK  CTW402
2239          KO       0       0     0.0       0      22
2240          HC       3
```

```
                 *
                 *
                 * ROUTE UPDATED 4/14/04

2241             KK  RTW402
2242             KO       0       0     0.0       0      22
2243             RS       1    FLOW     0.0     0.0
2244             RC   0.045   0.035   0.045    2375   0.001
                 * McMicken Dam Channel
2245             RX       0      46     101     121     171     181    1421    3621
2246             RY      25      14       4       0       0       4      14      25
                 *
                 *
                 * ************************************************************************ *
                 * ******************** END OF TRILBY WASH REGION 1 ************************ *
                 * ************************************************************************ *
                 *
                 *
                 * ************************************************************************ *
                 * ******************** BEGINNING OF TRILBY WASH REGION 2 ******************** *
                 * ************************************************************************ *
                 *
                 *
1                                                HEC-1 INPUT
PAGE 76

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


2247             KK   TW448
2248             KO       0       0     0.0       1      22
2249             BA  0.3468
2250             LG    0.35   0.133  10.036   0.039   6.419
2251             UC   1.054   1.430
                 * Natural Time-Area Relation
2252             UA       0       3       5       8      12      20      43      75      90      96
2253             UA     100
                 *
                 *
                 * Railroad Diversion: Main path to  CTW446, Diversion to CTW446A
                 * From Structure RR410, See Appendix D.5 for analysis

2254             KK    D448
2255             KO       0       0     0.0       0      22
2256             DT   DO448     0.0     0.0
2257             DI       0      32      72     105     129     144     153     227     381
2258             DQ       0       0       0       0       0       0       0      71     222
                 *
                 *
                 * ROUTE UPDATED 4/14/04

2259             KK  RTW448
2260             KO       0       0     0.0       0      22
2261             RS       5    FLOW     0.0     0.0
2262             RC   0.043   0.035   0.043    8794  0.0095
                 * WITS10
2263             RX       0     360     460     552     627     680     876    1005
2264             RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                 *
                 *

2265             KK  TW446A
2266             KO       0       0     0.0       1      22
2267             BA  0.3372
2268             LG    0.34    0.15    9.19   0.056  19.497
2269             UC   0.975    1.20
                 * Natural Time-Area Relation
2270             UA       0       3       5       8      12      20      43      75      90      96
2271             UA     100
                 *
                 *

2272             KK    D448
2273             DR   DO448
```

```
                    *
                    *
                    * ROUTE UPDATED 4/14/4
                                                HEC-1 INPUT
PAGE 77

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


2274                KK   RD448
2275                KO       0       0     0.0       0      22
2276                RS       1    FLOW     0.0     0.0
2277                RC   0.043   0.035   0.043    1591  0.0126
                    * WITS130
2278                RX       0     400     456     575     620     650     660     682
2279                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
                    * Combines TW446A and RD448

2280                KK   C446A
                    * Hard Coded
2281                HC       2    0.42
                    *
                    *
                    * Railroad Diversion: Main path to  CTW446, Diversion to CTW450
                    * From Structure RR420 and RR430, See Appendix D.5 for analysis

2282                KK   D446A
2283                KO       0       0     0.0       0      22
2284                DT  DO446A     0.0     0.0
2285                DI       0      98     395    2499    6509
2286                DQ       0       0       0    1845    5770
                    *
                    *
                    * ROUTE UPDATED 4/14/4

2287                KK   R446A
2288                KO       0       0     0.0       0      22
2289                RS       4    FLOW     0.0     0.0
2290                RC   0.043   0.035   0.043    6777  0.0086
                    * WITS130
2291                RX       0     400     456     575     620     650     660     682
2292                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *

2293                KK   TW446
2294                KO       0       0     0.0       1      22
2295                BA  0.3542
2296                LG   0.326   0.142   9.967   0.041   11.25
2297                UC   0.621   0.662
                    * Natural Time-Area Relation
2298                UA       0       3       5       8      12      20      43      75      90      96
2299                UA     100
                    *
                    *
                    * Combines R446A, TW446 and RTW448
1                                               HEC-1 INPUT
PAGE 78

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


2300                KK  CTW446
2301                KO       0       0     0.0       0      22
                    * Hard Coded
2302                HC       3    1.04
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2303                KK  RTW446
2304                KO       0       0     0.0       0      22
```

```
2305          RS       4    FLOW     0.0     0.0
2306          RC    0.04    0.04    0.04    6941  0.0086
              * WITS20
2307          RX       0      10     515     673     779     880    1000    1050
2308          RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
              *
              *

2309          KK   TW432
2310          KO       0       0     0.0       1      22
2311          BA  0.8620
2312          LG   0.338   0.282   5.069   0.275   4.909
2313          UC   0.854   0.745
              * Natural Time-Area Relation
2314          UA       0       3       5       8      12      20      43      75      90      96
2315          UA     100
              *
              *
              * Combines TW432 and RTW446

2316          KK  CTW432
2317          KO       0       0     0.0       0      22
2318          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2319          KK  RTW432
2320          KO       0       0     0.0       0      22
2321          RS       7    FLOW     0.0     0.0
2322          RC    0.04    0.04    0.04    8990  0.0062
              * TWTS30
2323          RX       0     219     753     855     880    1110    1198    1380
2324          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *

2325          KK   TW431
2326          KO       0       0     0.0       1      22
2327          BA  0.8732
2328          LG   0.344   0.172   7.534   0.103   5.325
2329          UC   0.875   0.762
              * Natural Time-Area Relation
2330          UA       0       3       5       8      12      20      43      75      90      96
```



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

2331          UA     100
              *
              *
              * Combines TW431 and RTW432

2332          KK  CTW431
2333          KO       0       0     0.0       0      22
2334          HC       2
              *
              *
              * ************************************************************************ *
              * ********************** END OF TRILBY WASH REGION 2 ************************ *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * ******************** BEGINNING TRILBY WASH REGION 3 ************************ *
              * ************************************************************************ *
              *
              *

2335          KK   TW459
2336          KO       0       0     0.0       1      22
2337          BA  1.0449
2338          LG    0.35   0.249   6.011   0.181   5.065
```

```
2339        UC   1.413   1.688
            * Natural Time-Area Relation
2340        UA       0       3       5       8      12      20      43      75      90      96
2341        UA     100
            *
            *
            * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR350 (HWY74 CULVERT)

2342        KK  SSR350
2343        RS       1    STOR       0
2344        SQ       0     468    1350    2550
2345        SA       0      .3    1.99    5.35
2346        SE    2058    2060    2064    2068
            *
            *
            * ROUTE UPDATED 4/14/04

2347        KK  RTW459
2348        KO       0       0     0.0       0      22
2349        RS       2    FLOW     0.0     0.0
2350        RC   0.043   0.035   0.043    6625  0.0133
            * TWTS20
2351        RX       0     386     410     430     450     460     471     928
2352        RY    1965    1964    1962    1960    1960    1962    1964    1965
            *
            *
1                                          HEC-1 INPUT
PAGE 80

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


2353        KK   TW462
2354        KO       0       0     0.0       1      22
2355        BA  0.0798
2356        LG   0.342   0.146   9.779   0.046     7.4
2357        UC   0.296   0.322
            * Natural Time-Area Relation
2358        UA       0       3       5       8      12      20      43      75      90      96
2359        UA     100
            *
            *
            * Diversion Recovery from CPIW380

2360        KK    D380
2361        DR   DO380
            *
            *
            * Route updated 04-15-2004

2362        KK   RD380
2363        KO       0       0     0.0       0      22
2364        RS       1    FLOW     0.0     0.0
2365        RC   0.043   0.035   0.043    1142  0.0035
            * TWTS20-modified X-sect
2366        RX       0     772     796     822     836     846     857    1771
2367        RY    1966    1964    1962    1960    1960    1962    1964    1966
            *
            *
            * Combines TW462 and RD380

2368        KK  CTW462
            * Hard Coded
2369        HC       2    4.02
            *
            *
            * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR330,320 (HWY74 CULVERT)

2370        KK  SSR330
            * Ordinates 1218/1.435/2070 and 2050/2.7405/2072.05 added for stability
2371        RS       1    STOR       0
2372        SQ       0     436    1218    2000    2050    6000
2373        SA       0     .13   1.435    2.74  2.7405    2.75
2374        SE    2064    2068    2070    2072 2072.05    2073
```

```
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2375                KK  RTW462
2376                KO       0       0     0.0       0      22
2377                RS       2    FLOW     0.0     0.0
2378                RC   0.043   0.035   0.043    6520  0.0135
                    * TWTS20
2379                RX       0     386     410     430     450     460     471     928
2380                RY    1965    1964    1962    1960    1960    1962    1964    1965
                    *
                    *
1                                                HEC-1 INPUT
PAGE 81

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


2381                KK  TW450A
2382                KO       0       0     0.0       1      22
2383                BA  0.8811
2384                LG   0.348    0.15   8.086   0.083   5.465
2385                UC   0.917   0.805
                    * Natural Time-Area Relation
2386                UA       0       3       5       8      12      20      43      75      90      96
2387                UA     100
                    *
                    *
                    * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR410,420 (HWY74 CULVERT)

2388                KK  SSR410
2389                RS       1    STOR       0
2390                SQ       0      30     360    1072   10000
2391                SA       0  0.0001    0.88     3.7    3.71
2392                SE  2048.7  2049.8    2054    2058    2060
                    *
                    *
                    * ROUTE UPDATED 4/14/4

2393                KK   R450A
2394                KO       0       0     0.0       0      22
2395                RS       1    FLOW     0.0     0.0
2396                RC   0.043   0.035   0.043    5936  0.0148
                    * WITS10
2397                RX       0     360     460     552     627     680     876    1005
2398                RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                    *
                    *

2399                KK  TW450B
2400                KO       0       0     0.0       1      22
2401                BA  0.4043
2402                LG   0.343    0.15   8.767   0.061   7.095
2403                UC   0.675   0.526
                    * Natural Time-Area Relation
2404                UA       0       3       5       8      12      20      43      75      90      96
2405                UA     100
                    *
                    *
                    * Combines RTW462, RTW459, R450A and TW450B

2406                KK   C450B
2407                HC       4
                    *
                    *
                    * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 82

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


2408                KK   R450B
```

```
2409          KO        0        0      0.0        0       22
2410          RS        8     FLOW      0.0      0.0
2411          RC    0.043    0.035    0.043    18811   0.0122
              * WITS10
2412          RX        0      360      460      552      627      680      876     1005
2413          RY     1753     1750     1749     1749   1747.5   1750.5     1751     1752
              *
              *

2414          KK    TW450
2415          KO        0        0      0.0        1       22
2416          BA   1.2534
2417          LG    0.349     0.15    9.593     0.05    7.331
2418          UC    1.421    1.469
              * Natural Time-Area Relation
2419          UA        0        3        5        8       12       20       43       75       90       96
2420          UA      100
              *
              *

2421          KK    D446A
2422          KO        0        0      0.0        0       22
2423          DR   DO446A
              *
              *
              *
              * ROUTE UPDATED 4/14/4

2424          KK   RD446A
2425          KO        0        0      0.0        0       22
2426          RS        1     FLOW      0.0      0.0
2427          RC    0.043    0.035    0.043     2942   0.0088
              * WITS130
2428          RX        0      400      456      575      620      650      660      682
2429          RY   1396.5     1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *
              * Combines RD446A, TW450 and RD450B

2430          KK   CTW450
2431          KO        0        0      0.0        0       22
              * Hard Coded
2432          HC        3     7.59
              *
              *
              * Railroad Diversion: Main path to CTW444, Diversion to CTW452
              * From Structure RR450, See Appendix D.5 for analysis
```

1
PAGE 83

HEC-1 INPUT

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

2433          KK     D450
2434          KO        0        0      0.0        0       22
2435          DT    DO450      0.0      0.0
2436          DI        0      302     2114     2937     3815
2437          DQ        0        0        0      181      351
              *
              *
              * ROUTE UPDATED 4/14/04

2438          KK   RTW450
2439          KO        0        0      0.0        0       22
2440          RS        4     FLOW      0.0      0.0
2441          RC    0.043    0.035    0.043     7274    0.009
              * WITS10
2442          RX        0      360      460      552      627      680      876     1005
2443          RY     1753     1750     1749     1749   1747.5   1750.5     1751     1752
              *
              *

2444          KK    TW444
2445          KO        0        0      0.0        1       22
```

```
2446          BA  0.3467
2447          LG   0.285   0.226   6.387   0.172  23.066
2448          UC   0.554   0.522
              * Urban Time-Area Relation
2449          UA       0       5      16      30      65      77      84      90      94      97
2450          UA     100
              *
              *
              * Combines TW444 and RTW450

2451          KK  CTW444
2452          KO       0       0     0.0       0      22
              * Hard Coded
2453          HC       2    7.49
              *
              *
              * ROUTE UPDATED 4/14/04

2454          KK  RTW444
2455          KO       0       0     0.0       0      22
2456          RS       1    FLOW     0.0     0.0
2457          RC    0.04    0.04    0.04    2739  0.0092
              * WITS20
2458          RX       0      10     515     673     779     880    1000    1050
2459          RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
              *
              *
1                                          HEC-1 INPUT
PAGE 84

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


2460          KK   TW440
2461          KO       0       0     0.0       1      22
2462          BA  0.1082
2463          LG   0.327   0.317   5.883    0.19     5.0
2464          UC   0.408   0.387
              * Natural Time-Area Relation
2465          UA       0       3       5       8      12      20      43      75      90      96
2466          UA     100
              *
              *
              * Combines TW440 and RTW444

2467          KK  CTW440
2468          KO       0       0     0.0       0      22
2469          HC       2
              *
              *
              * ************************************************************************ *
              * ********************** END OF TRILBY WASH REGION 3 ************************ *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * ******************* BEGINNING OF TRILBY WASH REGION 4 ********************** *
              * ************************************************************************ *
              *
              *

2470          KK   TW460
2471          KO       0       0     0.0       1      22
2472          BA  2.3156
2473          LG    0.35    0.25    5.92   0.188   8.897
2474          UC   1.250   1.132
              * Natural Time-Area Relation
2475          UA       0       3       5       8      12      20      43      75      90      96
2476          UA     100
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR540 (HWY74 CULVERT)

2477          KK  SSR540
```

```
2478          RS       1    STOR       0
2479          SQ       0     168    1280    1350
2480          SA       0     .03    1.25    1.26
2481          SE  2043.2    2044    2048  2049.2
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 85

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


2482          KK  RTW460
2483          KO       0       0     0.0       0      22
2484          RS       2    FLOW     0.0     0.0
2485          RC   0.043   0.035   0.043    4935  0.0166
              * WITS10
2486          RX       0     360     460     552     627     680     876    1005
2487          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2488          KK   TW458
2489          KO       0       0     0.0       1      22
2490          BA  0.6697
2491          LG   0.344    0.15   8.971   0.059   6.768
2492          UC   0.733   0.545
              * Natural Time-Area Relation
2493          UA       0       3       5       8      12      20      43      75      90      96
2494          UA     100
              *
              *
              * Combines TW458 and RTW460

2495          KK  CTW458
2496          KO       0       0     0.0       0      22
2497          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2498          KK  RTW458
2499          KO       0       0     0.0       0      22
2500          RS       2    FLOW     0.0     0.0
2501          RC   0.043   0.035   0.043    3227  0.0135
              * WITS10
2502          RX       0     360     460     552     627     680     876    1005
2503          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2504          KK   TW456
2505          KO       0       0     0.0       1      22
2506          BA  0.1763
2507          LG    0.35   0.249   6.009   0.183     5.0
2508          UC   0.746   0.936
              * Natural Time-Area Relation
2509          UA       0       3       5       8      12      20      43      75      90      96
2510          UA     100
              *
              *
              * Combines TW456 and RTW458
1                                          HEC-1 INPUT
PAGE 86

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


2511          KK  CTW456
2512          KO       0       0     0.0       0      22
2513          HC       2
              *
              *
```

```
                 * ROUTE UPDATED 4/14/04

2514             KK  RTW456
2515             KO       0       0     0.0       0      22
2516             RS       2    FLOW     0.0     0.0
2517             RC   0.043   0.035   0.043    4821   0.012
                 * WITS10
2518             RX       0     360     460     552     627     680     876    1005
2519             RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                 *
                 *

2520             KK   TW454
2521             KO       0       0     0.0       1      22
2522             BA  0.3557
2523             LG    0.35    0.25   5.253    0.25   5.103
2524             UC   1.250   1.780
                 * Natural Time-Area Relation
2525             UA       0       3       5       8      12      20      43      75      90      96
2526             UA     100
                 *
                 *
                 * Combines TW454 and RTW456

2527             KK  CTW454
2528             KO       0       0     0.0       0      22
2529             HC       2
                 *
                 *
                 * Diversion Out: Flow split FS3
                 * Flow Split Diversion: Main path to TW452, Diversion to TW485
                 * 64% of flow is diverted to TW485

2530             KK    D454
2531             KO       0       0     0.0       0      22
2532             DT   DO454     0.0     0.0
2533             DI       0   10000
2534             DQ       0    6400
                 *
                 *
                 * ROUTE UPDATED 4/14/04

2535             KK  RTW454
2536             KO       0       0     0.0       0      22
2537             RS      10    FLOW     0.0     0.0
2538             RC   0.043   0.035   0.043   13093  0.0103
                 * WITS10
2539             RX       0     360     460     552     627     680     876    1005
2540             RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                 *
                 *
1                                                HEC-1 INPUT
PAGE 87

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


2541             KK  TW452A
2542             KO       0       0     0.0       1      22
2543             BA  1.0764
2544             LG   0.349    0.15   7.883   0.088   5.286
2545             UC   0.963   0.842
                 * Natural Time-Area Relation
2546             UA       0       3       5       8      12      20      43      75      90      96
2547             UA     100
                 *
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR450,460 (HWY74 CULVERT)

2548             KK  SSR450
2549             RS       1    STOR       0
2550             SQ       0     330    1120    1850    2600
2551             SA       0     .38    1.28    3.27    5.83
2552             SE    2032    2036    2040    2044    2048
```

```
                 *
                 *
                 * ROUTE UPDATED 4/14/4

2553             KK   R452A
2554             KO       0       0     0.0       0      22
2555             RS      11    FLOW     0.0     0.0
2556             RC   0.043   0.035   0.043   16523   0.014
                 * WITS10
2557             RX       0     360     460     552     627     680     876    1005
2558             RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                 *
                 *

2559             KK  TW452B
2560             KO       0       0     0.0       1      22
2561             BA  1.0314
2562             LG   0.349    0.15   7.745   0.093   5.326
2563             UC   1.213   1.159
                 * Natural Time-Area Relation
2564             UA       0       3       5       8      12      20      43      75      90      96
2565             UA     100
                 *
                 *
                 * Combines R452A, RTW454 and TW452B

2566             KK   C452B
2567             KO       0       0     0.0       0      22
                 * Hard Coded
2568             HC       3    3.38
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 88

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

2569             KK   R452B
2570             KO       0       0     0.0       0      22
2571             RS       4    FLOW     0.0     0.0
2572             RC   0.043   0.035   0.043    9296  0.0084
                 * WITS10
2573             RX       0     360     460     552     627     680     876    1005
2574             RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                 *
                 *

2575             KK   TW452
2576             KO       0       0     0.0       1      22
2577             BA  0.4617
2578             LG   0.341   0.142    9.85   0.044   7.586
2579             UC   1.025   1.087
                 * Natural Time-Area Relation
2580             UA       0       3       5       8      12      20      43      75      90      96
2581             UA     100
                 *
                 *

2582             KK    D450
2583             KO       0       0     0.0       0      22
2584             DR   DO450
                 *
                 *
                 *
                 * ROUTE UPDATED 4/14/4

2585             KK   RD450
2586             KO       0       0     0.0       0      22
2587             RS       1    FLOW     0.0     0.0
2588             RC   0.043   0.035   0.043    2017  0.0059
                 * WITS130
2589             RX       0     400     456     575     620     650     660     682
```

```
2590          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD450, TW452, R452B

2591          KK  CTW452
2592          KO       0       0     0.0       0      22
              * Hard Coded
2593          HC       3    4.29
              *
              *
              * ROUTE UPDATED 4/14/04

2594          KK  RTW452
2595          KO       0       0     0.0       0      22
2596          RS       6    FLOW     0.0     0.0
2597          RC    0.04    0.04    0.04    8151  0.0099
              * WITS20
2598          RX       0      10     515     673     779     880    1000    1050
1                                          HEC-1 INPUT
PAGE 89

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

2599          RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
              *
              *

2600          KK   TW442
2601          KO       0       0     0.0       1      22
2602          BA  0.3766
2603          LG    0.32   0.227   6.986   0.123   8.387
2604          UC   0.596   0.542
              * Urban Time-Area Relation
2605          UA       0       5      16      30      65      77      84      90      94      97
2606          UA     100
              *
              *
              * Combines TW442 and RTW452

2607          KK  CTW442
2608          KO       0       0     0.0       0      22
2609          HC       2
              *
              *
              * Combines CTW442 and CTW440

2610          KK   C442*
2611          KO       0       0     0.0       0      22
2612          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

2613          KK   R442*
2614          KO       0       0     0.0       0      22
2615          RS       6    FLOW     0.0     0.0
2616          RC    0.04    0.04    0.04    9088  0.0071
              * WITS20
2617          RX       0      10     515     673     779     880    1000    1050
2618          RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
              *
              *
              * ************************************************************************ *
              * **********************END OF TRILBY WASH REGION 4 ************************** *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * ****************** BEGINNING OF TRILBY WASH REGION 5 ********************** *
              * ************************************************************************ *
              *
              *
```

```
1                                                    HEC-1 INPUT
PAGE 90

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

2619          KK   TW434
2620          KO       0       0     0.0       1      22
2621          BA  0.5690
2622          LG   0.352   0.261   5.746   0.208   5.068
2623          UC   0.750   0.666
              * Natural Time-Area Relation
2624          UA       0       3       5       8      12      20      43      75      90      96
2625          UA     100
              *
              *
              * ---------------------------------------------------------------------------
              * ------------------------------- 03-11-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              *

2626          KK  C434_1
2627          HC       2
              * *** This CP was changed from combining 3 to 2 [C434_1 & CTW431]
              * Combines TW434, R442* and CTW431

2628          KK  CTW434
2629          KO       0       0     0.0       0      22
2630          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2631          KK  RTW434
2632          KO       0       0     0.0       0      22
2633          RS       5    FLOW     0.0     0.0
2634          RC    0.04    0.04    0.04    7363  0.0046
              * TWTS30
2635          RX       0     219     753     855     880    1110    1198    1380
2636          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *
              * *** This basin has been moved for the delineation of 2 West *** *

2637          KK   TW430
2638          KO       0       0     0.0       1      22
2639          BA  2.4917
2640          LG   0.334   0.209    6.52    0.15   5.389
2641          UC   0.792   0.386
              * Natural Time-Area Relation
2642          UA       0       3       5       8      12      20      43      75      90      96
2643          UA     100
              *

2644          KK  C430_2
2645          HC       2
              *
1                                                    HEC-1 INPUT
PAGE 91

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

2646          KK   TW436
2647          KO       0       0     0.0       1      22
2648          BA  0.6744
2649          LG   0.312   0.171   7.041   0.126  14.794
2650          UC   0.633   0.473
              * Urban Time-Area Relation
2651          UA       0       5      16      30      65      77      84      90      94      97
2652          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
2653          KK  RTW436
2654          KO       0       0     0.0       0      22
2655          RS      10    FLOW     0.0     0.0
2656          RC    0.04    0.04    0.04   13449  0.0051
              * TWTS30
2657          RX       0     219     753     855     880    1110    1198    1380
2658          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *
              * *** This was commented out for the delineation of 2 West *** *
              * This concentration point was added to delineate 2 West tributary-2
              * KKC430_1
              * HC     2
              *

2659          KK   TW429
2660          KO       0       0     0.0       1      22
2661          BA  0.5553
2662          LG   0.321   0.149   8.256   0.078   7.695
2663          UC   0.746   0.638
              * Urban Time-Area Relation
2664          UA       0       5      16      30      65      77      84      90      94      97
2665          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2666          KK  RTW429
2667          KO       0       0     0.0       0      22
2668          RS       2    FLOW     0.0     0.0
2669          RC    0.04    0.04    0.04    3703   0.001
              * TSR429
2670          RX       0      29      86     123     195     577     756    1133
2671          RY    1552    1552    1550    1546    1546    1548    1550    1556
              *
              *
              * *** This was changed from combining 4 to 3 *** *
              * Combines RTW429, TW430, RTW436 and RTW434
1                                          HEC-1 INPUT
PAGE 92

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


2672          KK   C430*
2673          KO       0       0     0.0       0      22
2674          HC       3
              * ------------------------------------------------------------------------
              * ------------------------------- 03-11-2005 ---------------------------------
              * ------------------------------------------------------------------------
              *
              *
              * ************************************************************************ *
              * ****************** BEGINNING OF TRILBY WASH REGION 6 ********************** *
              * ************************************************************************ *
              *
              *
              * ------------------------------------------------------------------------
              * ------------------------------------------------------------------------
              * ---------------------------- Begin 1-24-2005 edits  ------------------------
              * ------------------------------------------------------------------------
              * ------------------------------------------------------------------------
              *
              *
              * Diversion Recovery: Flow split FS3

2675          KK    D454
2676          KO       0       0     0.0       0      22
2677          DR   DO454
              *
              *
              * ROUTE UPDATED 4/14/4
```

```
2678          KK   RD454
2679          KO       0       0     0.0       0      22
2680          RS       1    FLOW     0.0     0.0
2681          RC   0.043   0.035   0.043    3342  0.0136
              * WITS90_2
2682          RX       0      89     186     233     287     396     484     597
2683          RY    1823  1822.5    1821    1819    1817  1819.5  1820.5  1822.5
              *
              *

2684          KK   TW485
2685          KO       0       0     0.0       1      22
2686          BA  2.3728
2687          LG   0.348   0.251   5.786   0.199   5.349
2688          UC   1.013   0.803
              * Natural Time-Area Relation
2689          UA       0       3       5       8      12      20      43      75      90      96
2690          UA     100
              *
              *
1                                                HEC-1 INPUT
PAGE 93

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


2691          KK  WI576A
2692          KO       0       0     0.0       1      22
2693          BA  1.2238
2694          LG   0.349    0.25    5.97   0.185   7.045
2695          UC   1.083   1.199
              * Natural Time-Area Relation
2696          UA       0       3       5       8      12      20      43      75      90      96
2697          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

2698          KK   R576A
2699          KO       0       0     0.0       0      22
2700          RS       6    FLOW     0.0     0.0
2701          RC   0.043   0.035   0.043    8797  0.0168
              * WITS10
2702          RX       0     360     460     552     627     680     876    1005
2703          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2704          KK  WI576B
2705          KO       0       0     0.0       1      22
2706          BA  0.4631
2707          LG   0.346    0.25   5.665   0.212   6.275
2708          UC   0.817   0.711
              * Natural Time-Area Relation
2709          UA       0       3       5       8      12      20      43      75      90      96
2710          UA     100
              *
              *
              * Combines WI576B and R576A

2711          KK   C576B
2712          KO       0       0     0.0       0      22
2713          HC       2
              *
              *
              * Diversion Out: Flow split FS5
              * Flow Split Diversion: Main path to TW485, Diversion to CWI576

2714          KK   D576B
2715          KO       0       0     0.0       0      21
2716          DT  DO576B     0.0     0.0
2717          DI       0   10000
2718          DQ       0    4000
              *
```

```
                    *
                    * ROUTE UPDATED 4/14/4
                                                HEC-1 INPUT
PAGE 94

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


2719                KK   R576B
2720                KO       0       0     0.0       0      22
2721                RS      16    FLOW     0.0     0.0
2722                RC   0.043   0.035   0.043   18394  0.0114
                    * WITS10
2723                RX       0     360     460     552     627     680     876    1005
2724                RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                    *
                    *
                    * Combines R576B and TW485

2725                KK  C485_1
2726                KO       0       0     0.0       0      21
                    * Hard Coded
2727                HC       2    3.39
                    *
                    * Combines C485_1 and RD454

2728                KK  CTW485
2729                KO       0       0     0.0       0      21
                    * Hard Coded
2730                HC       2    5.64
                    *
                    *
                    * ---------------------------------------------------------------------------
                    * ---------------------------------------------------------------------------
                    * ---------------------------- End 1-24-2005 edits   -------------------------
                    * ---------------------------------------------------------------------------
                    * ---------------------------------------------------------------------------
                    * ROUTE UPDATED 4/14/04

2731                KK  RTW485
2732                KO       0       0     0.0       0      22
2733                RS       1    FLOW     0.0     0.0
2734                RC    0.04    0.04    0.04    1831  0.0066
                    * TSR482
2735                RX       0     102     478     535     709     892    1441    1649
2736                RY    1610    1608    1608    1606    1606    1608    1608    1610
                    *
                    *

2737                KK   TW484
2738                KO       0       0     0.0       1      22
2739                BA  0.3476
2740                LG   0.301   0.249    6.01   0.191  18.414
2741                UC   0.733   0.830
                    * Urban Time-Area Relation
2742                UA       0       5      16      30      65      77      84      90      94      97
2743                UA     100
                    *
                    *
                    * Combines TW484 and RTW485
1                                               HEC-1 INPUT
PAGE 95

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


2744                KK  CTW484
2745                KO       0       0     0.0       0      22
2746                HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2747                KK  RTW484
```

```
2748          KO       0       0     0.0       0      22
2749          RS       7    FLOW     0.0     0.0
2750          RC    0.04    0.04    0.04   10402  0.0085
              * TSR482
2751          RX       0     102     478     535     709     892    1441    1649
2752          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *

2753          KK   TW480
2754          KO       0       0     0.0       1      22
2755          BA  0.7538
2756          LG   0.316   0.166   7.274   0.112  11.804
2757          UC   0.700   0.543
              * Urban Time-Area Relation
2758          UA       0       5      16      30      65      77      84      90      94      97
2759          UA     100
              *
              * ------------------------------------------------------------------------------
              * ------------------------ BEGIN 03-25-2005 ------------------------------------
              * ------------------------------------------------------------------------------
              *
              * Combines TW480 and RTW484
              * KKC480_1
              * KO     0       0     0.0       0      22
              * HC     2
              * ------------------------------------------------------------------------------
              * ------------------------- END 03-25-2005 -------------------------------------
              * ------------------------------------------------------------------------------
              *

2760          KK  WI580A
2761          KO       0       0     0.0       1      22
2762          BA  2.7850
2763          LG   0.349   0.216   6.359   0.161   9.712
2764          UC   1.033   0.768
              * Natural Time-Area Relation
2765          UA       0       3       5       8      12      20      43      75      90      96
2766          UA     100
              *
              *
1                                          HEC-1 INPUT
PAGE 96

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

2767          KK  WI580B
2768          KO       0       0     0.0       1      22
2769          BA  0.6285
2770          LG    0.35   0.251   5.837   0.193  14.022
2771          UC   0.671   0.722
              * Natural Time-Area Relation
2772          UA       0       3       5       8      12      20      43      75      90      96
2773          UA     100
              *
              *
              * Diversion Out: Flow split FS4
              * Flow Split Diversion: Main path to C580A, Diversion to CWI578

2774          KK   D580B
2775          KO       0       0     0.0       0      22
2776          DT  DO580B     0.0     0.0
2777          DI       0   10000
2778          DQ       0    4600
              *
              *
              * ROUTE UPDATED 4/14/4

2779          KK   R580B
2780          KO       0       0     0.0       0      22
2781          RS       5    FLOW     0.0     0.0
2782          RC   0.043   0.035   0.043    8181  0.0203
              * WITS10
```

```
2783          RX       0     360     460     552     627     680     876    1005
2784          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *
              * Combines R580B and WI580A                    /

2785          KK   C580A
2786          KO       0       0     0.0       0      22
              * Hard Coded
2787          HC       2    3.13
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR630 (HWY74 CULVERT)

2788          KK  SSR630
2789          RS       1    STOR       0
2790          SQ       0      84     840    1710   10000
2791          SA       0     .04     .21    2.72    2.73
2792          SE  2015.5    2016    2020    2024    2026
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 97

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


2793          KK   R580A
2794          KO       0       0     0.0       0      22
2795          RS      14    FLOW     0.0     0.0
2796          RC   0.043   0.035   0.043   21213  0.0091
              * WITS10
2797          RX       0     360     460     552     627     680     876    1005
2798          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2799          KK   WI580
2800          KO       0       0     0.0       1      22
2801          BA  1.3195
2802          LG   0.348    0.25   5.076   0.272   5.692
2803          UC   0.642   0.404
              * Natural Time-Area Relation
2804          UA       0       3       5       8      12      20      43      75      90      96
2805          UA     100
              *
              *
              * Diversion Recovery: Flow split FS4

2806          KK   D580B
2807          KO       0       0     0.0       0      22
2808          DR  DO580B
              *
              *
              * ROUTE UPDATED 4/14/4

2809          KK  RD580B
2810          KO       0       0     0.0       0      22
2811          RS       6    FLOW     0.0     0.0
2812          RC   0.043   0.035   0.043    9430  0.0199
              * WITS90_1
2813          RX       0      50     125     200     230     250     260     400
2814          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *

2815          KK   WI578
2816          KO       0       0     0.0       1      22
2817          BA  0.4841
2818          LG   0.348   0.208   6.424   0.157   5.662
2819          UC   0.838   0.842
              * Natural Time-Area Relation
2820          UA       0       3       5       8      12      20      43      75      90      96
```

```
2821          UA     100
              *
              *
              * Combines WI578 and RD580B
1                                          HEC-1 INPUT
PAGE 98

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


2822          KK  CWI578
2823          KO       0       0     0.0       0      22
              * Hard Coded
2824          HC       2    0.77
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR700,720 (HWY74 CULVERT)

2825          KK  SSR700
2826          RS       1    STOR       0
2827          SQ       0     940    1040
2828          SA       0     4.4     5.9
2829          SE  1992.4    2004    2005
              *
              *
              * ROUTE UPDATED 4/14/04

2830          KK  RWI578
2831          KO       0       0     0.0       0      22
2832          RS       8    FLOW     0.0     0.0
2833          RC   0.043   0.035   0.043   12424  0.0132
              * WITS90_1
2834          RX       0      50     125     200     230     250     260     400
2835          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *
              * Combines RWI578, WI580 and R580A

2836          KK  CWI580
2837          KO       0       0     0.0       0      21
2838          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2839          KK  RWI580
2840          KO       0       0     0.0       0      22
2841          RS       5    FLOW     0.0     0.0
2842          RC   0.043   0.035   0.043    8541  0.0112
              * WITS10
2843          RX       0     360     460     552     627     680     876    1005
2844          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              * ---------------------------------------------------------------------------
              * ------------------------ BEGIN 03-19-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *

2845          KK   WI576
2846          KO       0       0     0.0       1      21
2847          BA  1.1801
2848          LG   0.338   0.274   4.615   0.339     5.0
2849          UC   0.896   0.794
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE 99

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

2850          UA       0       3       5       8      12      20      43      75      90      96
2851          UA     100
              *

2852          KK  C576_2
```

```
2853          HC       2
              *
              * Diversion Recovery: Flow split FS5

2854          KK   D576B
2855          KO       0       0     0.0       0      22
2856          DR  DO576B
              *
              *
              * ROUTE UPDATED 4/14/4

2857          KK  RD576B
2858          KO       0       0     0.0       0      22
2859          RS       9    FLOW     0.0     0.0
2860          RC   0.043   0.035   0.043   13552  0.0118
              * WITS10
2861          RX       0     360     460     552     627     680     876    1005
2862          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              * KKC576_1
              * HC     2    1.86
              *
              * *** changed from combing 3 to 2 * ***
              * Combines WI576, RD576B and RWI580

2863          KK  CWI576
2864          KO       0       0     0.0       0      22
              * Hard Coded
2865          HC       2    7.07
              *
              * ------------------------------------------------------------------------------
              * ------------------------- BEGIN 03-19-2005 ----------------------------------
              * ------------------------------------------------------------------------------
              *
              * Diversion Out: Flow split diversion FS16
              * This split was determined using FLO-2D.  The model is titled "EAST" and
              * details and documentation about the model are contained in the Appendix D 5.4.
              * Flow Split Diversion, Main path to TW482, Diversion to CWI560

2866          KK    D576
2867          KO       0       0     0.0       0      22
2868          DT   DO576     0.0     0.0
2869          DI       0      27      52      67      80     119     145     200     254     411
2870          DI     685     703     849    1102    1268    1395    1449    3000
2871          DQ       0      13      19      23      25      30      37      38      43     108
2872          DQ     302     303     432     577     728     791     809    1675
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE100

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


2873          KK  RWI576
2874          KO       0       0     0.0       0      22
2875          RS       5    FLOW     0.0     0.0
2876          RC   0.043   0.035   0.043    8726  0.0098
              * WITS10
2877          RX       0     360     460     552     627     680     876    1005
2878          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *
              *

2879          KK   TW482
2880          KO       0       0     0.0       1      21
2881          BA  0.7564
2882          LG   0.334   0.254   5.187   0.262   8.939
2883          UC   0.704   0.548
              * Natural Time-Area Relation
2884          UA       0       3       5       8      12      20      43      75      90      96
2885          UA     100
```

```
                 *
                 *
                 * Combines TW482 and RWI576

2886             KK  CTW482
2887             KO       0       0     0.0       0      22
                 * Hard Coded
2888             HC       2    3.88
                 *
                 *
                 * Railroad Diversion: Main path to CTW480, Diversion to CWI582
                 * From Structure RR520, See Appendix D.5 for analysis

2889             KK    D482
2890             KO       0       0     0.0       0      22
2891             DT   DO482     0.0     0.0
2892             DI       0       6     370    1098    2131    2935
2893             DQ       0       0       0       0       0     178
                 *
                 *
                 * ROUTE UPDATED 4/14/04

2894             KK  RTW482
2895             KO       0       0     0.0       0      22
2896             RS       6    FLOW     0.0     0.0
2897             RC    0.04    0.04    0.04    7471  0.0078
                 * TSR482
2898             RX       0     102     478     535     709     892    1441    1649
2899             RY    1610    1608    1608    1606    1606    1608    1608    1610
                 *
                 * ---------------------------------------------------------------------------
                 * ------------------------ BEGIN 03-25-2005 ----------------------------------
                 * ---------------------------------------------------------------------------
1                                                HEC-1 INPUT
PAGE101

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


2900             KK  C480_4
2901             HC       2
                 * ---------------------------------------------------------------------------
                 * --------------------------END 03-25-2005 ----------------------------------
                 * ---------------------------------------------------------------------------
                 *
                 * Combines C480_1 and RTW482

2902             KK  CTW480
2903             KO       0       0     0.0       0      22
2904             HC       2
                 *
                 *
                 * Diversion Out
                 * Flow Split Diversion: Main path to TW478, Diversion to WI584
                 * 95% of flow is diverted to IW356

2905             KK    D480
2906             KO       0       0     0.0       0      22
2907             DT   DO480
2908             DI       0   10000
2909             DQ       0    9500
                 *
                 *
                 * ROUTE UPDTAED 4/14/04

2910             KK  RTW480
2911             KO       0       0     0.0       0      22
2912             RS       2    FLOW     0.0     0.0
2913             RC    0.04    0.04    0.04    4817  0.0083
                 * TSR482
2914             RX       0     102     478     535     709     892    1441    1649
2915             RY    1610    1608    1608    1606    1606    1608    1608    1610
                 *
                 *
```

```
2916          KK   TW478
2917          KO       0       0     0.0       1      22
2918          BA  0.2625
2919          LG   0.329   0.193   6.512   0.151   5.664
2920          UC   0.458   0.333
              * Urban Time-Area Relation
2921          UA       0       5      16      30      65      77      84      90      94      97
2922          UA     100
              *
              *
              * Combines TW478 and RTW480

2923          KK  CTW478
2924          KO       0       0     0.0       0      22
2925          HC       2    0.79
              *
              *
              * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE102

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


2926          KK  RTW478
2927          KO       0       0     0.0       0      22
2928          RS       3    FLOW     0.0     0.0
2929          RC    0.04    0.04    0.04    5969  0.0013
              * TSR478
2930          RX       0      10      22      30     126     506     751    1085
2931          RY    1550    1549    1548    1546    1546    1548    1550    1552
              *
              *
              * ************************************************************************ *
              * ******************** END OF TRILBY WASH REGION 6 ************************ *
              * ************************************************************************ *
              *
              *
              * Combines RTW478 and C430*

2932          KK  CTW430
2933          KO       0       0     0.0       0      22
2934          HC       2
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP040

2935          KK  SCP040
2936          KO       3       0     0.0       0      22
2937          RS       1    STOR       0
2938          SQ       0     367    1560    3214    3881   27635
2939          SE  1546.8    1548    1550    1552  1552.7    1554
2940          SA    22.1    37.1    61.1   105.1   160.8   181.3
2941          SE    1546  1546.8    1546    1550    1552  1552.7
              *
              *
              * ROUTE UPDATED 4/14/04

2942          KK  RTW430
2943          KO       0       0     0.0       0      22
2944          RS       1    FLOW     0.0     0.0
2945          RC    0.04    0.04    0.04   10141  0.0057
              * WITS30
2946          RX       0     216     426     525     583     771    1184    1444
2947          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

2948          KK   TW418
2949          KO       0       0     0.0       1      22
2950          BA  1.3681
2951          LG   0.219   0.178   6.692   0.161  34.138
2952          UC   0.833   0.491
              * Natural Time-Area Relation
```

```
2953          UA       0       3       5       8      12      20      43      75      90      96
2954          UA     100
              *
              *
              * Combines TW418 and RTW430
1                                          HEC-1 INPUT
PAGE103

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


2955          KK  CTW418
2956          KO       0       0     0.0       0      22
2957          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2958          KK  RTW418
2959          KO       0       0     0.0       0      22
2960          RS       1    FLOW     0.0     0.0
2961          RC    0.04    0.04    0.04    7044  0.0057
              * WITS30
2962          RX       0     216     426     525     583     771    1184    1444
2963          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *
              * ------------------------------------------------------------------------------
              * ------------------------------------------------------------------------------
              * ---------------------------- Begin 01-17-2005 edits ---------------------------
              * ------------------------------------------------------------------------------
              * ------------------------------------------------------------------------------
              *
              *

2964          KK   TW422
2965          KO       0       0     0.0       1      22
2966          BA  0.7031
2967          LG   0.293   0.287   5.537   0.221  26.254
2968          UC   0.908   0.802
              * Natural Time-Area Relation
2969          UA       0       3       5       8      12      20      43      75      90      96
2970          UA     100
              *
              * Combines TW422 and RTW418

2971          KK  C422_1
2972          KO       0       0     0.0       0      22
2973          HC       2
              *

2974          KK   TW424
2975          KO       0       0     0.0       1      22
2976          BA  1.4966
2977          LG   0.313   0.161   6.851   0.145  10.935
2978          UC   0.617   0.277
              * Urban Time-Area Relation
2979          UA       0       5      16      30      65      77      84      90      94      97
2980          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE104

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


2981          KK  RTW424
2982          KO       0       0     0.0       0      22
2983          RS       3    FLOW     0.0     0.0
2984          RC    0.04    0.04    0.04    5625  0.0052
              * WITS30
2985          RX       0     216     426     525     583     771    1184    1444
```

```
2986          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *
              * Combines RTW424 and C422_1

2987          KK  CTW422
2988          KO       0       0     0.0       0      22
2989          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2990          KK  RTW422
2991          KO       0       0     0.0       0      22
2992          RS      17    FLOW     0.0     0.0
2993          RC    0.04    0.04    0.04   22821  0.0037
              * WITS30
2994          RX       0     216     426     525     583     771    1184    1444
2995          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

2996          KK   TW400
2997          KO       0       0     0.0       1      22
2998          BA  4.2708
2999          LG   0.313   0.267    5.32   0.244   17.35
3000          UC   1.463   0.924
              * Urban Time-Area Relation
3001          UA       0       5      16      30      65      77      84      90      94      97
3002          UA     100
              *
              *
              * Combines TW400 and RTW422

3003          KK  C400_2
3004          KO       0       0     0.0       0      22
3005          HC       2
              *
              *
              * Combines C400_2 and RTW402

3006          KK  CTW400
3007          KO       0       0     0.0       0      22
3008          HC       2
              *
              *
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              * ---------------------------- End 01-17-2005 edits ----------------------------
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              *
              * ROUTE UPDATED 4/14/04
```



```
                                          HEC-1 INPUT

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


3009          KK  RTW400
3010          KO       0       0     0.0       0      22
3011          RS       2    FLOW     0.0     0.0
3012          RC   0.045   0.035   0.045    6826  0.0037
              * McMicken Dam Channel
3013          RX       0      46     101     121     171     181    1421    3621
3014          RY      25      14       4       0       0       4      14      25
              *
              *

3015          KK   WI504
3016          KO       0       0     0.0       1      22
3017          BA  1.3494
3018          LG   0.336    0.25   5.982    0.19  10.285
3019          UC   0.796   0.433
```

```
                 * Natural Time-Area Relation
3020             UA       0       3       5       8      12      20      43      75      90      96
3021             UA     100
                 *
                 *
                 * COMBINES RTW400 AND RWI504

3022             KK  CWI504
3023             KO       0       0     0.0       0      22
3024             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3025             KK  RWI504
3026             KO       0       0     0.0       0      22
3027             RS       1    FLOW     0.0     0.0
3028             RC   0.045   0.035   0.045    1494   0.001
                 * McMicken Dam Channel
3029             RX       0      46     101     121     171     181    1421    3621
3030             RY      25      14       4       0       0       4      14      25
                 *
                 *
                 * ************************************************************************ *
                 * ********************** END OF TRILBY WASH REGION 5 ************************** *
                 * ************************************************************************ *
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * **********************  END OF TRILBY WASH SUBAREA ************************** *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 *
                 *
                 * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
                 * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
                 * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
                 * ************************************************************************ *
                 * *************** END OF WEST PORTION OF DETAILED MODEL ********************** *
                 * ************************************************************************ *
                 * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
                 * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
                 * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
                 *
                 *
                 *
                 *
                 * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                 * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                 * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ********** BEGINNING EAST PORTION OF DETAILED MODEL ************************ *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                 * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                 * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                 *
                 *
                 * ------------------------------------------------------------------------
                 * ------------------------ Begin 03-25-2005 ------------------------------------
                 * ------------------------------------------------------------------------
                 *
                 * ------------------------------------------------------------------------
                 * ------------------------ Begin 03-19-2005 ------------------------------------
                 * ------------------------------------------------------------------------
                 *
                                                HEC-1 INPUT
PAGE106

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

```
3031          KK   WI560
3032          KO       0       0     0.0       1      22
3033          BA  3.5624
3034          LG   0.298   0.284   5.108   0.265   23.11
3035          UC   0.979   0.639
              * Natural Time-Area Relation
3036          UA       0       3       5       8      12      20      43      75      90      96
3037          UA     100
              *
              * KKC560_1
              * HC     2    7.51
              *
              *

3038          KK   WI574
3039          KO       0       0     0.0       1      21
3040          BA  0.2189
3041          LG    0.35    0.25   4.987   0.283     5.0
3042          UC   0.492   0.496
              * Natural Time-Area Relation
3043          UA       0       3       5       8      12      20      43      75      90      96
3044          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

3045          KK  RWI574
3046          KO       0       0     0.0       0      22
3047          RS       7    FLOW     0.0     0.0
3048          RC   0.043   0.035   0.043   14010  0.0106
              * WITS10
3049          RX       0     360     460     552     627     680     876    1005
3050          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *

3051          KK  C5602A
3052          HC       2
              *
              * Diversion Recovery: Flow split FS16

3053          KK    D576
3054          KO       0       0     0.0       0      22
3055          DR   DO576
              *
              *
              * ROUTE UPDATED 4/14/4

3056          KK   RD576
3057          KO       0       0     0.0       0      22
3058          RS       3    FLOW     0.0     0.0
3059          RC   0.043   0.035   0.043    4830  0.0095
              * WITS10
3060          RX       0     360     460     552     627     680     876    1005
3061          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
1                                          HEC-1 INPUT
PAGE107

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


3062          KK  C5602B
3063          HC       2    7.73
              *

3064          KK  WI560A
3065          KO       0       0     0.0       1      22
3066          BA  2.0440
3067          LG   0.349    0.25   5.869   0.191  11.973
3068          UC   1.317   1.432
              * Natural Time-Area Relation
3069          UA       0       3       5       8      12      20      43      75      90      96
```

```
3070          UA     100
              *

3071          KK   R560A
3072          KO       0       0     0.0       0      22
3073          RS       9    FLOW     0.0     0.0
3074          RC   0.043   0.035   0.043   16408  0.0115
              * WITS10
3075          RX       0     360     460     552     627     680     876    1005
3076          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

3077          KK  C5602C
3078          HC       2
              *

3079          KK   WI572
3080          KO       0       0     0.0       1      22
3081          BA  2.0606
3082          LG   0.349   0.228    6.63   0.145  17.629
3083          UC   0.663   0.622
              * Natural Time-Area Relation
3084          UA       0       3       5       8      12      20      43      75      90      96
3085          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

3086          KK  RWI572
3087          KO       0       0     0.0       0      22
3088          RS      12    FLOW     0.0     0.0
3089          RC   0.043   0.035   0.043   23543  0.0122
              * WITS90_1
3090          RX       0      50     125     200     230     250     260     400
3091          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *
```

1
PAGE108

```
                                          HEC-1 INPUT

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


3092          KK   WI570
3093          KO       0       0     0.0       1      22
3094          BA  2.2376
3095          LG    0.35   0.164   6.881   0.129  22.117
3096          UC   1.096   0.865
              * Natural Time-Area Relation
3097          UA       0       3       5       8      12      20      43      75      90      96
3098          UA     100
              *
              *
              * Diversion Out: Flow split FS6
              * Flow Split Diversion: Main path to CWI570, Diversion to WI566
              * 21% of flow is diverted to WI566

3099          KK    D570
3100          KO       0       0     0.0       0      22
3101          DT   DO570     0.0     0.0
3102          DI    0      10000
3103          DQ    0       2100
              *
              *
              * ROUTE UPDATED 4/14/04

3104          KK  RWI570
3105          KO       0       0     0.0       0      22
3106          RS       4    FLOW     0.0     0.0
3107          RC   0.043   0.035   0.043   12212  0.0139
              * WITS90_1
3108          RX       0      50     125     200     230     250     260     400
3109          RY    1942    1940    1938    1936    1936    1938    1940    1942
```

```
                    *
                    *
3110                KK   WI566
3111                KO       0       0     0.0       1      22
3112                BA  0.1109
3113                LG   0.348    0.21     6.4   0.159   5.682
3114                UC   0.500   0.518
                    * Natural Time-Area Relation
3115                UA       0       3       5       8      12      20      43      75      90      96
3116                UA     100
                    *
                    *
                    * Diversion Recovery: Flow split FS6
                    * No route because route is only 191 feet

3117                KK    D570
3118                KO       0       0     0.0       0      22
3119                DR   DO570
                    *
                    *
                    *
                    *  Combines WI566 and D570
1                                                HEC-1 INPUT
PAGE109

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


3120                KK  CWI566
3121                KO       0       0     0.0       0      22
                    * Hard Coded
3122                HC       2    0.58
                    *
                    *
                    * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR830 (HWY74 CULVERT)

3123                KK  SSR830
3124                RS       1    STOR       0
3125                SQ       0     300     640   10000
3126                SA       0     .36    1.82    1.83
3127                SE  1977.2    1980    1982    1986
                    *
                    *
                    * ROUTE UPDATED 4/14/04

3128                KK  RWI566
3129                KO       0       0     0.0       0      22
3130                RS       8    FLOW     0.0     0.0
3131                RC   0.043   0.035   0.043   10390  0.0123
                    * WITS90_1
3132                RX       0      50     125     200     230     250     260     400
3133                RY    1942    1940    1938    1936    1936    1938    1940    1942
                    *
                    *

3134                KK   WI564
3135                KO       0       0     0.0       1      22
3136                BA  1.8056
3137                LG    0.35    0.25   5.988   0.181   17.92
3138                UC     1.5   1.448
                    * Natural Time-Area Relation
3139                UA       0       3       5       8      12      20      43      75      90      96
3140                UA     100
                    *
                    *
                    * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR880 (HWY74 CULVERT)

3141                KK  SSR880
3142                RS       1    STOR       0
3143                SQ       0     360    1950    2340
3144                SA       0     .53    2.04     4.6
3145                SE  1960.1    1964    1968    1972
                    *
```

```
                    *
                    * ROUTE UPDATED 4/14/04

3146                KK  RWI564
3147                KO       0       0     0.0       0      22
3148                RS       3    FLOW     0.0     0.0
3149                RC   0.043   0.035   0.043    9364   0.012
                    * WITS90_1
3150                RX       0      50     125     200     230     250     260     400
1                                                HEC-1 INPUT
PAGE110

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

3151                RY    1942    1940    1938    1936    1936    1938    1940    1942
                    *
                    *

3152                KK   WI562
3153                KO       0       0     0.0       1      22
3154                BA  0.8720
3155                LG   0.344   0.155   6.954   0.125   7.052
3156                UC   1.029   1.010
                    * Natural Time-Area Relation
3157                UA       0       3       5       8      12      20      43      75      90      96
3158                UA     100
                    *
                    *
                    * Combines WI562, RWI564 and RWI566

3159                KK  CWI562
3160                KO       0       0     0.0       0      22
3161                HC       3
                    *
                    *
                    * CombineS CWI562 and RWI570

3162                KK   C562*
3163                KO       0       0     0.0       0      22
                    * Hard Coded
3164                HC       2    5.03
                    *
                    *
                    * ROUTE UPDATED 4/14/4

3165                KK   R562*
3166                KO       0       0     0.0       0      22
3167                RS       8    FLOW     0.0     0.0
3168                RC   0.043   0.035   0.043   14581  0.0112
                    * WITS40
3169                RX       0     100     197     277     349     452     594    1131
3170                RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
                    *
                    *
                    * CombineS WI560, R562*, RWI572, RWI574, RD576 and R560A

3171                KK  CWI560
3172                KO       0       0     0.0       0      22
                    * Hard Coded
3173                HC       3   16.86
                    *
                    * ------------------------------------------------------------------------
                    * ------------------------ END 03-19-2005 ------------------------------------
                    * ------------------------------------------------------------------------
                    *
                    *
                    * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE111

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

3174                KK  RWI560
```

```
3175          KO       0       0     0.0       0      22
3176          RS       8    FLOW     0.0     0.0
3177          RC   0.043   0.035   0.043   11699   0.007
              * WITS40
3178          RX       0     100     197     277     349     452     594    1131
3179          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *

3180          KK   WI554
3181          KO       0       0     0.0       1      22
3182          BA  1.0438
3183          LG   0.332   0.253   4.497   0.367  10.849
3184          UC   0.792   0.568
              * Natural Time-Area Relation
3185          UA       0       3       5       8      12      20      43      75      90      96
3186          UA     100
              *

3187          KK  C554_9
3188          HC       2
              *
              *

3189          KK   WI556
3190          KO       0       0     0.0       1      22
3191          BA  0.0781
3192          LG    0.32   0.265   4.399   0.389  16.111
3193          UC   0.221   0.140
              * Natural Time-Area Relation
3194          UA       0       3       5       8      12      20      43      75      90      96
3195          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

3196          KK  RWI556
3197          KO       0       0     0.0       0      22
3198          RS       4    FLOW     0.0     0.0
3199          RC   0.043   0.035   0.043   11635  0.0074
              * WITS40
3200          RX       0     100     197     277     349     452     594    1131
3201          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *

3202          KK  C5541B
3203          HC       2
              *
```



```
                                        HEC-1 INPUT

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


3204          KK   WI582
3205          KO       0       0     0.0       1      22
3206          BA  0.3752
3207          LG   0.343    0.25     5.0   0.281   7.041
3208          UC   0.579   0.504
              * Natural Time-Area Relation
3209          UA       0       3       5       8      12      20      43      75      90      96
3210          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR520

3211          KK    D482
3212          KO       0       0     0.0       0      22
3213          DR   DO482
              *
              *
              *
              * ROUTE UPDATED 4/14/4

3214          KK   RD482
```

```
3215          KO       0       0     0.0       0      22
3216          RS       1    FLOW     0.0     0.0
3217          RC   0.043   0.035   0.043    2439  0.0094
              * WITS130
3218          RX       0     400     456     575     620     650     660     682
3219          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD482 and WI582

3220          KK  CWI582
3221          KO       0       0     0.0       0      22
3222          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3223          KK  RWI582
3224          KO       0       0     0.0       0      22
3225          RS       2    FLOW     0.0     0.0
3226          RC   0.043   0.035   0.043    5153  0.0052
              * WITS10
3227          RX       0     360     460     552     627     680     876    1005
3228          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              * ------------------------------------------------------------------------
              * ------------------------ BEGIN 03-18-2005 ----------------------------------
              * ------------------------------------------------------------------------
              *
              * KKC554_1
              * HC     2
              *
              * *** Changed from combining 4 to 3 * ***
              * COMBINES RWI582, RWI560, RWI556 AND WI554
1                                          HEC-1 INPUT
PAGE113

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


3229          KK  CWI554
3230          KO       0       0     0.0       0      22
3231          HC       2
              *
              * ------------------------------------------------------------------------
              * ------------------------ END 03-18-2005 ----------------------------------
              * ------------------------------------------------------------------------
              *
              * ------------------------------------------------------------------------
              * ------------------------ END 03-18-2005 ----------------------------------
              * ------------------------------------------------------------------------
              * ROUTE UPDATED 4/14/04

3232          KK  RWI554
3233          KO       0       0     0.0       0      22
3234          RS       2    FLOW     0.0     0.0
3235          RC   0.043   0.035   0.043    4538   0.014
              * WITS50
3236          RX       0      46      95     115     169     222     328     409
3237          RY    1581    1579    1575    1572    1577    1578  1579.5    1582
              *
              *

3238          KK   WI552
3239          KO       0       0     0.0       1      22
3240          BA  0.4131
3241          LG   0.327    0.25   4.373   0.398  11.892
3242          UC   0.692   0.629
              * Natural Time-Area Relation
3243          UA       0       3       5       8      12      20      43      75      90      96
3244          UA     100
              *
              *
              * Combines WI552 and RWI554
```

```
3245          KK  CWI552
3246          KO       0       0     0.0       0      22
3247          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3248          KK  RWI552
3249          KO       0       0     0.0       0      22
3250          RS       1    FLOW     0.0     0.0
3251          RC    0.04    0.04    0.04    1732  0.0122
              * WITS70
3252          RX       0     450     700    1284    1435    1499    1745    2500
3253          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
1                                          HEC-1 INPUT
PAGE114

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


3254          KK   WI584
3255          KO       0       0     0.0       1      22
3256          BA  1.2569
3257          LG   0.323   0.261   5.089    0.27   9.277
3258          UC   0.963   0.714
              * Urban Time-Area Relation
3259          UA       0       5      16      30      65      77      84      90      94      97
3260          UA     100
              *
              *
              * Diversion Recovery: Flow split from CTW480

3261          KK    D480
3262          KO       0       0     0.0       0      22
3263          DR   DO480
              *
              *
              * ROUTE UPDATED 1/27/05

3264          KK   RD480
3265          KO       0       0     0.0       0      22
3266          RS       2    FLOW     0.0     0.0
3267          RC    0.04    0.04    0.04    5985  0.0065
              * TSR482
3268          RX       0     102     478     535     709     892    1441    1649
3269          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *
              * COMBINES WI584 AND RD480

3270          KK  CWI584
3271          KO       0       0     0.0       0      22
3272          HC       2   11.35
              *
              *
              * ROUTE UPDATED 4/14/04

3273          KK  RWI584
3274          KO       0       0     0.0       0      22
3275          RS       2    FLOW     0.0     0.0
3276          RC    0.04    0.04    0.04    3933   0.001
              * WITS70
3277          RX       0     450     700    1284    1435    1499    1745    2500
3278          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3279          KK   WI550
3280          KO       0       0     0.0       1      22
3281          BA  0.1425
3282          LG   0.271    0.23     4.3    0.41  20.079
```

```
3283          UC   0.346   0.250
              * Natural Time-Area Relation
3284          UA       0       3       5       8      12      20      43      75      90      96
                                          HEC-1 INPUT
PAGE115

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

3285          UA     100
              *
              *
              * COMBINES WI550, RWI552 AND RWI584

3286          KK  CWI550
3287          KO       0       0     0.0       0      22
3288          HC       3
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP050

3289          KK  SCP050
3290          KO       3       0     0.0       0      21
3291          RS       1    STOR       0
3292          SQ       0     209    1075    2314    3833    4684   10988
3293          SE    1545    1546    1548    1550    1552    1553    1554
3294          SA       0      .1      .7    11.5    35.3    54.1
3295          SE    1545    1546    1548    1550    1552    1553
              *
              *
              * ROUTE UPDATED 4/14/04

3296          KK  RWI550
3297          KO       0       0     0.0       0      22
3298          RS       2    FLOW     0.0     0.0
3299          RC    0.04    0.04    0.04    6201  0.0084
              * WITS70
3300          RX       0     450     700    1284    1435    1499    1745    2500
3301          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3302          KK   WI514
3303          KO       0       0     0.0       1      22
3304          BA  0.3524
3305          LG   0.322   0.237   5.113   0.264   6.094
3306          UC   0.488   0.339
              * Natural Time-Area Relation
3307          UA       0       3       5       8      12      20      43      75      90      96
3308          UA     100
              *
              *
              * COMBINEs WI514 AND RWI550

3309          KK  CWI514
3310          KO       0       0     0.0       0      22
3311          HC       2
              *
              *
1                                         HEC-1 INPUT
PAGE116

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

3312          KK   WI548
3313          KO       0       0     0.0       1      22
3314          BA  0.3084
3315          LG    0.35   0.162   6.881   0.129     5.0
3316          UC   0.504   0.524
              * Natural Time-Area Relation
3317          UA       0       3       5       8      12      20      43      75      90      96
3318          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
3319          KK  RWI548
3320          KO       0       0     0.0       0      22
3321          RS       7    FLOW     0.0     0.0
3322          RC   0.043   0.035   0.043   13444  0.0117
              * WITS90_2
3323          RX       0      89     186     233     287     396     484     597
3324          RY    1823  1822.5    1821    1819    1817  1819.5  1820.5  1822.5
              *
              *

3325          KK   WI546
3326          KO       0       0     0.0       1      22
3327          BA  0.6051
3328          LG   0.232   0.309    4.48   0.362  49.331
3329          UC   0.725   0.767
              * Urban Time-Area Relation
3330          UA       0       5      16      30      65      77      84      90      94      97
3331          UA     100
              *
              *
              * Combines WI546 and RWI548

3332          KK  CWI546
3333          KO       0       0     0.0       0      22
3334          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3335          KK  RWI546
3336          KO       0       0     0.0       0      22
3337          RS       3    FLOW     0.0     0.0
3338          RC   0.043   0.035   0.043    5296  0.0091
              * WITS90_3
3339          RX       0     294     436     564     596     685     950    1000
3340          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *
1                                          HEC-1 INPUT
PAGE117

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


3341          KK   WI544
3342          KO       0       0     0.0       1      22
3343          BA  1.7938
3344          LG   0.261   0.295   4.302   0.407  38.479
3345          UC   0.863   0.671
              * Urban Time-Area Relation
3346          UA       0       5      16      30      65      77      84      90      94      97
3347          UA     100
              *
              *
              * Combines WI544 and RWI546

3348          KK  CWI544
3349          KO       0       0     0.0       0      22
3350          HC       2
              *
              *
              * Diversion Out: Flow split FS7
              * Flow Split Diversion: Main path to CWI542, Diversion to WI530
              * 67% of flow is diverted to WI530

3351          KK    D544
3352          KO       0       0     0.0       0      22
3353          DT   DO544     0.0     0.0
3354          DI    0      10000
3355          DQ    0       6700
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
3356          KK  RWI544
3357          KO       0       0     0.0       0      22
3358          RS       5    FLOW     0.0     0.0
3359          RC   0.043   0.035   0.043    9910  0.0083
              * WITS40
3360          RX       0     100     197     277     349     452     594    1131
3361          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *
              *

3362          KK   WI542
3363          KO       0       0     0.0       1      22
3364          BA  1.1740
3365          LG   0.345   0.252   4.299   0.415   6.718
3366          UC   1.033   0.934
              * Natural Time-Area Relation
3367          UA       0       3       5       8      12      20      43      75      90      96
3368          UA     100
              *
              *
              * Combines WI542 and RWI544
1                                                HEC-1 INPUT
PAGE118

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


3369          KK  CWI542
3370          KO       0       0     0.0       0      22
              * Hard Coded
3371          HC       2    2.07
              *
              *

3372          KK   WI540
3373          KO       0       0     0.0       1      22
3374          BA  1.2455
3375          LG    0.35     0.2   6.497   0.153  24.434
3376          UC   1.063   0.960
              * Natural Time-Area Relation
3377          UA       0       3       5       8      12      20      43      75      90      96
3378          UA     100
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR940 (HWY74 CULVERT)

3379          KK  SSR940
              * Ordinates 850/0.452/1978 and 880/0.472/1978.5 added for stability
3380          RS       1    STOR       0
3381          SQ       0      78     300     850     880    1350    1680
3382          SA       0  0.0001    0.08   0.452   0.472    0.79    1.34
3383          SE  1973.8  1974.8    1976    1978  1978.5    1980  1983.1
              *
              *
              * ROUTE UPDATED 4/14/04

3384          KK  RWI540
3385          KO       0       0     0.0       0      22
3386          RS       1    FLOW     0.0     0.0
3387          RC   0.043   0.035   0.043    4350  0.0169
              * WITS90_1
3388          RX       0      50     125     200     230     250     260     400
3389          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *

3390          KK  WI538A
3391          KO       0       0     0.0       1      22
3392          BA  0.7763
3393          LG   0.345    0.15   7.801   0.092   9.971
3394          UC   0.979   0.954
              * Natural Time-Area Relation
3395          UA       0       3       5       8      12      20      43      75      90      96
```

```
3396          UA     100
              *
              *
              * Combines WI538A and RWI540
1                                          HEC-1 INPUT
PAGE119

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


3397          KK   C538A
3398          KO       0       0     0.0       0      22
3399          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

3400          KK   R538A
3401          KO       0       0     0.0       0      22
3402          RS       8    FLOW     0.0     0.0
3403          RC   0.043   0.035   0.043   18226  0.0134
              * WITS90_2
3404          RX       0      89     186     233     287     396     484     597
3405          RY    1823  1822.5    1821    1819    1817  1819.5  1820.5  1822.5
              *
              *

3406          KK   WI538
3407          KO       0       0     0.0       1      22
3408          BA  1.4301
3409          LG   0.336    0.16   8.095   0.082  10.205
3410          UC   1.438   1.457
              * Natural Time-Area Relation
3411          UA       0       3       5       8      12      20      43      75      90      96
3412          UA     100
              *
              *
              * Combines WI538 and R538A

3413          KK  CWI538
3414          KO       0       0     0.0       0      22
3415          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3416          KK  RWI538
3417          KO       0       0     0.0       0      22
3418          RS       9    FLOW     0.0     0.0
3419          RC   0.043   0.035   0.043   15096  0.0075
              * WITS90_3
3420          RX       0     294     436     564     596     685     950    1000
3421          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *
              * ------------------------------------------------------------------------
              * ------------------------------- 03-10-2005 ---------------------------------
              * ------------------------------------------------------------------------
              *
1                                          HEC-1 INPUT
PAGE120

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


3422          KK   WI530
3423          KO       0       0     0.0       1      22
3424          BA  2.3757
3425          LG   0.348   0.249   4.293   0.415   4.976
3426          UC   0.971   0.621
              * Natural Time-Area Relation
3427          UA       0       3       5       8      12      20      43      75      90      96
3428          UA     100
              *
```

```
                    *
                    * *** Combines WI530 and RWI538 ***

3429                KK  C530_2
3430                HC       2
                    *
                    *

3431                KK   WI536
3432                KO       0       0     0.0       1      22
3433                BA    1.37
3434                LG   0.328   0.161   9.678   0.049  13.114
3435                UC   1.467   1.618
                    * Natural Time-Area Relation
3436                UA       0       3       5       8      12      20      43      75      90      96
3437                UA     100
                    *
                    *

3438                KK   WI534
3439                KO       0       0     0.0       1      22
3440                BA   0.434
3441                LG    0.32   0.165   9.599    0.05  16.269
3442                UC   0.767   0.686
                    * Natural Time-Area Relation
3443                UA       0       3       5       8      12      20      43      75      90      96
3444                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

3445                KK  RWI534
3446                KO       0       0     0.0       0      22
3447                RS       2    FLOW     0.0     0.0
3448                RC   0.043   0.035   0.043    3889  0.0112
                    * WITS90_3
3449                RX       0     294     436     564     596     685     950    1000
3450                RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
                    *
                    *
1                                                HEC-1 INPUT
PAGE121

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


3451                KK   WI532
3452                KO       0       0     0.0       1      22
3453                BA  0.3227
3454                LG    0.35    0.25   5.053   0.275     5.0
3455                UC   0.475   0.423
                    * Natural Time-Area Relation
3456                UA       0       3       5       8      12      20      43      75      90      96
3457                UA     100
                    *
                    *
                    * Combines WI532 and RWI534

3458                KK  CWI532
3459                KO       0       0     0.0       0      22
3460                HC       2
                    *
                    *
                    * Combines CWI532 and WI536

3461                KK   C530*
3462                KO       0       0     0.0       0      22
3463                HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/4

3464                KK   R530*
3465                KO       0       0     0.0       0      22
```

```
3466          RS       9    FLOW     0.0     0.0
3467          RC   0.043   0.035   0.043   14751  0.0082
              * WITS90_3
3468          RX       0     294     436     564     596     685     950    1000
3469          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *
              * ---------------------------------------------------------------------------
              * ------------------------------- 03-10-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              * ******* Commented out: See explanation under 03-10-2005 *******
              * *** Combines WI530 and R530* ***
              * KKC530_1
              * HC     2
              *
              * *** Combines C530_2 and R530* ***

3470          KK  C530_3
3471          HC       2
              *
              *
              * Diversion Recovery: Flow split FS7
1                                                HEC-1 INPUT
PAGE122

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


3472          KK    D544
3473          KO       0       0     0.0       0      22
3474          DR   DO544
              *
              *
              * ROUTE UPDATED 4/14/4

3475          KK   RD544
3476          KO       0       0     0.0       0      22
3477          RS       6    FLOW     0.0     0.0
3478          RC   0.043   0.035   0.043    9401  0.0082
              * WITS40
3479          RX       0     100     197     277     349     452     594    1131
3480          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *
              *
              * ******* 03-10-2005 ********
              * *** Changed to combine two (2) [C530_2 and RD544]
              * Combines RD544, WI530, R530* and RWI538

3481          KK  CWI530
3482          KO       0       0     0.0       0      22
              * Hard Coded
3483          HC       2    9.77
              *
              *
              * COMBINES CWI542 AND CWI530

3484          KK   CAP1*
3485          KM   CAP IMPOUNDMENT AREA
3486          KO       0       0     0.0       0      22
3487          HC       2
              *
              *

3488          KK   PI663
3489          KO       0       0     0.0       1      22
3490          BA  0.6040
3491          LG    0.35    0.15   9.369   0.053   6.578
3492          UC   1.108   1.474
              * Natural Time-Area Relation
3493          UA       0       3       5       8      12      20      43      75      90      96
3494          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
3495          KK  RPI663
3496          KO       0       0     0.0       0      22
3497          RS      10    FLOW     0.0     0.0
3498          RC   0.043   0.035   0.043   14316  0.0149
              * PITS10_1
3499          RX       0      56      89     161     178     225     256     357
3500          RY    1850    1848    1846    1844    1844    1846    1848    1850
              *
              *
1                                          HEC-1 INPUT
PAGE123

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


3501          KK   PI657
3502          KO       0       0     0.0       1      22
3503          BA  0.8697
3504          LG   0.348   0.139   9.924   0.042   5.669
3505          UC   1.279   1.558
              * Natural Time-Area Relation
3506          UA       0       3       5       8      12      20      43      75      90      96
3507          UA     100
              *
              *

3508          KK   PI660
3509          KO       0       0     0.0       1      22
3510          BA  0.8393
3511          LG   0.346    0.15   9.503   0.052   6.086
3512          UC   1.450   2.124
              * Natural Time-Area Relation
3513          UA       0       3       5       8      12      20      43      75      90      96
3514          UA     100
              *
              *
              * Combines PI660, PI657 and RPI663

3515          KK  CPI660
3516          KO       0       0     0.0       0      22
3517          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

3518          KK  RPI660
3519          KO       0       0     0.0       0      22
3520          RS       1    FLOW     0.0     0.0
3521          RC   0.043   0.035   0.043    5729  0.0127
              * PITS10_1
3522          RX       0      56      89     161     178     225     256     357
3523          RY    1850    1848    1846    1844    1844    1846    1848    1850
              *
              *

3524          KK   PI654
3525          KO       0       0     0.0       1      22
3526          BA  4.0277
3527          LG   0.348    0.15    9.53   0.051   5.671
3528          UC    1.50   1.196
              * Natural Time-Area Relation
3529          UA       0       3       5       8      12      20      43      75      90      96
3530          UA     100
              *
              *
              * Combines PI654 and RPI660
1                                          HEC-1 INPUT
PAGE124

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


3531          KK  CPI654
```

```
3532          KO       0       0     0.0       0      22
3533          HC       2
              *
              *
              * Diversion Out: Flow split FS8
              * Flow Split Diversion: Main path to CPI651, Diversion to CPI645
              * 20% of flow is diverted to CPI645

3534          KK    D654
3535          KO       0       0     0.0       0      22
3536          DT   DO654     0.0     0.0
3537          DI       0   10000
3538          DQ       0    2000
              *
              *
              * ROUTE UPDATED 4/14/04

3539          KK  RPI654
3540          KO       0       0     0.0       0      22
3541          RS       4    FLOW     0.0     0.0
3542          RC   0.043   0.035   0.043    6847  0.0104
              * PITS10_2 Modified X-sect
3543          RX       0     207     221     254     303     324     379     588
3544          RY    1614  1610.5    1610  1608.5    1610    1611  1611.8    1614
              *
              * ---------------------------------------------------------------------------
              * -------------------------- BEGIN 03-14-2005 -------------------------------
              * ---------------------------------------------------------------------------

3545          KK   PI651
3546          KO       0       0     0.0       1      22
3547          BA  0.4594
3548          LG    0.35   0.173    6.77   0.136     5.0
3549          UC   0.983   0.954
              * Natural Time-Area Relation
3550          UA       0       3       5       8      12      20      43      75      90      96
3551          UA     100
              *
              *

3552          KK  C651_1
3553          HC       2    5.53
              *
              *

3554          KK   PI648
3555          KO       0       0     0.0       1      22
3556          BA  1.7278
3557          LG   0.346    0.16   8.694   0.064   5.156
3558          UC   1.388   1.162
              * Natural Time-Area Relation
3559          UA       0       3       5       8      12      20      43      75      90      96
3560          UA     100
              *
              *
              *
              * Combines PI651, PI648 and RPI654
1                                          HEC-1 INPUT
PAGE125

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


3561          KK  CPI651
3562          KO       0       0     0.0       0      22
              * Hard Coded
3563          HC       2    7.26
              *
              * ---------------------------------------------------------------------------
              * -------------------------- END 03-14-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              *
              *
              * ---------------------------------------------------------------------------
```

```
                 * ------------------------ BEGIN 03-15-2005 ---------------------------------
                 * ---------------------------------------------------------------------------
                 * ROUTE UPDATED 4/14/04

3564             KK  RPI651
3565             KO       0       0     0.0       0      22
3566             RS       3    FLOW     0.0     0.0
3567             RC   0.043   0.035   0.043    5658  0.0068
                 * PITS10_2 Modified X-sect
3568             RX       0     207     221     254     303     324     379     588
3569             RY    1614  1610.5    1610  1608.5    1610    1611  1611.8    1614
                 *
                 *

3570             KK   PI645
3571             KO       0       0     0.0       1      22
3572             BA  1.5618
3573             LG    0.34   0.277   4.166   0.451   4.792
3574             UC   0.863   0.532
                 * Natural Time-Area Relation
3575             UA       0       3       5       8      12      20      43      75      90      96
3576             UA     100
                 *

3577             KK  C645_1
3578             HC       2
                 *

3579             KK  PI645A
3580             KO       0       0     0.0       1      22
3581             BA  1.6306
3582             LG   0.316   0.154   8.035   0.087  14.307
3583             UC   1.367   1.283
                 * Natural Time-Area Relation
3584             UA       0       3       5       8      12      20      43      75      90      96
3585             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE126

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

3586             KK   R645A
3587             KO       0       0     0.0       0      22
3588             RS       5    FLOW     0.0     0.0
3589             RC   0.043   0.035   0.043    8664   0.012
                 * PITS10_2
3590             RX       0      89     103     136     185     206     261     280
3591             RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
                 *
                 *
                 * Diversion Recovery: Flow split FS8

3592             KK    D654
3593             KO       0       0     0.0       0      22
3594             DR   DO654
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3595             KK   RD654
3596             KO       0       0     0.0       0      22
3597             RS       6    FLOW     0.0     0.0
3598             RC   0.043   0.035   0.043   11215  0.0098
                 * PITS10_2
3599             RX       0      89     103     136     185     206     261     280
3600             RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
                 *
                 *
                 * *** changed from combining 4 to 3 * ***
                 * COMBINES PI645, R645A, DIVERSION RD654 AND RPI651
```

```
3601          KK  CPI645
3602          KO       0       0     0.0       0      22
              * Hard Coded
3603          HC       3   11.72
              *
              *
              * ---------------------------------------------------------------------------
              * -------------------------- END 03-15-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *
              * COMBINES CPI645 AND CAP1*

3604          KK   CAP1*
3605          KO       0       0     0.0       0      22
3606          HC       2
              *
              *

3607          KK   PI689
3608          KO       0       0     0.0       1      22
3609          BA  6.7846
3610          LG    0.35   0.377   6.465   0.154  33.445
3611          UC   1.383   0.775
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE127

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

3612          UA       0       3       5       8      12      20      43      75      90      96
3613          UA     100
              *
              *

3614          KK   PI688
3615          KO       0       0     0.0       1      22
3616          BA  3.1967
3617          LG    0.35    0.39   5.752     0.2  32.193
3618          UC   1.121   0.638
              * Natural Time-Area Relation
3619          UA       0       3       5       8      12      20      43      75      90      96
3620          UA     100
              *
              *
              * Combines PI688 and PI689

3621          KK  CPI689
3622          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3623          KK  RPI689
3624          KO       0       0     0.0       0      22
3625          RS       4    FLOW     0.0     0.0
3626          RC   0.043   0.035   0.043   18798  0.0173
              * WITS100
3627          RX       0      16      34      89     132     168     221     326
3628          RY    2127    2123    2118  2117.5  2116.5    2118    2119    2127
              *
              *

3629          KK   PI687
3630          KO       0       0     0.0       1      22
3631          BA  7.0093
3632          LG    0.35    0.36   5.392   0.232  27.265
3633          UC     1.5   0.868
              * Natural Time-Area Relation
3634          UA       0       3       5       8      12      20      43      75      90      96
3635          UA     100
              *
              *
              * Combines PI687 and  RPI689
```

```
3636          KK  CPI687
3637          KO       0       0     0.0       0      22
3638          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE128

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


3639          KK  RPI687
3640          KO       0       0     0.0       0      22
3641          RS       3    FLOW     0.0     0.0
3642          RC   0.043   0.035   0.043   10777  0.0167
              * WITS100
3643          RX       0      16      34      89     132     168     221     326
3644          RY    2127    2123    2118  2117.5  2116.5    2118    2119    2127
              *
              *

3645          KK   PI684
3646          KO       0       0     0.0       1      22
3647          BA  0.7361
3648          LG    0.35    0.15    7.86   0.087   6.444
3649          UC   0.842   0.731
              * Natural Time-Area Relation
3650          UA       0       3       5       8      12      20      43      75      90      96
3651          UA     100
              *
              *
              * Combines PI684 and RPI687

3652          KK  CPI684
3653          KO       0       0     0.0       0      22
3654          HC       2
              *
              *
              * *** STAGE DISCHARGE/STORAGE BEHIND STRUCTURE SR1030,1040,1050 (HWY74 CULVERT)

3655          KK  SSR103
3656          KO       0       0     0.0       0      22
3657          RS       1    STOR       0
3658          SQ       0     752    1710    5550    8278   11740
3659          SA       0  0.0001    0.61    3.82    7.57   11.20
3660          SE  1976.2    1978    1980    1984    1988    1992
              *
              *
              * ROUTE UPDATED 4/14/04

3661          KK  RPI684
3662          KO       0       0     0.0       0      22
3663          RS       4    FLOW     0.0     0.0
3664          RC   0.043   0.035   0.043   14047  0.0139
              * WITS110_1
3665          RX       0      82     155     186     241     380     502     570
3666          RY    1909    1903    1900    1899    1900    1903    1903    1909
              *
              *
1                                          HEC-1 INPUT
PAGE129

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


3667          KK   PI681
3668          KO       0       0     0.0       1      22
3669          BA  0.9914
3670          LG   0.338   0.156   8.404   0.071   9.157
3671          UC   1.175   1.212
              * Natural Time-Area Relation
3672          UA       0       3       5       8      12      20      43      75      90      96
```

```
3673          UA     100
              *
              *
              * Combines PI681 and RPI684

3674          KK  CPI681
3675          KO       0       0     0.0       0      22
3676          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3677          KK  RPI681
3678          KO       0       0     0.0       0      22
3679          RS       7    FLOW     0.0     0.0
3680          RC   0.043   0.035   0.043   19831   0.011
              * WITS110_2
3681          RX       0     190     319     379     460     560     600     667
3682          RY    1571    1569  1568.5    1565  1568.5  1568.5  1569.5    1571
              *
              *

3683          KK   PI678
3684          KO       0       0     0.0       1      22
3685          BA  0.8324
3686          LG   0.324   0.252   4.342   0.417  12.003
3687          UC   0.983   1.112
              * Natural Time-Area Relation
3688          UA       0       3       5       8      12      20      43      75      90      96
3689          UA     100
              *
              *
              * Combines PI678 and RPI681

3690          KK  CPI678
3691          KO       0       0     0.0       0      22
3692          HC       2
              *
              *
              * Diversion Out: Flow split FS9
              * Flow Split Diversion: Main path to CPI675, Diversion to PI672
              * 28% of flow is diverted to PI672
1                                          HEC-1 INPUT
PAGE130

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


3693          KK    D678
3694          KO       0       0     0.0       0      22
3695          DT   DO678     0.0     0.0
3696          DI       0   10000
3697          DQ       0    2800
              *

3698          KK   PI690
3699          KO       0       0     0.0       1      22
3700          BA  0.6288
3701          LG    0.35    0.25   4.347   0.404     5.0
3702          UC   0.913   1.043
              * Natural Time-Area Relation
3703          UA       0       3       5       8      12      20      43      75      90      96
3704          UA     100
              *
              *
              * Combines PI690 and D678

3705          KK  CPI690
3706          KO       0       0     0.0       0      22
              * Hard Coded
3707          HC       2   14.71
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
3708          KK  RPI690
3709          KO       0       0     0.0       0      22
3710          RS       1    FLOW     0.0     0.0
3711          RC   0.043   0.035   0.043    2823  0.0028
              * WITS110_2 Modified X-sect
3712          RX       0     380     509     569     650     750     790     946
3713          RY    1573    1569  1568.5    1565  1568.5  1568.5  1569.5    1573
              *
              *

3714          KK   PI675
3715          KO       0       0     0.0       1      22
3716          BA  0.0628
3717          LG    0.35    0.25   4.586   0.346     5.0
3718          UC   0.375   0.391
              * Natural Time-Area Relation
3719          UA       0       3       5       8      12      20      43      75      90      96
3720          UA     100
              *
              *
              * Combines PI675 and RPI690
1                                          HEC-1 INPUT
PAGE131

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


3721          KK  CPI675
3722          KO       0       0     0.0       0      22
3723          HC       2
              *
              *
              * COMBINEs CPI675 AND CAP1*

3724          KK   CAP1*
3725          KO       0       0     0.0       0      22
3726          HC       2
              *
              *

3727          KK   PI672
3728          KO       0       0     0.0       1      22
3729          BA  1.5103
3730          LG   0.348   0.248   4.402   0.391   4.918
3731          UC   0.838   0.554
              * Natural Time-Area Relation
3732          UA       0       3       5       8      12      20      43      75      90      96
3733          UA     100
              *
              *
              * Diversion Recovery: Flow split FS9

3734          KK    D678
3735          KO       0       0     0.0       0      22
3736          DR   DO678
              *
              *
              * ROUTE UPDATED 4/14/4

3737          KK   RD678
3738          KO       0       0     0.0       0      22
3739          RS       1    FLOW     0.0     0.0
3740          RC   0.043   0.035   0.043    6108  0.0039
              * WITS110_2
3741          RX       0     190     319     379     460     560     600     667
3742          RY    1571    1569  1568.5    1565  1568.5  1568.5  1569.5    1571
              *
              *
              * Combines RD678 and PI672

3743          KK  CPI672
3744          KO       0       0     0.0       0      22
              * Hard Coded
```

```
3745          HC       2    6.98
              *
              *
              * COMBINES CPI672 AND CAP1*
1                                                HEC-1 INPUT
PAGE132

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

3746          KK   CAP1*
3747          KO       0       0     0.0       0      22
3748          HC       2
              *
              *

3749          KK   PI693
3750          KO       0       0     0.0       1      22
3751          BA  0.8361
3752          LG   0.345   0.247    4.55   0.354   4.932
3753          UC   0.688   0.471
              * Natural Time-Area Relation
3754          UA       0       3       5       8      12      20      43      75      90      96
3755          UA     100
              *
              *
              * COMBINES PI693 AND CAP1*

3756          KK   CAP1*
3757          KO       0       0     0.0       0      22
3758          HC       2
              *
              *

3759          KK   PI669
3760          KO       0       0     0.0       1      22
3761          BA  0.2855
3762          LG   0.378   0.248    4.65   0.364   3.929
3763          UC   0.800   1.094
              * Natural Time-Area Relation
3764          UA       0       3       5       8      12      20      43      75      90      96
3765          UA     100
              *
              *
              * COMBINES PI669 AND CAP1*

3766          KK   CAP1*
3767          KO       0       0     0.0       0      22
3768          HC       2
              *
              *

3769          KK   PI642
3770          KO       0       0     0.0       1      22
3771          BA  0.2366
3772          LG   0.332   0.334   4.103   0.501   4.208
3773          UC   0.583   0.580
              * Urban Time-Area Relation
3774          UA       0       5      16      30      65      77      84      90      94      97
3775          UA     100
              *
              *
              * COMBINES PI642 AND CAP1*
1                                                HEC-1 INPUT
PAGE133

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

3776          KK   CAP1*
3777          KO       0       0     0.0       0      22
3778          HC       2
              *
              *
```

```
*
*
*
*
* ************************************************************************ *
* ************************************************************************ *
* ************************************************************************ *
* ******************* BEGIN WEST PADELFORD AREA RECOVERY ******************** *
* ************************************************************************ *
* ************************************************************************ *
* ************************************************************************ *
*
* This is the interpolated hydrograph from concentration point CO400 from
* the Padelford model by A-N West Inc, which corresponds to concentration
* point PDWEST in the 2004 Wittmann ADMSU.  The Padelford model used a time
* step of 2 minutes, and the Wittmann ADMSU utilizes a time step of 5 minutes,
* so interpolation was required.  The QI cards were utilized to avoid the
* conflict of using DSS files, which can cause errors in the future if not
* utilized correctly.  This QI card was truncated once the flows reached
* zero cfs.  Although A-N West calculated the flow through the various CAP
* structures, they did not take into consideration all of the flow from the
* west portion of this CAP system.  Thus it was necessary to create the QI
* card from a point before diversions occur at the CAP, and before storage
* occurs.
*
* There are 2 points where flow is inputted into the model from the Padelford
* area: PDEAST and PDWEST. A-N WEST hard coded both concentrations points with
* the entire model area, 23 sq miles.  To remain consistent in the Wittmann
* ADMSU, this can not occur, so the contributing area is associated with each
* Inflow point, and they are as follows:
*        PDEAST = 16.44 sq miles
*        PDWEST =  7.08 sq miles
*
* It was necessary to place an IN card prior to the QI cards because the
* precipitation interval is 15 minutes.
*

3779    KK  PDWEST
3780    IN       5
3781    BA    7.08
3782    QI       0       0       0       0       0       0       0       0       0       0
3783    QI       0       0       0       0       0       0       0       0       0       0
3784    QI       0       0       0       0       0       0       0       0       0       0
3785    QI       1       1       1       1       1       1       1       1       2       2
3786    QI       2       2       3       3       4       4       5       5       6       7
3787    QI       8       8      11      15      24      30      35      39      43      46
3788    QI      50      52      55      56      58      58      60      60      61      62
3789    QI      63      63      64      64      65      66      66      67      68      69
3790    QI      70      70      71      72      73      74      75      76      78      78
1                                       HEC-1 INPUT
PAGE134

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

3791    QI      80      80      81      82      83      83      84      85      85      86
3792    QI      87      88      89      89      90      91      92      93      94      95
3793    QI      97      97      98      99     100     101     102     103     104     105
3794    QI     106     107     108     109     111     113     115     116     119     121
3795    QI     123     125     128     130     132     133     136     137     140     145
3796    QI     156     182     238     340     483     604     651     635     610     674
3797    QI     926    1223    1588    2017    2536    3131    3691    4125    4360    4394
3798    QI    4266    4060    3815    3562    3311    3059    2825    2590    2368    2144
3799    QI    1906    1662    1419    1198    1034     904     815     740     670     606
3800    QI     552     500     452     410     372     341     316     293     275     260
3801    QI     248     237     228     219     211     203     197     190     185     180
3802    QI     176     171     168     164     161     158     156     155     153     151
3803    QI     150     148     147     145     144     142     141     140     139     137
3804    QI     136     135     134     133     132     131     130     129     128     126
3805    QI     125     123     122     121     119     118     117     115     114     113
3806    QI     112     111     110     108     107     106     105     103     102     101
3807    QI     100      99      98      97      96      95      94      94      93      92
3808    QI      92      91      90      89      88      87      87      86      85      84
3809    QI      83      82      81      80      79      78      78      77      77      76
3810    QI      76      75      75      74      74      73      72      72      71      71
```

```
QI      71      70      70      69      69      68      68      68      68      67
QI      67      67      66      66      66      65      65      64      64      63
QI      63      63      62      61      61      60      59      58      57      56
QI      55      54      53      52      51      50      49      48      47      46
QI      45      43      42      40      39      37      36      34      33      31
QI      30      28      27      26      25      24      24      24      23      23
QI      22      22      21      21      20      19      18      17      16      15
QI      15      14      14      14      13      13      12      11      11      10
QI       9       9       8       7       7       6       6       5       5       4
QI       4       3       3       3       2       2       2       2       2       1
QI       1       1       1       1       1       1       1   0.001
*
* This combine card combines CAP1* and PDWEST which contains all of the
* contributing area from the West side of the CAP impoundment system.
*
* Combines PDWEST and CAP1*

KK   CAP1*
KO       0       0     0.0       0      22
HC       2
*
*
*
* ************************************************************************ *
* ************************************************************************ *
* ************************************************************************ *
* ******************** END WEST PADELFORD AREA RECOVERY ********************** *
* ************************************************************************ *
* ************************************************************************ *
* ************************************************************************ *
*
*
*
*
* ************************************************************************ *
* ************************************************************************ *
* ************* BEGINNING OF CAP IMPOUNDMENT AREA SYSTEM 1 ******************** *
* ************************************************************************ *
* ************************************************************************ *
*                                                                          *
* ************************* STOR1 to STOR2 Diversion ************************* *
* ************************************************************************ *
* * This storge is part of a large 14 culvert storage system.  Although      * *
* * the 14 culverts act as a single system, there is a berm which separates  * *
* * the 2 storage areas at low flows.  The two storage areas are connected   * *
* * by a diversion once the flow reaches the bottom of the x-sect which      * *
* * separates the two areas.  The diversion occurs from Storage STOR1        * *
* * to STOR2.  This was determined by first modeling the 2 culvert systems   * *
* * separately.  When they were modeled separately it was obvious that the   * *
* * west side of this CAP system overflowed into the East side.  The same   * *
* * assumption was made by A-N West in their hydrology model (FCD No. 99-12).* *
* * Although A-N West Inc. calculated storage in their model, their storage  * *
* * calculations were not utilized in this Wittmann ADMSU.  The main reason  * *
* * is the fact that all the storage west of Padelford is not accounted for  * *
* * in the A-N West model.                                                   * *
* *                                                                          * *
* * The rating curve for the diversion was calculated using BOSS RMS, and    * *
* * details can be found in the appendix.  The invert of the cross section   * *
* * cut by RMS is 1553.5.  Once the flow depth reaches this point, flow      * *
* * will begin to divert from STOR1 to STOR2.  The diversion was calculated  * *
* * assumming critcal depth.  The rating curve was then incorporated into    * *
* * the SQ card for STOR1.  The diversion is taken from that card, and the   * *
* * remaining flow represents the capacities of the culverts for that        * *
* * ponding area.                                                            * *
* * The storage was set up in the following order:                           * *
* *    -STOR1 (Storage of 9 culverts on west side of 14 culvert system)      * *
* *    -DCAP* (Diversion from STOR1 to STOR2)                                * *
* *    -STOR2 (Storage of 5 culverts on east side of 14 culvert system)      * *
* *                                                                          * *
* ************************************************************************ *
*                                                                          *
*                                                                          *
* ********************** Culvert/Overchute Capacities ********************** *
* ************************************************************************ *
```

```
* * The flows were calculated based upon the capacities of the overchutes or * *
* * culverts.  Once the culvert capacities (inlet controlled) were calculated* *
* * up to the berm elevation (1556), a combined culvert (inlet control) and  * *
* * weir equation was utilized to calculate the flows that would overtop the * *
* * berm for 1 and 2 feet (1557 & 1558).  A weir coefficient (C) of 2.7 was  * *
* * used and the weir length was the basin boundary where overtopping        * *
* * would occur. These will be utilized for both of the CAP storage areas.   * *
* * The following table summarizes the weir flow and parameters.             * *
* *                                                                          * *
* * ------------------------------------------------------------------------ * *
* *                              Q(weir)=C*L*H^1.5                           * *
* * ------------------------------------------------------------------------ * *
* *                 *Routes*   *C*   *LENGTH*   *FLOW*    *FLOW*             * *
* *                                     [ft]      [H=1]     [H=2]            * *
* *                 ----------------------------------------                 * *
* *                  DCAP19 ** 2.7 ** 1641.0  **  4431  ** 12532             * *
* *                  DCAP18 ** 2.7 **  899.1  **  2428  **  6866             * *
* *                  DCAP17 ** 2.7 ** 2059.0  **  5559  ** 15724             * *
* *                  DCAP16 ** 2.7 ** 1947.9  **  5259  ** 14876             * *
* *                  DCAP15 ** 2.7 ** 1127.4  **  3044  **  8610             * *
* *                  DCAP14 ** 2.7 ** 2783.4  **  7515  ** 21256             * *
* *                  DCAP13 ** 2.7 ** 2552.8  **  6893  ** 19495             * *
* *                  DCAP12 ** 2.7 ** 1207.7  **  3261  **  9223             * *
* *                  DCAP11 ** 2.7 ** 1104.9  **  2983  **  8438             * *
* *                  DCAP10 ** 2.7 ** 3508.9  **  9474  ** 26797             * *
* *                  DCAP09 ** 2.7 ** 4908.7  ** 13253  ** 37487             * *
* *                  DCAP08 ** 2.7 **  411.1  **  1110  **  3139             * *
* *                  DCAP07 ** 2.7 ** 2199.3  **  5938  ** 16796             * *
* *                  DCAPOT ** 2.7 ** 2369.2  **  6397  ** 18093             * *
* *                  RWI542 ** 2.7 ** 2034.9  **  5494  ** 15540             * *
* *                                                                          * *
* ************************************************************************** *
* ************************************************************************** *
*
*
* ************************************************************************** *
* ********************************** STOR1 ********************************** *
* ************************************************************************** *
*
*
*
* *** STORAGE IN THE CAP IMPOUNDMENT AREA
```

1
PAGE135

```
                                  HEC-1 INPUT

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


3825          KK   STOR1
3826          KO       3       0     0.0       0      22
3827          RS       1    STOR       0
              *
              *
              * This SQ card represents not only the flow through the culverts, but also the
              * flow over the connecting berm between the two ponding areas STOR1 and STOR2.
              * Only the values in the table following the DCAP* card were calculated, except
              * for DCAP*.  Values were calculated using BOSS-RMS for all elevations of DCAP*.
              * The rest of the structure capacities were interpolated assuming linear
              * interpolation.
              *
3828          SQ       0     206     638    2223    2900    3271    3545    3961    4255    5071
3829          SQ    5615    6148    6681    7725    8791    9885   79348  204489
3830          SE    1541    1544    1546    1550    1552  1553.5    1554  1554.3  1554.5  1554.8
3831          SE    1555 1555.15  1555.3  1555.5  1555.8    1556    1557    1558
              *
3832          SA       0   23.20   63.00   98.11  222.56  331.20   442.5  553.04   553.1   553.2
3833          SE    1540    1544    1546    1548    1550    1552    1554    1556    1557    1558
              *
              *


3834          KK   DCAP*
3835          DT  DOCAP*
3836          DI       0     206     638    2223    2900    3271    3545    3961    4255    5071
3837          DI    5615    6148    6681    7725    8791    9885   79348  204489
```

```
3838          DQ       0       0       0       0       0       0     150     500     750    1500
3839          DQ    2000    2500    3000    4000    5000    6050   13000   24000
              *
              * THe flow from STOR1 is distributed to the following routes and diversions
              * The breakdown of where the flow is distributed to is shown below, with the
              * STOR1 being the summation of the flows at any given elevation.
              *
              * ************************************************************************ *
              *  *ELEV*  1544 *  1546 *  1550 *  1552 *  1554 *  1556 *   1557 *   1558 *    *
              * ------------------------------------------------------------------------- *
              * *ROUTES* ********************************************************************** *
              * *DCAP14*    0 *    27 *   172 *   260 *   335 *   380 *   7930 *  21686 *    *
              * *DCAP13*   32 *    76 *   270 *   335 *   390 *   440 *   7348 *  19975 *    *
              * *DCAP12*   27 *    82 *   260 *   335 *   380 *   430 *   3716 *   9703 *    *
              * *DCAP11*   32 *    95 *   270 *   345 *   400 *   440 *   3448 *   8918 *    *
              * *DCAP10*   32 *    91 *   270 *   345 *   390 *   440 *   9939 *  27277 *    *
              * *DCAP09*   27 *    82 *   260 *   335 *   380 *   430 *  13708 *  37967 *    *
              * *DCAP08*   22 *    65 *   245 *   320 *   375 *   430 *   1550 *   3604 *    *
              * *DCAP07*   19 *    65 *   238 *   320 *   375 *   430 *   6378 *  17261 *    *
              * *DCAPOT*    0 *     0 *     0 *     0 *     0 *     0 *   6397 *  18093 *    *
              * *RWI542*   15 *    55 *   238 *   305 *   370 *   415 *   5934 *  16005 *    *
              * *DCAP* *    0 *     0 *     0 *     0 *   150 *  6050 *  13000 *  24000 *    *
              * ========================================================================== *
              *  *STOR1*  206 *   638 *  1430 *  2223 *  3545 *  9885 *  79348 * 204489 *    *
              * ************************************************************************ *
              *
              *
```


HEC-1 INPUT

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

3840          KK  DCAP14
3841          KM   DIVERSON AT STRUCTURE CAP140: MAIN PATH TO DCAP13, DIVERSION TO CPI609
3842          DT  DOCP14
3843          DI     206     638    2223    2900    3395    3835   66348  180489
3844          DQ       0      27     172     260     335     380    7930   21686
              *
              *

3845          KK  DCAP13
3846          KM   DIVERSON AT STRUCTURE CAP130: MAIN PATH TO DCAP12, DIVERSION TO CPI615
3847          DT  DOCP13
3848          DI     206     611    2051    2640    3060    3455   58418  158803
3849          DQ      32      76     270     335     390     440    7348   19975
              *
              *

3850          KK  DCAP12
3851          KM   DIVERSON AT STRUCTURE CAP120: MAIN PATH TO DCAP11, DIVERSION TO CPI618
3852          DT  DOCP12
3853          DI     174     535    1781    2305    2670    3015   51070  138828
3854          DQ      27      82     260     335     380     430    3716    9703
              *
              *

3855          KK  DCAP11
3856          KM   DIVERSON AT STRUCTURE CAP110: MAIN PATH TO DCAP10, DIVERSION TO CPI618
3857          DT  DOCP11
3858          DI     147     453    1521    1970    2290    2585   47354  129125
3859          DQ      32      95     270     345     400     440    3448    8918
              *
              *

3860          KK  DCAP10
3861          KM   DIVERSON AT STRUCTURE CAP100: MAIN PATH TO DCAP09, DIVERSION TO CPI628
3862          DT  DOCP10
3863          DI     115     358    1251    1625    1890    2145   43906  120207
3864          DQ      32      91     270     345     390     440    9939   27277
              *
              *

3865          KK  DCAP09
```

```
3866          KM   DIVERSON AT STRUCTURE CAP090: MAIN PATH TO DCAP08, DIVERSION TO CWI525
3867          DT  DOCP09
3868          DI      83     267     981    1280    1500    1705   33967   92930
3869          DQ      27      82     260     335     380     430   13708   37967
              *
              *

3870          KK  DCAP08
3871          KM   DIVERSON AT STRUCTURE CAP080: MAIN PATH TO DCAP07, DIVERSION TO CWI526
3872          DT  DOCP08
3873          DI      56     185     721     945    1120    1275   20259   54963
3874          DQ      22      65     245     320     375     430    1550    3604
              *
              *
1                                          HEC-1 INPUT
PAGE137

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


3875          KK  DCAP07
3876          KM   DIVERSON AT STRUCTURE CAP070: MAIN PATH TO DCAPOT, DIVERSION TO CWI528
3877          KM   MAIN FLOW PATH IS OUTFLOW FROM CAP060
3878          DT  DOCP07
3879          DI      34     120     476     625     745     845   18709   51359
3880          DQ      19      65     238     320     375     430    6378   17261
              *
              *

3881          KK  DCAPOT
3882          KM   DIVERSON AT STRUCTURE CAP070: MAIN PATH TO CWI529, DIVERSION TO CWI527
3883          KM   MAIN FLOW PATH IS OVERTOPPING WEIR FLOW ONLY
3884          DT  DOCPOT
3885          DI      15      55     238     305     370     415   12331   34098
3886          DQ       0       0       0       0       0       0    6397   18093
              *
              *
              * THE FOLLOWING IS THE REMAINING FLOW TO RWI542
              * DI  15      55     238     305     370     415    5934   16005
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * **************** END OF CAP IMPOUNDMENT AREA SYSTEM 2 ********************** *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              * ROUTE UPDATED 4/14/04

3887          KK  RWI542
3888          KO       0       0     0.0       0      22
3889          RS       1    FLOW     0.0     0.0
3890          RC   0.043   0.035   0.043    2706  0.0074
              * WITS90_3
3891          RX       0     294     436     564     596     685     950    1000
3892          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *

3893          KK   WI529
3894          KO       0       0     0.0       1      22
3895          BA  0.1663
3896          LG   0.246   0.224     4.3   0.408  24.627
3897          UC   0.479   0.355
              * Natural Time-Area Relation
3898          UA       0       3       5       8      12      20      43      75      90      96
3899          UA     100
              *
              *
              * COMBINES RWI542 AND WI529
1                                          HEC-1 INPUT
PAGE138
```

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

3900          KK  CWI529
3901          KO       0       0     0.0       0      22
              * Hard Coded
3902          HC       2    3.53
              *
              *
              * Railroad Diversion: Main path to CWI516, Diversion to CWI528
              * From Structure RR580, See Appendix D.5 for analysis

3903          KK    D529
3904          KO       0       0     0.0       0      22
3905          DT   DO529     0.0     0.0
3906          DI       0      39     481     879   10762
3907          DQ       0       0       0     218    8008
              *
              *
              * ROUTE UPDATED 4/14/04

3908          KK  RWI529
3909          KO       0       0     0.0       0      22
3910          RS       1    FLOW     0.0     0.0
3911          RC    0.04    0.04    0.04    3670  0.0098
              * WITS70
3912          RX       0     450     700    1284    1435    1499    1745    2500
3913          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3914          KK   WI516
3915          KO       0       0     0.0       1      22
3916          BA  0.1435
3917          LG   0.297   0.324     4.3   0.416   9.918
3918          UC   0.488   0.471
              * Natural Time-Area Relation
3919          UA       0       3       5       8      12      20      43      75      90      96
3920          UA     100
              *
              *
              * COMBINES WI516 RIW529

3921          KK  C516_1
3922          KO       0       0     0.0       0      22
3923          HC       2
              *
              * COMBINES C516_1 and RIW529

3924          KK  CWI516
3925          KO       0       0     0.0       0      22
3926          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE139

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

3927          KK  RWI516
3928          KO       0       0     0.0       0      22
3929          RS       6    FLOW     0.0     0.0
3930          RC    0.04    0.04    0.04   11711  0.0051
              * WITS70
3931          RX       0     450     700    1284    1435    1499    1745    2500
3932          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3933          KK   WI512
3934          KO       0       0     0.0       1      22
3935          BA  1.3550
```

```
3936          LG   0.308   0.273     5.8   0.204  13.487
3937          UC   0.917   0.636
              * Urban Time-Area Relation
3938          UA       0       5      16      30      65      77      84      90      94      97
3939          UA     100
              *
              *
              * Combines WI512 and RWI516

3940          KK  CWI512
3941          KO       0       0     0.0       0      22
3942          HC       2
              *
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP070

3943          KK  DCAPOT
3944          KO       0       0     0.0       0      22
3945          DR  DOCPOT
              *
              *
              * Route updated 04-15-2004

3946          KK  RDCPOT
3947          KO       0       0     0.0       0      22
3948          RS       2    FLOW     0.0     0.0
3949          RC    0.04    0.04    0.04    8638  0.0074
              *
              * WITS70
3950          RX       0     450     700    1284    1435    1499    1745    2500
3951          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3952          KK   WI527
3953          KO       0       0     0.0       1      22
3954          BA  0.7094
3955          LG   0.328   0.241   4.863   0.296   7.911
3956          UC   0.733   0.516
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE140

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

3957          UA       0       3       5       8      12      20      43      75      90      96
3958          UA     100
              *
              *
              * Combines RDCAPOT and WI527

3959          KK  CWI527
3960          HC       2
              *
              *
              * Railroad Diversion: Main path to CWI518, Diversion to CWI525
              * From Structure RR600 and RR610, See Appendix D.5 for analysis

3961          KK    D527
3962          KO       0       0     0.0       0      22
3963          DT   DO527     0.0     0.0
3964          DI     0       523     811    1154    3000
3965          DQ     0         0      92     254    1097
              *
              *
              * Route updated 04-15-2004

3966          KK  RWI527
3967          KO       0       0     0.0       0      22
3968          RS       3    FLOW     0.0     0.0
3969          RC    0.04    0.04    0.04    5909  0.0068
              * WITS70
3970          RX       0     450     700    1284    1435    1499    1745    2500
```

```
3971          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR580

3972          KK    D529
3973          KO       0       0     0.0       0      22
3974          DR   DO529
              *
              *
              *
              * ROUTE UPDATED 4/14/4

3975          KK   RD529
3976          KO       0       0     0.0       0      22
3977          RS       1    FLOW     0.0     0.0
3978          RC   0.043   0.035   0.043    4871  0.0078
              * WITS130
3979          RX       0     400     456     575     620     650     660     682
3980          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP070
1                                          HEC-1 INPUT
PAGE141

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


3981          KK  DCAP07
3982          KO       0       0     0.0       0      22
3983          DR  DOCP07
              *
              *
              * ROUTE UPDATED 4/14/4

3984          KK  RDCP07
3985          KO       0       0     0.0       0      22
3986          RS       2    FLOW     0.0     0.0
3987          RC   0.043   0.035   0.043    6956  0.0083
              * WITS120
3988          RX       0     100     292     409     492     567     718     886
3989          RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
              *
              *
              *

3990          KK   WI528
3991          KO       0       0     0.0       1      22
3992          BA  0.3585
3993          LG   0.296   0.233   4.353   0.398  13.563
3994          UC   0.617   0.506
              * Natural Time-Area Relation
3995          UA       0       3       5       8      12      20      43      75      90      96
3996          UA     100
              *
              *
              * COMBINES BASIN WI528 AND RDCP07

3997          KK  C528_1
3998          KO       0       0     0.0       0      22
              * Hard Coded
3999          HC       2    3.80
              *
              *
              * COMBINES C528_1 and RD529

4000          KK  CWI528
4001          KO       0       0     0.0       0      22
              * Hard Coded
4002          HC       2    3.80
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
4003          KK  RWI528
4004          KO       0       0     0.0       0      22
4005          RS       1    FLOW     0.0     0.0
4006          RC    0.04    0.04    0.04    8240  0.0073
              * WITS70
4007          RX       0     450     700    1284    1435    1499    1745    2500
4008          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
1                                          HEC-1 INPUT
PAGE142

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


4009          KK   WI518
4010          KO       0       0     0.0       1      22
4011          BA  0.5317
4012          LG   0.338   0.253   5.205   0.256   8.261
4013          UC   0.721   0.572
              * Natural Time-Area Relation
4014          UA       0       3       5       8      12      20      43      75      90      96
4015          UA     100
              *
              *
              * COMBINES BASIN WI518 and RWI528

4016          KK  C518_1
4017          KO       0       0     0.0       0      22
              *
4018          HC       2
              * COMBINES BASIN C518_1 and RWI527

4019          KK  CWI518
4020          KO       0       0     0.0       0      22
              * Hard Coded
4021          HC       2    5.00
              *
              *
              * Combines CWI518 and CWI512

4022          KK   C508*
4023          KO       0       0     0.0       0      22
4024          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

4025          KK   R508*
4026          KO       0       0     0.0       0      22
4027          RS       7    FLOW     0.0     0.0
4028          RC   0.043   0.035   0.043   12366  0.0053
              * WITS130
4029          RX       0     400     456     575     620     650     660     682
4030          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *

4031          KK   WI508
4032          KO       0       0     0.0       1      22
4033          BA  0.6991
4034          LG   0.336   0.252   5.116   0.271    6.72
4035          UC   1.021   0.932
              * Natural Time-Area Relation
4036          UA       0       3       5       8      12      20      43      75      90      96
4037          UA     100
              *
              *
              * COMBINES WI508 AND R508*
                                           HEC-1 INPUT
PAGE143

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

```
4038          KK  CWI508
4039          KO       0       0     0.0       0      22
4040          HC       2
              *
              * Diversion Out: Flow split FS10
              * Flow Split Diversion: Main path to CWI510, Diversion to CWI500
              * 19% of flow is diverted to CWI500

4041          KK    D508
4042          KO       0       0     0.0       0      22
4043          DT   DO508     0.0     0.0
4044          DI       0   10000
4045          DQ       0    1900
              *
              *

4046          KK  WI510A
4047          KO       0       0     0.0       1      22
4048          BA  1.1293
4049          LG   0.337    0.26   4.622   0.338   5.191
4050          UC   0.813   0.521
              * Natural Time-Area Relation
4051          UA       0       3       5       8      12      20      43      75      90      96
4052          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

4053          KK   R510A
4054          KO       0       0     0.0       0      22
4055          RS       8    FLOW     0.0     0.0
4056          RC    0.04    0.04    0.04   17257  0.0051
              * WITS70
4057          RX       0     450     700    1284    1435    1499    1745    2500
4058          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

4059          KK   WI510
4060          KO       0       0     0.0       1      22
4061          BA  1.2273
4062          LG   0.339   0.274   5.732   0.204   5.364
4063          UC   1.313   1.287
              * Natural Time-Area Relation
4064          UA       0       3       5       8      12      20      43      75      90      96
4065          UA     100
              *
              *
              * COMBINES CWI508, WI510 AND R510A
1                                                HEC-1 INPUT
PAGE144

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


4066          KK  CWI510
4067          KO       0       0     0.0       0      22
              * Hard Coded
4068          HC       3   35.84
              *
              *
              * ROUTE UPDATED 4/14/04

4069          KK  RWI510
4070          KO       0       0     0.0       0      22
4071          RS       2    FLOW     0.0     0.0
4072          RC    0.04    0.04    0.04    6492  0.0048
              * WITS70
4073          RX       0     450     700    1284    1435    1499    1745    2500
4074          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
```

```
4075          KK   WI502
4076          KO       0       0     0.0       1      22
4077          BA  1.2082
4078          LG   0.344   0.251   5.448   0.229   6.516
4079          UC   1.179   1.004
              * Natural Time-Area Relation
4080          UA       0       3       5       8      12      20      43      75      90      96
4081          UA     100
              *
              *
              * COMBINES WI502 AND RWI510

4082          KK  C502_1
4083          KO       0       0     0.0       0      22
4084          HC       2
              *
              * COMBINES C502_1 and RWI504

4085          KK  CWI502
4086          KO       0       0     0.0       0      22
4087          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

4088          KK  RWI502
4089          KO       0       0     0.0       0      22
4090          RS       1    FLOW     0.0     0.0
4091          RC   0.045   0.035   0.045    1679  0.0026
              * McMicken Dam Channel
4092          RX       0      46     101     121     171     181    1421    3621
4093          RY      25      14       4       0       0       4      14      25
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP080
                                          HEC-1 INPUT
PAGE145

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


4094          KK  DCAP08
4095          KO       0       0     0.0       0      22
4096          DR  DOCP08
              *
              *
              * ROUTE UPDATED 4/14/4

4097          KK  RDCP08
4098          KO       0       0     0.0       0      22
4099          RS       1    FLOW     0.0     0.0
4100          RC   0.043   0.035   0.043    4229  0.0114
              * WITS120
4101          RX       0     100     292     409     492     567     718     886
4102          RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
              *
              *

4103          KK   WI526
4104          KO       0       0     0.0       1      22
4105          BA  0.0486
4106          LG    0.35    0.25    4.35   0.403     5.0
4107          UC   0.500   0.833
              * Natural Time-Area Relation
4108          UA       0       3       5       8      12      20      43      75      90      96
4109          UA     100
              *
              *
              * Combines WI526 and RDCP08

4110          KK  CWI526
4111          KO       0       0     0.0       0      22
              * Hard Coded
```

```
4112          HC       2    3.49
              *
              *
              * ROUTE UPDATED 4/14/04

4113          KK  RWI526
4114          KO       0       0     0.0       0      22
4115          RS       6    FLOW     0.0     0.0
4116          RC   0.043   0.035   0.043   11922  0.0069
              * WITS120
4117          RX       0     100     292     409     492     567     718     886
4118          RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
              *
              *

4119          KK   WI525
4120          KO       0       0     0.0       1      22
4121          BA  1.9406
4122          LG    0.33   0.245   4.547   0.361   8.635
4123          UC   0.900   0.533
              * Natural Time-Area Relation
4124          UA       0       3       5       8      12      20      43      75      90      96
1                                                HEC-1 INPUT
PAGE146

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

4125          UA     100
              *
              * Combines WI525 RWI526
              * KKC525_1
              * KO     0       0     0.0       0      22
              *
              * HC     2
              *
              *  Diversion Recovery: Outflow from structure CAP090

4126          KK  DCAP09
4127          KO       0       0     0.0       0      22
4128          DR  DOCP09
              *
              *
              * ROUTE UPDATED 4/14/4

4129          KK  RDCP09
4130          KO       0       0     0.0       0      22
4131          RS       8    FLOW     0.0     0.0
4132          RC   0.043   0.035   0.043   14618   0.009
              * WITS120
4133          RX       0     100     292     409     492     567     718     886
4134          RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
              *
              * Combines WI525 and RDCP09

4135          KK  C5251b
4136          KO       0       0     0.0       0      22
              * Hard Coded
4137          HC       2    5.38
              *
              * Combines C525_1 and RDCP09

4138          KK  C5251a
4139          KO       0       0     0.0       0      22
              * Hard Coded
4140          HC       2    8.87
              *
              *
              * Railroad Diversion Recovery: Outflow from structure  RR600

4141          KK    D527
4142          KO       0       0     0.0       0      22
4143          DR   DO527
              *
              *
```

```
                    *
                    * ROUTE UPDATED 4/14/4
                                                HEC-1 INPUT
PAGE147

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


4144                KK   RD527
4145                KO       0       0     0.0       0      22
4146                RS       2    FLOW     0.0     0.0
4147                RC   0.043   0.035   0.043    7666  0.0065
                    * WITS130
4148                RX       0     400     456     575     620     650     660     682
4149                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
                    * Combines C5251a and RD527

4150                KK  CWI525
4151                KO       0       0     0.0       0      22
                    * Hard Coded
4152                HC       2    8.92
                    *
                    *
                    * Railroad Diversion: Main path to CWI506, Diversion to CWI524
                    * From Structure RR630 and RR640, See Appendix D.5 for analysis

4153                KK    D525
4154                KO       0       0     0.0       0      22
4155                DT   DO525     0.0     0.0
4156                DI       0     269     463     699     969
4157                DQ       0       0       9      26      48
                    *
                    *
                    * ROUTE UPDATED 4/14/04

4158                KK  RWI525
4159                KO       0       0     0.0       0      22
4160                RS       6    FLOW     0.0     0.0
4161                RC   0.043   0.035   0.043   11015  0.0064
                    * WITS130
4162                RX       0     400     456     575     620     650     660     682
4163                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *

4164                KK   WI506
4165                KO       0       0     0.0       1      22
4166                BA  1.5757
4167                LG   0.326    0.25   5.331   0.254  10.467
4168                UC   1.083   0.781
                    * Urban Time-Area Relation
4169                UA       0       5      16      30      65      77      84      90      94      97
4170                UA     100
                    *
                    * COMBINES WI506 and RWI525
1                                               HEC-1 INPUT
PAGE148

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


4171                KK  C506_1
4172                KO       0       0     0.0       0      22
                    * Hard Coded
4173                HC       2    9.94
                    *

4174                KK   WI524
4175                KO       0       0     0.0       1      22
4176                BA  0.9500
4177                LG   0.347    0.25   4.659   0.322  10.203
4178                UC   0.871   0.645
```

```
                 * Natural Time-Area Relation
4179             UA       0       3       5       8      12      20      43      75      90      96
4180             UA     100
                 *
                 *
                 * Railroad Diversion Recovery: Outflow from structure RR630

4181             KK    D525
4182             KO       0       0     0.0       0      22
4183             DR   DO525
                 *
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4184             KK   RD525
4185             KO       0       0     0.0       0      22
4186             RS       6    FLOW     0.0     0.0
4187             RC   0.043   0.035   0.043    6496  0.0065
                 * WITS130
4188             RX       0     400     456     575     620     650     660     682
4189             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * Combines RD525 and WI524

4190             KK  CWI524
4191             KO       0       0     0.0       0      22
                 * Hard Coded
4192             HC       2    1.51
                 *
                 *
                 * Railroad Diversion: Main path to CWI506, Diversion to CPI639
                 * From Structure RR650, See Appendix D.5 for analysis

4193             KK    D524
4194             KO       0       0     0.0       0      22
4195             DT   DO524     0.0     0.0
4196             DI       0     595     906    1295    1748
4197             DQ       0       0      38     119     230
                 *
                 *
                 * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE149

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


4198             KK  RWI524
4199             KO       0       0     0.0       0      22
4200             RS       2    FLOW     0.0     0.0
4201             RC   0.043   0.035   0.043    4526  0.0062
                 * WITS130
4202             RX       0     400     456     575     620     650     660     682
4203             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * COMBINES C506_1 and RW524

4204             KK  CWI506
4205             KO       0       0     0.0       0      22
                 * Hard Coded
4206             HC       2   11.42
                 *
                 *
                 * ROUTE UPDATED 4/14/04

4207             KK  RWI506
4208             KO       0       0     0.0       0      22
4209             RS       3    FLOW     0.0     0.0
4210             RC    0.04    0.04    0.04    5235  0.0042
                 * WITS70
4211             RX       0     450     700    1284    1435    1499    1745    2500
```

```
4212          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              * ---------------------------------------------------------------------------
              * ------------------------ BEGIN 03-30-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *

4213          KK   WI500
4214          KO       0       0     0.0       1      22
4215          BA  1.0487
4216          LG   0.349    0.25   5.521   0.224   5.124
4217          UC   0.979   0.695
              * Natural Time-Area Relation
4218          UA       0       3       5       8      12      20      43      75      90      96
4219          UA     100
              *

4220          KK  C500_1
4221          HC       2
              *
              * Diversion Recovery: Flow split FS10

4222          KK    D508
4223          KO       0       0     0.0       0      22
4224          DR   DO508
              *
              *
              * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE150

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


4225          KK   RD508
4226          KO       0       0     0.0       0      22
4227          RS       2    FLOW     0.0     0.0
4228          RC    0.04    0.04    0.04    5200  0.0065
              * WITS70
4229          RX       0     450     700    1284    1435    1499    1745    2500
4230          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *

4231          KK  C500_2
4232          HC       2  20.322
              *
              * COMBINES WI500, RD508, RWI506 AND RWI502

4233          KK  CWI500
4234          KO       0       0     0.0       0      22
              * Hard Coded
4235          HC       2  222.82
              *
              * ---------------------------------------------------------------------------
              * ------------------------ END 03-25-2005 ------------------------------------
              * ---------------------------------------------------------------------------
              *
              * STORAGE AT MCMICKEN DAM SPILLWAY
              *
              *

4236          KK  SSPILL
4237          KM   MCMICKEN DAM OUTLET AND SPILLWAY RATING CURVES USED HERE
4238          RS       1    STOR       0       0
4239          SV       0    1370    5505   17501   20816   25623   30850   36661   38754   39849
4240          SQ       0     675     810    4080    4325   21150   47400   81650   93160   99300
4241          SE    1335    1340    1345  1352.5 1353.65 1355.65 1357.65 1359.65 1360.35  1360.7
4242          ST  1360.7   12775    3.05     1.5
              *
              *
              * ROUTE UPDATED 4/14/04

4243          KK  RWI500
4244          KO       0       0     0.0       0      22
```

```
4245          RS       3    FLOW     0.0     0.0
4246          RC   0.045   0.035   0.045    5659   0.001
              * McMicken Dam Channel
4247          RX       0      46     101     121     171     181    1421    3621
4248          RY      25      14       4       0       0       4      14      25
              *
              *

4249          KK   PI635
4250          KO       0       0     0.0       1      22
4251          BA  0.6106
4252          LG    0.29    0.27   5.391   0.237  15.959
4253          UC   0.683   0.465
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE151

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

4254          UA       0       3       5       8      12      20      43      75      90      96
4255          UA     100
              *
              *
              * COMBINES PI635 AND RWI500

4256          KK  CPI635
4257          KO       0       0     0.0       0      22
4258          HC       2
              *
              * ROUTE UPDATED 4/14/04

4259          KK  RPI635
4260          KO       0       0     0.0       0      22
4261          RS       6    FLOW     0.0     0.0
4262          RC   0.045   0.035   0.045    7557   0.001
              * McMicken Dam Channel
4263          RX       0      46     101     121     171     181    1421    3621
4264          RY      25      14       4       0       0       4      14      25
              *
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP110

4265          KK  DCAP11
4266          KO       0       0     0.0       0      22
4267          DR  DOCP11
              *
              *
              * ROUTE UPDATED 4/14/4

4268          KK  RDCP11
4269          KO       0       0     0.0       0      22
4270          RS       5    FLOW     0.0     0.0
4271          RC   0.043   0.035   0.043    6377  0.0094
              * PITS10_2
4272          RX       0      89     103     136     185     206     261     280
4273          RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
              *
              *

4274          KK   PI618
4275          KO       0       0     0.0       1      22
4276          BA  0.2886
4277          LG   0.281   0.235   4.623   0.332    9.32
4278          UC   0.500   0.407
              * Natural Time-Area Relation
4279          UA       0       3       5       8      12      20      43      75      90      96
4280          UA     100
              *
              *
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              * ---------------------------- Begin 01-20-2005 edits -------------------------
              * ---------------------------------------------------------------------------
```

```
                    * ---------------------------------------------------------------------------
                    *
                    *
                    * Combines PI618 and RDCP11
                    * KKC618_1
                    * KO      0        0      0.0        0       22
                    * Hard Coded
                    * HC      2     3.85
                    *
                    * CAP Diversion Recovery: Outflow from structure CAP120
1                                                HEC-1 INPUT
PAGE152

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

4281                KK  DCAP12
4282                KO       0        0      0.0        0       22
4283                DR  DOCP12
                    *
                    *
                    * Diversion Out: Flow split FS11
                    * Flow Split Diversion: Main path to CPI618, Diversion to CPI615
                    * 53% of flow is diverted to CPI615

4284                KK    D618
4285                KO       0        0      0.0        0       22
4286                DT   DO618      0.0      0.0
4287                DI       0    10000
4288                DQ       0     5300
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4289                KK  RDCP12
4290                KO       0        0      0.0        0       22
4291                RS       2     FLOW      0.0      0.0
4292                RC   0.043    0.035    0.043     6159   0.0094
                    * PITS30
4293                RX       0       49      199      206      222      231      299      375
4294                RY    1532     1532     1530     1528     1528     1530     1532     1532
                    *
                    *
                    * Combines PI618 and RDCP12

4295                KK  C6181a
4296                KO       0        0      0.0        0       22
                    * Hard Coded
4297                HC       2     1.91
                    *
                    * Combines C618_1 and RDCP12

4298                KK  CPI618
4299                KO       0        0      0.0        0       22
                    * Hard Coded
4300                HC       2     5.48
                    *
                    *
                    * ROUTE UPDATED 4/14/04

4301                KK  RPI618
4302                KO       0        0      0.0        0       22
4303                RS       5     FLOW      0.0      0.0
4304                RC   0.043    0.035    0.043    10443   0.0075
                    * PITS20
4305                RX       0       50       84       87      123      125      156      285
4306                RY    1454     1453     1452     1450     1450     1452     1452     1454
                    *
                    *
                    *
                                                 HEC-1 INPUT
PAGE153

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

```
4307          KK   PI612
4308          KO       0       0     0.0       1      22
4309          BA  0.7377
4310          LG   0.337    0.25   4.365     0.4   6.284
4311          UC   0.883   0.770
              * Natural Time-Area Relation
4312          UA       0       3       5       8      12      20      43      75      90      96
4313          UA     100
              *
              *
              * COMBINES RPI618 and PI612
              * KKC612_1
              * KO     0       0     0.0       0      22
              *
              * HC     2
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP130

4314          KK  DCAP13
4315          KO       0       0     0.0       0      22
4316          DR  DOCP13
              *
              *
              * ROUTE UPDATED 4/14/4

4317          KK  RDCP13
4318          KO       0       0     0.0       0      22
4319          RS       6    FLOW     0.0     0.0
4320          RC   0.043   0.035   0.043   11034  0.0089
              * PITS30
4321          RX       0      49     199     206     222     231     299     375
4322          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *

4323          KK   PI615
4324          KO       0       0     0.0       1      22
4325          BA  0.8419
4326          LG   0.299   0.243   4.318   0.409   8.997
4327          UC   0.771    0.57
              * Urban Time-Area Relation
4328          UA       0       5      16      30      65      77      84      90      94      97
4329          UA     100
              *
              *
              * Combines PI615 and RD618

4330          KK  C6151A
4331          KO       0       0     0.0       0      22
              * Hard Coded
4332          HC       2   4.376
              *
              * Diversion Recovery: Flow split FS11
```



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

4333          KK    D618
4334          KO       0       0     0.0       0      22
4335          DR   DO618
              *
              *
              * ROUTE UPDATED 4/14/4

4336          KK   RD618
4337          KO       0       0     0.0       0      22
4338          RS       2    FLOW     0.0     0.0
4339          RC   0.043   0.035   0.043    4541  0.0088
              * PITS20
```

```
4340          RX       0      50      84      87     123     125     156     285
4341          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              *
              * Combines PI615 and RD618
              * KKC615_1
              * KO     0       0     0.0       0      22
              * Hard Coded
              * HC     2    2.68
              *
              * Combines C615_1 and RDCP13

4342          KK  CPI615
4343          KO       0       0     0.0       0      22
              * Hard Coded
4344          HC       2    6.20
              *
              *
              * ROUTE UPDATED 4/14/04

4345          KK  RPI615
4346          KO       0       0     0.0       0      22
4347          RS       2    FLOW     0.0     0.0
4348          RC   0.043   0.035   0.043    5109  0.0079
              * PITS20
4349          RX       0      50      84      87     123     125     156     285
4350          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              *
              * COMBINES RPI618 and PI612

4351          KK  C6121a
4352          KO       0       0     0.0       0      22
              *
4353          HC       2
              *
              * COMBINES C6121a and  RPI618
1                                          HEC-1 INPUT
PAGE155

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


4354          KK  CPI612
4355          KO       0       0     0.0       0      22
              *
4356          HC       2
              *
              *
              * Diversion Out: Flow split FS12
              * Flow Split Diversion: Main path to CPI609, Diversion to PI621

4357          KK    D612
4358          KO       0       0     0.0       0      22
4359          DT   DO612     0.0     0.0
4360          DI       0   10000
4361          DQ       0    7500
              *
              *
              * ROUTE UPDATED 4/14/04

4362          KK  RPI612
4363          KO       0       0     0.0       0      22
4364          RS       3    FLOW     0.0     0.0
4365          RC   0.043   0.035   0.043    5754   0.006
              * PITS20
4366          RX       0      50      84      87     123     125     156     285
4367          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *

4368          KK   PI609
```

```
4369          KO       0       0     0.0       1      22
4370          BA  1.9353
4371          LG   0.321   0.247   4.529   0.368   8.386
4372          UC   1.146   0.915
              * Urban Time-Area Relation
4373          UA       0       5      16      30      65      77      84      90      94      97
4374          UA     100
              *
              *
              * Combines PI609 and RPI612

4375          KK  C609_1
4376          KO       0       0     0.0       0      22
              * Hard Coded
4377          HC       2    5.04
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP140

4378          KK  DCAP14
4379          KO       0       0     0.0       0      22
4380          DR  DOCP14
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE156

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


4381          KK  RDCP14
4382          KO       0       0     0.0       0      22
4383          RS      12    FLOW     0.0     0.0
4384          RC   0.043   0.035   0.043   20386  0.0086
              * PITS30
4385          RX       0      49     199     206     222     231     299     375
4386          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *
              * Combines C609_1 and RDCP14

4387          KK  CPI609
4388          KO       0       0     0.0       0      22
              * Hard Coded
4389          HC       2    8.10
              *
              *
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              * --------------------------- End 01-20-2005 edits ---------------------------
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              *
              *
              * ROUTE UPDATED 4/14/04

4390          KK  RPI609
4391          KO       0       0     0.0       0      22
4392          RS       2    FLOW     0.0     0.0
4393          RC   0.043   0.035   0.043    4513  0.0062
              * PITS40
4394          RX       0       7      14      27      61      79      97     113
4395          RY    1370    1368    1366    1364    1364    1366    1368    1370
              *
              *

4396          KK  PI600A
4397          BA  0.5202
4398          LG   0.345   0.246   5.184   0.252   4.929
4399          UC    0.45   0.205
              * Natural Time-Area Relation
4400          UA       0       3       5       8      12      20      43      75      90      96
4401          UA     100
```

```
                    *
                    *
                    *
                    * Combines RPI609 and PI600A

4402                KK   C600A
4403                HC       2
                    *
                    *
                    * This diversion diverts everything out to CPI603.
                    * This was used for ease of logic in HEC-1 model.
                    * No flow from PI600A actually combines with CPI633.
1                                                HEC-1 INPUT
PAGE157

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


4404                KK   D600A
4405                DT  DO600A     0.0     0.0
4406                DI       0  100000
4407                DQ       0  100000
                    *
                    *
                    *

4408                KK   PI621
4409                KO       0       0     0.0       1      22
4410                BA  0.9050
4411                LG   0.347   0.249   4.621   0.339   5.296
4412                UC   0.900   0.650
                    * Natural Time-Area Relation
4413                UA       0       3       5       8      12      20      43      75      90      96
4414                UA     100
                    *
                    *
                    * Diversion Recovery: Flow split FS12

4415                KK    D612
4416                KO       0       0     0.0       0      22
4417                DR   DO612
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4418                KK   RD612
4419                KO       0       0     0.0       0      22
4420                RS       8    FLOW     0.0     0.0
4421                RC   0.043   0.035   0.043   11125  0.0065
                    * PITS20
4422                RX       0      50      84      87     123     125     156     285
4423                RY    1454    1453    1452    1450    1450    1452    1452    1454
                    *
                    *
                    * COMBINES BASIN PI621 AND RD612

4424                KK  CPI621
4425                KO       0       0     0.0       0      22
                    * Hard Coded
4426                HC       2   10.22
                    *
                    *
                    * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
                    * Berm Elevation = 1342
                    * The storage behind this basin is contained, and does not flow to a siphon
                    * For overtopping of the berm, the Weir equation was used.
                    * Q=C*L*H^1.5
                    * C was assumed to be 2.7
                    * L, the length of the weir was the basin boundary along the canal = 3107 ft
                                                 HEC-1 INPUT
PAGE158

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

```
4427          KK  SPI621
4428          KO       3       0     0.0       0      21
4429          RS       1    STOR       0
4430          SQ       0       0       0       0    2966    8389   15411   23727
4431          SA       0    0.10    1.69   21.17   21.18   21.19   21.20   12.21
4432          SE    1336    1338    1340    1342  1342.5    1343  1343.5    1344
              *
              *
              * ROUTE UPDATED 4/14/04

4433          KK  RPI621
4434          KO       0       0     0.0       0      22
4435          RS       1    FLOW     0.0     0.0
4436          RC   0.043   0.035   0.043    2775  0.0079
              * TSR621
4437          RX       0      20      32      79     118     139     374     400
4438          RY    1344    1343    1342    1342    1340    1342    1344    1344
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP100

4439          KK  DCAP10
4440          KO       0       0     0.0       0      22
4441          DR  DOCP10
              *
              *
              * ROUTE UPDATED 4/14/4

4442          KK  RDCP10
4443          KO       0       0     0.0       0      22
4444          RS       4    FLOW     0.0     0.0
4445          RC   0.043   0.035   0.043    6701  0.0081
              * WITS120
4446          RX       0     100     292     409     492     567     718     886
4447          RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
              *
              *

4448          KK   PI628
4449          KO       0       0     0.0       1      22
4450          BA  0.5695
4451          LG   0.285    0.25    4.56   0.349   8.902
4452          UC   0.538   0.316
              * Natural Time-Area Relation
4453          UA       0       3       5       8      12      20      43      75      90      96
4454          UA     100
              *
              *
              * Combines PI628 and RDCP10
1                                          HEC-1 INPUT
PAGE159

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

4455          KK  CPI628
4456          KO       0       0     0.0       0      22
              * Hard Coded
4457          HC       2    4.11
              *
              *
              * ROUTE UPDATED 4/14/04

4458          KK  RPI628
4459          KO       0       0     0.0       0      22
4460          RS       6    FLOW     0.0     0.0
4461          RC   0.043   0.035   0.043   14427  0.0067
              * PITS20
4462          RX       0      50      84      87     123     125     156     285
4463          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
```

```
4464          KK  PI624A
4465          KO       0       0     0.0       1      22
4466          BA  2.8066
4467          LG   0.391   0.258   4.467   0.431   3.693
4468          UC   1.171   0.693
              * Natural Time-Area Relation
4469          UA       0       3       5       8      12      20      43      75      90      96
4470          UA     100
              *
              *
              * COMBINES RPI628, PI624A

4471          KK   C624A
4472          KO       0       0     0.0       0      22
4473          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

4474          KK   R624A
4475          KO       0       0     0.0       0      22
4476          RS       6    FLOW     0.0     0.0
4477          RC   0.043   0.035   0.043   11809  0.0042
              * PDTS40_1
4478          RX       0      86     158     492     543     560     776    1208
4479          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

4480          KK   PI639
4481          KO       0       0     0.0       1      22
4482          BA  0.3431
4483          LG   0.335    0.25   4.598   0.341   9.561
4484          UC   0.946   1.173
              * Natural Time-Area Relation
4485          UA       0       3       5       8      12      20      43      75      90      96
```



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

4486          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR650

4487          KK    D524
4488          KO       0       0     0.0       0      22
4489          DR   DO524
              *
              *
              *
              * ROUTE UPDATED 4/14/4

4490          KK   RD524
4491          KO       0       0     0.0       0      22
4492          RS       1    FLOW     0.0     0.0
4493          RC   0.043   0.035   0.043    2235  0.0027
              * WITS130
4494          RX       0     400     456     575     620     650     660     682
4495          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD524 and PI639

4496          KK  CPI639
4497          KO       0       0     0.0       0      22
              * Hard Coded
4498          HC       2    0.37
              *
              * ROUTE UPDATED 4/14/04

4499          KK  RPI639
4500          KO       0       0     0.0       0      22
```

```
4501          RS       2    FLOW      0.0      0.0
4502          RC   0.043   0.035    0.043     5380   0.0048
              * WITS130
4503          RX       0     400      456      575      620      650      660      682
4504          RY  1396.5    1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *

4505          KK   PI636
4506          KO       0       0      0.0        1       22
4507          BA  0.4286
4508          LG   0.297    0.25     4.65    0.331   20.164
4509          UC   0.708   0.564
              * Natural Time-Area Relation
4510          UA       0       3        5        8       12       20       43       75       90       96
4511          UA     100
              *
              *
              * Combines PI636 and RPI639
1                                                HEC-1 INPUT
PAGE161

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


4512          KK  CPI636
4513          KO       0       0      0.0        0       22
4514          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

4515          KK  RPI636
4516          KO       0       0      0.0        0       22
4517          RS       1    FLOW      0.0      0.0
4518          RC   0.043   0.035    0.043      730   0.0137
              * WITS130
4519          RX       0     400      456      575      620      650      660      682
4520          RY  1396.5    1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *

4521          KK   PI624
4522          KO       0       0      0.0        1       22
4523          BA  1.2250
4524          LG   0.234   0.249    4.886    0.341   34.218
4525          UC   1.021   0.730
              * Urban Time-Area Relation
4526          UA       0       5       16       30       65       77       84       90       94       97
4527          UA     100
              *
              *
              * COMBINES R624A, PI624 and RPI636

4528          KK  CPI624
4529          KO       0       0      0.0        0       22
4530          HC       3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * It was assumed that this basin is isolated, and can only overtop the canal.
              * Berm Elevation = 1342
              * For Overtopping of the berm, the Weir equation was used.
              * Q=C*B*H^1.5
              * C was assumed to be 2.7
              * B, the length of the weir was the basin boundary along the canal = 4305 ft

4531          KK  SPI624
4532          KO       3       0      0.0        0       21
4533          RS       1    STOR        0
4534          SQ       0       0        0        0     4110    11624    21354    32876
4535          SE    1336    1338     1340     1342   1342.5     1343   1343.5     1344
4536          SA       0    0.19     5.86    36.95    36.96    36.97
4537          SE    1336    1338     1340     1342     1343     1344
```

PAGE162

```
                    *
                    *
                    * ROUTE UPDATED 4/14/04
                                                HEC-1 INPUT

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


4538                KK  RPI624
4539                KO       0       0     0.0       0      22
4540                RS       3    FLOW     0.0     0.0
4541                RC   0.043   0.035   0.043    5060  0.0043
                    * TSR621-modified X-sect
4542                RX       0      40      52      99     138     159     394   511.5
4543                RY    1345    1343    1342    1342    1340    1342    1344    1345
                    *
                    *

4544                KK   PI633
4545                KO       0       0     0.0       1      22
4546                BA  0.3359
4547                LG   0.329   0.235   5.231   0.248   4.696
4548                UC   0.708   0.635
                    * Natural Time-Area Relation
4549                UA       0       3       5       8      12      20      43      75      90      96
4550                UA     100
                    *
                    *
                    * Combines RPI635, D600A, RPI621, RPI624 and PI633

4551                KK  CPI633
4552                KO       0       0     0.0       0      22
                    * Hard Coded
4553                HC       5  241.94
                    *
                    * ROUTE UPDATED 4/14/04

4554                KK  RPI633
4555                KO       0       0     0.0       0      22
4556                RS       4    FLOW     0.0     0.0
4557                RC   0.045   0.035   0.045    5834   0.001
                    * McMicken Dam Channel
4558                RX       0      46     101     121     171     181    1421    3621
4559                RY      25      14       4       0       0       4      14      25
                    *
                    *
                    *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ******************** BEGIN EAST PADELFORD AREA RECOVERY ******************** *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    *
                    * This is the interpolated hydrograph from concentration point CO500 from
                    * the Padelford model by A-N West Inc, which corresponds to concentration
                    * point PDEAST in the 2004 Wittmann ADMSU.  The Padelford model used a time
                    * step of 2 minutes, and the Wittmann ADMSU utilizes a time step of 5 minutes,
                    * so interpolation was required.  The QI cards were utilized to avoid the
                    * conflict of using DSS files, which can cause errors in the future if not
                    * utilized correctly.  This QI card was truncated once the flows reached
                    * zero cfs.  Although A-N West calculated the flow through the various CAP
                    * structures, they did not take into consideration all of the flow from the
                    * west portion of this CAP system.  Thus it was necessary to create the QI
                    * card from a point before diversions occur at the CAP, and before storage
                    * occurs.
                    *
                    * There are 2 points where flow is inputted into the model from the Padelford
                    * area: PDEAST and PDWEST. A-N WEST hard coded both concentrations points with
                    * the entire model area, 23 sq miles.  To remain consistent in the Wittmann
                    * ADMSU, this can not occur, so the contributing area is associated with each
                    * Inflow point, and they are as follows:
```

```
*        PDEAST = 16.44 sq miles
*        PDWEST =  7.08 sq miles
*
*
1                                    HEC-1 INPUT
PAGE163

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

4560          KK  PDEAST
4561          BA   16.44
4562          QI       0       0       0       0       0       0       1       1       1       1
4563          QI       2       2       2       2       3       3       3       4       4       4
4564          QI       4       4       5       5       5       5       5       5       5       5
4565          QI       6       6       6       6       6       6       6       6       6       6
4566          QI       7       7       7       7       7       8       8       8       9       9
4567          QI      10      10      11      11      12      12      13      13      14      15
4568          QI      15      16      17      17      18      19      20      21      22      23
4569          QI      23      23      24      24      24      24      25      25      25      25
4570          QI      26      26      27      27      27      28      28      28      29      29
4571          QI      29      29      30      30      30      30      30      31      31      31
4572          QI      31      32      32      32      33      33      34      34      35      35
4573          QI      36      36      37      37      38      38      39      39      40      40
4574          QI      41      41      42      42      43      43      44      45      46      47
4575          QI      49      50      52      54      57      60      65      71      81     102
4576          QI     145     234     461     929    1602    2352    2980    3399    3442    3262
4577          QI    3054    2959    3100    3578    4503    5750    6718    7619    8243    8461
4578          QI    8267    7765    7024    6177    5359    4700    4122    3568    2982    2388
4579          QI    2015    1677    1364    1117     961     849     762     686     625     574
4580          QI     525     481     445     416     392     368     343     318     295     273
4581          QI     255     239     226     212     199     185     173     160     150     141
4582          QI     134     127     122     116     111     106     100      96      91      87
4583          QI      83      78      75      71      68      65      63      60      58      56
4584          QI      55      53      52      50      49      48      47      45      44      43
4585          QI      42      41      41      40      40      39      39      38      38      37
4586          QI      37      37      36      36      36      35      35      34      34      33
4587          QI      33      32      32      32      31      31      31      30      30      30
4588          QI      30      29      29      29      29      29      28      28      28      28
4589          QI      27      27      27      27      26      26      26      26      26      25
4590          QI      25      25      25      25      24      24      24      24      24      24
4591          QI      23      23      23      23      22      22      21      21      21      20
4592          QI      20      19      19      18      18      18      18      17      17      17
4593          QI      17      16      16      16      16      16      16      15      15      15
4594          QI      15      15      15      14      14      14      14      14      14      13
4595          QI      13      13      13      13      12      12      12      11      11      11
4596          QI      10      10      10       9       9       8       8       8       7       7
4597          QI       7       6       6       5       5       5       4       4       4       3
4598          QI       3       3       3       2       2       2       2       2       2       1
4599          QI       1       1       1       1       1       1       1       1       1   0.001
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************************************************************ *
              * ******************** END EAST PADELFORD AREA RECOVERY ********************** *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              * This combine card combines DCAP* and PDC24 which contains all of the
              * contributing area from the Padelford model to the CAP impoundment system.
              *
              *
1                                    HEC-1 INPUT
PAGE164

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

4600          KK   DCAP*
4601          DR  DOCAP*
              *
              *
```

```
4602        KK   CAP2*
            * Hard Coded
4603        HC       2   39.36
            *
            *
            * ************************************************************************ *
            * ************************************************************************ *
            * ************* BEGINNING OF CAP IMPOUNDMENT AREA SYSTEM 2 ****************** *
            * ************************************************************************ *
            * ************************************************************************ *
            *
            * The flow from STOR2 is distributed to the following routes and diversions.
            * The breakdown of where the flow is distributed to is shown below, with the
            * STOR2 being the summation of the flows at any given elevation.
            *
            * * ---------------------------------------------------------------------- * *
            * * More details on the 2 CAP impoundment areas can be found above the STOR1 * *
            * * storage card in this model as well as in the appendix of the report.     * *
            * * ---------------------------------------------------------------------- * *
            *
            * ************************************************************************ *
            *  *ELEV*  1544 *  1546 *  1550 *  1552 *  1554 *  1556 *   1557 *   1558 *    *
            * ------------------------------------------------------------------------- *
            * *ROUTES* ********************************************************************* *
            * *DCAP19*  195 *   450 *   945 *  1140 *  1290 *  1395 *   5931 *  14092 *    *
            * *DCAP18*   55 *   145 *   310 *   375 *   430 *   465 *   2908 *   7386 *    *
            * *DCAP17*   55 *   140 *   300 *   370 *   430 *   465 *   6039 *  16244 *    *
            * *DCAP16*  165 *   420 *   900 *  1125 *  1290 *  1395 *   6699 *  16436 *    *
            * *DCAP15*   22 *    66 *   245 *   320 *   380 *   430 *   3499 *   9075 *    *
            * ------------------------------------------------------------------------- *
            *  *STOR2*  492 *  1221 *  2700 *  3330 *  3820 *  4150 *  25076 *  63233 *    *
            * ************************************************************************ *
            *
            *
            * *** STORAGE IN THE EAST Padelford CAP IMPOUNDMENT AREA

4604        KK   STOR2
4605        KO       3       0     0.0       0      22
4606        RS       1    STOR       0
4607        SQ       0     492    1221    2700    3330    3820    4150   25076   63233
4608        SE    1541    1544    1546    1550    1552    1554    1556    1557    1558
            *
4609        SA       0    0.21    0.79    4.44   37.30   67.70   96.99  126.24  154.80  182.80
4610        SA  210.76  210.77  210.78
4611        SE    1528    1532    1536    1540    1544    1546    1548    1550    1552    1554
4612        SE    1556    1557    1558
            *
            *
            *
1                                          HEC-1 INPUT
PAGE165

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

4613        KK  DCAP19
4614        KM   DIVERSON AT STRUCTURE CAP190: MAIN PATH TO DCAP18, DIVERSION TO CPD732
4615        DT  DOCP19
4616        DI     492    1221    2700    3330    3820    4150   25076   63233
4617        DQ     195     450     945    1140    1290    1395    5931   14092
            *
            *

4618        KK  DCAP18
4619        KM   DIVERSON AT STRUCTURE CAP180: MAIN PATH TO DCAP17, DIVERSION TO CPD736
4620        DT  DOCP18
4621        DI     297     771    1755    2190    2530    2755   19145   49141
4622        DQ      55     145     310     375     430     465    2908    7386
            *
            *

4623        KK  DCAP17
4624        KM   DIVERSON AT STRUCTURE CAP170: MAIN PATH TO DCAP16, DIVERSION TO CPD740
```

```
4625          DT  DOCP17
4626          DI     242     626    1445    1815    2100    2290   16237   41755
4627          DQ      55     140     300     370     430     465    6039   16244
              *
              *

4628          KK  DCAP16
4629          KM   DIVERSON AT STRUCTURE CAP160: MAIN PATH TO DCAP15, DIVERSION TO CPD740
4630          DT  DOCP16
4631          DI     187     486    1145    1445    1670    1825   10198   25511
4632          DQ     165     420     900    1125    1290    1395    6699   16436
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * **************** END OF CAP IMPOUNDMENT AREA SYSTEM 2 ********************** *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              * ROUTE UPDATED 4/14/4

4633          KK  RDCP15
4634          KO      0       0     0.0       0      22
4635          RS      6    FLOW     0.0     0.0
4636          RC  0.043   0.035   0.043    9602  0.0106
              * PITS30
4637          RX      0      49     199     206     222     231     299     375
4638          RY   1532    1532    1530    1528    1528    1530    1532    1532
              *
              *
1                                          HEC-1 INPUT
PAGE166

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

4639          KK  PI606A
4640          KO      0       0     0.0       1      22
4641          BA  0.4572
4642          LG  0.308   0.245   4.449   0.378  10.151
4643          UC  0.667   0.586
              * Natural Time-Area Relation
4644          UA      0       3       5       8      12      20      43      75      90      96
4645          UA    100
              *
              *
              * COMBINES BASIN PI606A, RDCP15

4646          KK   C606A
4647          KO      0       0     0.0       0      22
              * Hard Coded
4648          HC      2    4.08
              *
              *
              * Diversion Out: Flow split FS14
              * Flow Split Diversion: Main path to CPI606, Diversion to CPI604
              * 41% of flow is diverted to CPI604

4649          KK   D606A
4650          KO      0       0     0.0       0      22
4651          DT  DO606A     0.0     0.0
4652          DI      0   10000
4653          DQ      0    4100
              *
              *
              * ROUTE UPDATED 4/14/4

4654          KK   R606A
4655          KO      0       0     0.0       0      22
4656          RS      7    FLOW     0.0     0.0
4657          RC  0.043   0.035   0.043   12583  0.0081
              * PDTS30
4658          RX      0      47     318     322     356     364     463     604
```

```
4659          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4660          KK   PI606
4661          KO       0       0     0.0       1      22
4662          BA  1.0765
4663          LG   0.324    0.25   4.383   0.419  10.725
4664          UC   0.879   0.635
              * Urban Time-Area Relation
4665          UA       0       5      16      30      65      77      84      90      94      97
4666          UA     100
              *
              *
              * COMBINES BASIN PI606, R606A
1                                                HEC-1 INPUT
PAGE167

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


4667          KK  CPI606
4668          KO       0       0     0.0       0      22
              * Hard Coded
4669          HC       2    3.49
              *
              *
              * ROUTE UPDATED 4/14/04

4670          KK  RPI606
4671          KO       0       0     0.0       0      22
4672          RS       1    FLOW     0.0     0.0
4673          RC   0.043   0.035   0.043    2654  0.0055
              * TSR606
4674          RX       0     241     598     949    1098    1381    2002    2039
4675          RY    1354    1354    1350    1348    1348    1350    1352    1354
              *
              *

4676          KK   PI604
4677          KO       0       0     0.0       1      22
4678          BA  0.3628
4679          LG   0.307    0.25    4.97   0.285  22.848
4680          UC   0.688   0.579
              * Urban Time-Area Relation
4681          UA       0       5      16      30      65      77      84      90      94      97
4682          UA     100
              *
              *
              * Diversion Recovery: Flow split FS14

4683          KK   D606A
4684          KO       0       0     0.0       0      22
4685          DR  DO606A
              *
              *
              * ROUTE UDPATED 4/14/4

4686          KK  RD606A
4687          KO       0       0     0.0       0      22
4688          RS       6    FLOW     0.0     0.0
4689          RC   0.043   0.035   0.043    7507  0.0087
              * PITS30
4690          RX       0      49     199     206     222     231     299     375
4691          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *
              * Combines RD606A and PI604

4692          KK  CPI604
4693          KO       0       0     0.0       0      22
              * Hard Coded
4694          HC       2    2.03
              *
```

```
                    *
                    * ROUTE UPDATED 4/14/04
                                                HEC-1 INPUT
PAGE168

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


4695                KK  RPI604
4696                KO       0       0     0.0       0      22
4697                RS       4    FLOW     0.0     0.0
4698                RC   0.043   0.035   0.043    7442   0.007
                    * PDTS30
4699                RX       0      47     318     322     356     364     463     604
4700                RY    1416    1414    1410    1408    1408    1410    1412    1414
                    *
                    *
                    * ------------------------------------------------------------------------
                    * ------------------------- BEGIN EDITS 03-10-2005 ----------------------------
                    * ------------------------------------------------------------------------
                    * 03-10-2005 moved basin

4701                KK   PI603
4702                KO       0       0     0.0       1      22
4703                BA  0.5190
4704                LG   0.344    0.25    4.66   0.316   7.957
4705                UC   0.738   0.615
                    * Natural Time-Area Relation
4706                UA       0       3       5       8      12      20      43      75      90      96
4707                UA     100
                    *
                    *
                    * 03-10-2005 This was added to combine 3: RPI604, RPI606 & PI603

4708                KK  C603_1
4709                KO       0       0     0.0       0      22
4710                HC       3
                    *

4711                KK   PD744
4712                KO       0       0     0.0       1      22
4713                BA  0.7975
4714                LG   0.342   0.249   4.427   0.357   5.989
4715                UC   0.908   0.725
                    * Natural Time-Area Relation
4716                UA       0       3       5       8      12      20      43      75      90      96
4717                UA     100
                    *
                    *
                    * This diversion contains all the flow from C600A.

4718                KK   D600A
4719                DR  DO600A
                    *
                    *
                    * ROUTE UPDATED 4/14/4
1                                               HEC-1 INPUT
PAGE169

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


4720                KK  RD600A
4721                RS       2    FLOW     0.0     0.0
4722                RC   0.043   0.035   0.043    4775  0.0013
                    * TSBEAR
4723                RX       0      25      30      35      60     110     460     600
4724                RY    1344    1344    1342    1340    1340    1342    1344    1345
                    *
                    *
                    * 03-10-2005 This was edited to combine only 3: C603_1, RD600A and PD744
                    * *** COMBINES RD600A, RPI606, RPI604, PD744 AND PI603 ***

4725                KK  CPI603
```

```
4726    KO       0       0     0.0       0      22
        * Hard Coded
4727    HC       3   15.46
        *
        * ---------------------------------------------------------------------------
        * -------------------------- END EDITS 03-10-2005 ----------------------------
        * ---------------------------------------------------------------------------
        *
        * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
        * *** This storage includes the storage at basins PI603, PI600A and PD744
        * *** The Discharge represents the Discharge through the Beardsley Canal
        * *** structure as well as the weir flow across PI603, PI600A and PD744,
        * *** so the SQ card can be calculated by adding the flows for basins PI603
        * *** and PD744 as found in the appendix.
        * *** The Weir flow across PD744 is diverted out on the next KK card.
        * *** The weir flow for Basin PI600A is not diverted, because both
        * *** flows (from PI600A and PI603) go to CPI600.

4728    KK  SPI603
4729    KO       3       0     0.0       0      21
4730    RS       1    STOR       0
4731    SQ       0     309     874    1605    2471    3453    4539   14797   33095   56636
4732    SQ   84417
4733    SE    1338    1339    1340    1341    1342    1343    1344  1344.5    1345  1345.5
4734    SE    1346
        *
4735    SA       0    0.48    5.26   27.16  105.96  105.98     106
4736    SE    1336    1338    1340    1342    1344    1345    1346
        *
        *
        * This diversion is only weir flow across the boundary of Basin PD744
        * over the Beardsley Canal to CPD720.  This Diversion is being combined
        * with CPD726 and they are routed together.
        *
        * For overtopping of the berm, the Weir equation was used.
        * Q=C*L*H^1.5
        * C was assumed to be 2.7
        * L, the length of the weir was the basin boundary along the canal = 3652 ft
        * Berm Elevation was 1344
        * *** The remaing flow goes to CPI600 ***
1                                   HEC-1 INPUT
PAGE170

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


4737    KK    D744
4738    DT   DO744     0.0     0.0
4739    DI       0     309     874    1605    2471    3453    4539   14797   33095   56636
4740    DI   84417
4741    DQ       0       0       0       0       0       0       0    3486    9860   18115
4742    DQ   27889
        *
        *
        * ROUTE UPDATED 4/14/04

4743    KK  RPI603
4744    KO       0       0     0.0       0      22
4745    RS       1    FLOW     0.0     0.0
4746    RC   0.043   0.035   0.043    3427  0.0044
        * PDTS40_1
4747    RX       0      86     158     492     543     560     776    1208
4748    RY    1330  1326.5    1326    1324    1320    1326    1328    1330
        *
        *
        *

4749    KK   PI600
4750    KO       0       0     0.0       1      22
4751    BA  0.6050
4752    LG   0.342   0.244   5.047   0.268   4.887
4753    UC   0.542   0.341
        * Natural Time-Area Relation
4754    UA       0       3       5       8      12      20      43      75      90      96
```

```
4755          UA     100
              *
              *
              * COMBINES BASIN RPI633, RPI603 and  PI600

4756          KK  CPI600
4757          KO       0       0     0.0       0      22
4758          HC       3
              *
              * ROUTE UPDATED 4/14/04

4759          KK  RPI600
4760          KO       0       0     0.0       0      22
4761          RS       2    FLOW     0.0     0.0
4762          RC   0.045   0.035   0.045    4937   0.001
              * McMicken Dam Channel
4763          RX       0      46     101     121     171     181    1421    3621
4764          RY      25      14       4       0       0       4      14      25
              *
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP160
1                                                HEC-1 INPUT
PAGE171

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


4765          KK  DCAP16
4766          KO       0       0     0.0       0      22
4767          DR  DOCP16
              *
              *
              * ROUTE UPDATED 4/14/4

4768          KK  RDCP16
4769          KO       0       0     0.0       0      22
4770          RS       8    FLOW     0.0     0.0
4771          RC   0.043   0.035   0.043   10754  0.0112
              * PDTS30
4772          RX       0      47     318     322     356     364     463     604
4773          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              * ---------------------------------------------------------
              * ---------------------------------------------------------
              *
              * MODIFIED FOR WASH 11E
              *
              *

4774          KK   PD740
4775          KO       0       0     0.0       1      22
4776          BA  1.2839
4777          LG   0.315   0.242   4.227   0.427   8.181
              *
              * Per the District the CLark Unit hydrograph was changed to an S-Graph
              *
              * Desert/Rangeland S-Graph for Basin PD740
              * KN = 0.059
              * Basin Area [mi2] = 1.2839
              * Basin Lag [hr] = 0.96
              * Time Step [min] = 5
              * Qult = 9942
              *
4778          UI       0      75      75     124     249     353     452     537     631     672
4779          UI     718     719     692     657     561     491     417     361     310     269
4780          UI     226     197     167     141     125     115      83      80      68      51
4781          UI      51      51      34      18      18      18      18      18      18      18
4782          UI      18      18      18       0
              *
              *
              * COMBINES RDCP16 AND PD740

4783          KK  C740_1
```

```
4784          HC       2   14.40
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP170
1                                          HEC-1 INPUT
PAGE172

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


4785          KK  DCAP17
4786          KO       0       0     0.0       0      22
4787          DR  DOCP17
              *
              *
              * ROUTE UPDATED 4/14/4

4788          KK  RDCP17
4789          KO       0       0     0.0       0      22
4790          RS       5    FLOW     0.0     0.0
4791          RC   0.043   0.035   0.043   10400  0.0115
              * PDTS30
4792          RX       0      47     318     322     356     364     463     604
4793          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * Combines RDCP17 and C740_1

4794          KK  CPD740
4795          KO       0       0     0.0       0      22
              * Hard Coded
4796          HC       2   18.84
              *
              * ----------------------------------------------------------------------
              * ----------------------------------------------------------------------
              *
              * Route updated 04-15-04

4797          KK  RPD740
4798          KO       0       0     0.0       0      22
4799          RS       5    FLOW     0.0     0.0
4800          RC   0.043   0.035   0.043    5434  0.0063
              * PDTS30
4801          RX       0      47     318     322     356     364     463     604
4802          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4803          KK  PD726B
4804          KO       0       0     0.0       1      22
4805          BA  0.9345
4806          LG    0.32    0.25   4.368   0.399   9.751
              *
              * Desert/Rangeland S-Graph for Basin PD726B
              * KN = 0.059
              * Basin Area [mi2] = 0.9345
              * Basin Lag [hr] = 0.88
              * Time Step [min] = 5
              * Qult = 7237
              *
4807          UI       0      60      60     123     221     315     397     469     529     559
4808          UI     571     551     518     438     376     317     269     227     193     166
4809          UI     135     115     100      91      63      63      48      41      41      37
4810          UI      15      15      15      15      15      15      15      15      15       0
              *
              *
              * Combines RPD740 and PD726B
1                                          HEC-1 INPUT
PAGE173

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


4811          KK   C726B
```

```
4812          KO       0       0     0.0       0      22
4813          HC       2
              *
              *
              * Route updated 04-15-04

4814          KK   R726B
4815          KO       0       0     0.0       0      22
4816          RS       2    FLOW     0.0     0.0
4817          RC   0.043   0.035   0.043    4094  0.0083
              * PDTS30
4818          RX       0      47     318     322     356     364     463     604
4819          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP180

4820          KK  DCAP18
4821          KO       0       0     0.0       0      22
4822          DR  DOCP18
              *
              *
              * ROUTE UPDATED 4/14/4

4823          KK  RDCP18
4824          KO       0       0     0.0       0      22
4825          RS       8    FLOW     0.0     0.0
4826          RC   0.043   0.035   0.043   14927    0.01
              * PDTS30
4827          RX       0      47     318     322     356     364     463     604
4828          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4829          KK   PD736
4830          KO       0       0     0.0       1      22
4831          BA  0.7789
4832          LG   0.347   0.248   4.632   0.334   5.248
4833          UC     1.5   1.637
              * Natural Time-Area Relation
4834          UA       0       3       5       8      12      20      43      75      90      96
4835          UA     100
              *
              *
              * Combines PD736 and RDCP18

4836          KK  CPD736
4837          KO       0       0     0.0       0      22
              * Hard Coded
4838          HC       2    5.27
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE174

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


4839          KK  RPD736
4840          KO       0       0     0.0       0      22
4841          RS       1    FLOW     0.0     0.0
4842          RC   0.043   0.035   0.043    1894  0.0053
              * PDTS30
4843          RX       0      47     318     322     356     364     463     604
4844          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP190

4845          KK  DCAP19
4846          KO       0       0     0.0       0      22
4847          DR  DOCP19
              *
```

```
                 *
                 * ROUTE UPDATED 4/14/4

4848             KK  RDCP19
4849             KO       0       0     0.0       0      22
4850             RS       4    FLOW     0.0     0.0
4851             RC   0.043   0.035   0.043    5902  0.0149
                 * PDTS30
4852             RX       0      47     318     322     356     364     463     604
4853             RY    1416    1414    1410    1408    1408    1410    1412    1414
                 *
                 *

4854             KK   PD760
4855             KO       0       0     0.0       1      22
4856             BA  0.8670
4857             LG   0.344   0.336   5.039   0.275   6.919
4858             UC   0.542   0.248
                 * Natural Time-Area Relation
4859             UA       0       3       5       8      12      20      43      75      90      96
4860             UA     100
                 *
                 *
                 * *** Storage CAP200 *** This storage is located at the CAP Canal at CP 740.
                 * *** CP 740 is located at the CAP Canal at Lone Mountain Rd and 147th Ave.

4861             KK  SCP200
4862             KO       3       0       0       0      21
4863             RS       1    STOR       0
                 * CAP 200, R-8 STA 342+40
                 * THE WEIR LENGTH IS 3800 FT AND THE WEIR COEF - 2.7
                 * THE WEIR FLOW WAS CALCULATED AT H = 1 FT (1542.4) AND H = 2 FT (1543.4)
4864             SQ     0.0    25.0   175.0   335.0   440.0   530.0   600.0   620.0   10910   29690
4865             SE  1518.5    1520    1524    1528    1532    1536    1540  1541.4  1542.4  1543.4
4866             SA       0     1.3     6.0    18.0      40    69.9    80.6    80.7    80.8
4867             SE    1520    1524    1528    1532    1536    1540  1541.4  1542.4  1543.4
                 *
                 *
                 * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE175

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


4868             KK  RPD760
4869             KO       0       0     0.0       0      22
4870             RS       2    FLOW     0.0     0.0
4871             RC   0.043   0.035   0.043    5149  0.0101
                 * PDTS30
4872             RX       0      47     318     322     356     364     463     604
4873             RY    1416    1414    1410    1408    1408    1410    1412    1414
                 *
                 *

4874             KK   PD732
4875             KO       0       0     0.0       1      22
4876             BA  0.4793
4877             LG   0.325   0.232   4.928   0.286   4.645
4878             UC   0.738   0.470
                 * Natural Time-Area Relation
4879             UA       0       3       5       8      12      20      43      75      90      96
4880             UA     100
                 *
                 *
                 * Combines PD732, RPD760 and RDCP19

4881             KK  CPD732
4882             KO       0       0     0.0       0      22
                 * Hard Coded
4883             HC       3   15.04
                 *
                 * ROUTE UPDATED 4/14/04
```

```
4884          KK  RPD732
4885          KO       0       0     0.0       0      22
4886          RS       6    FLOW     0.0     0.0
4887          RC   0.043   0.035   0.043   10623  0.0064
              * PDTS30
4888          RX       0      47     318     322     356     364     463     604
4889          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * The UC card for PD726A is approximated as 1.5hrs

4890          KK  PD726A
4891          BA  1.1030
4892          LG   0.346   0.247   4.501   0.366   8.937
4893          UC    1.50   1.258
              * Natural Time-Area Relation
4894          UA       0       3       5       8      12      20      43      75      90      96
4895          UA     100
              *
              *
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              * Begin Wash 14 East edits
              *
              * COMBINES RPD732 and PD726A
1                                          HEC-1 INPUT
PAGE176

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


4896          KK    C14E
4897          KO       0       0     0.0       0      22
4898          HC       2
              *
              * COMBINES RPD736 and C14E

4899          KK   C726A
4900          KO       0       0     0.0       0      22
              * changed from HC = 3 to = 2
4901          HC       2
              * ---------------------------------------------------------------------------
              * ---------------------------------------------------------------------------
              *
              * Route updated 04-15-2004

4902          KK   R726A
4903          KO       0       0     0.0       0      22
4904          RS       2    FLOW     0.0     0.0
4905          RC   0.043   0.035   0.043    3986   0.007
              * PDTS30
4906          RX       0      47     318     322     356     364     463     604
4907          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * Combines R726A and R726B

4908          KK   C726*
4909          KO       0       0     0.0       0      22
4910          HC       2
              *
              *
              * Route updated 04-15-2004

4911          KK   R726*
4912          KO       0       0     0.0       0      22
4913          RS       2    FLOW     0.0     0.0
4914          RC   0.046    0.07   0.046 10639.1  0.0060
              * PDTS30
4915          RX       0      47     318     322     356     364     463     604
4916          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
```

```
4917          KK   PD726
4918          KO       0       0     0.0       1      22
4919          BA  1.3471
4920          LG   0.335    0.25   4.531   0.353   6.505
4921          UC   0.833   0.823
              * Natural Time-Area Relation
4922          UA       0       3       5       8      12      20      43      75      90      96
4923          UA     100
              *
              *
              * ---------------------------------------------------------------
              * ---------------------------------------------------------------
              * modification made to model for wash 11E
              *
              * COMBINES PD726 and R726*
1                                          HEC-1 INPUT
PAGE177

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


4924          KK    C11E
4925          KO       0       0     0.0       0      22
4926          HC       2
              * ---------------------------------------------------------------
              * ---------------------------------------------------------------
              *

4927          KK   PD716
4928          KO       0       0     0.0       1      22
4929          BA  1.7545
4930          LG   0.348   0.249   5.684   0.209   9.472
4931          UC   0.454   0.217
              * Natural Time-Area Relation
4932          UA       0       3       5       8      12      20      43      75      90      96
4933          UA     100
              *
              *
              * ---------------------------------------------------------------
              * ---------------------------------------------------------------
              * modification made to model for wash 11E
              *
              * COMBINES combines C11E and PD716

4934          KK  CPD726
4935          KO       0       0     0.0       0      22
4936          HC       2
              * HC     3
              * ---------------------------------------------------------------
              * ---------------------------------------------------------------
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * *** This storage includes the storage at basins PD726 and PD716
              * *** The Discharge represents the Discharge through the Beardsley Canal
              * *** structure as well as the weir flow across PD726 and PD716
              * *** The Weir flow across PD716 is diverted out on the next KK card.

4937          KK  SPD726
4938          KO       3       0     0.0       0      21
4939          RS       1    STOR       0
4940          SQ       0     154     437     803    1236    1727    2270   10223   24536   42993
4941          SQ   64802
4942          SE    1338    1339    1340    1341    1342    1343    1344  1344.5    1345  1345.5
4943          SE    1346
              *
4944          SA       0    0.50    4.14   35.33   35.34   35.35
4945          SE    1338    1340    1342    1344    1345    1346
              *
              *
              * This diversion is only weir flow across the boundary of Basin PD716
              * over the Beardsley Canal to CPD700.
              *
              * For overtopping of the berm, the Weir equation was used.
              * Q=C*L*H^1.5
```

```
                    * C was assumed to be 2.7
                    * L, the length of the weir was the basin boundary along the canal = 6745 ft
                    * Berm Elevation was 1344
                    * *** The remaing flow goes to CPD720 ***
1                                                HEC-1 INPUT
PAGE178

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

4946                KK    D716
4947                DT   DO716     0.0     0.0
4948                DI       0     154     437     803    1236    1727    2270   10223   24536   42993
4949                DI   64802
4950                DQ       0       0       0       0       0       0       0    6439   18212   33457
4951                DQ   51510
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4952                KK  RPD726
4953                KO       0       0     0.0       0      22
4954                RS       2    FLOW     0.0     0.0
4955                RC   0.043   0.035   0.043    4959  0.0044
                    * PDTS40_1
4956                RX       0      86     158     492     543     560     776    1208
4957                RY    1330  1326.5    1326    1324    1320    1326    1328    1330
                    *
                    *

4958                KK   PD720
4959                KO       0       0     0.0       1      22
4960                BA  0.5944
4961                LG   0.341   0.243   5.039   0.275   4.865
4962                UC   0.596   0.371
                    * Natural Time-Area Relation
4963                UA       0       3       5       8      12      20      43      75      90      96
4964                UA     100
                    *
                    *
                    * This is the Weir flow across the Basin PD744 boundary over the Beardsley Canal

4965                KK    D744
4966                DR   DO744
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4967                KK   RD744
4968                KO       0       0     0.0       0      22
4969                RS       1    FLOW     0.0     0.0
4970                RC   0.043   0.035   0.043    3177  0.0057
                    * TSR606
4971                RX       0     241     598     949    1098    1381    2002    2039
4972                RY    1354    1354    1350    1348    1348    1350    1352    1354
                    *
                    *
                    * Combines RD744, PD720, RPD726 and RPI600
1                                                HEC-1 INPUT
PAGE179

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

4973                KK  CPD720
4974                KO       0       0     0.0       0      22
                    * Hard Coded
4975                HC       4  293.30
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4976                KK  RPD720
4977                KO       0       0     0.0       0      22
```

```
4978          RS       1    FLOW     0.0     0.0
4979          RC   0.045   0.035   0.045    1840  0.0099
              * McMicken Dam Channel
4980          RX       0      46     101     121     171     181    1421    3621
4981          RY      25      14       4       0       0       4      14      25
              *
              *
              * This diversion is the weir flow over the boundary of Basin PD716

4982          KK    D716
4983          DR   DO716
              *
              *
              * Route updated 04-15-2004

4984          KK   RD716
4985          KO       0       0     0.0       0      22
4986          RS       2    FLOW     0.0     0.0
4987          RC   0.043   0.035   0.043    4300  0.0091
              * PDTS40_1
4988          RX       0      86     158     492     543     560     776    1208
4989          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *
              * COMBINES BASIN RPD716 AND RPD720

4990          KK   C700*
4991          KO       0       0     0.0       0      22
              * Hard Coded
4992          HC       2  302.88
              *
              *
              * ROUTE UPDATED 4/14/4

4993          KK   R700*
4994          KO       0       0     0.0       0      22
4995          RS       2    FLOW     0.0     0.0
4996          RC   0.045   0.035   0.045    5757   0.001
              * McMicken Dam Channel
4997          RX       0      46     101     121     171     181    1421    3621
4998          RY      25      14       4       0       0       4      14      25
              *
              *
1                                          HEC-1 INPUT
PAGE180

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


4999          KK   PD752
5000          KO       0       0     0.0       1      22
5001          BA  0.1897
5002          LG   0.325   0.277    4.16   0.413  30.417
5003          UC   0.429   0.355
              * Natural Time-Area Relation
5004          UA       0       3       5       8      12      20      43      75      90      96
5005          UA     100
              *
              *

5006          KK   PD748
5007          KO       0       0     0.0       1      22
5008          BA  0.2838
5009          LG    0.35   0.283   4.527   0.356   31.29
5010          UC   0.450   0.317
              * Natural Time-Area Relation
5011          UA       0       3       5       8      12      20      43      75      90      96
5012          UA     100
              *
              *
              * Combine PD748 and PD752

5013          KK  CPD748
5014          KO       0       0     0.0       0      22
```

```
5015          HC       2
              *
              *

5016          KK  SCP220
5017          KO       3       0     0.0       0      21
5018          RS       1    STOR       0
              * CAP 220, R-8 STA 433+85
              * THE WEIR LENGTH IS 2000 FT AND THE WEIR COEF - 2.7
              * THE WEIR FLOW WAS CALCULATED AT H = 1 FT (1541) AND H = 2 FT (1542)
5019          SQ     0.0    28.0   155.0   335.0   440.0   530.0   600.0   680.0    6090   15974
5020          SE  1514.9    1516    1520    1524    1528    1532    1536    1540    1541    1542
5021          SA       0      .1      .2      .5     4.4    15.4    29.2    29.3    29.4
5022          SE    1512    1520    1524    1528    1532    1536    1540    1541    1542
              *
              *
              * ROUTE UPDATED 4/14/04

5023          KK  RPD748
5024          KO       0       0     0.0       0      22
5025          RS       3    FLOW     0.0     0.0
5026          RC   0.043   0.035   0.043    6476  0.0145
              * PDTS40_2
5027          RX       0      38      74     209     245     263     401     541
5028          RY    1448    1446    1444    1440    1440    1444    1446    1448
              *
              *
1                                                HEC-1 INPUT
PAGE181

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


5029          KK   PD756
5030          KO       0       0     0.0       1      22
5031          BA  3.2304
5032          LG   0.349   0.346   4.292   0.415  27.514
5033          UC     1.5   1.093
              * Natural Time-Area Relation
5034          UA       0       3       5       8      12      20      43      75      90      96
5035          UA     100
              *
              *

5036          KK  SCP210
5037          KO       3       0     0.0       0      21
5038          RS       1    STOR       0
              * CAP 210, R-8 STA 376+80
              * THE WEIR LENGTH IS 2200 FT AND THE WEIR COEF - 2.7
              * THE WEIR FLOW WAS CALCULATED AT H = 1 FT (1543) AND H = 2 FT (1544)
5039          SQ     0.0   372.0  1240.0  1900.0  2480.0  2888.0  3280.0  3600.0  3760.0    9740
5040          SQ   20641
5041          SE  1512.7    1516    1520    1524    1528    1532    1536    1540  1541.8  1542.8
5042          SE  1543.8
5043          SA       0      .3      .8     1.4     2.7     6.5    13.8    22.4      27    27.1
5044          SA    27.2
5045          SE    1512    1516    1520    1524    1528    1532    1536    1540    1542    1543
5046          SE    1544
              *
              *
              * ROUTE UPDATED 4/14/04

5047          KK  RPD756
5048          KO       0       0     0.0       0      22
5049          RS       4    FLOW     0.0     0.0
5050          RC   0.043   0.035   0.043    8775  0.0125
              * PDTS40_2
5051          RX       0      38      74     209     245     263     401     541
5052          RY    1448    1446    1444    1440    1440    1444    1446    1448
              *
              *
              * Combine RPD756 and RPD748

5053          KK   C708*
```

```
5054          KO       0       0     0.0       0      22
5055          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

5056          KK   R708*
5057          KO       0       0     0.0       0      22
5058          RS       6    FLOW     0.0     0.0
5059          RC   0.043   0.035   0.043   10484  0.0078
              * PDTS40_2
5060          RX       0      38      74     209     245     263     401     541
5061          RY    1448    1446    1444    1440    1440    1444    1446    1448
              *
              *
1                                          HEC-1 INPUT
PAGE182

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


5062          KK   PD708
5063          KO       0       0     0.0       1      22
5064          BA  2.4018
5065          LG   0.342   0.245   4.987   0.268  10.121
5066          UC   1.058   0.705
              * Natural Time-Area Relation
5067          UA       0       3       5       8      12      20      43      75      90      96
5068          UA     100
              *
              *

5069          KK  PD712A
5070          KO       0       0     0.0       1      22
5071          BA  0.7664
5072          LG    0.35    0.25   4.955    0.28    15.0
5073          UC   1.238   1.077
              * Natural Time-Area Relation
5074          UA       0       3       5       8      12      20      43      75      90      96
5075          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

5076          KK   R712A
5077          KO       0       0     0.0       0      22
5078          RS       6    FLOW     0.0     0.0
5079          RC   0.043   0.035   0.043    6448  0.0092
              * PDTS40_2
5080          RX       0      38      74     209     245     263     401     541
5081          RY    1448    1446    1444    1440    1440    1444    1446    1448
              *
              *

5082          KK   PD712
5083          KO       0       0     0.0       1      22
5084          BA  0.8916
5085          LG   0.311    0.25   5.374   0.248  28.595
5086          UC   0.942   0.630
              * Natural Time-Area Relation
5087          UA       0       3       5       8      12      20      43      75      90      96
5088          UA     100
              *
              *
              * Combine R712A, PD712, PD708 and R708*

5089          KK  CPD708
5090          KO       0       0     0.0       0      22
5091          HC       4
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE183
```

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

5092          KK  RPD708
5093          KO       0       0     0.0       0      22
5094          RS       1    FLOW     0.0     0.0
5095          RC   0.043   0.035   0.043    2780  0.0058
              * PDTS40_1
5096          RX       0      86     158     492     543     560     776    1208
5097          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

5098          KK   PD704
5099          KO       0       0     0.0       1      22
5100          BA  0.3619
5101          LG   0.299   0.297   4.461   0.342   2.516
5102          UC   0.583   0.471
              * Natural Time-Area Relation
5103          UA       0       3       5       8      12      20      43      75      90      96
5104          UA     100
              *
              *

5105          KK   AF800
5106          KO       0       0     0.0       1      22
5107          BA  0.7163
5108          LG   0.276   0.328   6.447   0.135   1.369
5109          UC   0.654   0.482
              * Natural Time-Area Relation
5110          UA       0       3       5       8      12      20      43      75      90      96
5111          UA     100
              *
              *
              * Combines RPD708, PD704 and AF800

5112          KK  CPD704
5113          KO       0       0     0.0       0      22
5114          HC       3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * *** This storage includes the storage at basins PD704 and AF800
              * *** The Discharge represents the Discharge through the Beardsley Canal
              * *** structure as well as the weir flow across PD704 and AF800
              * *** The Weir flow across AF800 is diverted`out on the next KK card.

5115          KK  SPD704
5116          KO       3       0     0.0       0      21
5117          RS       1    STOR       0
5118          SQ       0     154     437     802    1236    1727    2270    2860    3495    4170
5119          SQ    4884    5635    6420   11206   19630   30423   43134
5120          SE    1334    1335    1336    1337    1338    1339    1340    1341    1342    1343
5121          SE    1344    1345    1346  1346.5    1347  1347.5    1348
              *
5122          SA       0    0.65    2.07    5.40   10.99   23.99   45.97   45.98      46
5123          SE    1334    1336    1338    1340    1342    1344    1346    1347    1348
              *
              *
              * This diversion is only weir flow across the boundary of Basin AF800
              * over the Beardsley Canal to CPD700.
              *
              * For overtopping of the berm, the Weir equation was used.
              * Q=C*L*H^1.5
              * C was assumed to be 2.7
              * L, the length of the weir was the basin boundary along the canal = 2281 ft
              * Berm Elevation was 1346
              * *** The remaing flow goes to CPD700 ***
                                          HEC-1 INPUT
E184

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

```
5124          KK    D800
5125          DT   DO800      0.0      0.0
5126          DI       0      154      437      802     1236     1727     2270     2860     3495     4170
5127          DI    4884     5635     6420    11206    19630    30423    43134
5128          DQ       0        0        0        0        0        0        0        0        0        0
5129          DQ       0        0        0     2177     6159    11314    17419
              *
              *
              * ROUTE UPDATED 4/14/4

5130          KK  RPD704
5131          KO       0        0      0.0        0       22
5132          RS       4     FLOW      0.0      0.0
5133          RC   0.043    0.035    0.043     5924   0.0055
              * PDTS40_1
5134          RX       0       86      158      492      543      560      776     1208
5135          RY    1330   1326.5     1326     1324     1320     1326     1328     1330
              *
              *

5136          KK   PD700
5137          KO       0        0      0.0        1       22
5138          BA  1.3997
5139          LG   0.344    0.246    5.243     0.25    4.918
5140          UC   0.708    0.386
              * Natural Time-Area Relation
5141          UA       0        3        5        8       12       20       43       75       90       96
5142          UA     100
              *
              *
              * COMBINES BASIN PD700, RPD704, R700*

5143          KK  CPD700
5144          KO       0        0      0.0        0       22
5145          HC       3
              *
              *

5146          KK    D800
5147          DR   DO800
              *
              *
              * ROUTE UDPATED 4/14/4

5148          KK   RD800
5149          KO       0        0      0.0        0       22
5150          RS       2     FLOW      0.0      0.0
5151          RC   0.043    0.035    0.043     5888   0.0059
              * PDTS40_1
5152          RX       0       86      158      492      543      560      776     1208
5153          RY    1330   1326.5     1326     1324     1320     1326     1328     1330
              *
              *
```

1
PAGE185

```
                                        HEC-1 INPUT

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


5154          KK   AF802
5155          KO       0        0      0.0        1       22
5156          BA  0.3902
5157          LG   0.342    0.244    5.222    0.251    4.882
5158          UC   0.613    0.411
              * Natural Time-Area Relation
5159          UA       0        3        5        8       12       20       43       75       90       96
5160          UA     100
              *
              *
              * Combines CPD700, RD800 and AF802

5161          KK   C802*
5162          HC       3
```

```
                 *
                 *
                 * Route updated 04-15-2004

5163             KK   R810*
5164             KO       0       0     0.0       0      22
5165             RS       8    FLOW     0.0     0.0
5166             RC   0.043   0.035   0.043   10685  0.0058
                 * PDTS40_1
5167             RX       0      86     158     492     543     560     776    1208
5168             RY    1330  1326.5    1326    1324    1320    1326    1328    1330
                 *
                 *

5169             KK   AF803
5170             KO       0       0     0.0       1      22
5171             BA  2.8368
5172             LG   0.253   0.279   5.068   0.289  24.728
5173             UC   1.129   0.752
                 * Urban Time-Area Relation
5174             UA       0       5      16      30      65      77      84      90      94      97
5175             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4

5176             KK  RAF803
5177             KO       0       0     0.0       0      22
5178             RS       3    FLOW     0.0     0.0
5179             RC   0.045   0.035   0.045    5287  0.0019
                 * TSAF10
5180             RX       0      25      50      65     110     125     150     175
5181             RY      10     7.5       5       0       0       5     7.5      10
                 *
                 *
                                          HEC-1 INPUT
E186

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

5182             KK   AF805
5183             KO       0       0     0.0       1      22
5184             BA  0.6276
5185             LG   0.325   0.283   5.475   0.217   3.741
5186             UC   0.817   0.510
                 * Natural Time-Area Relation
5187             UA       0       3       5       8      12      20      43      75      90      96
5188             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4

5189             KK  RAF805
5190             KO       0       0     0.0       0      22
5191             RS       6    FLOW     0.0     0.0
5192             RC   0.043   0.035   0.043    6821  0.0059
                 * PDTS40_1
5193             RX       0      86     158     492     543     560     776    1208
5194             RY    1330  1326.5    1326    1324    1320    1326    1328    1330
                 *
                 *

5195             KK   AF807
5196             KO       0       0     0.0       1      22
5197             BA  1.0224
5198             LG   0.358   0.282   6.738    0.15    0.17
5199             UC   0.463   0.236
                 * Natural Time-Area Relation
5200             UA       0       3       5       8      12      20      43      75      90      96
5201             UA     100
                 *
                 *
                 * Combines RAF803, RAF805 and AF807
```

```
5202          KK  CAF807
5203          HC       3
              *
              *
              * ROUTE UPDATED 4/14/4

5204          KK  RAF807
5205          KO       0       0     0.0       0      22
5206          RS       1    FLOW     0.0     0.0
5207          RC   0.045   0.035   0.045    2485   0.004
              * TSAF10
5208          RX       0      25      50      65     110     125     150     175
5209          RY      10     7.5       5       0       0       5     7.5      10
              *
              *
1                                                HEC-1 INPUT
PAGE187

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


5210          KK   AF810
5211          KO       0       0     0.0       1      22
5212          BA  2.1166
5213          LG   0.325   0.251   4.419   0.389  10.927
5214          UC   1.125   0.667
              * Natural Time-Area Relation
5215          UA       0       3       5       8      12      20      43      75      90      96
5216          UA     100
              *
              *
              * Combines R810*, RAF807 and AF810

5217          KK  CAF810
5218          HC       3
              *
              *
              * ROUTE UPDATED 4/14/4

5219          KK  RAF810
5220          KO       0       0     0.0       0      22
5221          RS       5    FLOW     0.0     0.0
5222          RC   0.043   0.035   0.043    8372  0.0084
              * PDTS40_1
5223          RX       0      86     158     492     543     560     776    1208
5224          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

5225          KK   AF820
5226          KO       0       0     0.0       1      22
5227          BA  0.6957
5228          LG    0.35    0.25   4.217   0.423     5.0
5229          UC   0.904   0.809
              * Natural Time-Area Relation
5230          UA       0       3       5       8      12      20      43      75      90      96
5231          UA     100
              *
              *
              * Combines RAF810 and AF820

5232          KK  CAF820
5233          HC       2
              *
              *
              *
              * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
              * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
              * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
              * ************************************************************************** *
              * ************************************************************************** *
              * ************* END EAST PORTION OF DETAILED MODEL *************************** *
              * ************************************************************************** *
```

```
                    * ************************************************************************ *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    *
                    *
                    *
                    *  * START SEGMENT THAT DOES NOT CONTRIBUTE TO DOWNSTREAM WATERSHED*
                    *
                    *
1                                                   HEC-1 INPUT
PAGE188

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

          5234      KK   AF830
          5235      KO       0       0     0.0       1      22
          5236      BA  0.2662
          5237      LG    0.35   0.162    6.88    0.13     5.0
          5238      UC   0.663   0.663
                    * Natural Time-Area Relation
          5239      UA       0       3       5       8      12      20      43      75      90      96
          5240      UA     100
                    *
                    *

          5241      KK   AF854
          5242      BA  0.3382
          5243      LG   0.208    0.25   5.078   0.304  43.333
          5244      UC   0.346   0.207
                    * Urban Time-Area Relation
          5245      UA       0       5      16      30      65      77      84      90      94      97
          5246      UA     100
                    *
                    *

          5247      KK  RAF854
          5248      RS       1    FLOW     0.0     0.0
          5249      RC   0.045   0.035   0.045    2113  0.0047
                    * TSAF10
          5250      RX       0      25      50      65     110     125     150     175
          5251      RY      10     7.5       5       0       0       5     7.5      10
                    *
                    *

          5252      KK   AF852
          5253      BA  0.1678
          5254      LG   0.211   0.181   6.691   0.168  42.843
          5255      UC   0.263   0.171
                    * Urban Time-Area Relation
          5256      UA       0       5      16      30      65      77      84      90      94      97
          5257      UA     100
                    *
                    *
                    * Combines RAF854 and AF852

          5258      KK  CAF852
          5259      HC       2
                    *
                    *

          5260      KK  RAF852
          5261      RS       1    FLOW     0.0     0.0
          5262      RC   0.045   0.035   0.045    1378  0.0044
                    * TSAF10
          5263      RX       0      25      50      65     110     125     150     175
          5264      RY      10     7.5       5       0       0       5     7.5      10
                    *
                    *
                    *
1                                                   HEC-1 INPUT
PAGE189
```

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

5265          KK   AF850
5266          BA  0.2178
5267          LG   0.213    0.25    5.05   0.307  44.259
5268          UC   0.296   0.185
              * Urban Time-Area Relation
5269          UA       0       5      16      30      65      77      84      90      94      97
5270          UA     100
              *
              *
              * Combines RAF852 and AF850

5271          KK  CAF850
5272          HC       2
              *
              *

5273          KK   AF864
5274          BA  0.0868
5275          LG    0.15    0.25   5.594    0.28    55.0
5276          UC   0.508   0.724
              * Urban Time-Area Relation
5277          UA       0       5      16      30      65      77      84      90      94      97
5278          UA     100
              *
              *

5279          KK  RAF864
5280          RS       1    FLOW     0.0     0.0
5281          RC   0.045   0.035   0.045    4666   0.003
              * TSAF20
5282          RX       0      13      45      61      96     113     130     135
5283          RY       6       4       2       0       0       2       4       6
              *
              *

5284          KK   AF862
5285          BA  0.1772
5286          LG   0.273    0.25   4.025   0.487  24.286
5287          UC   0.221   0.098
              * Urban Time-Area Relation
5288          UA       0       5      16      30      65      77      84      90      94      97
5289          UA     100
              *
              *
              * Combines RAF854 and AF862

5290          KK  CAF862
5291          HC       2
              *
              *
```



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

5292          KK  RAF862
5293          RS       1    FLOW     0.0     0.0
5294          RC   0.045   0.035   0.045    2136  0.0047
              * TSAF20
5295          RX       0      13      45      61      96     113     130     135
5296          RY       6       4       2       0       0       2       4       6
              *
              *

5297          KK   AF866
5298          BA  0.4549
5299          LG   0.204   0.207   6.431   0.192  44.271
5300          UC   0.483   0.354
              * Urban Time-Area Relation
5301          UA       0       5      16      30      65      77      84      90      94      97
```

```
5302          UA     100
              *
              *

5303          KK  RAF866
5304          RS       1    FLOW     0.0     0.0
5305          RC   0.045   0.035   0.045    6743  0.0044
              * TSAF20
5306          RX       0      13      45      61      96     113     130     135
5307          RY       6       4       2       0       0       2       4       6
              *
              *

5308          KK   AF860
5309          BA  0.3627
5310          LG   0.229    0.25   4.023   0.518  35.172
5311          UC   0.563   0.569
              * Urban Time-Area Relation
5312          UA       0       5      16      30      65      77      84      90      94      97
5313          UA     100
              *
              *
              * Combines RAF866, RAF862 and AF860

5314          KK  CAF860
5315          HC       3
              *
              *

5316          KK   SV258
5317          KO       0       0     0.0       1      22
5318          BA  0.7359
5319          LG    0.35   0.343   6.344    0.15   7.423
5320          UC   0.638   0.582
              * Natural Time-Area Relation
5321          UA       0       3       5       8      12      20      43      75      90      96
5322          UA     100
              *
              *
              *
              * DIVERSION OUT: FLOW SPLIT* Diversion Out: Flow split FS15
              * FLOW SPLIT: MAIN PATH TO SV256, DIVERSION OUT OF WATERSHED
              * PERCENTAGE OF SPLIT OUT OF WATERSHED IS 49%,
              * SEE APPENDIX D OF TDN-ADMSU HYDROLOGY
1                                          HEC-1 INPUT
PAGE191

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

5323          KK    D258
5324          KO       0       0     0.0       0      22
5325          DT   DO258     0.0     0.0
5326          DI       0   10000
5327          DQ       0    4900
              *
              *
              * ROUTE UPDATED 4/14/04

5328          KK  RSV258
5329          KO       0       0     0.0       0      22
5330          RS       1    FLOW     0.0     0.0
5331          RC    0.06   0.035    0.06    2155  0.0181
              * TSR248
5332          RX       0     362     515     618     765     800     820     841
5333          RY    1664    1662    1662    1660    1660    1662    1663    1664
              *
              *

5334          KK   SV256
5335          KO       0       0     0.0       1      22
5336          BA  0.0604
5337          LG    0.35   0.269   3.427   0.575     5.0
5338          UC   0.308   0.344
```

```
                 * Natural Time-Area Relation
5339             UA       0       3       5       8      12      20      43      75      90      96
5340             UA     100
                 *
                 *
                 * Combines SV256 and RSV258

5341             KK  CSV256
5342             KO       0       0     0.0       0      22
                 * Hard Coded
5343             HC       2    0.44
                 *
                 *
                 *
                 *  ***END SEGMENT THAT DOES NOT CONTRIBUTE TO DOWNSTREAM WATERSHED*
                 *
                 *
5344             ZZ
1
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

455        WT140
               V
               V
462       RWT140
               .
               .
468            .       WT130
               .           .
               .           .
475       CWT130............
               V
               V
478       RWT130
               .
               .
484            .       WT160
               .           V
               .           V
491            .      RWT160
               .           .
               .           .
497            .           .      WT150A
               .           .           V
               .           .           V
504            .           .       R150A
               .           .           .
               .           .           .
510            .           .           .       WT150
               .           .           .           .
               .           .           .           .
517            .           .      CWT150............
               .           .           V
               .           .           V
520            .           .      RWT150
               .           .           .
               .           .           .
526            .           .           .       WT120
               .           .           .           .
               .           .           .           .
533       CWT120.................................
               V
               V
536       RWT120
               .
               .
542            .       WT110
               .           .
               .           .
549       CWT110............
               V
               V
552       RWT110
               .
               .
558            .       WT100
               .           .
               .           .
565       CWT100............
               V
               V
568       RWT100
               .
               .
574            .       TW406
               .           V
               .           V
581            .      RTW406
               .        /   .
```

```
                .           .
587             .           .       TW408
                .           .           V
                .           .           V
594             .           .      RTW408
                .           .           .
                .           .           .
600             .           .           .       TW404
                .           .           .           .
                .           .           .           .
607        CTW404.................................
                V
                V
610        RTW404
                .
                .
616             .       IW371
                .           .
                .           .
625             .           .------->   DO371
623             .        D371
                .           V
                .           V
628             .      RIW371
                .           .
                .           .
634             .           .       IW366
                .           .           .
                .           .           .
641             .      CIW366............
                .           V
                .           V
644             .      RIW366
                .           .
                .           .
650             .           .       IW377
                .           .           V
                .           .           V
657             .           .      SSR010
                .           .           V
                .           .           V
662             .           .      RIW377
                .           .           .
                .           .           .
668             .           .           .       IW374
                .           .           .           .
                .           .           .           .
677             .           .           .           .           .<-------   DO371
675             .           .           .           .        D371
                .           .           .           .           V
                .           .           .           .           V
678             .           .           .           .       RD371
                .           .           .           .           .
                .           .           .           .           .
684             .           .      CIW374........................
                .           .           V
                .           .           V
687             .           .      RIW374
                .           .           .
                .           .           .
693             .           .           .       IW386
                .           .           .           V
                .           .           .           V
700             .           .           .      RIW386
                .           .           .           .
                .           .           .           .
706             .           .           .           .       IW382
                .           .           .           .           .
                .           .           .           .           .
713             .           .           .      CIW382............
                .           .           .           .
                .           .           .           .
718             .           .           .           .-------->  DO382B
716             .           .           .       D382B
```

```
                .          .          .          .
                .          .          .          .
723             .          .          .          .-------> DO382A
721             .          .          .      D382A
                .          .          .          V
                .          .          .          V
726             .          .          .     RIW382
                .          .          .          .
                .          .          .          .
732             .          .          .          .      IW384
                .          .          .          .          .
                .          .          .          .          .
741             .          .          .          .          .          .<------- DO382A
739             .          .          .          .          .      D382A
                .          .          .          .          .          V
                .          .          .          .          .          V
742             .          .          .          .          .     RD382A
                .          .          .          .          .          .
                .          .          .          .          .          .
748             .          .          .          .     CIW384............
                .          .          .          .              V
                .          .          .          .              V
751             .          .          .          .     RIW384
                .          .          .          .          .
                .          .          .          .          .
757             .          .          .          .          .      IW381
                .          .          .          .          .          .
                .          .          .          .          .          .
766             .          .          .          .          .          .          .<------- DO382B
764             .          .          .          .          .          .      D382B
                .          .          .          .          .          .          .
                .          .          .          .          .          .          .
767             .          .          .          .          .     CIW381............
                .          .          .          .          .          V
                .          .          .          .          .          V
769             .          .          .          .          .     RIW381
                .          .          .          .          .          .
                .          .          .          .          .          .
775             .          .          .      C359*......................
                .          .          .          V
                .          .          .          V
778             .          .          .      R359*
                .          .          .          .
                .          .          .          .
784             .          .          .          .      IW359
                .          .          .          .          .
                .          .          .          .          .
791             .     CIW359.................................
                .          V
                .          V
794             .     RIW359
                .          .
                .          .
800             .          .      IW353
                .          .          .
                .          .          .
807             .     C353_3............
                .          .
                .          .
809             .          .      IW389
                .          .          V
                .          .          V
816             .          .     SSR190
                .          .          V
                .          .          V
822             .          .     RIW389
                .          .          .
                .          .          .
828             .          .          .      IW394
                .          .          .          V
                .          .          .          V
835             .          .          .     RIW394
                .          .          .          .
                .          .          .          .
```

```
841          .           .           .           .      IW390A
             .           .           .           .           .
             .           .           .           .           .
848          .           .           .       C390A............
             .           .           .           V
             .           .           .           V
851          .           .           .       R390A
             .           .           .           .
             .           .           .           .
857          .           .           .           .       IW390
             .           .           .           .           .
             .           .           .           .           .
864          .           .           .           .           .       IW392
             .           .           .           .           .           .
             .           .           .           .           .           .
871          .           .           .      CIW390........................
             .           .           .           V
             .           .           .           V
874          .           .           .      SSR160
             .           .           .           V
             .           .           .           V
879          .           .           .      RIW390
             .           .           .           .
             .           .           .           .
885          .           .           .           .       IW388
             .           .           .           .           .
             .           .           .           .           .
892          .           .           .      C388_1............
             .           .           .           .
             .           .           .           .
894          .           .      CIW388............
             .           .           V
             .           .           V
897          .           .      RIW388
             .           .           .
             .           .           .
903          .           .           .       IW357
             .           .           .           .
             .           .           .           .
910          .           .      CIW357............
             .           .           .
             .           .           .
914          .           .           .-------->   DO357
913          .           .        D357
             .           .           V
             .           .           V
919          .           .      RIW357
             .           .           .
             .           .           .
925          .           .           .       IW358
             .           .           .           .
             .           .           .           .
932          .      CIW353........................
             .           V
             .           V
935          .      RIW353
             .           .
             .           .
941          .           .       IW350
             .           .           .
             .           .           .
948          .      CIW350............
             .           .
             .           .
951          .           .       IW312
             .           .           .
             .           .           .
960          .           .           .-------->   DO312
958          .           .        D312
             .           .           V
             .           .           V
963          .           .      RIW312
             .           .           .
             .           .           .
```

```
 969          .          .          .       IW365
              .          .          .           .
              .          .          .           .
 978          .          .          .           .           .<-------   DO312
 976          .          .          .           .        D312
              .          .          .           .           V
              .          .          .           .           V
 979          .          .          .           .       RD312
              .          .          .           .           .
              .          .          .           .           .
 985          .          .          .      CIW365............
              .          .          .           .
              .          .          .           .
 990          .          .          .           .------->   DO365
 988          .          .          .        D365
              .          .          .           V
              .          .          .           V
 993          .          .          .      RIW365
              .          .          .           .
              .          .          .           .
 999          .          .          .           .       IW367
              .          .          .           .           .
              .          .          .           .           .
1008          .          .          .           .           .           .<-------   DO365
1006          .          .          .           .           .        D365
              .          .          .           .           .           V
              .          .          .           .           .           V
1009          .          .          .           .           .       RD365
              .          .          .           .           .           .
              .          .          .           .           .           .
1015          .          .          .           .      CIW367............
              .          .          .           .           .
              .          .          .           .           .
1018          .          .          .           .           .       IW369
              .          .          .           .           .           .
              .          .          .           .           .           .
1027          .          .          .           .           .           .------->   DO369
1025          .          .          .           .           .        D369
              .          .          .           .           .           .
              .          .          .           .           .           .
1030          .          .          .           .       C363*............
              .          .          .           .           V
              .          .          .           .           V
1033          .          .          .           .      RIW369
              .          .          .           .           .
              .          .          .           .           .
1040          .          .          .           .           .           .<-------   DO357
1039          .          .          .           .           .        D357
              .          .          .           .           .           V
              .          .          .           .           .           V
1041          .          .          .           .           .       RD357
              .          .          .           .           .           .
              .          .          .           .           .           .
1047          .          .          .           .           .           .       IW363
              .          .          .           .           .           .           .
              .          .          .           .           .           .           .
1054          .          .          .           .           .      C363_2............
              .          .          .           .           .           .
              .          .          .           .           .           .
1056          .          .      CIW363.....................................
              .          .          .
              .          .          .
1060          .          .          .------->   DO363
1059          .          .       D363
              .          .          V
              .          .          V
1065          .          .      RIW363
              .          .          .
              .          .          .
1071          .          .          .       IW368
              .          .          .           .
              .          .          .           .
1080          .          .          .           .           .<-------   DO369
1078          .          .          .           .        D369
```

```
                 .         .         .         .         V
                 .         .         .         .         V
1081             .         .         .         .      RD369
                 .         .         .         .         .
                 .         .         .         .         .
1087             .         .         .    CIW368............
                 .         .         .         V
                 .         .         .         V
1090             .         .         .    RIW368
                 .         .         .         .
                 .         .         .         .
1096             .         .         .         .      IW360
                 .         .         .         .         .
                 .         .         .         .         .
1103             .         .         .    CIW360............
                 .         .         .         V
                 .         .         .         V
1106             .         .         .    RIW360
                 .         .         .         .
                 .         .         .         .
1112             .         .         .         .      IW397
                 .         .         .         .         V
                 .         .         .         .         V
1119             .         .         .         .     RIW397
                 .         .         .         .         .
                 .         .         .         .         .
1125             .         .         .         .         .       IW395
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1132             .         .         .         .     CIW395............
                 .         .         .         .         V
                 .         .         .         .         V
1135             .         .         .         .     RIW395
                 .         .         .         .         .
                 .         .         .         .         .
1141             .         .         .         .         .       IW387
                 .         .         .         .         .           V
                 .         .         .         .         .           V
1148             .         .         .         .         .      RIW387
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1154             .         .         .         .         .           .       IW396
                 .         .         .         .         .           .           .
                 .         .         .         .         .           .           .
1161             .         .         .         .     CIW396........................
                 .         .         .         .         V
                 .         .         .         .         V
1164             .         .         .         .     RIW396
                 .         .         .         .         .
                 .         .         .         .         .
1170             .         .         .         .         .       IW380
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1177             .         .         .         .     CIW380............
                 .         .         .         .         V
                 .         .         .         .         V
1180             .         .         .         .     SSR310
                 .         .         .         .         .
                 .         .         .         .         .
1188             .         .         .         .         .-------->   DO380
1186             .         .         .         .      D380
                 .         .         .         .         V
                 .         .         .         .         V
1193             .         .         .         .     RIW380
                 .         .         .         .         .
                 .         .         .         .         .
1199             .         .         .         .         .       IW370
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1206             .         .         .         .     CIW370............
                 .         .         .         .         V
                 .         .         .         .         V
1209             .         .         .         .     RIW370
                 .         .         .         .         .
```

```
1215                                                  IW349
                                                        .
                                                        .
1222                                        CIW349............
                                                        .
                                                        .
1227                                                    .-------> DO349
1225                                          D349
                                                        V
                                                        V
1230                                        RIW349
                                                        .
                                                        .
1236                                                  IW352
                                                        .
                                                        .
1243                                  CIW352......................
                                                        .
                                                        .
1246                                          IW356
                                                        .
                                                        .
1255                                                        .<-------   DO349
1253                                                  D349
                                                          V
                                                          V
1256                                                  RD349
                                                        .
                                                        .
1262                                  CIW356......................
                                            V
                                            V
1265                                  RIW356
                                                        .
                                                        .
1271                                          IW354
                                                        .
                                                        .
1278                                  CIW354............
                                            V
                                            V
1281                                  RIW354
                                                        .
                                                        .
1287                                          IW362
                                                        .
                                                        .
1294                                  CIW362............
                                                        .
                                                        .
1297                                          IW372
                                                        .
                                                        .
1306                                                    .-------> DO372
1304                                          D372
                                                        V
                                                        V
1309                                        RIW372
                                                        .
                                                        .
1315                                                  IW375
                                                        .
                                                        .
1324                                                                .<-------   DO372
1322                                                            D372
                                                                  V
                                                                  V
1325                                                            RD372
                                                                  .
                                                                  .
1331                                                    CIW375............
                                                          V
                                                          V
```

```
1334                                                  RIW375
                                                         .
1340                                                     .        IW364
                                                         .           .
                                                         .           .
1347                                        CIW364.......................
                                                 .
                                                 .
1350                                  C364*............
                                          V
                                          V
1353                                  RIW364
                                          .
                                          .
1359                                          IW342
                                                 .
                                                 .
1366                                  CIW342............
                                          .
                                          .
1369                                          IW351
                                                 .
                                                 .
1377                                                        .<-------   DO363
1376                                                   D363
                                                          V
                                                          V
1378                                                  RD363
                                                         .
                                                         .
1384                                        CIW351............
                                                 .
                                                 .
1388                                                .-------->   DO351
1387                                           D351
                                                  V
                                                  V
1393                                        RIW351
                                                 .
                                                 .
1399                                                  IW346
                                                         .
                                                         .
1406                                        C346_1............
                                                 .
                                                 .
1409                                  CIW346............
                                          V
                                          V
1412                                  RIW346
                                          .
                                          .
1418                                          IW338
                                                 .
                                                 .
1425                                  CIW338............
                                          V
                                          V
1428                                  RIW338
                                          .
                                          .
1434                                          IW326
                                                  V
                                                  V
1441                                        RIW326
                                                 .
                                                 .
1447                                                  IW334
                                                         .
                                                         .
1454                                  CIW334........................
                                          V
                                          V
```

```
1457          .          .          .      SCP030
              .          .          .          V
              .          .          .          V
1464          .          .          .      RIW334
              .          .          .          .
              .          .          .          .
1470          .          .          .          .       IW302
              .          .          .          .           .
              .          .          .          .           .
1477          .          .          .      CIW302............
              .          .          .          .
              .          .          .          .
1481          .          .          .          .-------->   DO302
1480          .          .          .        D302
              .          .          .          .
              .          .          .          .
1484          .          .          .          .       IW361
              .          .          .          .           .
              .          .          .          .           .
1491          .          .      C361_1........................
              .          .          .
              .          .          .
1494          .          .          .          .<-------   DO351
1493          .          .          .        D351
              .          .          .          V
              .          .          .          V
1495          .          .          .       RD351
              .          .          .          .
              .          .          .          .
1501          .          .      CIW361............
              .          .          V
              .          .          V
1504          .          .      RIW361
              .          .          .
              .          .          .
1510          .       C350*............
              .          V
              .          V
1513          .       R350*
              .          .
              .          .
1519          .          .       IW330
              .          .          .
              .          .          .
1526          .      CIW330............
              .          V
              .          V
1529          .      RIW330
              .          .
              .          .
1535          .          .       IW322
              .          .          .
              .          .          .
1542          .      CIW322............
              .          V
              .          V
1545          .      RIW322
              .          .
              .          .
1551          .          .       IW314
              .          .          .
              .          .          .
1558          .      C314_1............
              .          .
              .          .
1561          .          .       IW318
              .          .          V
              .          .          V
1568          .          .      RIW318
              .          .          .
              .          .          .
1574          .          .          .       IW310
              .          .          .          .
              .          .          .          .
```

```
1581          .           .      CIW310............
              .           .           V
              .           .           V
1584          .           .      RIW310
              .           .           .
              .           .           .
1590          .      CIW314............
              .           V
              .           V
1593          .      SCP020
              .           V
              .           V
1600          .      RIW314
              .           .
              .           .
1606          .           .       IW300
              .           .           .
              .           .           .
1613          .      CIW300............
              .           V
              .           V
1616          .      RIW300
              .           .
              .           .
1622          .           .       SV202
              .           .           V
              .           .           V
1629          .           .      RSV202
              .           .           .
              .           .           .
1635          .      C300_1............
              .           .
              .           .
1639          .           .           .<-------   DO302
1638          .           .        D302
              .           .           .
              .           .           .
1640          .       C302*............
              .           V
              .           V
1643          .      RIW302
              .           .
              .           .
1649          .           .      SV264A
              .           .           V
              .           .           V
1656          .           .       R264A
              .           .           .
              .           .           .
1662          .           .           .       SV264
              .           .           .           .
              .           .           .           .
1669          .           .      CSV264............
              .           .           V
              .           .           V
1672          .           .      RSV264
              .           .           .
              .           .           .
1678          .           .           .       SV298
              .           .           .           V
              .           .           .           V
1685          .           .           .      RSV298
              .           .           .           .
              .           .           .           .
1691          .           .           .           .       SV286
              .           .           .           .           V
              .           .           .           .           V
1698          .           .           .           .      RSV286
              .           .           .           .           .
              .           .           .           .           .
1704          .           .           .           .           .       SV284
              .           .           .           .           .           .
              .           .           .           .           .           .
1711          .           .           .           .      CSV284............
```

```
                 .         .         .         .         V
                 .         .         .         .         V
1714             .         .         .         .    RSV284
                 .         .         .         .         .
                 .         .         .         .         .
1720             .         .         .         .         .       SV272
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1727             .         .         .         .    C272_2............
                 .         .         .         .         .
                 .         .         .         .         .
1729             .         .         .         .         .       SV290
                 .         .         .         .         .           V
                 .         .         .         .         .           V
1736             .         .         .         .         .     RSV290
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1742             .         .         .         .    CSV272............
                 .         .         .         .         V
                 .         .         .         .         V
1745             .         .         .         .    RSV272
                 .         .         .         .         .
                 .         .         .         .         .
1751             .         .         .         .         .       SV276
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1758             .         .         .         .    C276_2............
                 .         .         .         .         .
                 .         .         .         .         .
1760             .         .         .         .         .       SV294
                 .         .         .         .         .           V
                 .         .         .         .         .           V
1767             .         .         .         .         .     RSV294
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1773             .         .         .         .    CSV276............
                 .         .         .         .         V
                 .         .         .         .         V
1776             .         .         .         .    RSV276
                 .         .         .         .         .
                 .         .         .         .         .
1782             .         .         .         .         .       SV280
                 .         .         .         .         .           .
                 .         .         .         .         .           .
1789             .         .         .         .    C280_1............
                 .         .         .         .         .
                 .         .         .         .         .
1791             .         .         .    CSV280............
                 .         .         .         V
                 .         .         .         V
1794             .         .         .    RSV280
                 .         .         .         .
                 .         .         .         .
1800             .         .         .         .     SV260
                 .         .         .         .         .
                 .         .         .         .         .
1807             .         .         .    C260_1............
                 .         .         .         .
                 .         .         .         .
1809             .         .         .         .     SV268
                 .         .         .         .         V
                 .         .         .         .         V
1816             .         .         .         .    RSV268
                 .         .         .         .         .
                 .         .         .         .         .
1822             .         .    CSV260........................
                 .         .         V
                 .         .         V
1825             .         .    SCP010
                 .         .         V
                 .         .         V
1832             .         .    RSV260
                 .         .         .
                 .         .         .
```

```
1838                    .         .         .       SV220
                        .         .         .         .
                        .         .         .         .
1845                    .         .         .         .      SV252
                        .         .         .         .          V
                        .         .         .         .          V
1852                    .         .         .         .      RSV252
                        .         .         .         .          .
                        .         .         .         .          .
1858                    .         .         .         .          .      SV254
                        .         .         .         .          .          V
                        .         .         .         .          .          V
1865                    .         .         .         .          .     RSV254
                        .         .         .         .          .          .
                        .         .         .         .          .          .
1871                    .         .         .         .          .          .      SV219
                        .         .         .         .          .          .          .
                        .         .         .         .          .          .          .
1878                    .         .         .         .      CSV219.......................
                        .         .         .         .          V
                        .         .         .         .          V
1881                    .         .         .         .      RSV219
                        .         .         .         .          .
                        .         .         .         .          .
1887                    .         .         .         .          .      SV251
                        .         .         .         .          .          V
                        .         .         .         .          .          V
1894                    .         .         .         .          .     RSV251
                        .         .         .         .          .          .
                        .         .         .         .          .          .
1900                    .         .         .         .          .          .      SV250
                        .         .         .         .          .          .          V
                        .         .         .         .          .          .          V
1907                    .         .         .         .          .          .     RSV250
                        .         .         .         .          .          .          .
                        .         .         .         .          .          .          .
1913                    .         .         .         .          .          .          .      SV218
                        .         .         .         .          .          .          .          .
                        .         .         .         .          .          .          .          .
1920                    .         .         .         .      CSV218.................................
                        .         .         .         .          V
                        .         .         .         .          V
1923                    .         .         .         .      RSV218
                        .         .         .         .          .
                        .         .         .         .          .
1929                    .         .         .         .          .      SV248
                        .         .         .         .          .          .
                        .         .         .         .          .          .
1938                    .         .         .         .          .          .-------->   DO248
1936                    .         .         .         .          .       D248
                        .         .         .         .          .          V
                        .         .         .         .          .          V
1941                    .         .         .         .          .     RSV248
                        .         .         .         .          .          .
                        .         .         .         .          .          .
1947                    .         .         .         .          .          .      SV244
                        .         .         .         .          .          .          .
                        .         .         .         .          .          .          .
1954                    .         .         .         .          .     CSV244............
                        .         .         .         .          .          .
                        .         .         .         .          .          .
1957                    .         .         .         .          .          .      SV246
                        .         .         .         .          .          .          .
                        .         .         .         .          .          .          .
1966                    .         .         .         .          .          .          .          .<-------
DO248
1964                    .         .         .         .          .          .          .      D248
                        .         .         .         .          .          .          .         V
                        .         .         .         .          .          .          .         V
1967                    .         .         .         .          .          .          .     RD248
                        .         .         .         .          .          .          .         .
                        .         .         .         .          .          .          .         .
1973                    .         .         .         .          .          .     CSV246............
                        .         .         .         .          .          .          .
```

```
1976                                  C216*............
                                          V
                                          V
1979                                  RSV244
                                          .
                                          .
1985                                      .       SV216
                                          .           .
                                          .           .
1992                              CSV216.......................
                                      V
                                      V
1995                              RSV216
                                      .
                                      .
2001                                  SV236
                                          V
                                          V
2008                                  RSV236
                                          .
                                          .
2014                                      .       SV240
                                          .           .
                                          .           .
2021                                      .           .       SV242
                                          .           .           .
                                          .           .           .
2028                                      .       C242*............
                                          .           V
                                          .           V
2031                                      .       R242*
                                          .           .
                                          .           .
2037                                      .           .       SV214
                                          .           .           .
                                          .           .           .
2044                      CSV220..............................................
                              V
                              V
2047                      RSV220
                              .
                              .
2053                          .       SV230
                              .           .
                              .           .
2060                          .           .       SV232
                              .           .           .
                              .           .           .
2067                          .       C230*............
                              .           V
                              .           V
2070                          .       R230*
                              .           .
                              .           .
2076                          .           .       SV212
                              .           .           .
                              .           .           .
2083                      CSV212........................
                              V
                              V
2086                      RSV212
                              .
                              .
2092                          .       SV210
                              .           V
                              .           V
2099                          .      RSV210
                              .           .
                              .           .
2105                      C210*............
                              .
                              .
2108                          .       SV208
```

```
                .          .          .          .
2115            .          .          .          .      SV205
                .          .          .          .          .
                .          .          .          .          .
2122            .          .          .      C205*...........
                .          .          .          V
                .          .          .          V
2125            .          .          .      R205*
                .          .          .          .
                .          .          .          .
2131            .          .          .          .      SV203
                .          .          .          .          V
                .          .          .          .          V
2138            .          .          .          .     RSV203
                .          .          .          .          .
                .          .          .          .          .
2144            .          .      C200*......................
                .          .          .
                .          .          .
2147            .          .          .      SV200
                .          .          .          .
                .          .          .          .
2154            .     CSV200......................
                .          V
                .          V
2157            .     RSV200
                .          .
                .          .
2163            .          .      TW416
                .          .          V
                .          .          V
2170            .          .     RTW416
                .          .          .
                .          .          .
2176            .          .          .      TW420
                .          .          .          V
                .          .          .          V
2183            .          .          .     RTW420
                .          .          .          .
                .          .          .          .
2189            .          .          .          .      TW412
                .          .          .          .          .
                .          .          .          .          .
2196            .          .          .     CTW412...........
                .          .          .          .
                .          .          .          .
2199            .          .          .          .      TW414
                .          .          .          .          V
                .          .          .          .          V
2206            .          .          .          .     RTW414
                .          .          .          .          .
                .          .          .          .          .
2212            .          .          .          .          .      TW410
                .          .          .          .          .          .
                .          .          .          .          .          .
2219            .          .          .          .     CTW410...........
                .          .          .          .          .
                .          .          .          .          .
2222            .      C410*...................................
                .          V
                .          V
2225            .     RTW410
                .          .
                .          .
2231            .          .      TW402
                .          .          .
                .          .          .
2238       CTW402......................
                V
                V
2241       RTW402
                .
                .
```

```
2247          .      TW448
              .          .
              .          .
2256          .          .-------->   DO448
2254          .       D448
              .          V
              .          V
2259          .     RTW448
              .          .
              .          .
2265          .          .      TW446A
              .          .           .
              .          .           .
2273          .          .           .           .<-------   DO448
2272          .          .           .       D448
              .          .           .          V
              .          .           .          V
2274          .          .           .      RD448
              .          .           .           .
              .          .           .           .
2280          .          .      C446A............
              .          .           .
              .          .           .
2284          .          .           .-------->  DO446A
2282          .          .      D446A
              .          .          V
              .          .          V
2287          .          .      R446A
              .          .           .
              .          .           .
2293          .          .           .      TW446
              .          .           .           .
              .          .           .           .
2300          .     CTW446........................
              .          V
              .          V
2303          .     RTW446
              .          .
              .          .
2309          .          .      TW432
              .          .           .
              .          .           .
2316          .     CTW432............
              .          V
              .          V
2319          .     RTW432
              .          .
              .          .
2325          .          .      TW431
              .          .           .
              .          .           .
2332          .     CTW431............
              .          .
              .          .
2335          .          .      TW459
              .          .          V
              .          .          V
2342          .          .     SSR350
              .          .          V
              .          .          V
2347          .          .     RTW459
              .          .           .
              .          .           .
2353          .          .           .      TW462
              .          .           .           .
              .          .           .           .
2361          .          .           .           .           .<-------   DO380
2360          .          .           .           .       D380
              .          .           .           .          V
              .          .           .           .          V
2362          .          .           .           .      RD380
              .          .           .           .           .
              .          .           .           .           .
2368          .          .           .      CTW462............
```

```
                 .         .         .         V
                 .         .         .         V
2370             .         .         .    SSR330
                 .         .         .         V
                 .         .         .         V
2375             .         .         .    RTW462
                 .         .         .         .
                 .         .         .         .
2381             .         .         .         .    TW450A
                 .         .         .         .         V
                 .         .         .         .         V
2388             .         .         .         .    SSR410
                 .         .         .         .         V
                 .         .         .         .         V
2393             .         .         .         .     R450A
                 .         .         .         .         .
                 .         .         .         .         .
2399             .         .         .         .         .    TW450B
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2406             .         .    C450B.....................................
                 .         .        V
                 .         .        V
2408             .         .    R450B
                 .         .        .
                 .         .        .
2414             .         .        .    TW450
                 .         .        .         .
                 .         .        .         .
2423             .         .        .         .         .<-------  DO446A
2421             .         .        .         .     D446A
                 .         .        .         .         V
                 .         .        .         .         V
2424             .         .        .         .    RD446A
                 .         .        .         .         .
                 .         .        .         .         .
2430             .         .    CTW450......................
                 .         .        .
                 .         .        .
2435             .         .        .-------> DO450
2433             .         .     D450
                 .         .        V
                 .         .        V
2438             .         .    RTW450
                 .         .        .
                 .         .        .
2444             .         .        .    TW444
                 .         .        .         .
                 .         .        .         .
2451             .         .    CTW444............
                 .         .        V
                 .         .        V
2454             .         .    RTW444
                 .         .        .
                 .         .        .
2460             .         .        .    TW440
                 .         .        .         .
                 .         .        .         .
2467             .         .    CTW440............
                 .         .        .
                 .         .        .
2470             .         .        .    TW460
                 .         .        .         V
                 .         .        .         V
2477             .         .        .    SSR540
                 .         .        .         V
                 .         .        .         V
2482             .         .        .    RTW460
                 .         .        .         .
                 .         .        .         .
2488             .         .        .         .    TW458
                 .         .        .         .         .
                 .         .        .         .         .
2495             .         .        .    CTW458............
```

```
                 .         .         .         V
                 .         .         .         V
2498             .         .         .     RTW458
                 .         .         .         .
                 .         .         .         .
2504             .         .         .         .       TW456
                 .         .         .         .         .
                 .         .         .         .         .
2511             .         .         .     CTW456............
                 .         .         .         V
                 .         .         .         V
2514             .         .         .     RTW456
                 .         .         .         .
                 .         .         .         .
2520             .         .         .         .       TW454
                 .         .         .         .         .
                 .         .         .         .         .
2527             .         .         .     CTW454............
                 .         .         .         .
                 .         .         .         .
2532             .         .         .         .-------->   DO454
2530             .         .         .       D454
                 .         .         .         V
                 .         .         .         V
2535             .         .         .     RTW454
                 .         .         .         .
                 .         .         .         .
2541             .         .         .         .     TW452A
                 .         .         .         .         V
                 .         .         .         .         V
2548             .         .         .         .     SSR450
                 .         .         .         .         V
                 .         .         .         .         V
2553             .         .         .         .      R452A
                 .         .         .         .         .
                 .         .         .         .         .
2559             .         .         .         .         .     TW452B
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2566             .         .         .      C452B........................
                 .         .         .         V
                 .         .         .         V
2569             .         .         .      R452B
                 .         .         .         .
                 .         .         .         .
2575             .         .         .         .      TW452
                 .         .         .         .         .
                 .         .         .         .         .
2584             .         .         .         .         .           .<-------   DO450
2582             .         .         .         .         .       D450
                 .         .         .         .         .         V
                 .         .         .         .         .         V
2585             .         .         .         .         .      RD450
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2591             .         .         .     CTW452........................
                 .         .         .         V
                 .         .         .         V
2594             .         .         .     RTW452
                 .         .         .         .
                 .         .         .         .
2600             .         .         .         .      TW442
                 .         .         .         .         .
                 .         .         .         .         .
2607             .         .         .     CTW442............
                 .         .         .         .
                 .         .         .         .
2610             .         .     C442*............
                 .         .         V
                 .         .         V
2613             .         .     R442*
                 .         .         .
                 .         .         .
2619             .         .         .      TW434
```

```
                .          .          .          .
                .          .          .          .
2626            .          .     C434_1...........
                .          .          .
                .          .          .
2628            .     CTW434...........
                .          V
                .          V
2631            .     RTW434
                .          .
                .          .
2637            .          .      TW430
                .          .          .
                .          .          .
2644            .     C430_2...........
                .          .
                .          .
2646            .          .      TW436
                .          .          V
                .          .          V
2653            .          .     RTW436
                .          .          .
                .          .          .
2659            .          .          .      TW429
                .          .          .          V
                .          .          .          V
2666            .          .          .     RTW429
                .          .          .          .
                .          .          .          .
2672            .      C430*......................
                .          .
                .          .
2677            .          .          .<-------   DO454
2675            .          .       D454
                .          .          V
                .          .          V
2678            .          .      RD454
                .          .          .
                .          .          .
2684            .          .          .      TW485
                .          .          .          .
                .          .          .          .
2691            .          .          .          .     WI576A
                .          .          .          .          V
                .          .          .          .          V
2698            .          .          .          .      R576A
                .          .          .          .          .
                .          .          .          .          .
2704            .          .          .          .          .     WI576B
                .          .          .          .          .          .
                .          .          .          .          .          .
2711            .          .          .          .      C576B...........
                .          .          .          .          .
                .          .          .          .          .
2716            .          .          .          .          .-------> DO576B
2714            .          .          .          .      D576B
                .          .          .          .          V
                .          .          .          .          V
2719            .          .          .          .      R576B
                .          .          .          .          .
                .          .          .          .          .
2725            .          .          .     C485_1...........
                .          .          .          .
                .          .          .          .
2728            .          .     CTW485...........
                .          .          V
                .          .          V
2731            .          .     RTW485
                .          .          .
                .          .          .
2737            .          .          .      TW484
                .          .          .          .
                .          .          .          .
2744            .          .     CTW484...........
```

```
                 .         .         V
                 .         .         V
2747             .         .     RTW484
                 .         .         .
                 .         .         .
2753             .         .         .       TW480
                 .         .         .         .
                 .         .         .         .
2760             .         .         .         .     WI580A
                 .         .         .         .         .
                 .         .         .         .         .
2767             .         .         .         .         .      WI580B
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2776             .         .         .         .         .         .-------> DO580B
2774             .         .         .         .         .      D580B
                 .         .         .         .         .         V
                 .         .         .         .         .         V
2779             .         .         .         .         .      R580B
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2785             .         .         .         .       C580A............
                 .         .         .         .           V
                 .         .         .         .           V
2788             .         .         .         .     SSR630
                 .         .         .         .           V
                 .         .         .         .           V
2793             .         .         .         .       R580A
                 .         .         .         .         .
                 .         .         .         .         .
2799             .         .         .         .         .      WI580
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2808             .         .         .         .         .         .           .<-------  DO580B
2806             .         .         .         .         .         .      D580B
                 .         .         .         .         .         .          V
                 .         .         .         .         .         .          V
2809             .         .         .         .         .         .     RD580B
                 .         .         .         .         .         .          .
                 .         .         .         .         .         .          .
2815             .         .         .         .         .         .          .       WI578
                 .         .         .         .         .         .          .         .
                 .         .         .         .         .         .          .         .
2822             .         .         .         .         .         .     CWI578............
                 .         .         .         .         .         .          V
                 .         .         .         .         .         .          V
2825             .         .         .         .         .         .     SSR700
                 .         .         .         .         .         .          V
                 .         .         .         .         .         .          V
2830             .         .         .         .         .         .     RWI578
                 .         .         .         .         .         .          .
                 .         .         .         .         .         .          .
2836             .         .         .         .     CWI580........................
                 .         .         .         .           V
                 .         .         .         .           V
2839             .         .         .         .     RWI580
                 .         .         .         .         .
                 .         .         .         .         .
2845             .         .         .         .         .      WI576
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2852             .         .         .         .     C576_2............
                 .         .         .         .         .
                 .         .         .         .         .
2856             .         .         .         .         .         .<-------  DO576B
2854             .         .         .         .         .      D576B
                 .         .         .         .         .         V
                 .         .         .         .         .         V
2857             .         .         .         .         .     RD576B
                 .         .         .         .         .         .
                 .         .         .         .         .         .
2863             .         .         .         .     CWI576............
                 .         .         .         .         .
                 .         .         .         .         .
```

```
2868          .           .           .           .           .-------->   DO576
2866          .           .           .           .        D576
              .           .           .           .           V
              .           .           .           .           V
2873          .           .           .           .      RWI576
              .           .           .           .           .
              .           .           .           .           .
2879          .           .           .           .           .       TW482
              .           .           .           .           .           .
              .           .           .           .           .           .
2886          .           .           .           .      CTW482............
              .           .           .           .           .
              .           .           .           .           .
2891          .           .           .           .           .-------->   DO482
2889          .           .           .           .        D482
              .           .           .           .           V
              .           .           .           .           V
2894          .           .           .           .      RTW482
              .           .           .           .           .
              .           .           .           .           .
2900          .           .           .      C480_4............
              .           .           .           .
              .           .           .           .
2902          .           .      CTW480............
              .           .           .
              .           .           .
2907          .           .           .-------->   DO480
2905          .           .        D480
              .           .           V
              .           .           V
2910          .           .      RTW480
              .           .           .
              .           .           .
2916          .           .           .       TW478
              .           .           .           .
              .           .           .           .
2923          .           .      CTW478............
              .           .           V
              .           .           V
2926          .           .      RTW478
              .           .           .
              .           .           .
2932          .      CTW430............
              .           V
              .           V
2935          .      SCP040
              .           V
              .           V
2942          .      RTW430
              .           .
              .           .
2948          .           .       TW418
              .           .           .
              .           .           .
2955          .      CTW418............
              .           V
              .           V
2958          .      RTW418
              .           .
              .           .
2964          .           .       TW422
              .           .           .
              .           .           .
2971          .      C422_1............
              .           .
              .           .
2974          .           .       TW424
              .           .           V
              .           .           V
2981          .           .      RTW424
              .           .           .
              .           .           .
2987          .      CTW422............
              .           V
```

```
                 .          V
2990             .      RTW422
                 .          .
                 .          .
2996             .          .       TW400
                 .          .           .
                 .          .           .
3003             .      C400_2...........
                 .          .
                 .          .
3006        CTW400...........
                 V
                 V
3009        RTW400
                 .
                 .
3015             .       WI504
                 .          .
                 .          .
3022        CWI504...........
                 V
                 V
3025        RWI504
                 .
                 .
3031             .       WI560
                 .          .
                 .          .
3038             .          .       WI574
                 .          .           V
                 .          .           V
3045             .          .      RWI574
                 .          .           .
                 .          .           .
3051             .      C5602A...........
                 .          .
                 .          .
3055             .          .           .<-------   DO576
3053             .          .        D576
                 .          .           V
                 .          .           V
3056             .          .       RD576
                 .          .           .
                 .          .           .
3062             .      C5602B...........
                 .          .
                 .          .
3064             .          .      WI560A
                 .          .           V
                 .          .           V
3071             .          .       R560A
                 .          .           .
                 .          .           .
3077             .      C5602C...........
                 .          .
                 .          .
3079             .          .       WI572
                 .          .           V
                 .          .           V
3086             .          .      RWI572
                 .          .           .
                 .          .           .
3092             .          .           .       WI570
                 .          .           .           .
                 .          .           .           .
3101             .          .           .           .-------->   DO570
3099             .          .           .        D570
                 .          .           .           V
                 .          .           .           V
3104             .          .           .      RWI570
                 .          .           .           .
                 .          .           .           .
3110             .          .           .           .       WI566
                 .          .           .           .           .
```

```
3119                                                                  .<-------   DO570
3117                                                            D570
                                                                   .
                                                                   .
3120                                                      CWI566............
                                                               V
                                                               V
3123                                                      SSR830
                                                               V
                                                               V
3128                                                      RWI566
                                                               .
                                                               .
3134                                                            .       WI564
                                                                .           V
                                                                .           V
3141                                                            .      SSR880
                                                                .           V
                                                                .           V
3146                                                            .      RWI564
                                                                .           .
                                                                .           .
3152                                                            .           .       WI562
                                                                .           .          .
                                                                .           .          .
3159                                                      CWI562......................
                                                               .
                                                               .
3162                                                 C562*............
                                                         V
                                                         V
3165                                                 R562*
                                                         .
                                                         .
3171                 CWI560......................
                         V
                         V
3174                 RWI560
                         .
                         .
3180                         .       WI554
                             .           .
                             .           .
3187                 C554_9............
                             .
                             .
3189                         .       WI556
                             .           V
                             .           V
3196                         .      RWI556
                             .           .
                             .           .
3202                 C5541B............
                             .
                             .
3204                         .       WI582
                             .           .
                             .           .
3213                         .           .<-------   DO482
3211                         .        D482
                             .           V
                             .           V
3214                         .       RD482
                             .           .
                             .           .
3220                         .      CWI582............
                             .           V
                             .           V
3223                         .      RWI582
                             .           .
                             .           .
3229                 CWI554............
                         V
```

```
                 .          V
3232             .     RWI554
                 .          .
                 .          .
3238             .          .      WI552
                 .          .          .
                 .          .          .
3245             .     CWI552............
                 .          V
                 .          V
3248             .     RWI552
                 .          .
                 .          .
3254             .          .      WI584
                 .          .          .
                 .          .          .
3263             .          .          .          .<-------   DO480
3261             .          .          .       D480
                 .          .          .          V
                 .          .          .          V
3264             .          .          .      RD480
                 .          .          .          .
                 .          .          .          .
3270             .          .     CWI584............
                 .          .          V
                 .          .          V
3273             .          .     RWI584
                 .          .          .
                 .          .          .
3279             .          .          .      WI550
                 .          .          .          .
                 .          .          .          .
3286             .     CWI550........................
                 .          V
                 .          V
3289             .     SCP050
                 .          V
                 .          V
3296             .     RWI550
                 .          .
                 .          .
3302             .          .      WI514
                 .          .          .
                 .          .          .
3309             .     CWI514............
                 .          .
                 .          .
3312             .          .      WI548
                 .          .          V
                 .          .          V
3319             .          .     RWI548
                 .          .          .
                 .          .          .
3325             .          .          .      WI546
                 .          .          .          .
                 .          .          .          .
3332             .          .     CWI546............
                 .          .          V
                 .          .          V
3335             .          .     RWI546
                 .          .          .
                 .          .          .
3341             .          .          .      WI544
                 .          .          .          .
                 .          .          .          .
3348             .          .     CWI544............
                 .          .          .
                 .          .          .
3353             .          .          .-------->   DO544
3351             .          .      D544
                 .          .          V
                 .          .          V
3356             .          .     RWI544
                 .          .          .
```

```
3362                WI542
                      .
                      .
3369            CWI542............
                      .
                      .
3372                WI540
                      V
                      V
3379               SSR940
                      V
                      V
3384               RWI540
                      .
                      .
3390                  .      WI538A
                      .           .
                      .           .
3397                C538A............
                      V
                      V
3400                R538A
                      .
                      .
3406                  .       WI538
                      .           .
                      .           .
3413               CWI538............
                      V
                      V
3416               RWI538
                      .
                      .
3422                  .       WI530
                      .           .
                      .           .
3429               C530_2............
                      .
                      .
3431                  .       WI536
                      .           .
                      .           .
3438                  .           .       WI534
                      .           .          V
                      .           .          V
3445                  .           .      RWI534
                      .           .          .
                      .           .          .
3451                  .           .           .       WI532
                      .           .           .           .
                      .           .           .           .
3458                  .           .      CWI532............
                      .           .           .
                      .           .           .
3461                  .       C530*............
                      .           V
                      .           V
3464                  .       R530*
                      .           .
                      .           .
3470               C530_3............
                      .
                      .
3474                  .           .<-------   DO544
3472                  .        D544
                      .           V
                      .           V
3475                  .       RD544
                      .           .
                      .           .
3481               CWI530............
                      .
                      .
```

```
3484                CAP1*............
                        .
                        .
3488                    .      PI663
                        .          V
                        .          V
3495                    .     RPI663
                        .          .
                        .          .
3501                    .          .       PI657
                        .          .          .
                        .          .          .
3508                    .          .          .       PI660
                        .          .          .          .
                        .          .          .          .
3515                    .     CPI660........................
                        .          V
                        .          V
3518                    .     RPI660
                        .          .
                        .          .
3524                    .          .       PI654
                        .          .          .
                        .          .          .
3531                    .     CPI654............
                        .          .
                        .          .
3536                    .          .-------->   DO654
3534                    .       D654
                        .          V
                        .          V
3539                    .     RPI654
                        .          .
                        .          .
3545                    .          .       PI651
                        .          .          .
                        .          .          .
3552                    .     C651_1............
                        .          .
                        .          .
3554                    .          .       PI648
                        .          .          .
                        .          .          .
3561                    .     CPI651............
                        .          V
                        .          V
3564                    .     RPI651
                        .          .
                        .          .
3570                    .          .       PI645
                        .          .          .
                        .          .          .
3577                    .     C645_1............
                        .          .
                        .          .
3579                    .          .      PI645A
                        .          .          V
                        .          .          V
3586                    .          .       R645A
                        .          .          .
                        .          .          .
3594                    .          .          .          .<-------   DO654
3592                    .          .          .       D654
                        .          .          .          V
                        .          .          .          V
3595                    .          .          .      RD654
                        .          .          .          .
                        .          .          .          .
3601                    .     CPI645........................
                        .          .
                        .          .
3604                CAP1*............
                        .
                        .
```

```
3607                    PI689
                          .
                          .
3614                      .        PI688
                          .            .
                          .            .
3621                  CPI689............
                          V
                          V
3623                  RPI689
                          .
                          .
3629                      .        PI687
                          .            .
                          .            .
3636                  CPI687............
                          V
                          V
3639                  RPI687
                          .
                          .
3645                      .        PI684
                          .            .
                          .            .
3652                  CPI684............
                          V
                          V
3655                  SSR103
                          V
                          V
3661                  RPI684
                          .
                          .
3667                      .        PI681
                          .            .
                          .            .
3674                  CPI681............
                          V
                          V
3677                  RPI681
                          .
                          .
3683                      .        PI678
                          .            .
                          .            .
3690                  CPI678............
                          .
                          .
3695                      .-------->   DO678
3693                    D678
                          .
                          .
3698                      .        PI690
                          .            .
                          .            .
3705                  CPI690............
                          V
                          V
3708                  RPI690
                          .
                          .
3714                      .        PI675
                          .            .
                          .            .
3721                  CPI675............
                          .
                          .
3724             CAP1*............
                          .
                          .
3727                    PI672
                          .
                          .
3736                      .            .<--------   DO678
```

```
3734                                  D678
                                         V
                                         V
3737                                 RD678
                                         .
                                         .
3743                        CPI672............
                                         .
                                         .
3746                 CAP1*............
                             .
                             .
3749                         PI693
                             .
                             .
3756                 CAP1*............
                             .
                             .
3759                         PI669
                             .
                             .
3766                 CAP1*............
                             .
                             .
3769                         PI642
                             .
                             .
3776                 CAP1*............
                             .
                             .
3779                        PDWEST
                             .
                             .
3822                 CAP1*............
                         V
                         V
3825                 STOR1
                             .
                             .
3835                         .-------> DOCAP*
3834                 DCAP*
                             .
                             .
3842                         .-------> DOCP14
3840                DCAP14
                             .
                             .
3847                         .-------> DOCP13
3845                DCAP13
                             .
                             .
3852                         .-------> DOCP12
3850                DCAP12
                             .
                             .
3857                         .-------> DOCP11
3855                DCAP11
                             .
                             .
3862                         .-------> DOCP10
3860                DCAP10
                             .
                             .
3867                         .-------> DOCP09
3865                DCAP09
                             .
                             .
3872                         .-------> DOCP08
3870                DCAP08
                             .
                             .
3878                         .-------> DOCP07
3875                DCAP07
                             .
```

```
                .           .
3884            .           .       .-------> DOCPOT
3881            .           .   DCAPOT
                .           .       V
                .           .       V
3887            .           .   RWI542
                .           .       .
                .           .       .
3893            .           .       .       WI529
                .           .       .           .
                .           .       .           .
3900            .           .   CWI529............
                .           .       .
                .           .       .
3905            .           .       .-------> DO529
3903            .           .     D529
                .           .       V
                .           .       V
3908            .           .   RWI529
                .           .       .
                .           .       .
3914            .           .       .       WI516
                .           .       .           .
                .           .       .           .
3921            .           .   C516_1............
                .           .       .
                .           .       .
3924            .       CWI516............
                .           V
                .           V
3927            .       RWI516
                .           .
                .           .
3933            .           .     WI512
                .           .       .
                .           .       .
3940            .       CWI512............
                .           .
                .           .
3945            .           .       .<-------- DOCPOT
3943            .           .   DCAPOT
                .           .       V
                .           .       V
3946            .           .   RDCPOT
                .           .       .
                .           .       .
3952            .           .       .       WI527
                .           .       .           .
                .           .       .           .
3959            .           .   CWI527............
                .           .       .
                .           .       .
3963            .           .       .-------> DO527
3961            .           .     D527
                .           .       V
                .           .       V
3966            .           .   RWI527
                .           .       .
                .           .       .
3974            .           .       .           .<-------  DO529
3972            .           .       .         D529
                .           .       .           V
                .           .       .           V
3975            .           .       .       RD529
                .           .       .           .
                .           .       .           .
3983            .           .       .           .           .<-------- DOCP07
3981            .           .       .           .       DCAP07
                .           .       .           .           V
                .           .       .           .           V
3984            .           .       .           .       RDCP07
                .           .       .           .           .
                .           .       .           .           .
3990            .           .       .           .           .       WI528
```

```
                .          .          .          .          .          .
                .          .          .          .          .          .
3997            .          .          .          .     C528_1...........
                .          .          .          .          .
                .          .          .          .          .
4000            .          .          .     CWI528...........
                .          .          .          V
                .          .          .          V
4003            .          .          .     RWI528
                .          .          .          .
                .          .          .          .
4009            .          .          .          .      WI518
                .          .          .          .          .
                .          .          .          .          .
4016            .          .          .     C518_1...........
                .          .          .          .
                .          .          .          .
4019            .          .     CWI518...........
                .          .          .
                .          .          .
4022            .      C508*...........
                .          V
                .          V
4025            .      R508*
                .          .
                .          .
4031            .          .      WI508
                .          .          .
                .          .          .
4038            .     CWI508...........
                .          .
                .          .
4043            .          .-------->   DO508
4041            .       D508
                .          .
                .          .
4046            .          .     WI510A
                .          .          V
                .          .          V
4053            .          .      R510A
                .          .          .
                .          .          .
4059            .          .          .      WI510
                .          .          .          .
                .          .          .          .
4066            .     CWI510......................
                .          V
                .          V
4069            .     RWI510
                .          .
                .          .
4075            .          .      WI502
                .          .          .
                .          .          .
4082            .     C502_1...........
                .          .
                .          .
4085       CWI502...........
                V
                V
4088       RWI502
                .
                .
4096            .          .<--------  DOCP08
4094            .     DCAP08
                .          V
                .          V
4097            .     RDCP08
                .          .
                .          .
4103            .          .      WI526
                .          .          .
                .          .          .
4110            .     CWI526...........
```

```
                 .          V
                 .          V
4113             .     RWI526
                 .          .
                 .          .
4119             .          .       WI525
                 .          .           .
                 .          .           .
4128             .          .           .           .<-------  DOCP09
4126             .          .           .     DCAP09
                 .          .           .          V
                 .          .           .          V
4129             .          .           .     RDCP09
                 .          .           .           .
                 .          .           .           .
4135             .          .      C5251b............
                 .          .           .
                 .          .           .
4138             .     C5251a............
                 .          .
                 .          .
4143             .          .           .<-------   DO527
4141             .          .        D527
                 .          .           V
                 .          .           V
4144             .          .       RD527
                 .          .           .
                 .          .           .
4150             .     CWI525............
                 .          .
                 .          .
4155             .          .-------->   DO525
4153             .       D525
                 .          V
                 .          V
4158             .     RWI525
                 .          .
                 .          .
4164             .          .       WI506
                 .          .           .
                 .          .           .
4171             .     C506_1............
                 .          .
                 .          .
4174             .          .       WI524
                 .          .           .
                 .          .           .
4183             .          .           .           .<-------   DO525
4181             .          .           .        D525
                 .          .           .           V
                 .          .           .           V
4184             .          .           .       RD525
                 .          .           .           .
                 .          .           .           .
4190             .          .      CWI524............
                 .          .           .
                 .          .           .
4195             .          .           .-------->   DO524
4193             .          .        D524
                 .          .           V
                 .          .           V
4198             .          .      RWI524
                 .          .           .
                 .          .           .
4204             .     CWI506............
                 .          V
                 .          V
4207             .     RWI506
                 .          .
                 .          .
4213             .          .       WI500
                 .          .           .
                 .          .           .
4220             .     C500_1............
```

```
                .           .
                .           .
4224            .           .           .<-------   DO508
4222            .           .        D508
                .           .           V
                .           .           V
4225            .           .       RD508
                .           .           .
                .           .           .
4231            .      C500_2............
                .           .
                .           .
4233       CWI500............
                V
                V
4236       SSPILL
                V
                V
4243       RWI500
                .
                .
4249            .       PI635
                .           .
                .           .
4256       CPI635............
                V
                V
4259       RPI635
                .
                .
4267            .           .<-------  DOCP11
4265            .      DCAP11
                .           V
                .           V
4268            .      RDCP11
                .           .
                .           .
4274            .           .       PI618
                .           .           .
                .           .           .
4283            .           .           .           .<-------  DOCP12
4281            .           .           .      DCAP12
                .           .           .           .
                .           .           .           .
4286            .           .           .           .------->   DO618
4284            .           .           .        D618
                .           .           .           V
                .           .           .           V
4289            .           .           .      RDCP12
                .           .           .           .
                .           .           .           .
4295            .           .      C6181a............
                .           .           .
                .           .           .
4298            .      CPI618............
                .           V
                .           V
4301            .      RPI618
                .           .
                .           .
4307            .           .       PI612
                .           .           .
                .           .           .
4316            .           .           .           .<-------  DOCP13
4314            .           .           .      DCAP13
                .           .           .           V
                .           .           .           V
4317            .           .           .      RDCP13
                .           .           .           .
                .           .           .           .
4323            .           .           .           .       PI615
                .           .           .           .           .
                .           .           .           .           .
4330            .           .           .      C6151A............
```

```
                .          .          .          .
                .          .          .          .
4335            .          .          .          .          .<-------   DO618
4333            .          .          .       D618
                .          .          .          V
                .          .          .          V
4336            .          .          .      RD618
                .          .          .          .
                .          .          .          .
4342            .          .          .    CPI615............
                .          .          .         V
                .          .          .         V
4345            .          .          .    RPI615
                .          .          .          .
                .          .          .          .
4351            .          .     C6121a............
                .          .          .
                .          .          .
4354            .     CPI612............
                .          .
                .          .
4359            .          .------->   DO612
4357            .       D612
                .          V
                .          V
4362            .     RPI612
                .          .
                .          .
4368            .          .      PI609
                .          .          .
                .          .          .
4375            .     C609_1............
                .          .
                .          .
4380            .          .          .<-------  DOCP14
4378            .          .     DCAP14
                .          .          V
                .          .          V
4381            .          .     RDCP14
                .          .          .
                .          .          .
4387            .     CPI609............
                .          V
                .          V
4390            .     RPI609
                .          .
                .          .
4396            .          .     PI600A
                .          .          .
                .          .          .
4402            .      C600A............
                .          .
                .          .
4405            .          .-------> DO600A
4404            .      D600A
                .          .
                .          .
4408            .          .      PI621
                .          .          .
                .          .          .
4417            .          .          .          .<-------   DO612
4415            .          .          .       D612
                .          .          .          V
                .          .          .          V
4418            .          .          .      RD612
                .          .          .          .
                .          .          .          .
4424            .          .     CPI621............
                .          .          V
                .          .          V
4427            .          .     SPI621
                .          .          V
                .          .          V
4433            .          .     RPI621
```

```
                .          .          .
                .          .          .
4441            .          .          .          .<-------  DOCP10
4439            .          .          .     DCAP10
                .          .          .          V
                .          .          .          V
4442            .          .          .     RDCP10
                .          .          .          .
                .          .          .          .
4448            .          .          .          .       PI628
                .          .          .          .           .
                .          .          .          .           .
4455            .          .          .     CPI628............
                .          .          .          V
                .          .          .          V
4458            .          .          .     RPI628
                .          .          .          .
                .          .          .          .
4464            .          .          .          .      PI624A
                .          .          .          .           .
                .          .          .          .           .
4471            .          .          .      C624A............
                .          .          .          V
                .          .          .          V
4474            .          .          .      R624A
                .          .          .          .
                .          .          .          .
4480            .          .          .          .       PI639
                .          .          .          .           .
                .          .          .          .           .
4489            .          .          .          .           .          .<-------   DO524
4487            .          .          .          .           .       D524
                .          .          .          .           .          V
                .          .          .          .           .          V
4490            .          .          .          .           .      RD524
                .          .          .          .           .           .
                .          .          .          .           .           .
4496            .          .          .          .      CPI639............
                .          .          .          .           V
                .          .          .          .           V
4499            .          .          .          .      RPI639
                .          .          .          .           .
                .          .          .          .           .
4505            .          .          .          .           .      PI636
                .          .          .          .           .           .
                .          .          .          .           .           .
4512            .          .          .          .      CPI636............
                .          .          .          .           V
                .          .          .          .           V
4515            .          .          .          .      RPI636
                .          .          .          .           .
                .          .          .          .           .
4521            .          .          .          .           .      PI624
                .          .          .          .           .           .
                .          .          .          .           .           .
4528            .          .          .     CPI624........................
                .          .          .          V
                .          .          .          V
4531            .          .          .     SPI624
                .          .          .          V
                .          .          .          V
4538            .          .          .     RPI624
                .          .          .          .
                .          .          .          .
4544            .          .          .          .       PI633
                .          .          .          .           .
                .          .          .          .           .
4551       CPI633.................................................
                V
                V
4554       RPI633
                .
                .
4560            .     PDEAST
```

```
                 .           .
                 .           .
4601             .           .           .<-------  DOCAP*
4600             .           .       DCAP*
                 .           .           .
                 .           .           .
4602             .       CAP2*............
                 .           V
                 .           V
4604             .       STOR2
                 .           .
                 .           .
4615             .           .-------> DOCP19
4613             .      DCAP19
                 .           .
                 .           .
4620             .           .-------> DOCP18
4618             .      DCAP18
                 .           .
                 .           .
4625             .           .-------> DOCP17
4623             .      DCAP17
                 .           .
                 .           .
4630             .           .-------> DOCP16
4628             .      DCAP16
                 .           V
                 .           V
4633             .      RDCP15
                 .           .
                 .           .
4639             .           .      PI606A
                 .           .           .
                 .           .           .
4646             .       C606A............
                 .           .
                 .           .
4651             .           .-------> DO606A
4649             .       D606A
                 .           V
                 .           V
4654             .       R606A
                 .           .
                 .           .
4660             .           .       PI606
                 .           .           .
                 .           .           .
4667             .      CPI606............
                 .           V
                 .           V
4670             .      RPI606
                 .           .
                 .           .
4676             .           .       PI604
                 .           .           .
                 .           .           .
4685             .           .           .           .<-------  DO606A
4683             .           .           .       D606A
                 .           .           .           V
                 .           .           .           V
4686             .           .           .      RD606A
                 .           .           .           .
                 .           .           .           .
4692             .           .      CPI604............
                 .           .           V
                 .           .           V
4695             .           .      RPI604
                 .           .           .
                 .           .           .
4701             .           .           .       PI603
                 .           .           .           .
                 .           .           .           .
4708             .      C603_1........................
                 .           .
```

```
                .           .
4711            .           .       PD744
                .           .           .
                .           .           .
4719            .           .           .           .<-------  DO600A
4718            .           .           .       D600A
                .           .           .           V
                .           .           .           V
4720            .           .           .      RD600A
                .           .           .           .
                .           .           .           .
4725            .      CPI603.......................
                .           V
                .           V
4728            .      SPI603
                .           .
                .           .
4738            .           .------->   DO744
4737            .        D744
                .           V
                .           V
4743            .      RPI603
                .           .
                .           .
4749            .           .       PI600
                .           .           .
                .           .           .
4756       CPI600.......................
                V
                V
4759       RPI600
                .
                .
4767            .           .<-------  DOCP16
4765            .      DCAP16
                .           V
                .           V
4768            .      RDCP16
                .           .
                .           .
4774            .           .       PD740
                .           .           .
                .           .           .
4783            .      C740_1............
                .           .
                .           .
4787            .           .           .<-------  DOCP17
4785            .           .      DCAP17
                .           .           V
                .           .           V
4788            .           .      RDCP17
                .           .           .
                .           .           .
4794            .      CPD740............
                .           V
                .           V
4797            .      RPD740
                .           .
                .           .
4803            .           .      PD726B
                .           .           .
                .           .           .
4811            .       C726B............
                .           V
                .           V
4814            .       R726B
                .           .
                .           .
4822            .           .           .<-------  DOCP18
4820            .           .      DCAP18
                .           .           V
                .           .           V
4823            .           .      RDCP18
                .           .           .
```

```
4829                    PD736
                          .
                          .
4836              CPD736............
                       V
                       V
4839              RPD736
                       .
                       .
4847                          .<-------  DOCP19
4845                DCAP19
                          V
                          V
4848                RDCP19
                          .
                          .
4854                          .       PD760
                              .           V
                              .           V
4861                          .      SCP200
                              .           V
                              .           V
4868                          .      RPD760
                              .           .
                              .           .
4874                          .           .       PD732
                              .           .         .
                              .           .         .
4881                RDCP19.....................
                          V
                          V
4884                RPD732
                          .
                          .
4890                          .      PD726A
                              .           .
                              .           .
4896                  C14E............
                          .
                          .
4899              C726A............
                       V
                       V
4902              R726A
                       .
                       .
4908          C726*............
                   V
                   V
4911          R726*
                   .
                   .
4917              PD726
                       .
                       .
4924           C11E............
                   .
                   .
4927              PD716
                       .
                       .
4934         CPD726............
                   V
                   V
4937         SPD726
                   .
                   .
4947               .-------->   DO716
4946           D716
                   V
                   V
4952         RPD726
                   .
```

```
                .           .
4958            .           .       PD720
                .           .           .
                .           .           .
4966            .           .           .           .<-------   DO744
4965            .           .           .        D744
                .           .           .           V
                .           .           .           V
4967            .           .           .       RD744
                .           .           .           .
                .           .           .           .
4973       CPD720.................................
                V
                V
4976       RPD720
                .
                .
4983            .           .<-------   DO716
4982            .        D716
                .           V
                .           V
4984            .       RD716
                .           .
                .           .
4990        C700*............
                V
                V
4993        R700*
                .
                .
4999            .       PD752
                .           .
                .           .
5006            .           .       PD748
                .           .           .
                .           .           .
5013            .      CPD748............
                .           V
                .           V
5016            .      SCP220
                .           V
                .           V
5023            .      RPD748
                .           .
                .           .
5029            .           .       PD756
                .           .           V
                .           .           V
5036            .           .      SCP210
                .           .           V
                .           .           V
5047            .           .      RPD756
                .           .           .
                .           .           .
5053            .       C708*............
                .           V
                .           V
5056            .       R708*
                .           .
                .           .
5062            .           .       PD708
                .           .           .
                .           .           .
5069            .           .           .      PD712A
                .           .           .           V
                .           .           .           V
5076            .           .           .       R712A
                .           .           .           .
                .           .           .           .
5082            .           .           .           .       PD712
                .           .           .           .           .
                .           .           .           .           .
5089            .      CPD708.................................
                .           V
```

```
                .          V
5092            .      RPD708
                .          .
                .          .
5098            .          .       PD704
                .          .           .
                .          .           .
5105            .          .           .       AF800
                .          .           .           .
                .          .           .           .
5112            .      CPD704.......................
                .          V
                .          V
5115            .      SPD704
                .          .
                .          .
5125            .          .-------->   DO800
5124            .        D800
                .          V
                .          V
5130            .      RPD704
                .          .
                .          .
5136            .          .       PD700
                .          .           .
                .          .           .
5143        CPD700......................
                .
                .
5147            .          .<-------   DO800
5146            .        D800
                .          V
                .          V
5148            .       RD800
                .          .
                .          .
5154            .          .       AF802
                .          .           .
                .          .           .
5161         C802*......................
                V
                V
5163         R810*
                .
                .
5169            .       AF803
                .          V
                .          V
5176            .      RAF803
                .          .
                .          .
5182            .          .       AF805
                .          .           V
                .          .           V
5189            .          .      RAF805
                .          .           .
                .          .           .
5195            .          .           .       AF807
                .          .           .           .
                .          .           .           .
5202            .      CAF807.......................
                .          V
                .          V
5204            .      RAF807
                .          .
                .          .
5210            .          .       AF810
                .          .           .
                .          .           .
5217         CAF810......................
                V
                V
5219         RAF810
                .
```

```
                .
5225            .       AF820
                .           .
                .           .
5232      CAF820............
                .
                .
5234            .       AF830
                .           .
                .           .
5241            .           .       AF854
                .           .           V
                .           .           V
5247            .           .      RAF854
                .           .           .
                .           .           .
5252            .           .           .       AF852
                .           .           .           .
                .           .           .           .
5258            .           .      CAF852............
                .           .           V
                .           .           V
5260            .           .      RAF852
                .           .           .
                .           .           .
5265            .           .           .       AF850
                .           .           .           .
                .           .           .           .
5271            .           .      CAF850............
                .           .           .
                .           .           .
5273            .           .           .       AF864
                .           .           .           V
                .           .           .           V
5279            .           .           .      RAF864
                .           .           .           .
                .           .           .           .
5284            .           .           .           .       AF862
                .           .           .           .           .
                .           .           .           .           .
5290            .           .           .      CAF862............
                .           .           .           V
                .           .           .           V
5292            .           .           .      RAF862
                .           .           .           .
                .           .           .           .
5297            .           .           .           .       AF866
                .           .           .           .           V
                .           .           .           .           V
5303            .           .           .           .      RAF866
                .           .           .           .           .
                .           .           .           .           .
5308            .           .           .           .           .       AF860
                .           .           .           .           .           .
                .           .           .           .           .           .
5314            .           .           .      CAF860........................
                .           .           .           .
                .           .           .           .
5316            .           .           .           .       SV258
                .           .           .           .           .
                .           .           .           .           .
5325            .           .           .           .           .-------->   DO258
5323            .           .           .           .        D258
                .           .           .           .           V
                .           .           .           .           V
5328            .           .           .           .      RSV258
                .           .           .           .           .
                .           .           .           .           .
5334            .           .           .           .           .       SV256
                .           .           .           .           .           .
                .           .           .           .           .           .
5341            .           .           .           .      CSV256............
```

Wittmann ADMSU HEC-1 Modifications
100-year 24-hour Existing Conditions

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
+	HYDROGRAPH AT	WT140	1911.	13.00	556.	163.	54.	3.79
+	ROUTED TO	RWT140	1804.	13.33	556.	162.	54.	3.79
+	HYDROGRAPH AT	WT130	1817.	12.67	366.	100.	33.	2.57
+	2 COMBINED AT	CWT130	2641.	13.25	910.	260.	87.	6.36
+	ROUTED TO	RWT130	2441.	13.75	908.	260.	87.	6.36
+	HYDROGRAPH AT	WT160	569.	12.58	123.	35.	12.	.81
+	ROUTED TO	RWT160	376.	14.25	121.	35.	12.	.81
+	HYDROGRAPH AT	WT150A	2779.	12.92	701.	204.	68.	4.75
+	ROUTED TO	R150A	2601.	13.17	700.	204.	68.	4.75
	HYDROGRAPH AT	WT150	901.	12.50	161.	46.	15.	1.09
+	2 COMBINED AT	CWT150	2964.	13.08	855.	248.	83.	5.84
+	ROUTED TO	RWT150	2875.	13.50	854.	248.	83.	5.84
+	HYDROGRAPH AT	WT120	1802.	12.75	383.	99.	33.	2.80
+	4 COMBINED AT	CWT120	5970.	13.50	2198.	624.	209.	15.81
+	ROUTED TO	RWT120	5726.	14.08	2195.	624.	209.	15.81
+	HYDROGRAPH AT	WT110	2415.	12.58	403.	107.	36.	2.90
+	2 COMBINED AT	CWT110	5882.	14.08	2552.	722.	242.	18.71
+	ROUTED TO	RWT110	5507.	14.75	2544.	721.	242.	18.71
+	HYDROGRAPH AT	WT100	2889.	12.67	586.	166.	56.	3.85
+	2 COMBINED AT	CWT100	5629.	14.75	3045.	868.	292.	22.55
	ROUTED TO	RWT100	5251.	15.08	3028.	868.	292.	22.55
+	HYDROGRAPH AT	TW406	375.	12.08	28.	8.	3.	.16

	ROUTED TO						
+		RTW406	30.	16.67	23.	8.	3.	.16
	HYDROGRAPH AT						
+		TW408	413.	12.83	141.	42.	14.	.91
	ROUTED TO						
+		RTW408	213.	16.00	120.	42.	14.	.91
	HYDROGRAPH AT						
+		TW404	2515.	12.42	302.	80.	27.	2.09
	4 COMBINED AT						
+		CTW404	5271.	15.17	3351.	979.	330.	25.72
	ROUTED TO						
+		RTW404	5210.	15.42	3341.	979.	330.	25.72
	HYDROGRAPH AT						
+		IW371	68.	12.08	9.	3.	1.	.05
	DIVERSION TO						
+		DO371	46.	12.08	4.	1.	0.	.05
	HYDROGRAPH AT						
+		D371	22.	12.08	5.	2.	1.	.05
	ROUTED TO						
+		RIW371	13.	14.58	5.	2.	1.	.05
	HYDROGRAPH AT						
+		IW366	881.	12.58	162.	43.	14.	1.06
	2 COMBINED AT						
+		CIW366	881.	12.58	167.	45.	15.	1.08
	ROUTED TO						
+		RIW366	771.	13.00	166.	45.	15.	1.08
	HYDROGRAPH AT						
+		IW377	106.	12.33	17.	4.	1.	.11
	ROUTED TO						
+		SSR010	99.	12.42	17.	4.	1.	.11
	ROUTED TO						
+		RIW377	67.	13.25	17.	4.	1.	.11
	HYDROGRAPH AT						
+		IW374	534.	12.33	79.	21.	7.	.39
	HYDROGRAPH AT						
+		D371	46.	12.08	4.	1.	0.	.05
	ROUTED TO						
+		RD371	26.	12.33	4.	1.	0.	.05
	3 COMBINED AT						
+		CIW374	558.	12.33	98.	26.	9.	.53
	ROUTED TO						
+		RIW374	279.	14.17	96.	26.	9.	.53
	HYDROGRAPH AT						
+		IW386	271.	12.67	73.	19.	6.	.37
	ROUTED TO						
+		RIW386	208.	13.75	72.	19.	6.	.37
	HYDROGRAPH AT						
		IW382	526.	12.33	100.	26.	9.	.62
	2 COMBINED AT						
+		CIW382	525.	12.33	168.	45.	15.	.99

	DIVERSION TO							
		DO382B	180.	12.00	112.	31.	10.	.99
	HYDROGRAPH AT							
+		D382B	345.	12.33	56.	14.	5.	.99
	DIVERSION TO							
+		DO382A	82.	12.33	5.	1.	0.	.99
	HYDROGRAPH AT							
+		D382A	263.	12.33	51.	13.	4.	.99
	ROUTED TO							
+		RIW382	212.	12.83	51.	13.	4.	.99
	HYDROGRAPH AT							
+		IW384	128.	12.25	18.	5.	2.	.08
	HYDROGRAPH AT							
+		D382A	82.	12.33	5.	1.	0.	.99
	ROUTED TO							
+		RD382A	60.	12.42	5.	1.	0.	.99
	2 COMBINED AT							
+		CIW384	164.	12.33	23.	6.	2.	.23
	ROUTED TO							
+		RIW384	120.	12.75	23.	6.	2.	.23
	HYDROGRAPH AT							
+		IW381	315.	12.50	83.	22.	7.	.38
	HYDROGRAPH AT							
		D382B	180.	12.00	112.	31.	10.	.99
	2 COMBINED AT							
+		CIW381	493.	12.50	194.	53.	18.	.72
	ROUTED TO							
+		RIW381	460.	12.92	193.	53.	18.	.72
	3 COMBINED AT							
+		C359*	778.	12.83	264.	71.	24.	1.45
	ROUTED TO							
+		R359*	719.	13.25	261.	71.	24.	1.45
	HYDROGRAPH AT							
+		IW359	2442.	12.67	444.	116.	39.	2.91
	4 COMBINED AT							
+		CIW359	3105.	12.92	939.	253.	85.	5.97
	ROUTED TO							
+		RIW359	2943.	13.25	928.	253.	85.	5.97
	HYDROGRAPH AT							
+		IW353	2307.	12.75	524.	135.	45.	2.80
	2 COMBINED AT							
+		C353_3	4453.	13.17	1422.	384.	129.	8.77
	HYDROGRAPH AT							
+		IW389	118.	12.50	32.	8.	3.	.13
	ROUTED TO							
+		SSR190	118.	12.50	32.	8.	3.	.13
	ROUTED TO							
+		RIW389	76.	13.92	31.	8.	3.	.13
	HYDROGRAPH AT							

+	IW394	2569.	13.00	682.	192.	64.	4.17
ROUTED TO	RIW394	2473.	13.17	682.	192.	64.	4.17
HYDROGRAPH AT +	IW390A	576.	12.75	156.	44.	15.	.90
2 COMBINED AT +	C390A	2903.	13.17	832.	235.	78.	5.07
ROUTED TO +	R390A	2827.	13.42	832.	234.	78.	5.07
HYDROGRAPH AT +	IW390	146.	12.75	45.	12.	4.	.31
HYDROGRAPH AT +	IW392	1713.	12.33	213.	56.	19.	1.11
3 COMBINED AT +	CIW390	3038.	13.33	1076.	300.	100.	6.50
ROUTED TO +	SSR160	2996.	13.42	1076.	300.	100.	6.50
ROUTED TO +	RIW390	2891.	13.75	1070.	299.	100.	6.50
HYDROGRAPH AT +	IW388	867.	12.92	259.	68.	23.	1.23
2 COMBINED AT +	C388_1	3367.	13.75	1315.	365.	122.	7.72
2 COMBINED AT	CIW388	3436.	13.75	1343.	373.	125.	7.85
ROUTED TO +	RIW388	3364.	14.00	1341.	373.	125.	7.85
HYDROGRAPH AT +	IW357	647.	12.50	151.	40.	14.	.75
2 COMBINED AT +	CIW357	3504.	14.00	1474.	411.	138.	8.60
DIVERSION TO +	DO357	935.	14.00	387.	106.	36.	8.60
HYDROGRAPH AT +	D357	2569.	14.00	1087.	305.	102.	8.60
ROUTED TO +	RIW357	2494.	14.50	1080.	305.	102.	8.60
HYDROGRAPH AT +	IW358	98.	12.50	23.	6.	2.	.16
3 COMBINED AT +	CIW353	5023.	13.33	2449.	682.	229.	15.24
ROUTED TO +	RIW353	4898.	13.75	2429.	682.	229.	15.24
HYDROGRAPH AT +	IW350	1154.	13.00	368.	96.	32.	2.17
2 COMBINED AT	CIW350	5647.	13.67	2758.	770.	259.	17.41
HYDROGRAPH AT +	IW312	346.	12.92	127.	34.	11.	.57

	DIVERSION TO						
+	DO312	95.	12.92	11.	3.	1.	.57
	HYDROGRAPH AT						
+	D312	250.	12.92	117.	31.	10.	.57
	ROUTED TO						
+	RIW312	228.	13.75	114.	31.	10.	.57
	HYDROGRAPH AT						
+	IW365	272.	12.92	108.	29.	10.	.47
	HYDROGRAPH AT						
+	D312	95.	12.92	11.	3.	1.	.57
	ROUTED TO						
+	RD312	86.	13.00	11.	3.	1.	.57
	2 COMBINED AT						
+	CIW365	353.	13.00	119.	32.	11.	.63
	DIVERSION TO						
+	DO365	66.	13.00	5.	1.	0.	.63
	HYDROGRAPH AT						
+	D365	287.	13.00	114.	30.	10.	.63
	ROUTED TO						
+	RIW365	282.	13.50	113.	30.	10.	.63
	HYDROGRAPH AT						
+	IW367	77.	12.25	13.	3.	1.	.05
	HYDROGRAPH AT						
+	D365	66.	13.00	5.	1.	0.	.63
	ROUTED TO						
+	RD365	58.	13.17	5.	1.	0.	.63
	2 COMBINED AT						
+	CIW367	80.	13.17	19.	5.	2.	.17
	HYDROGRAPH AT						
+	IW369	435.	13.00	172.	46.	15.	.79
	DIVERSION TO						
+	DO369	230.	13.00	48.	12.	4.	.79
	HYDROGRAPH AT						
+	D369	205.	13.00	125.	34.	11.	.79
	2 COMBINED AT						
+	C363*	279.	13.08	142.	39.	13.	.54
	ROUTED TO						
+	RIW369	266.	13.42	141.	39.	13.	.54
	HYDROGRAPH AT						
+	D357	935.	14.00	387.	106.	36.	8.60
	ROUTED TO						
+	RD357	926.	14.08	386.	106.	36.	8.60
	HYDROGRAPH AT						
+	IW363	804.	12.42	139.	37.	12.	.63
	2 COMBINED AT						
+	C363_2	1012.	14.08	531.	146.	49.	.63
	4 COMBINED AT						
	CIW363	1640.	14.00	873.	241.	81.	4.38
	DIVERSION TO						
+	DO363	519.	14.00	257.	71.	24.	4.38

	HYDROGRAPH AT	D363	1120.	14.00	616.	170.	57.	4.38
	ROUTED TO	RIW363	1098.	14.33	610.	170.	57.	4.38
+	HYDROGRAPH AT	IW368	179.	12.58	37.	10.	3.	.29
+	HYDROGRAPH AT	D369	230.	13.00	48.	12.	4.	.79
+	ROUTED TO	RD369	205.	13.25	48.	12.	4.	.79
+	2 COMBINED AT	CIW368	296.	13.17	85.	22.	7.	.71
+	ROUTED TO	RIW368	270.	13.75	84.	22.	7.	.71
+	HYDROGRAPH AT	IW360	670.	12.25	114.	32.	11.	.83
+	2 COMBINED AT	CIW360	666.	12.25	194.	53.	18.	1.54
+	ROUTED TO	RIW360	635.	12.42	194.	53.	18.	1.54
+	HYDROGRAPH AT	IW397	3716.	12.83	959.	298.	100.	4.81
	ROUTED TO	RIW397	3396.	13.42	956.	297.	100.	4.81
+	HYDROGRAPH AT	IW395	6223.	12.83	1393.	414.	138.	7.86
+	2 COMBINED AT	CIW395	7572.	13.17	2308.	699.	235.	12.68
+	ROUTED TO	RIW395	7399.	13.42	2305.	698.	235.	12.68
+	HYDROGRAPH AT	IW387	1110.	12.67	205.	54.	18.	1.35
+	ROUTED TO	RIW387	1106.	12.67	205.	54.	18.	1.35
+	HYDROGRAPH AT	IW396	260.	12.83	79.	21.	7.	.59
+	3 COMBINED AT	CIW396	7924.	13.33	2563.	766.	258.	14.61
+	ROUTED TO	RIW396	7858.	13.50	2560.	766.	258.	14.61
+	HYDROGRAPH AT	IW380	490.	12.42	93.	24.	8.	.50
+	2 COMBINED AT	CIW380	7968.	13.50	2642.	788.	265.	15.11
+	ROUTED TO	SSR310	7964.	13.50	2642.	788.	265.	15.11
+	DIVERSION TO	DO380	2080.	13.50	279.	70.	23.	15.11
	HYDROGRAPH AT							

+	D380	5883.	13.50	2363.	718.	242.	15.11
ROUTED TO	RIW380	5542.	14.58	2361.	718.	242.	15.11
HYDROGRAPH AT +	IW370	433.	12.75	122.	33.	11.	.88
2 COMBINED AT +	CIW370	5663.	14.58	2485.	753.	254.	12.05
ROUTED TO +	RIW370	5390.	15.08	2484.	753.	254.	12.05
HYDROGRAPH AT +	IW349	172.	12.50	39.	11.	4.	.25
2 COMBINED AT +	CIW349	5399.	15.08	2512.	763.	257.	12.30
DIVERSION TO +	DO349	3348.	15.08	1557.	473.	159.	12.30
HYDROGRAPH AT +	D349	2052.	15.08	954.	290.	98.	12.30
ROUTED TO +	RIW349	2047.	15.17	954.	290.	98.	12.30
HYDROGRAPH AT +	IW352	99.	12.25	13.	3.	1.	.10
3 COMBINED AT +	CIW352	2192.	15.08	1154.	347.	117.	6.31
HYDROGRAPH AT	IW356	275.	12.42	53.	14.	5.	.29
HYDROGRAPH AT +	D349	3348.	15.08	1557.	473.	159.	12.30
ROUTED TO +	RD349	3194.	15.42	1556.	473.	159.	12.30
3 COMBINED AT +	CIW356	5308.	15.25	2726.	826.	278.	14.23
ROUTED TO +	RIW356	5244.	15.42	2722.	826.	278.	14.23
HYDROGRAPH AT +	IW354	409.	12.42	72.	18.	6.	.36
2 COMBINED AT +	CIW354	5244.	15.42	2781.	843.	284.	14.59
ROUTED TO +	RIW354	5141.	15.75	2774.	842.	284.	14.59
HYDROGRAPH AT +	IW362	183.	12.33	34.	9.	3.	.18
2 COMBINED AT +	CIW362	5141.	15.75	2798.	850.	286.	14.77
HYDROGRAPH AT +	IW372	354.	12.33	48.	13.	4.	.32
DIVERSION TO	DO372	177.	12.33	13.	3.	1.	.32
HYDROGRAPH AT +	D372	178.	12.33	35.	10.	3.	.32

	ROUTED TO	RIW372	129.	13.50	35.	10.	3.	.32
+	HYDROGRAPH AT	IW375	272.	13.17	114.	31.	10.	.66
+	HYDROGRAPH AT	D372	177.	12.33	13.	3.	1.	.32
+	ROUTED TO	RD372	101.	12.50	13.	3.	1.	.32
+	2 COMBINED AT	CIW375	306.	13.00	126.	34.	11.	.82
+	ROUTED TO	RIW375	280.	13.75	123.	34.	11.	.82
+	HYDROGRAPH AT	IW364	1340.	12.50	260.	68.	23.	1.15
+	3 COMBINED AT	CIW364	1337.	12.50	401.	110.	37.	2.13
+	2 COMBINED AT	C364*	5271.	15.75	3154.	952.	321.	16.90
+	ROUTED TO	RIW364	5152.	16.42	3142.	952.	321.	16.90
+	HYDROGRAPH AT	IW342	180.	12.67	47.	12.	4.	.35
+	2 COMBINED AT	CIW342	5157.	16.42	3177.	962.	324.	17.25
+	HYDROGRAPH AT	IW351	236.	12.42	43.	12.	4.	.32
+	HYDROGRAPH AT	D363	519.	14.00	257.	71.	24.	4.38
+	ROUTED TO	RD363	514.	14.08	256.	71.	24.	4.38
+	2 COMBINED AT	CIW351	559.	13.42	300.	83.	28.	1.71
+	DIVERSION TO	DO351	482.	13.42	253.	70.	23.	1.71
+	HYDROGRAPH AT	D351	78.	13.42	47.	13.	4.	1.71
+	ROUTED TO	RIW351	68.	16.50	42.	13.	4.	1.71
+	HYDROGRAPH AT	IW346	1969.	12.92	473.	124.	41.	3.44
+	2 COMBINED AT	C346_1	1968.	12.92	498.	136.	46.	3.73
+	2 COMBINED AT	CIW346	5247.	16.42	3611.	1085.	366.	20.92
+	ROUTED TO	RIW346	5213.	16.58	3606.	1085.	366.	20.92
	HYDROGRAPH AT	IW338	358.	12.42	53.	14.	5.	.34
+	2 COMBINED AT	CIW338	5213.	16.58	3632.	1097.	370.	21.26

	ROUTED TO	RIW338	5156.	17.00	3617.	1096.	370.	21.26
	HYDROGRAPH AT	IW326	327.	12.42	49.	13.	4.	.33
+	ROUTED TO	RIW326	235.	13.00	49.	13.	4.	.33
	HYDROGRAPH AT	IW334	1160.	12.58	191.	50.	17.	1.26
+	3 COMBINED AT	CIW334	5156.	17.00	3746.	1152.	389.	22.85
+	ROUTED TO	SCP030	5143.	17.08	3737.	1149.	388.	22.85
+	ROUTED TO	RIW334	5060.	17.92	3656.	1149.	388.	22.85
+	HYDROGRAPH AT	IW302	544.	13.08	196.	55.	18.	1.33
+	2 COMBINED AT	CIW302	5078.	17.92	3731.	1195.	404.	24.18
+	DIVERSION TO	DO302	5078.	17.92	3731.	1195.	404.	24.18
+	HYDROGRAPH AT	D302	0.	.00	0.	0.	0.	24.18
	HYDROGRAPH AT	IW361	212.	12.42	55.	14.	5.	.35
+	3 COMBINED AT	C361_1	1142.	14.25	658.	184.	62.	3.35
+	HYDROGRAPH AT	D351	482.	13.42	253.	70.	23.	1.71
+	ROUTED TO	RD351	475.	13.83	251.	70.	23.	1.71
+	2 COMBINED AT	CIW361	1600.	14.17	901.	252.	85.	4.82
+	ROUTED TO	RIW361	1591.	14.83	892.	252.	85.	4.82
+	2 COMBINED AT	C350*	6553.	13.83	3546.	1001.	336.	22.23
+	ROUTED TO	R350*	6462.	14.08	3523.	1001.	336.	22.23
+	HYDROGRAPH AT	IW330	619.	12.75	154.	40.	13.	1.04
+	2 COMBINED AT	CIW330	6608.	14.08	3612.	1035.	348.	23.27
+	ROUTED TO	RIW330	6525.	14.25	3596.	1035.	348.	23.27
+	HYDROGRAPH AT	IW322	932.	13.17	370.	99.	33.	1.89
+	2 COMBINED AT	CIW322	7021.	14.25	3890.	1121.	377.	25.16
	ROUTED TO							

+	RIW322	6912.	14.92	3843.	1121.	377.	25.16
HYDROGRAPH AT	IW314	1094.	13.00	330.	87.	29.	2.18
2 COMBINED AT +	C314_1	7102.	14.92	3964.	1194.	402.	27.34
HYDROGRAPH AT +	IW318	409.	12.75	120.	32.	11.	.58
ROUTED TO +	RIW318	295.	14.58	115.	32.	11.	.58
HYDROGRAPH AT +	IW310	708.	12.92	230.	60.	20.	1.17
2 COMBINED AT +	CIW310	708.	12.92	333.	91.	30.	1.75
ROUTED TO +	RIW310	703.	13.00	333.	91.	30.	1.75
2 COMBINED AT +	CIW314	7496.	14.92	4210.	1272.	428.	29.09
ROUTED TO +	SCP020	7253.	15.17	3819.	1270.	426.	29.09
ROUTED TO +	RIW314	6916.	16.42	3809.	1270.	426.	29.09
HYDROGRAPH AT +	IW300	686.	13.08	218.	58.	19.	1.48
2 COMBINED AT	CIW300	6941.	16.42	3823.	1314.	442.	30.57
ROUTED TO +	RIW300	6759.	16.83	3819.	1314.	442.	30.57
HYDROGRAPH AT +	SV202	1078.	12.75	259.	68.	23.	1.44
ROUTED TO +	RSV202	977.	13.25	258.	68.	23.	1.44
2 COMBINED AT +	C300_1	6764.	16.83	3826.	1370.	462.	32.01
HYDROGRAPH AT +	D302	5078.	17.92	3731.	1195.	404.	24.18
2 COMBINED AT +	C302*	10671.	17.25	7021.	2450.	828.	56.19
ROUTED TO +	RIW302	10643.	17.58	7010.	2450.	828.	56.19
HYDROGRAPH AT +	SV264A	1695.	13.08	527.	138.	46.	2.90
ROUTED TO +	R264A	1353.	13.50	517.	138.	46.	2.90
HYDROGRAPH AT +	SV264	1336.	12.83	357.	92.	31.	1.92
2 COMBINED AT	CSV264	2264.	13.33	862.	229.	76.	4.82
ROUTED TO +	RSV264	1931.	13.75	840.	228.	76.	4.82

+	HYDROGRAPH AT	SV298	506.	13.08	204.	56.	19.	1.08
+	ROUTED TO	RSV298	450.	14.42	198.	55.	19.	1.08
+	HYDROGRAPH AT	SV286	1175.	12.75	273.	71.	24.	1.54
+	ROUTED TO	RSV286	1023.	13.00	272.	71.	24.	1.54
+	HYDROGRAPH AT	SV284	337.	12.42	56.	15.	5.	.28
+	2 COMBINED AT	CSV284	1157.	12.92	325.	85.	28.	1.82
+	ROUTED TO	RSV284	931.	13.75	320.	85.	28.	1.82
+	HYDROGRAPH AT	SV272	976.	12.67	198.	52.	17.	1.20
+	2 COMBINED AT	C272_2	1212.	13.58	508.	135.	45.	3.02
+	HYDROGRAPH AT	SV290	653.	12.58	129.	33.	11.	.81
+	ROUTED TO	RSV290	385.	13.75	127.	33.	11.	.81
+	2 COMBINED AT	CSV272	1566.	13.67	629.	167.	56.	3.84
+	ROUTED TO	RSV272	1550.	13.75	629.	167.	56.	3.84
+	HYDROGRAPH AT	SV276	678.	12.67	171.	44.	15.	.92
+	2 COMBINED AT	C276_2	1830.	13.67	793.	210.	70.	4.76
+	HYDROGRAPH AT	SV294	1805.	12.92	532.	138.	46.	2.65
+	ROUTED TO	RSV294	1466.	13.83	523.	138.	46.	2.65
+	2 COMBINED AT	CSV276	3247.	13.75	1296.	345.	115.	7.41
+	ROUTED TO	RSV276	3233.	13.83	1295.	345.	115.	7.41
+	HYDROGRAPH AT	SV280	707.	12.83	212.	56.	19.	1.06
+	2 COMBINED AT	C280_1	3601.	13.75	1498.	398.	133.	8.46
+	2 COMBINED AT	CSV280	3723.	13.92	1672.	452.	151.	9.54
+	ROUTED TO	RSV280	3625.	14.25	1668.	452.	151.	9.54
+	HYDROGRAPH AT	SV260	1154.	12.58	198.	51.	17.	1.26
+	2 COMBINED AT	C260_1	3691.	14.17	1842.	499.	167.	10.80

	HYDROGRAPH AT	SV268	1349.	12.67	290.	75.	25.	1.38
	ROUTED TO							
+		RSV268	1081.	12.92	289.	75.	25.	1.38
	3 COMBINED AT							
+		CSV260	5765.	14.00	2889.	783.	262.	16.99
	ROUTED TO							
+		SCP010	4063.	14.92	2801.	782.	261.	16.99
	ROUTED TO							
+		RSV260	4052.	15.17	2794.	782.	261.	16.99
	HYDROGRAPH AT							
+		SV220	797.	12.33	99.	26.	9.	.60
	HYDROGRAPH AT							
+		SV252	104.	12.33	19.	5.	2.	.15
	ROUTED TO							
+		RSV252	62.	13.42	19.	5.	2.	.15
	HYDROGRAPH AT							
+		SV254	99.	12.25	12.	3.	1.	.10
	ROUTED TO							
+		RSV254	45.	13.42	12.	3.	1.	.10
	HYDROGRAPH AT							
+		SV219	1105.	12.42	151.	39.	13.	.90
	3 COMBINED AT							
		CSV219	1104.	12.42	180.	47.	16.	1.14
	ROUTED TO							
+		RSV219	786.	12.83	180.	47.	16.	1.14
	HYDROGRAPH AT							
+		SV251	204.	12.42	33.	9.	3.	.27
	ROUTED TO							
+		RSV251	126.	13.42	33.	9.	3.	.27
	HYDROGRAPH AT							
+		SV250	107.	12.33	17.	4.	1.	.12
	ROUTED TO							
+		RSV250	61.	13.50	16.	4.	1.	.12
	HYDROGRAPH AT							
+		SV218	1039.	12.58	190.	49.	16.	1.29
	4 COMBINED AT							
+		CSV218	1692.	12.75	412.	108.	36.	2.82
	ROUTED TO							
+		RSV218	1409.	13.17	411.	108.	36.	2.82
	HYDROGRAPH AT							
+		SV248	771.	12.67	189.	52.	17.	1.27
	DIVERSION TO							
+		DO248	363.	12.67	89.	24.	8.	1.27
	HYDROGRAPH AT							
+		D248	409.	12.67	100.	27.	9.	1.27
	ROUTED TO							
+		RSV248	324.	13.25	100.	27.	9.	1.27
	HYDROGRAPH AT							

+		SV244	435.	12.92	143.	37.	12.	.95
+	2 COMBINED AT	CSV244	720.	13.08	241.	64.	21.	1.62
+	HYDROGRAPH AT	SV246	200.	12.25	30.	8.	3.	.16
+	HYDROGRAPH AT	D248	363.	12.67	89.	24.	8.	1.27
+	ROUTED TO	RD248	324.	12.92	89.	24.	8.	1.27
+	2 COMBINED AT	CSV246	395.	12.92	119.	32.	11.	.76
+	2 COMBINED AT	C216*	1079.	13.00	355.	95.	32.	2.38
+	ROUTED TO	RSV244	977.	13.75	353.	95.	32.	2.38
+	HYDROGRAPH AT	SV216	1613.	12.50	240.	63.	21.	1.63
+	3 COMBINED AT	CSV216	2345.	13.33	981.	262.	88.	6.82
+	ROUTED TO	RSV216	2308.	13.75	976.	262.	88.	6.82
+	HYDROGRAPH AT	SV236	521.	12.42	71.	19.	6.	.59
	ROUTED TO	RSV236	258.	13.75	71.	19.	6.	.59
+	HYDROGRAPH AT	SV240	2841.	12.67	522.	141.	47.	3.67
+	HYDROGRAPH AT	SV242	63.	12.33	11.	3.	1.	.09
+	2 COMBINED AT	C242*	2883.	12.67	532.	144.	48.	3.76
+	ROUTED TO	R242*	2310.	13.42	532.	144.	48.	3.76
+	HYDROGRAPH AT	SV214	1910.	12.50	269.	70.	23.	1.87
+	6 COMBINED AT	CSV220	6753.	13.67	4355.	1234.	413.	30.63
+	ROUTED TO	RSV220	6674.	14.17	4323.	1234.	413.	30.63
+	HYDROGRAPH AT	SV230	1276.	12.25	140.	38.	13.	.85
+	HYDROGRAPH AT	SV232	2919.	12.50	460.	123.	41.	3.06
+	2 COMBINED AT	C230*	3546.	12.50	597.	160.	53.	3.91
	ROUTED TO	R230*	3214.	12.83	596.	160.	53.	3.91
+	HYDROGRAPH AT	SV212	3325.	12.67	559.	146.	49.	4.14

	3 COMBINED AT	CSV212	7363.	14.00	5158.	1489.	499.	38.68
	ROUTED TO							
+		RSV212	7179.	14.67	5048.	1488.	499.	38.68
	HYDROGRAPH AT							
+		SV210	1189.	12.17	116.	31.	10.	.72
	ROUTED TO							
+		RSV210	642.	13.17	116.	31.	10.	.72
	2 COMBINED AT							
+		C210*	7196.	14.58	5121.	1513.	507.	39.40
	HYDROGRAPH AT							
+		SV208	638.	12.67	162.	46.	15.	1.07
	HYDROGRAPH AT							
+		SV205	747.	12.17	83.	22.	7.	.50
	2 COMBINED AT							
+		C205*	919.	12.25	243.	68.	23.	1.57
	ROUTED TO							
+		R205*	585.	13.00	241.	68.	23.	1.57
	HYDROGRAPH AT							
+		SV203	120.	12.17	10.	3.	1.	.08
	ROUTED TO							
+		RSV203	73.	12.67	10.	3.	1.	.08
	3 COMBINED AT							
+		C200*	7418.	14.58	5266.	1570.	527.	41.04
	HYDROGRAPH AT							
+		SV200	1931.	12.67	309.	81.	27.	2.29
	3 COMBINED AT							
+		CSV200	14090.	17.33	11253.	3894.	1314.	99.52
	ROUTED TO							
+		RSV200	14051.	17.58	11238.	3893.	1314.	99.52
	HYDROGRAPH AT							
+		TW416	420.	12.50	135.	44.	15.	.59
	ROUTED TO							
+		RTW416	359.	13.75	134.	44.	15.	.59
	HYDROGRAPH AT							
+		TW420	575.	12.67	124.	33.	11.	.81
	ROUTED TO							
+		RTW420	460.	13.58	123.	33.	11.	.81
	HYDROGRAPH AT							
+		TW412	1239.	12.92	326.	89.	30.	2.06
	2 COMBINED AT							
+		CTW412	1295.	13.25	445.	121.	40.	2.87
	HYDROGRAPH AT							
+		TW414	2018.	12.17	172.	46.	15.	1.17
	ROUTED TO							
+		RTW414	760.	13.25	170.	46.	15.	1.17
	HYDROGRAPH AT							
		TW410	178.	12.58	41.	11.	4.	.31
	2 COMBINED AT							
+		CTW410	852.	13.25	208.	56.	19.	1.48

4 COMBINED AT	C410*	14108.	17.58	11589.	4061.	1373.	104.46
ROUTED TO +	RTW410	13996.	18.25	11548.	4061.	1373.	104.46
HYDROGRAPH AT +	TW402	3179.	12.92	735.	200.	67.	4.91
3 COMBINED AT +	CTW402	16166.	15.58	13852.	5003.	1698.	135.09
ROUTED TO +	RTW402	16053.	15.75	13827.	5003.	1698.	135.09
HYDROGRAPH AT +	TW448	202.	12.83	79.	21.	7.	.35
DIVERSION TO +	DO448	47.	12.83	5.	1.	0.	.35
HYDROGRAPH AT +	D448	155.	12.83	74.	20.	7.	.35
ROUTED TO +	RTW448	152.	13.83	73.	20.	7.	.35
HYDROGRAPH AT +	TW446A	221.	12.75	76.	21.	7.	.34
HYDROGRAPH AT +	D448	47.	12.83	5.	1.	0.	.35
ROUTED TO	RD448	40.	13.00	5.	1.	0.	.35
2 COMBINED AT +	C446A	249.	12.92	80.	22.	8.	.42
DIVERSION TO +	DO446A	0.	.00	0.	0.	0.	.42
HYDROGRAPH AT +	D446A	249.	12.92	80.	22.	8.	.42
ROUTED TO +	R446A	211.	13.58	80.	22.	8.	.42
HYDROGRAPH AT +	TW446	361.	12.42	83.	22.	7.	.35
3 COMBINED AT +	CTW446	475.	13.50	229.	64.	21.	1.04
ROUTED TO +	RTW446	455.	13.92	228.	64.	21.	1.04
HYDROGRAPH AT +	TW432	588.	12.58	119.	31.	10.	.86
2 COMBINED AT +	CTW432	770.	12.75	341.	94.	31.	1.90
ROUTED TO +	RTW432	734.	13.33	339.	94.	31.	1.90
HYDROGRAPH AT +	TW431	705.	12.67	161.	42.	14.	.87
2 COMBINED AT +	CTW431	1160.	13.17	488.	134.	45.	2.78
HYDROGRAPH AT							

+	TW459	401.	13.08	154.	42.	14.	1.04
ROUTED TO	SSR350	401.	13.08	154.	42.	14.	1.04
ROUTED TO +	RTW459	384.	13.42	153.	42.	14.	1.04
HYDROGRAPH AT +	TW462	129.	12.17	18.	5.	2.	.08
HYDROGRAPH AT +	D380	2080.	13.50	279.	70.	23.	15.11
ROUTED TO +	RD380	1954.	13.67	279.	70.	23.	15.11
2 COMBINED AT +	CTW462	2130.	13.67	326.	82.	27.	4.02
ROUTED TO +	SSR330	2126.	13.67	326.	82.	27.	4.02
ROUTED TO +	RTW462	2018.	13.83	326.	82.	27.	4.02
HYDROGRAPH AT +	TW450A	709.	12.67	173.	45.	15.	.88
ROUTED TO +	SSR410	664.	12.83	173.	45.	15.	.88
ROUTED TO +	R450A	538.	13.25	173.	45.	15.	.88
HYDROGRAPH AT	TW450B	452.	12.50	87.	23.	8.	.40
4 COMBINED AT +	C450B	2786.	13.83	715.	186.	62.	6.35
ROUTED TO +	R450B	2499.	14.50	709.	186.	62.	6.35
HYDROGRAPH AT +	TW450	661.	13.17	264.	71.	24.	1.25
HYDROGRAPH AT +	D446A	0.	.00	0.	0.	0.	.42
ROUTED TO +	RD446A	0.	.00	0.	0.	0.	.42
3 COMBINED AT +	CTW450	2832.	14.42	956.	254.	85.	7.59
DIVERSION TO +	DO450	157.	14.42	15.	4.	1.	7.59
HYDROGRAPH AT +	D450	2675.	14.42	941.	250.	84.	7.59
ROUTED TO +	RTW450	2604.	14.75	938.	250.	84.	7.59
HYDROGRAPH AT +	TW444	357.	12.25	65.	19.	6.	.35
2 COMBINED AT	CTW444	2616.	14.75	981.	268.	90.	7.49
ROUTED TO +	RTW444	2556.	14.92	977.	268.	90.	7.49

	HYDROGRAPH AT	TW440	133.	12.25	16.	4.	1.	.11
	2 COMBINED AT	CTW440	2556.	14.92	989.	272.	91.	7.60
+	HYDROGRAPH AT	TW460	1213.	12.92	360.	97.	32.	2.32
+	ROUTED TO	SSR540	1207.	13.00	360.	97.	32.	2.32
+	ROUTED TO	RTW460	1152.	13.17	359.	97.	32.	2.32
+	HYDROGRAPH AT	TW458	726.	12.50	143.	37.	12.	.67
+	2 COMBINED AT	CTW458	1479.	13.08	495.	133.	44.	2.99
+	ROUTED TO	RTW458	1457.	13.25	495.	133.	44.	2.99
+	HYDROGRAPH AT	TW456	117.	12.58	28.	7.	2.	.18
+	2 COMBINED AT	CTW456	1517.	13.25	521.	140.	47.	3.16
+	ROUTED TO	RTW456	1461.	13.42	520.	140.	47.	3.16
+	HYDROGRAPH AT	TW454	128.	13.00	49.	14.	5.	.36
+	2 COMBINED AT	CTW454	1564.	13.42	567.	153.	51.	3.52
+	DIVERSION TO	DO454	1001.	13.42	363.	98.	33.	3.52
+	HYDROGRAPH AT	D454	563.	13.42	204.	55.	18.	3.52
+	ROUTED TO	RTW454	509.	14.33	203.	55.	18.	3.52
+	HYDROGRAPH AT	TW452A	822.	12.67	208.	54.	18.	1.08
+	ROUTED TO	SSR450	820.	12.75	208.	54.	18.	1.08
+	ROUTED TO	R452A	675.	13.75	208.	54.	18.	1.08
+	HYDROGRAPH AT	TW452B	615.	12.92	196.	51.	17.	1.03
+	3 COMBINED AT	C452B	1302.	13.75	592.	158.	53.	3.38
+	ROUTED TO	R452B	1257.	14.42	588.	158.	53.	3.38
+	HYDROGRAPH AT	TW452	320.	12.75	104.	27.	9.	.46
	HYDROGRAPH AT	D450	157.	14.42	15.	4.	1.	7.59
+	ROUTED TO	RD450	120.	14.67	15.	4.	1.	7.59

	3 COMBINED AT						
		CTW452	1465.	14.50	694.	188.	63.	4.29
	ROUTED TO						
+		RTW452	1415.	15.00	691.	188.	63.	4.29
	HYDROGRAPH AT						
+		TW442	373.	12.25	67.	18.	6.	.38
	2 COMBINED AT						
+		CTW442	1417.	15.00	725.	205.	69.	4.67
	2 COMBINED AT						
+		C442*	3831.	14.92	1680.	468.	157.	12.26
	ROUTED TO						
+		R442*	3623.	15.50	1668.	467.	157.	12.26
	HYDROGRAPH AT						
+		TW434	453.	12.50	85.	22.	7.	.57
	2 COMBINED AT						
+		C434_1	3623.	15.50	1713.	488.	163.	12.83
	2 COMBINED AT						
+		CTW434	3912.	15.50	2148.	611.	205.	15.61
	ROUTED TO						
+		RTW434	3790.	16.00	2135.	611.	205.	15.61
	HYDROGRAPH AT						
+		TW430	2816.	12.50	406.	106.	35.	2.49
	2 COMBINED AT						
		C430_2	3790.	16.00	2419.	711.	239.	18.10
	HYDROGRAPH AT						
+		TW436	729.	12.25	129.	35.	12.	.67
	ROUTED TO						
+		RTW436	563.	13.17	128.	35.	12.	.67
	HYDROGRAPH AT						
+		TW429	510.	12.33	113.	30.	10.	.56
	ROUTED TO						
+		RTW429	320.	13.17	112.	30.	10.	.56
	3 COMBINED AT						
+		C430*	3802.	16.00	2621.	766.	257.	19.33
	HYDROGRAPH AT						
+		D454	1001.	13.42	363.	98.	33.	3.52
	ROUTED TO						
+		RD454	978.	13.58	362.	98.	33.	3.52
	HYDROGRAPH AT						
+		TW485	1589.	12.75	354.	93.	31.	2.37
	HYDROGRAPH AT						
+		WI576A	633.	12.83	188.	50.	17.	1.22
	ROUTED TO						
+		R576A	558.	13.42	188.	50.	17.	1.22
	HYDROGRAPH AT						
+		WI576B	356.	12.58	71.	19.	6.	.46
	2 COMBINED AT						
+		C576B	687.	13.33	255.	68.	23.	1.69
	DIVERSION TO						

+	DO576B	275.	13.33	102.	27.	9.	1.69
HYDROGRAPH AT	D576B	412.	13.33	153.	41.	14.	1.69
ROUTED TO +	R576B	347.	15.25	151.	41.	14.	1.69
2 COMBINED AT +	C485_1	1589.	12.75	494.	132.	44.	3.39
2 COMBINED AT +	CTW485	1937.	12.92	848.	228.	76.	5.64
ROUTED TO +	RTW485	1903.	13.00	846.	228.	76.	5.64
HYDROGRAPH AT +	TW484	245.	12.33	61.	17.	6.	.35
2 COMBINED AT +	CTW484	2046.	13.00	901.	245.	82.	5.99
ROUTED TO +	RTW484	1959.	13.67	891.	245.	82.	5.99
HYDROGRAPH AT +	TW480	741.	12.33	144.	39.	13.	.75
HYDROGRAPH AT +	WI580A	2029.	12.75	461.	124.	41.	2.79
HYDROGRAPH AT +	WI580B	509.	12.50	105.	29.	10.	.63
DIVERSION TO	DO580B	234.	12.50	48.	13.	4.	.63
HYDROGRAPH AT +	D580B	275.	12.50	57.	16.	5.	.63
ROUTED TO +	R580B	237.	12.92	57.	16.	5.	.63
2 COMBINED AT +	C580A	2218.	12.75	516.	139.	46.	3.13
ROUTED TO +	SSR630	2211.	12.75	516.	139.	46.	3.13
ROUTED TO +	R580A	1804.	13.83	514.	139.	46.	3.13
HYDROGRAPH AT +	WI580	1398.	12.42	187.	49.	16.	1.32
HYDROGRAPH AT +	D580B	234.	12.50	48.	13.	4.	.63
ROUTED TO +	RD580B	200.	13.00	48.	13.	4.	.63
HYDROGRAPH AT +	WI578	350.	12.58	80.	21.	7.	.48
2 COMBINED AT +	CWI578	480.	12.83	127.	34.	11.	.77
ROUTED TO	SSR700	439.	13.08	127.	34.	11.	.77
ROUTED TO +	RWI578	411.	13.67	127.	34.	11.	.77

	3 COMBINED AT						
		CWI580	2239.	13.83	809.	219.	73.	5.22
	ROUTED TO						
+		RWI580	2114.	14.25	806.	219.	73.	5.22
	HYDROGRAPH AT						
+		WI576	729.	12.67	155.	41.	14.	1.18
	2 COMBINED AT						
+		C576_2	2223.	14.25	949.	257.	86.	6.40
	HYDROGRAPH AT						
+		D576B	275.	13.33	102.	27.	9.	1.69
	ROUTED TO						
+		RD576B	248.	14.25	101.	27.	9.	1.69
	2 COMBINED AT						
+		CWI576	2463.	14.25	1044.	284.	95.	7.07
	DIVERSION TO						
+		DO576	1375.	14.25	534.	142.	48.	7.07
	HYDROGRAPH AT						
+		D576	1088.	14.25	511.	141.	47.	7.07
	ROUTED TO						
+		RWI576	1019.	14.67	506.	141.	47.	7.07
	HYDROGRAPH AT						
+		TW482	678.	12.50	113.	30.	10.	.76
	2 COMBINED AT						
+		CTW482	1050.	14.67	599.	172.	58.	3.88
	DIVERSION TO						
+		DO482	0.	.00	0.	0.	0.	3.88
	HYDROGRAPH AT						
+		D482	1050.	14.67	599.	172.	58.	3.88
	ROUTED TO						
+		RTW482	1001.	15.17	589.	172.	58.	3.88
	2 COMBINED AT						
+		C480_4	1009.	15.17	684.	208.	70.	4.63
	2 COMBINED AT						
+		CTW480	2780.	13.67	1542.	449.	151.	10.62
	DIVERSION TO						
+		DO480	2641.	13.67	1464.	426.	143.	10.62
	HYDROGRAPH AT						
+		D480	139.	13.67	77.	22.	8.	10.62
	ROUTED TO						
+		RTW480	124.	14.42	75.	22.	8.	10.62
	HYDROGRAPH AT						
+		TW478	351.	12.17	45.	12.	4.	.26
	2 COMBINED AT						
+		CTW478	351.	12.17	115.	35.	12.	.79
	ROUTED TO						
+		RTW478	120.	13.50	102.	35.	12.	.79
	2 COMBINED AT						
		CTW430	3900.	16.00	2705.	796.	267.	20.12
	ROUTED TO						
+		SCP040	2857.	16.83	2201.	780.	261.	20.12

	ROUTED TO						
		RTW430	2755.	17.33	2178.	779.	261.	20.12
	HYDROGRAPH AT						
+		TW418	1476.	12.58	285.	86.	29.	1.37
	2 COMBINED AT						
+		CTW418	2766.	17.25	2200.	847.	287.	21.49
	ROUTED TO						
+		RTW418	2737.	17.58	2192.	846.	287.	21.49
	HYDROGRAPH AT						
+		TW422	516.	12.67	127.	38.	13.	.70
	2 COMBINED AT						
+		C422_1	2740.	17.50	2207.	877.	298.	22.19
	HYDROGRAPH AT						
+		TW424	2046.	12.25	268.	72.	24.	1.50
	ROUTED TO						
+		RTW424	1773.	12.50	268.	72.	24.	1.50
	2 COMBINED AT						
+		CTW422	2842.	12.58	2207.	938.	319.	23.69
	ROUTED TO						
+		RTW422	2486.	20.67	2185.	937.	319.	23.69
	HYDROGRAPH AT						
+		TW400	2211.	12.67	687.	195.	65.	4.27
	2 COMBINED AT						
		C400_2	3125.	13.75	2237.	1097.	376.	27.96
	2 COMBINED AT						
+		CTW400	17391.	15.83	15581.	5885.	2002.	163.05
	ROUTED TO						
+		RTW400	17257.	16.08	15541.	5885.	2002.	163.05
	HYDROGRAPH AT						
+		WI504	1395.	12.50	216.	58.	19.	1.35
	2 COMBINED AT						
+		CWI504	17257.	16.08	15544.	5928.	2017.	164.40
	ROUTED TO						
+		RWI504	17221.	16.17	15532.	5927.	2016.	164.40
	HYDROGRAPH AT						
+		WI560	2795.	12.67	601.	176.	59.	3.56
	HYDROGRAPH AT						
+		WI574	219.	12.33	31.	8.	3.	.22
	ROUTED TO						
+		RWI574	118.	13.50	31.	8.	3.	.22
	2 COMBINED AT						
+		C5602A	2796.	12.67	629.	183.	61.	3.78
	HYDROGRAPH AT						
+		D576	1375.	14.25	534.	142.	48.	7.07
	ROUTED TO						
+		RD576	1331.	14.50	533.	142.	48.	7.07
	2 COMBINED AT						
+		C5602B	3053.	12.83	1143.	323.	108.	7.73
	HYDROGRAPH AT						

+	WI560A	910.	13.00	322.	90.	30.	2.04
ROUTED TO	R560A	780.	14.00	319.	90.	30.	2.04
2 COMBINED AT +	C5602C	3079.	12.92	1440.	409.	137.	9.77
HYDROGRAPH AT +	WI572	1896.	12.50	371.	104.	35.	2.06
ROUTED TO +	RWI572	1567.	13.25	370.	104.	35.	2.06
HYDROGRAPH AT +	WI570	1622.	12.83	439.	125.	42.	2.24
DIVERSION TO +	DO570	341.	12.83	92.	26.	9.	2.24
HYDROGRAPH AT +	D570	1282.	12.83	347.	99.	33.	2.24
ROUTED TO +	RWI570	1160.	13.25	346.	99.	33.	2.24
HYDROGRAPH AT +	WI566	119.	12.33	19.	5.	2.	.11
HYDROGRAPH AT +	D570	341.	12.83	92.	26.	9.	2.24
2 COMBINED AT +	CWI566	410.	12.75	112.	31.	11.	.58
ROUTED TO	SSR830	404.	12.83	112.	31.	11.	.58
ROUTED TO +	RWI566	379.	13.33	112.	31.	11.	.58
HYDROGRAPH AT +	WI564	810.	13.17	303.	88.	29.	1.81
ROUTED TO +	SSR880	807.	13.17	303.	88.	29.	1.81
ROUTED TO +	RWI564	748.	13.67	301.	88.	29.	1.81
HYDROGRAPH AT +	WI562	569.	12.75	158.	42.	14.	.87
3 COMBINED AT +	CWI562	1415.	13.50	559.	159.	53.	3.26
2 COMBINED AT +	C562*	2509.	13.33	899.	256.	86.	5.03
ROUTED TO +	R562*	2344.	14.00	892.	255.	86.	5.03
3 COMBINED AT +	CWI560	5195.	14.08	2609.	747.	251.	16.86
ROUTED TO +	RWI560	5105.	14.67	2596.	747.	251.	16.86
HYDROGRAPH AT	WI554	833.	12.58	147.	40.	13.	1.04
2 COMBINED AT +	C554_9	5127.	14.67	2694.	783.	264.	17.90

	HYDROGRAPH AT						
		WI556	153.	12.08	12.	3.	1.	.08
	ROUTED TO						
+		RWI556	25.	13.75	11.	3.	1.	.08
	2 COMBINED AT						
+		C5541B	5142.	14.67	2703.	786.	265.	17.98
	HYDROGRAPH AT						
+		WI582	361.	12.42	55.	15.	5.	.38
	HYDROGRAPH AT						
+		D482	0.	.00	0.	0.	0.	3.88
	ROUTED TO						
+		RD482	0.	.00	0.	0.	0.	3.88
	2 COMBINED AT						
+		CWI582	361.	12.42	55.	15.	5.	.38
	ROUTED TO						
+		RWI582	216.	13.00	55.	14.	5.	.38
	2 COMBINED AT						
+		CWI554	5164.	14.67	2751.	799.	269.	18.36
	ROUTED TO						
+		RWI554	5155.	14.75	2750.	799.	269.	18.36
	HYDROGRAPH AT						
+		WI552	322.	12.50	59.	16.	5.	.41
	2 COMBINED AT						
+		CWI552	5165.	14.75	2793.	813.	274.	18.77
	ROUTED TO						
+		RWI552	5158.	14.75	2791.	813.	274.	18.77
	HYDROGRAPH AT						
+		WI584	824.	12.42	186.	50.	17.	1.26
	HYDROGRAPH AT						
+		D480	2641.	13.67	1464.	426.	143.	10.62
	ROUTED TO						
+		RD480	2450.	14.25	1452.	426.	143.	10.62
	2 COMBINED AT						
+		CWI584	2549.	14.17	1591.	472.	159.	11.35
	ROUTED TO						
+		RWI584	2435.	14.75	1572.	472.	159.	11.35
	HYDROGRAPH AT						
+		WI550	212.	12.17	23.	7.	2.	.14
	3 COMBINED AT						
+		CWI550	7251.	14.83	4191.	1243.	419.	30.26
	ROUTED TO						
+		SCP050	7166.	15.00	4188.	1243.	419.	30.26
	ROUTED TO						
+		RWI550	7061.	15.25	4177.	1243.	419.	30.26
	HYDROGRAPH AT						
+		WI514	441.	12.33	52.	14.	5.	.35
	2 COMBINED AT						
		CWI514	7054.	15.25	4183.	1254.	422.	30.62
	HYDROGRAPH AT						
+		WI548	339.	12.33	55.	14.	5.	.31

	ROUTED TO	RWI548	224.	13.25	55.	14.	5.	.31
	HYDROGRAPH AT	WI546	464.	12.33	128.	41.	14.	.61
+	2 COMBINED AT	CWI546	463.	12.33	180.	55.	18.	.91
+	ROUTED TO	RWI546	440.	13.33	180.	55.	18.	.91
+	HYDROGRAPH AT	WI544	1324.	12.42	335.	105.	35.	1.79
+	2 COMBINED AT	CWI544	1638.	12.50	510.	159.	53.	2.71
+	DIVERSION TO	DO544	1097.	12.50	342.	106.	36.	2.71
+	HYDROGRAPH AT	D544	541.	12.50	168.	52.	18.	2.71
+	ROUTED TO	RWI544	446.	13.33	167.	52.	18.	2.71
+	HYDROGRAPH AT	WI542	618.	12.75	151.	40.	13.	1.17
+	2 COMBINED AT	CWI542	886.	13.08	317.	92.	31.	2.07
	HYDROGRAPH AT	WI540	832.	12.75	238.	69.	23.	1.25
+	ROUTED TO	SSR940	831.	12.83	238.	69.	23.	1.25
+	ROUTED TO	RWI540	781.	13.00	238.	69.	23.	1.25
+	HYDROGRAPH AT	WI538A	553.	12.75	153.	41.	14.	.78
+	2 COMBINED AT	C538A	1278.	12.92	388.	109.	37.	2.02
+	ROUTED TO	R538A	1139.	13.67	386.	109.	37.	2.02
+	HYDROGRAPH AT	WI538	723.	13.17	278.	76.	25.	1.43
+	2 COMBINED AT	CWI538	1726.	13.58	655.	183.	61.	3.45
+	ROUTED TO	RWI538	1643.	14.25	650.	183.	61.	3.45
+	HYDROGRAPH AT	WI530	1618.	12.67	297.	78.	26.	2.38
+	2 COMBINED AT	C530_2	1807.	14.17	912.	258.	87.	5.83
+	HYDROGRAPH AT	WI536	680.	13.17	291.	82.	27.	1.37
+	HYDROGRAPH AT	WI534	415.	12.58	99.	27.	9.	.43
	ROUTED TO							

+	RWI534	379.	12.75	98.	27.	9.	.43
HYDROGRAPH AT	WI532	353.	12.33	46.	12.	4.	.32
2 COMBINED AT +	CWI532	539.	12.67	143.	39.	13.	.76
2 COMBINED AT +	C530*	1068.	13.00	429.	119.	40.	2.13
ROUTED TO +	R530*	1003.	13.75	424.	119.	40.	2.13
2 COMBINED AT +	C530_3	2679.	14.08	1318.	374.	125.	7.95
HYDROGRAPH AT +	D544	1097.	12.50	342.	106.	36.	2.71
ROUTED TO +	RD544	993.	13.08	341.	106.	36.	2.71
2 COMBINED AT +	CWI530	3248.	14.00	1649.	477.	160.	9.77
2 COMBINED AT +	CAP1*	3739.	14.00	1946.	564.	189.	11.84
HYDROGRAPH AT +	PI663	329.	12.92	127.	34.	11.	.60
ROUTED TO +	RPI663	304.	13.75	125.	34.	11.	.60
HYDROGRAPH AT	PI657	456.	13.00	189.	51.	17.	.87
HYDROGRAPH AT +	PI660	339.	13.25	166.	47.	16.	.84
3 COMBINED AT +	CPI660	986.	13.50	470.	130.	43.	2.31
ROUTED TO +	RPI660	955.	13.75	466.	130.	43.	2.31
HYDROGRAPH AT +	PI654	2372.	13.17	841.	221.	74.	4.03
2 COMBINED AT +	CPI654	3103.	13.33	1290.	348.	116.	6.34
DIVERSION TO +	DO654	621.	13.33	258.	70.	23.	6.34
HYDROGRAPH AT +	D654	2483.	13.33	1032.	278.	93.	6.34
ROUTED TO +	RPI654	2448.	13.58	1029.	278.	93.	6.34
HYDROGRAPH AT +	PI651	308.	12.75	80.	21.	7.	.46
2 COMBINED AT +	C651_1	2605.	13.58	1105.	298.	100.	5.53
HYDROGRAPH AT	PI648	1035.	13.08	348.	91.	30.	1.73
2 COMBINED AT +	CPI651	3455.	13.42	1439.	386.	129.	7.26

	ROUTED TO	RPI651	3384.	13.75	1435.	386.	129.	7.26
+	HYDROGRAPH AT	PI645	1160.	12.58	188.	49.	16.	1.56
+	2 COMBINED AT	C645_1	3561.	13.67	1602.	433.	145.	8.82
+	HYDROGRAPH AT	PI645A	912.	13.08	325.	90.	30.	1.63
+	ROUTED TO	R645A	876.	13.42	324.	90.	30.	1.63
+	HYDROGRAPH AT	D654	621.	13.33	258.	70.	23.	6.34
+	ROUTED TO	RD654	597.	13.83	256.	69.	23.	6.34
+	3 COMBINED AT	CPI645	4921.	13.67	2151.	586.	196.	11.72
+	2 COMBINED AT	CAP1*	8187.	13.83	3965.	1114.	373.	23.56
+	HYDROGRAPH AT	PI689	4688.	13.00	1285.	391.	131.	6.78
+	HYDROGRAPH AT	PI688	2507.	12.75	587.	178.	60.	3.20
+	2 COMBINED AT	CPI689	6934.	12.92	1857.	565.	189.	9.98
	ROUTED TO	RPI689	6389.	13.33	1852.	564.	189.	9.98
+	HYDROGRAPH AT	PI687	4139.	13.08	1199.	359.	120.	7.01
+	2 COMBINED AT	CPI687	10065.	13.25	2986.	904.	303.	16.99
+	ROUTED TO	RPI687	9861.	13.42	2983.	903.	303.	16.99
+	HYDROGRAPH AT	PI684	637.	12.58	145.	38.	13.	.74
+	2 COMBINED AT	CPI684	10128.	13.42	3114.	938.	315.	17.73
+	ROUTED TO	SSR103	9764.	13.58	3114.	938.	315.	17.73
+	ROUTED TO	RPI684	9368.	13.92	3109.	937.	315.	17.73
+	HYDROGRAPH AT	PI681	598.	12.92	202.	54.	18.	.99
+	2 COMBINED AT	CPI681	9687.	13.83	3289.	986.	331.	18.72
+	ROUTED TO	RPI681	9000.	14.50	3281.	985.	331.	18.72
	HYDROGRAPH AT	PI678	406.	12.75	115.	32.	11.	.83
+	2 COMBINED AT	CPI678	9081.	14.50	3360.	1014.	341.	19.55

	DIVERSION TO	DO678	2543.	14.50	941.	284.	95.	19.55
+	HYDROGRAPH AT	D678	6538.	14.50	2419.	730.	245.	19.55
+	HYDROGRAPH AT	PI690	315.	12.67	80.	21.	7.	.63
+	2 COMBINED AT	CPI690	6673.	14.50	2514.	757.	254.	14.71
+	ROUTED TO	RPI690	6454.	14.67	2508.	757.	254.	14.71
+	HYDROGRAPH AT	PI675	72.	12.25	9.	2.	1.	.06
+	2 COMBINED AT	CPI675	6454.	14.67	2510.	759.	255.	14.77
+	2 COMBINED AT	CAP1*	12048.	14.50	6184.	1793.	602.	38.33
+	HYDROGRAPH AT	PI672	1172.	12.58	193.	50.	17.	1.51
+	HYDROGRAPH AT	D678	2543.	14.50	941.	284.	95.	19.55
+	ROUTED TO	RD678	2162.	14.92	935.	283.	95.	19.55
	2 COMBINED AT	CPI672	2266.	14.92	1122.	340.	115.	6.98
+	2 COMBINED AT	CAP1*	13594.	14.58	7137.	2085.	701.	45.31
+	HYDROGRAPH AT	PI693	756.	12.50	111.	29.	10.	.84
+	2 COMBINED AT	CAP1*	13594.	14.58	7219.	2109.	709.	46.15
+	HYDROGRAPH AT	PI669	144.	12.58	37.	10.	3.	.29
+	2 COMBINED AT	CAP1*	13603.	14.58	7244.	2115.	711.	46.43
+	HYDROGRAPH AT	PI642	162.	12.25	27.	7.	2.	.24
+	2 COMBINED AT	CAP1*	13603.	14.58	7261.	2120.	713.	46.67
+	HYDROGRAPH AT	PDWEST	4394.	13.25	1157.	353.	118.	7.08
+	2 COMBINED AT	CAP1*	14390.	14.50	8329.	2451.	824.	53.75
+	ROUTED TO	STOR1	6384.	16.08	4735.	2419.	824.	53.75
+	DIVERSION TO	DOCAP*	2722.	16.08	1221.	305.	102.	53.75
+	HYDROGRAPH AT	DCAP*	3663.	16.08	3514.	2114.	722.	53.75
	DIVERSION TO							

+		DOCP14	362.	16.08	347.	185.	62.	53.75
	HYDROGRAPH AT	DCAP14	3300.	16.08	3167.	1929.	661.	53.75
	DIVERSION TO							
+		DOCP13	420.	16.08	404.	248.	88.	53.75
	HYDROGRAPH AT							
+		DCAP13	2880.	16.08	2764.	1682.	573.	53.75
	DIVERSION TO							
+		DOCP12	410.	16.08	394.	243.	84.	53.75
	HYDROGRAPH AT							
+		DCAP12	2469.	16.08	2370.	1438.	488.	53.75
	DIVERSION TO							
+		DOCP11	424.	16.08	411.	256.	88.	53.75
	HYDROGRAPH AT							
+		DCAP11	2045.	16.08	1959.	1183.	400.	53.75
	DIVERSION TO							
+		DOCP10	420.	16.08	404.	253.	86.	53.75
	HYDROGRAPH AT							
+		DCAP10	1625.	16.08	1556.	930.	314.	53.75
	DIVERSION TO							
+		DOCP09	410.	16.08	394.	243.	83.	53.75
	HYDROGRAPH AT							
+		DCAP09	1214.	16.08	1162.	687.	231.	53.75
	DIVERSION TO							
		DOCP08	408.	16.08	390.	233.	79.	53.75
	HYDROGRAPH AT							
+		DCAP08	806.	16.08	772.	454.	153.	53.75
	DIVERSION TO							
+		DOCP07	408.	16.08	390.	231.	78.	53.75
	HYDROGRAPH AT							
+		DCAP07	397.	16.08	382.	223.	75.	53.75
	DIVERSION TO							
+		DOCPOT	0.	.00	0.	0.	0.	53.75
	HYDROGRAPH AT							
+		DCAPOT	397.	16.08	382.	223.	75.	53.75
	ROUTED TO							
+		RWI542	397.	16.25	382.	223.	75.	53.75
	HYDROGRAPH AT							
+		WI529	205.	12.33	28.	8.	3.	.17
	2 COMBINED AT							
+		CWI529	407.	16.00	390.	238.	80.	3.53
	DIVERSION TO							
+		DO529	0.	.00	0.	0.	0.	3.53
	HYDROGRAPH AT							
+		D529	407.	16.00	390.	238.	80.	3.53
	ROUTED TO							
		RWI529	407.	16.25	390.	238.	80.	3.53
	HYDROGRAPH AT							
+		WI516	136.	12.33	19.	5.	2.	.14

	2 COMBINED AT						
+		C516_1	408.	16.25	390.	243.	82.	3.67
	2 COMBINED AT						
+		CWI516	7362.	15.25	4507.	1479.	499.	34.29
	ROUTED TO						
+		RWI516	7190.	15.83	4353.	1478.	499.	34.29
	HYDROGRAPH AT						
+		WI512	1020.	12.42	219.	60.	20.	1.36
	2 COMBINED AT						
+		CWI512	7183.	15.83	4375.	1529.	516.	35.64
	HYDROGRAPH AT						
+		DCAPOT	0.	.00	0.	0.	0.	53.75
	ROUTED TO						
+		RDCPOT	0.	.00	0.	0.	0.	53.75
	HYDROGRAPH AT						
+		WI527	645.	12.50	103.	28.	9.	.71
	2 COMBINED AT						
+		CWI527	645.	12.50	103.	28.	9.	.71
	DIVERSION TO						
+		DO527	39.	12.50	1.	0.	0.	.71
	HYDROGRAPH AT						
+		D527	606.	12.50	102.	27.	9.	.71
	ROUTED TO						
+		RWI527	501.	12.92	102.	27.	9.	.71
	HYDROGRAPH AT						
+		D529	0.	.00	0.	0.	0.	3.53
	ROUTED TO						
+		RD529	0.	.00	0.	0.	0.	3.53
	HYDROGRAPH AT						
+		DCAP07	408.	16.08	390.	231.	78.	53.75
	ROUTED TO						
+		RDCP07	407.	16.58	389.	231.	78.	53.75
	HYDROGRAPH AT						
+		WI528	333.	12.42	53.	15.	5.	.36
	2 COMBINED AT						
+		C528_1	420.	16.33	399.	251.	85.	3.80
	2 COMBINED AT						
+		CWI528	420.	16.33	399.	251.	85.	3.80
	ROUTED TO						
+		RWI528	417.	16.92	397.	251.	85.	3.80
	HYDROGRAPH AT						
+		WI518	466.	12.50	80.	21.	7.	.53
	2 COMBINED AT						
+		C518_1	630.	12.58	408.	271.	92.	4.33
	2 COMBINED AT						
+		CWI518	1028.	12.75	506.	297.	101.	5.00
	2 COMBINED AT						
		C508*	7488.	15.83	4740.	1801.	609.	40.64
	ROUTED TO						
+		R508*	7356.	16.42	4733.	1800.	609.	40.64

	HYDROGRAPH AT	WI508	411.	12.75	101.	27.	9.	.70
+	2 COMBINED AT	CWI508	7355.	16.42	4745.	1821.	616.	41.34
+	DIVERSION TO	DO508	1397.	16.42	901.	346.	117.	41.34
+	HYDROGRAPH AT	D508	5957.	16.42	3843.	1475.	499.	41.34
+	HYDROGRAPH AT	WI510A	937.	12.58	151.	39.	13.	1.13
+	ROUTED TO	R510A	553.	13.75	149.	39.	13.	1.13
+	HYDROGRAPH AT	WI510	563.	13.00	179.	47.	16.	1.23
+	3 COMBINED AT	CWI510	6128.	16.42	4048.	1565.	529.	35.84
+	ROUTED TO	RWI510	5999.	16.75	3921.	1564.	529.	35.84
+	HYDROGRAPH AT	WI502	669.	12.83	179.	47.	16.	1.21
+	2 COMBINED AT	C502_1	6000.	16.75	3961.	1603.	543.	37.05
	2 COMBINED AT	CWI502	21175.	16.67	18779.	7287.	2477.	201.45
+	ROUTED TO	RWI502	21142.	16.75	18773.	7287.	2477.	201.45
+	HYDROGRAPH AT	DCAP08	408.	16.08	390.	233.	79.	53.75
+	ROUTED TO	RDCP08	408.	16.33	390.	232.	79.	53.75
+	HYDROGRAPH AT	WI526	32.	12.33	6.	2.	1.	.05
+	2 COMBINED AT	CWI526	418.	16.08	397.	241.	82.	3.49
+	ROUTED TO	RWI526	417.	16.92	396.	241.	82.	3.49
+	HYDROGRAPH AT	WI525	1548.	12.58	266.	72.	24.	1.94
+	HYDROGRAPH AT	DCAP09	410.	16.08	394.	243.	83.	53.75
+	ROUTED TO	RDCP09	410.	17.00	393.	243.	83.	53.75
+	2 COMBINED AT	C5251b	1583.	12.58	547.	318.	109.	5.38
+	2 COMBINED AT	C5251a	1614.	12.58	833.	557.	190.	8.87
+	HYDROGRAPH AT	D527	39.	12.50	1.	0.	0.	.71
	ROUTED TO							

+		RD527	4.	13.33	1.	0.	0.	.71
	2 COMBINED AT	CWI525	1614.	12.58	834.	557.	190.	8.92
+	DIVERSION TO	DO525	101.	12.58	37.	20.	7.	8.92
+	HYDROGRAPH AT	D525	1514.	12.58	797.	538.	183.	8.92
+	ROUTED TO	RWI525	1184.	13.33	781.	537.	183.	8.92
+	HYDROGRAPH AT	WI506	961.	12.50	239.	65.	22.	1.58
+	2 COMBINED AT	C506_1	1701.	13.17	923.	596.	204.	9.94
+	HYDROGRAPH AT	WI524	712.	12.58	138.	38.	13.	.95
+	HYDROGRAPH AT	D525	101.	12.58	37.	20.	7.	8.92
+	ROUTED TO	RD525	63.	13.58	36.	20.	7.	8.92
+	2 COMBINED AT	CWI524	712.	12.58	166.	57.	19.	1.51
+	DIVERSION TO	DO524	14.	12.58	1.	0.	0.	1.51
	HYDROGRAPH AT	D524	694.	12.58	165.	56.	19.	1.51
+	ROUTED TO	RWI524	577.	13.00	164.	56.	19.	1.51
+	2 COMBINED AT	CWI506	2209.	13.17	1079.	649.	222.	11.42
+	ROUTED TO	RWI506	2134.	13.42	1073.	649.	222.	11.42
+	HYDROGRAPH AT	WI500	765.	12.67	154.	40.	13.	1.05
+	2 COMBINED AT	C500_1	2462.	13.33	1197.	686.	235.	12.47
+	HYDROGRAPH AT	D508	1397.	16.42	901.	346.	117.	41.34
+	ROUTED TO	RD508	1380.	16.67	901.	346.	117.	41.34
+	2 COMBINED AT	C500_2	2751.	13.42	1999.	1040.	355.	20.32
+	2 COMBINED AT	CWI500	22897.	16.83	20245.	8180.	2782.	222.82
+	ROUTED TO	SSPILL	2904.	26.83	2886.	2646.	1819.	222.82
	ROUTED TO	RWI500	2903.	27.42	2885.	2645.	1819.	222.82
+	HYDROGRAPH AT	PI635	622.	12.50	100.	28.	9.	.61

	2 COMBINED AT						
		CPI635	2903.	27.42	2885.	2645.	1819.	223.43
	ROUTED TO						
+		RPI635	2902.	28.17	2884.	2644.	1819.	223.43
	HYDROGRAPH AT						
+		DCAP11	424.	16.08	411.	256.	88.	53.75
	ROUTED TO						
+		RDCP11	424.	16.33	410.	256.	88.	53.75
	HYDROGRAPH AT						
+		PI618	323.	12.33	43.	12.	4.	.29
	HYDROGRAPH AT						
+		DCAP12	410.	16.08	394.	243.	84.	53.75
	DIVERSION TO						
+		DO618	218.	16.08	209.	129.	45.	53.75
	HYDROGRAPH AT						
+		D618	193.	16.08	185.	114.	40.	53.75
	ROUTED TO						
+		RDCP12	193.	16.33	185.	114.	40.	53.75
	2 COMBINED AT						
+		C6181a	350.	12.33	195.	129.	45.	1.91
	2 COMBINED AT						
+		CPI618	629.	16.17	605.	390.	135.	5.48
	ROUTED TO						
+		RPI618	628.	16.75	604.	390.	135.	5.48
	HYDROGRAPH AT						
		PI612	458.	12.67	96.	26.	9.	.74
	HYDROGRAPH AT						
+		DCAP13	420.	16.08	404.	248.	88.	53.75
	ROUTED TO						
+		RDCP13	420.	16.67	403.	248.	88.	53.75
	HYDROGRAPH AT						
+		PI615	625.	12.33	115.	31.	10.	.84
	2 COMBINED AT						
+		C6151A	672.	12.33	431.	284.	101.	4.38
	HYDROGRAPH AT						
+		D618	218.	16.08	209.	129.	45.	53.75
	ROUTED TO						
+		RD618	217.	16.25	209.	129.	45.	53.75
	2 COMBINED AT						
+		CPI615	709.	12.33	626.	416.	146.	6.20
	ROUTED TO						
+		RPI615	653.	16.67	626.	416.	146.	6.20
	2 COMBINED AT						
+		C6121a	1083.	12.67	693.	440.	155.	6.94
	2 COMBINED AT						
+		CPI612	1418.	12.67	1232.	826.	288.	12.42
	DIVERSION TO						
		DO612	1064.	12.67	924.	620.	216.	12.42
	HYDROGRAPH AT						
+		D612	355.	12.67	308.	207.	72.	12.42

	ROUTED TO	RPI612	338.	12.92	308.	207.	72.	12.42
+	HYDROGRAPH AT	PI609	960.	12.50	262.	71.	24.	1.94
+	2 COMBINED AT	C609_1	1196.	12.75	535.	275.	96.	5.04
+	HYDROGRAPH AT	DCAP14	362.	16.08	347.	185.	62.	53.75
+	ROUTED TO	RDCP14	362.	17.25	346.	185.	62.	53.75
+	2 COMBINED AT	CPI609	1199.	12.75	775.	464.	159.	8.10
+	ROUTED TO	RPI609	1183.	12.92	772.	464.	159.	8.10
+	HYDROGRAPH AT	PI600A	822.	12.25	76.	20.	7.	.52
+	2 COMBINED AT	C600A	1289.	12.58	815.	483.	165.	8.62
+	DIVERSION TO	DO600A	1289.	12.58	815.	483.	165.	8.62
+	HYDROGRAPH AT	D600A	0.	.00	0.	0.	0.	8.62
	HYDROGRAPH AT	PI621	645.	12.67	122.	32.	11.	.90
+	HYDROGRAPH AT	D612	1064.	12.67	924.	620.	216.	12.42
+	ROUTED TO	RD612	960.	17.33	924.	620.	216.	12.42
+	2 COMBINED AT	CPI621	1208.	13.25	960.	651.	227.	10.22
+	ROUTED TO	SPI621	1207.	13.33	960.	651.	223.	10.22
+	ROUTED TO	RPI621	1185.	13.42	957.	651.	223.	10.22
+	HYDROGRAPH AT	DCAP10	420.	16.08	404.	253.	86.	53.75
+	ROUTED TO	RDCP10	420.	16.50	404.	252.	86.	53.75
+	HYDROGRAPH AT	PI628	695.	12.33	81.	22.	7.	.57
+	2 COMBINED AT	CPI628	750.	12.33	413.	280.	96.	4.11
+	ROUTED TO	RPI628	507.	13.08	412.	280.	96.	4.11
+	HYDROGRAPH AT	PI624A	1630.	12.83	331.	86.	29.	2.81
+	2 COMBINED AT	C624A	2060.	12.83	699.	362.	124.	6.92
	ROUTED TO							

+		R624A	1528.	13.83	694.	362.	124.	6.92
	HYDROGRAPH AT	PI639	169.	12.67	49.	13.	4.	.34
+	HYDROGRAPH AT	D524	14.	12.58	1.	0.	0.	1.51
+	ROUTED TO	RD524	3.	12.83	1.	0.	0.	1.51
+	2 COMBINED AT	CPI639	173.	12.75	50.	14.	5.	.37
+	ROUTED TO	RPI639	115.	13.58	49.	14.	5.	.37
+	HYDROGRAPH AT	PI636	384.	12.50	70.	20.	7.	.43
+	2 COMBINED AT	CPI636	400.	12.50	117.	33.	11.	.80
+	ROUTED TO	RPI636	393.	12.58	117.	33.	11.	.80
+	HYDROGRAPH AT	PI624	847.	12.42	228.	70.	23.	1.23
+	3 COMBINED AT	CPI624	1945.	13.75	970.	453.	158.	8.94
+	ROUTED TO	SPI624	1933.	13.83	966.	446.	150.	8.94
	ROUTED TO	RPI624	1848.	14.17	953.	445.	150.	8.94
+	HYDROGRAPH AT	PI633	280.	12.50	50.	13.	4.	.34
+	5 COMBINED AT	CPI633	3900.	24.50	3817.	3153.	2125.	241.94
+	ROUTED TO	RPI633	3897.	25.08	3815.	3152.	2124.	241.94
+	HYDROGRAPH AT	PDEAST	8461.	13.25	1984.	519.	173.	16.44
+	HYDROGRAPH AT	DCAP*	2722.	16.08	1221.	305.	102.	53.75
+	2 COMBINED AT	CAP2*	8461.	13.25	3138.	855.	285.	39.36
+	ROUTED TO	STOR2	2738.	14.00	2468.	847.	282.	39.36
+	DIVERSION TO	DOCP19	957.	14.00	867.	319.	106.	39.36
+	HYDROGRAPH AT	DCAP19	1781.	14.00	1600.	528.	176.	39.36
+	DIVERSION TO	DOCP18	314.	14.00	284.	97.	32.	39.36
	HYDROGRAPH AT	DCAP18	1467.	14.00	1316.	431.	144.	39.36
+	DIVERSION TO	DOCP17	304.	14.00	275.	93.	31.	39.36

	HYDROGRAPH AT	DCAP17	1163.	14.00	1041.	339.	113.	39.36
+	DIVERSION TO	DOCP16	913.	14.00	825.	273.	91.	39.36
+	HYDROGRAPH AT	DCAP16	249.	14.00	217.	66.	22.	39.36
+	ROUTED TO	RDCP15	248.	14.42	216.	66.	22.	39.36
+	HYDROGRAPH AT	PI606A	374.	12.50	65.	18.	6.	.46
+	2 COMBINED AT	C606A	363.	12.50	258.	97.	32.	4.08
+	DIVERSION TO	DO606A	149.	12.50	106.	40.	13.	4.08
+	HYDROGRAPH AT	D606A	214.	12.50	152.	57.	19.	4.08
+	ROUTED TO	R606A	166.	17.92	151.	57.	19.	4.08
+	HYDROGRAPH AT	PI606	708.	12.42	147.	40.	13.	1.08
+	2 COMBINED AT	CPI606	701.	12.42	265.	97.	32.	3.49
+	ROUTED TO	RPI606	578.	12.67	259.	97.	32.	3.49
+	HYDROGRAPH AT	PI604	312.	12.33	63.	18.	6.	.36
+	HYDROGRAPH AT	D606A	149.	12.50	106.	40.	13.	4.08
+	ROUTED TO	RD606A	131.	12.83	105.	40.	13.	4.08
+	2 COMBINED AT	CPI604	321.	12.67	153.	58.	19.	2.03
+	ROUTED TO	RPI604	312.	12.92	150.	58.	19.	2.03
+	HYDROGRAPH AT	PI603	418.	12.50	74.	20.	7.	.52
+	3 COMBINED AT	C603_1	1214.	12.67	471.	172.	57.	6.04
+	HYDROGRAPH AT	PD744	531.	12.67	107.	28.	9.	.80
+	HYDROGRAPH AT	D600A	1289.	12.58	815.	483.	165.	8.62
+	ROUTED TO	RD600A	1122.	13.33	792.	483.	165.	8.62
+	3 COMBINED AT	CPI603	2451.	12.75	1322.	666.	229.	15.46
	ROUTED TO	SPI603	2301.	13.17	1319.	666.	228.	15.46
+	DIVERSION TO	DO744	0.	.00	0.	0.	0.	15.46

	HYDROGRAPH AT	D744	2301.	13.17	1319.	666.	228.	15.46
	ROUTED TO	RPI603	2241.	13.42	1302.	666.	228.	15.46
+	HYDROGRAPH AT	PI600	731.	12.33	87.	23.	8.	.61
+	3 COMBINED AT	CPI600	4427.	24.33	4312.	3616.	2309.	258.01
+	ROUTED TO	RPI600	4422.	24.83	4308.	3609.	2308.	258.01
+	HYDROGRAPH AT	DCAP16	913.	14.00	825.	273.	91.	39.36
+	ROUTED TO	RDCP16	907.	14.50	823.	273.	91.	39.36
+	HYDROGRAPH AT	PD740	798.	12.75	171.	46.	15.	1.28
+	2 COMBINED AT	C740_1	1024.	13.00	932.	349.	116.	14.40
+	HYDROGRAPH AT	DCAP17	304.	14.00	275.	93.	31.	39.36
+	ROUTED TO	RDCP17	303.	14.42	274.	93.	31.	39.36
	2 COMBINED AT	CPD740	1273.	14.33	1199.	444.	148.	18.84
+	ROUTED TO	RPD740	1269.	14.67	1199.	444.	148.	18.84
+	HYDROGRAPH AT	PD726B	642.	12.67	129.	35.	12.	.93
+	2 COMBINED AT	C726B	1298.	13.25	1234.	475.	158.	19.77
+	ROUTED TO	R726B	1292.	14.75	1232.	475.	158.	19.77
+	HYDROGRAPH AT	DCAP18	314.	14.00	284.	97.	32.	39.36
+	ROUTED TO	RDCP18	311.	14.58	283.	97.	32.	39.36
+	HYDROGRAPH AT	PD736	269.	13.17	101.	28.	9.	.78
+	2 COMBINED AT	CPD736	451.	14.17	373.	138.	46.	5.27
+	ROUTED TO	RPD736	449.	14.33	372.	138.	46.	5.27
+	HYDROGRAPH AT	DCAP19	957.	14.00	867.	319.	106.	39.36
+	ROUTED TO	RDCP19	955.	14.25	867.	319.	106.	39.36
+	HYDROGRAPH AT	PD760	1161.	12.33	119.	32.	11.	.87
	ROUTED TO							

+	SCP200	367.	12.75	119.	32.	11.	.87
ROUTED TO	RPD760	364.	12.92	119.	32.	11.	.87
HYDROGRAPH AT							
+	PD732	461.	12.50	69.	18.	6.	.48
3 COMBINED AT							
+	CPD732	1200.	13.83	1009.	395.	132.	15.04
ROUTED TO							
+	RPD732	1179.	14.42	1004.	395.	132.	15.04
HYDROGRAPH AT							
+	PD726A	457.	13.08	150.	41.	14.	1.10
2 COMBINED AT							
+	C14E	1381.	14.17	1120.	431.	145.	16.14
2 COMBINED AT							
+	C726A	1812.	14.25	1461.	553.	185.	21.41
ROUTED TO							
+	R726A	1805.	14.42	1457.	553.	185.	21.41
2 COMBINED AT							
+	C726*	3037.	14.50	2569.	950.	318.	41.19
ROUTED TO							
+	R726*	2943.	15.17	2514.	950.	318.	41.19
HYDROGRAPH AT							
+	PD726	843.	12.58	181.	48.	16.	1.35
2 COMBINED AT							
	C11E	2989.	15.08	2539.	988.	331.	42.53
HYDROGRAPH AT							
+	PD716	2751.	12.25	273.	73.	24.	1.75
2 COMBINED AT							
+	CPD726	2998.	15.08	2543.	1048.	352.	44.29
ROUTED TO							
+	SPD726	2997.	15.08	2517.	1048.	352.	44.29
DIVERSION TO							
+	DO716	589.	15.08	210.	53.	18.	44.29
HYDROGRAPH AT							
+	D716	2408.	15.08	2307.	995.	335.	44.29
ROUTED TO							
+	RPD726	2405.	15.42	2304.	995.	335.	44.29
HYDROGRAPH AT							
+	PD720	668.	12.42	85.	22.	7.	.59
HYDROGRAPH AT							
+	D744	0.	.00	0.	0.	0.	15.46
ROUTED TO							
+	RD744	0.	.00	0.	0.	0.	15.46
4 COMBINED AT							
+	CPD720	5932.	15.00	5430.	4363.	2570.	293.30
ROUTED TO							
	RPD720	5930.	15.08	5429.	4362.	2569.	293.30
HYDROGRAPH AT							
+	D716	589.	15.08	210.	53.	18.	44.29

	ROUTED TO	RD716	584.	15.25	210.	53.	18.	44.29
	2 COMBINED AT	C700*	6376.	15.25	5541.	4383.	2573.	302.88
+	ROUTED TO	R700*	6251.	15.92	5520.	4375.	2572.	302.88
+	HYDROGRAPH AT	PD752	236.	12.25	34.	10.	3.	.19
+	HYDROGRAPH AT	PD748	374.	12.25	51.	16.	5.	.28
+	2 COMBINED AT	CPD748	605.	12.25	84.	26.	9.	.47
+	ROUTED TO	SCP220	460.	12.42	84.	26.	9.	.47
+	ROUTED TO	RPD748	440.	12.75	84.	26.	9.	.47
+	HYDROGRAPH AT	PD756	1528.	13.08	510.	156.	52.	3.23
+	ROUTED TO	SCP210	1506.	13.17	510.	156.	52.	3.23
+	ROUTED TO	RPD756	1459.	13.50	509.	156.	52.	3.23
+	2 COMBINED AT	C708*	1563.	13.50	589.	181.	61.	3.70
+	ROUTED TO	R708*	1504.	13.92	587.	180.	61.	3.70
+	HYDROGRAPH AT	PD708	1690.	12.75	360.	97.	33.	2.40
+	HYDROGRAPH AT	PD712A	407.	12.92	120.	34.	11.	.77
+	ROUTED TO	R712A	389.	13.25	120.	34.	11.	.77
+	HYDROGRAPH AT	PD712	755.	12.67	164.	49.	16.	.89
+	4 COMBINED AT	CPD708	2728.	12.92	1201.	354.	119.	7.76
+	ROUTED TO	RPD708	2672.	13.08	1200.	354.	119.	7.76
+	HYDROGRAPH AT	PD704	337.	12.42	46.	12.	4.	.36
+	HYDROGRAPH AT	AF800	736.	12.42	110.	28.	9.	.72
+	3 COMBINED AT	CPD704	3060.	12.92	1347.	392.	132.	8.84
+	ROUTED TO	SPD704	2969.	13.17	1347.	392.	132.	8.84
	DIVERSION TO	DO800	0.	.00	0.	0.	0.	8.84
+	HYDROGRAPH AT	D800	2969.	13.17	1347.	392.	132.	8.84

	ROUTED TO						
		RPD704	2930.	13.42	1346.	392.	132.	8.84
	HYDROGRAPH AT						
+		PD700	1491.	12.50	201.	52.	17.	1.40
	3 COMBINED AT						
+		CPD700	7120.	15.50	6106.	4640.	2673.	313.12
	HYDROGRAPH AT						
+		D800	0.	.00	0.	0.	0.	8.84
	ROUTED TO						
+		RD800	0.	.00	0.	0.	0.	8.84
	HYDROGRAPH AT						
+		AF802	425.	12.42	57.	15.	5.	.39
	3 COMBINED AT						
+		C802*	7120.	15.50	6109.	4643.	2676.	313.51
	ROUTED TO						
+		R810*	7104.	15.92	6106.	4641.	2673.	313.51
	HYDROGRAPH AT						
+		AF803	1811.	12.50	483.	142.	48.	2.84
	ROUTED TO						
+		RAF803	1744.	12.75	482.	142.	48.	2.84
	HYDROGRAPH AT						
+		AF805	572.	12.58	91.	24.	8.	.63
	ROUTED TO						
		RAF805	506.	12.92	91.	23.	8.	.63
	HYDROGRAPH AT						
+		AF807	1553.	12.25	151.	38.	13.	1.02
	3 COMBINED AT						
+		CAF807	2508.	12.67	716.	201.	67.	4.49
	ROUTED TO						
+		RAF807	2496.	12.75	716.	201.	67.	4.49
	HYDROGRAPH AT						
+		AF810	1393.	12.75	293.	80.	27.	2.12
	3 COMBINED AT						
+		CAF810	7243.	15.83	6356.	4769.	2732.	320.12
	ROUTED TO						
+		RAF810	7233.	16.08	6352.	4766.	2730.	320.12
	HYDROGRAPH AT						
+		AF820	411.	12.67	88.	23.	8.	.70
	2 COMBINED AT						
+		CAF820	7239.	16.08	6372.	4775.	2734.	320.81
	HYDROGRAPH AT						
+		AF830	244.	12.50	48.	12.	4.	.27
	HYDROGRAPH AT						
+		AF854	583.	12.08	71.	22.	7.	.34
	ROUTED TO						
+		RAF854	527.	12.17	71.	22.	7.	.34
	HYDROGRAPH AT						
+		AF852	340.	12.08	38.	12.	4.	.17
	2 COMBINED AT						

+	CAF852	812.	12.17	108.	34.	11.	.51
ROUTED TO	RAF852	783.	12.17	108.	34.	11.	.51
HYDROGRAPH AT +	AF850	405.	12.08	46.	15.	5.	.22
2 COMBINED AT +	CAF850	1140.	12.17	152.	48.	16.	.72
HYDROGRAPH AT +	AF864	79.	12.25	20.	7.	2.	.09
ROUTED TO +	RAF864	50.	12.75	20.	7.	2.	.09
HYDROGRAPH AT +	AF862	365.	12.00	29.	9.	3.	.18
2 COMBINED AT +	CAF862	373.	12.00	48.	15.	5.	.26
ROUTED TO +	RAF862	294.	12.08	48.	15.	5.	.26
HYDROGRAPH AT +	AF866	609.	12.17	100.	31.	10.	.45
ROUTED TO +	RAF866	406.	12.50	99.	31.	10.	.45
HYDROGRAPH AT +	AF860	319.	12.25	66.	20.	7.	.36
3 COMBINED AT	CAF860	860.	12.25	209.	66.	22.	1.08
HYDROGRAPH AT +	SV258	669.	12.42	115.	30.	10.	.74
DIVERSION TO +	DO258	328.	12.42	56.	15.	5.	.74
HYDROGRAPH AT +	D258	341.	12.42	59.	16.	5.	.74
ROUTED TO +	RSV258	313.	12.58	59.	16.	5.	.74
HYDROGRAPH AT +	SV256	68.	12.17	7.	2.	1.	.06
2 COMBINED AT +	CSV256	340.	12.58	66.	17.	6.	.44

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

D.2 Modified 6-Hour, Existing Conditions HEC-1 Model

Wittmann ADMSU HEC-1 Modifications
100-year 6-hour Existing Conditions

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN   1998               *
*           VERSION 4.1                *
*                                      *
* RUN DATE   01AUG05  TIME  16:38:50   *
*                                      *
****************************************
```

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

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

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

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

1
PAGE 1

HEC-1 INPUT

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

  1           ID   ------------------------------------------------------------------------------
  2           ID   03-30-2005
  3           ID   3 East
  4           ID   The following additional modifications were made to delineate 3 East:
  5           ID
  6           ID   1. Basin WI500 was moved to follow RWI506.
  7           ID   2. A CP called C500_1 was added after WI500 combining 2.
  8           ID   3. A CP called C500_2 was added after RD508 combining 2.
  9           ID   4. CP CWI500 was changed from combining 4 to 2.
 10           ID   ------------------------------------------------------------------------------
 11           ID
 12           ID   ------------------------------------------------------------------------------
 13           ID   03-25-2005
 14           ID   T5N-R3W-S24E
 15           ID   The following edits were made to model.
 16           ID
 17           ID   1. Concentration point C480_1 was commented out.
 18           ID   2. Concentration point C480_4 was added after RTW482 combining 2
 19           ID      [RTW482 & TW480].  No hard coding was needed because all flow is diverted
 20           ID      to CTW480.
 21           ID
 22           ID   T5N-R2W-19W
 23           ID   The following edits were made to the model.
 24           ID
 25           ID   1. Concentration point C560_1 was commented out.
 26           ID   2. D576 and RD576 were moved to follow RWI574.
 27           ID   3. WI560A and R560A were moved to follow RD576.
 28           ID   4. CP C5602A was added after RWI574 combining 2 [RWI574 & WI560].
 29           ID   5. CP C5602B was added after RD576 combining 2 [C5602A & RD576].
 30           ID   5. CP C5602C was added after R560A combining 2 [C5602B & WI560A].
 31           ID   6. CP CWI560 was changed from combining 5 to 3.
 32           ID
 33           ID   7. Commented out CP C554_1.
 34           ID   8. Moved basin WI554 to follow RWI560.
 35           ID   9. Added CP C554_9 to after WI554 combining 2 [WI554 & RWI560].
 36           ID   10. Moved WI556 and RWI556 to follow C554_9.
 37           ID   11. Added CP C5541B combining 2.
 38           ID   12. Changed CWI554 to combine 2.
 39           ID   ------------------------------------------------------------------------------
 40           ID
 41           ID   ------------------------------------------------------------------------------
 42           ID   03-19-2005
 43           ID   T5N-R2W-S07
 44           ID   A concentration point was added after WI576, called C576_1 combining 2
```

```
 45          ID   [RD576B & WI576] and CP CWI576 was changed from combining 3 to 2.
 46          ID
 47          ID   Also, basin WI560 was moved to follow RD576 and concentration point C560_1
 48          ID   combining 2 [RD576 & WI560] was added after WI560. CP CWI560 was changed
 49          ID   from combining 6 to 5.
 50          ID
 51          ID   T5N-R3W-S01
 52          ID   The following modifications were made for the delineation of T5N-R3W-S01.
 53          ID
 54          ID   1. Basin WI576 was moved to follow RWI580.
 55          ID   2. A concentration point was added after WI576 called C576_2 combining 2.
1                                        HEC-1 INPUT
PAGE  2

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

 56          ID   3. CP C576_1 was commented out.
 57          ID   ------------------------------------------------------------------------
 58          ID
 59          ID   ------------------------------------------------------------------------
 60          ID   03-18-2005
 61          ID   T5N-R2W-19E
 62          ID   A concentration point was added after WI554, called C5554_1 combining 2
 63          ID   [RWI556 & WI554] and CP CWI554 was changed from combining 4 to 3.
 64          ID   ------------------------------------------------------------------------
 65          ID
 66          ID   ------------------------------------------------------------------------
 67          ID   03-17-2005
 68          ID   T4N-R3W-S08E
 69          ID   Concentration point C276_1 was added after SV276 to combine RSV294 and SV276.
 70          ID   in addition CSV276 was changed from combining 3 to 2 [C276_1 & RSV272].
 71          ID
 72          ID   3 West
 73          ID   The following modifications were made for the delineation of wash 3 West.
 74          ID
 75          ID    1. Basin SV272 was moved to follow RSV284.
 76          ID    2. Concentration point C272_2 was added after SV272 HC=2 [SV272 & RSV272].
 77          ID    3. CP CSV272 was changed from combining 3 to 2.
 78          ID    4. CP C276_1 was commented out.
 79          ID    5. Basin SV276 was moved to follow RSV272.
 80          ID    6. CP C276_2 was added after SV276, HC=2 [SV276 & RSV272].
 81          ID    7. CP C280_1 was added after SV280 HC=2 [RSV276 SV280].
 82          ID    8. CP CSV280 was changed from combining 3 to 2.
 83          ID    9. Basin SV260 was moved to come before SV268.
 84          ID   10. CP C260_1 was added after SV260 combining 2 [SV260 & RSV280].
 85          ID   11. CP CSV260 was changed from combining 4 to 3.
 86          ID   ------------------------------------------------------------------------
 87          ID
 88          ID   ------------------------------------------------------------------------
 89          ID   03-15-2005
 90          ID   7 EAST
 91          ID   The following modifications were made for the delineation of 7 East.
 92          ID
 93          ID   1. Basin PI645 was moved to follow RPI651.
 94          ID   2. A concentration point was added after PI645 called C645_1 combining 2
 95          ID      [RPI651 & PI645]
 96          ID   3. Concentration point CPI645 was changed from combining 4 to 3.
 97          ID   ------------------------------------------------------------------------
 98          ID
 99          ID   ------------------------------------------------------------------------
100          ID   03-14-2005
101          ID   IONA WASH (North of the CAP)
102          ID   The model was delineated for the delineation of Iona Wash North of the CAP.
103          ID   The following modifications were made.
104          ID
105          ID   1. A concentration point called C388_1 was added after Basin IW388.  This
106          ID      concentration point combines 2 [IW388 & RIW390].  Concentration point
107          ID      CIW388 was changed from combining 3 to 2 [C388_1 & RIW389].
108          ID
109          ID   2. Basin IW363 was moved to follow RD357.  A concentration point called
110          ID      C363_2 was then added after basin IW363.
1                                        HEC-1 INPUT
PAGE  3
```

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

 111          ID
 112          ID   3. Concentration point CIW363 was changed from combining 5 to combine
 113          ID      4 [RIW312, RIW365, RIW369 & C363_2].
 114          ID
 115          ID   4. Concentration point C361_1 was added following basin IW361 combining
 116          ID      3 [IW361, D302 & RIW363].  This was hard coded for an area of 3.322 sq.mi.
 117          ID      Concentration point CIW361 was changed from combining 4 to 2.
 118          ID
 119          ID   T5N-R2W-S14 & T5N-R2W-S14N
 120          ID   For the above delineation a basin PI648 was moved to follow PI651, a
 121          ID   concentration point was placed after PI651 to combine 2 [PI651 & RPI654].
 122          ID   concentration point CPI651 was changed fro combining 3 to 2.
 123          ID   ---------------------------------------------------------------------------
 124          ID
 125          ID   ---------------------------------------------------------------------------
 126          ID   03-11-2005
 127          ID   IONA ES-1
 128          ID   The model was modified for the delineation of Iona ES-1.  A concentration
 129          ID   point called C346_1 was added after IW346 to combine 2 [RIW351 & IW346].
 130          ID   This concentration point was hard coded for an area of 3.68.  In addition
 131          ID   concentration point CIW346 was changed from combining three (3) to
 132          ID   combine two (2): [C346_1 & CIW342].
 133          ID
 134          ID   2 West & 2 West Tributary-2
 135          ID   It was necessary to have basin TW430 combined solely with CTW434 for 2 West.
 136          ID   However, it was also necessary to combine TW430 solely with RTW436 for the
 137          ID   delineation of 2 West Tributary-2.  To accomplish this, TW430 was first
 138          ID   combined with RTW436, with a concentration point called C430_1.  This CP
 139          ID   was then commented out and basin TW430 was moved to follow CTW434.  A
 140          ID   concentration point was then added called C430_2 which combines TW430
 141          ID   and CTW434.
 142          ID
 143          ID   2 West Tributary-1
 144          ID   An additional concentration point was added following TW434 called C434_1
 145          ID   that combines C442* and TW434.
 146          ID   ---------------------------------------------------------------------------
 147          ID
 148          ID   ---------------------------------------------------------------------------
 149          ID   03-10-2005
 150          ID   2 WEST-TRIB and 2 EAST
 151          ID   The model has been modified for the delineation of washes 2 WEST-TRIB
 152          ID   and 2 EAST.  The following three (3) series of revisions, in order
 153          ID   have been made:
 154          ID
 155          ID   1.) A concentration point was added following basin WI530 called C530_1
 156          ID       to combine two (2): R530* and WI530.  Concentration point CWI530
 157          ID       was changed from combining four (4) [RWI538, R530*, WI530 & RD544]
 158          ID       to combine three (3) [RWI538, C530_1 & RD544].
 159          ID
 160          ID   2.) Concentration point C530_1 was commented out.  Basin WI530 was moved
 161          ID       to be follow RWI538.  A concentration point was added after basin
 162          ID       WI530 called C530_2 and combines two (2): RWI538 and WI530.
 163          ID
 164          ID   3.) A concentration point was added after R530* called C530_3 and combines
 165          ID       C530_2 and R530*.  Concentration point CWI530 was changed from
1                                          HEC-1 INPUT
PAGE  4

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

 166          ID       combining three (3) [C530_2, R530* & RD544] to combine two (2)
 167          ID       [C530_3 & RD544]
 168          ID   ---------------------------------------------------------------------------
 169          ID
 170          ID   ---------------------------------------------------------------------------
 171          ID   03-09-2005
 172          ID   10 EAST (EAST SPLIT-2)
 173          ID   Model was modified for the delineation of 10 EAST (EAST SPLIT-2).
 174          ID   Basin PI603 was moved to be before PD744.  Then a concentration
 175          ID   point was added that combines only RPI604, RPI606 and PI603.
 176          ID   Finally the HC card of CPI603 was adjusted to combine 3: RD600A,
 177          ID   PD744 and C603_1.
```

```
178          ID
179          ID   IONA EAST & IONA WEST
180          ID   Model was modified for the delineation of IONA EAST & IONA WEST.
181          ID   Basin SV202 and route RSV202 were moved from preceding C210* to
182          ID   follow RIW300. An additional concentration point (C300_1) was added after
183          ID   RSV202 to combine RIW300 and RSV202.  Concentration point C210*
184          ID   was changed from combining three (3) to combining two (2). In addition
185          ID   concentration point C302* changed the hard coding from
186          ID   54.72 to 56.16 (54.72 + 1.44 [SV202]).
187          ID   ---------------------------------------------------------------------------
188          ID
189          ID   ---------------------------------------------------------------------------
190          ID   02-22-2005
191          ID   7EAST
192          ID   The model was modified for the delineation of Wash 7 East and 8 East.
193          ID   Concentration point C618_1 was commented out and C6181a was added
194          ID   after RD618 to combine RD618 and PI618.
195          ID
196          ID   Concentration point C615_1 was added to combine RD618 and PI615 in order
197          ID   to develop an area vs flow relationship for the stretch of wash that does
198          ID   not include routed flow from RDCP13.
199          ID
200          ID   8 EAST
201          ID   Concentration point C615_1 was commented out and Concentration Point
202          ID   C6151A was added before DO618 to combine RDCAP13 and PI615.  This was
203          ID   done to get a Q/A relationship for 8 East, excluding the flow from DO618.
204          ID
205          ID   Concentration point C612_1 was commented out in order to determine the
206          ID   flows through Wash 8 East without the routed flow from RPI618.
207          ID   Concentration points C6121a was added after RPI615 in order to combine
208          ID   the flow from RPI615 and PI612.
209          ID   ---------------------------------------------------------------------------
210          ID
211          ID   ---------------------------------------------------------------------------
212          ID   02-21-2005
213          ID   The model was modified for the delineation of Wash 6 and 7 East. The split
214          ID   that was in the original model at CPI618 actually occurred further upstream.
215          ID   The split is better modeled directly after DCAP12. The diversion card was
216          ID   moved, but retained its original name: D618.
217          ID   ---------------------------------------------------------------------------
218          ID
219          ID   ---------------------------------------------------------------------------
220          ID   02-17-2005
```



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

221          ID   Model was modified for the delineation of Wash 4 East, south of the CAP.
222          ID   The concentration point C525_1 was commented out, and C5251b was added
223          ID   after RDCP09 in order to determine the flow through Wash 4E without the
224          ID   flow from wash 3E.
225          ID   ---------------------------------------------------------------------------
226          ID
227          ID   ---------------------------------------------------------------------------
228          ID   02-16-2005
229          ID   Model was modified for the delineation of Wash 3 East, south of the CAP.
230          ID   The concentration point C525_1 was added before CWI525 to not include
231          ID   the routed flow from DCAP09 and RD527. The HC of CWI525 was changed to 2.
232          ID   C5251a was added to combine C525_1 and RDCP09 in order to determine the
233          ID   flow along the reach north of the 60.
234          ID   ---------------------------------------------------------------------------
235          ID
236          ID   ---------------------------------------------------------------------------
237          ID   02-15-2005
238          ID   Model was modified for the delineation of Wash 2 East, south of the CAP.
239          ID   The concentration point C506_1 was added before CWI506 to not include
240          ID   the routed flow from CWI524. The HC of CWI506 was changed to 2.WI506 was
241          ID   also moved before WI524 in order to achieve this.
242          ID   ---------------------------------------------------------------------------
243          ID
244          ID   ---------------------------------------------------------------------------
245          ID   02-14-2005
246          ID   Model was modified for the delineation of Wash 1 East, south of the CAP.
```

```
247          ID   The concentration point C516_1 was added before CWI516 to not include
248          ID   the routed flow from CWI514. The HC of CWI516 was changed to 2.
249          ID   In order to delineate wash 2 east, cards DOCP07 - RWI528 were moved to be
250          ID   directly before WI518. Concentration Point C518_1 was added in order to
251          ID   determine the flow through Wash 2 East (excludes RWI527). CWI518 HC was set
252          ID   to 2.
253          ID   D529 was moved before WI528 and DOCP07 and C528_1 was added in order to
254          ID   delineate Wash 2 East.
255          ID   ---------------------------------------------------------------------------
256          ID
257          ID   ---------------------------------------------------------------------------
258          ID   01-24-2005
259          ID   Model was modified for the delineation of Wittmann Wash, north of the CAP.
260          ID   The concentration point CTW485_1 was added before CTW485 to not include
261          ID   RD454 that does not contribute to the delineated reach. TW485 was moved to
262          ID   be after RD454 in order to estimate the flow at CTW485_1 without the
263          ID   routed flow RD454. Concentration point C480_1 was added before CTW480
264          ID   to not include flow from RTW482.
265          ID   The model was modified for the delineation of Wash 2 West. Concentration
266          ID   point C422_1 was added before CTW422 in order to delineate the reach
267          ID   without flows from RTW424.TW422 was moved before TW424 in order to achieve
268          ID   this. Concentration point C400_2 was added before CTW400 in order to
269          ID   delineate the reach without flows from RTW402.
270          ID   ---------------------------------------------------------------------------
271          ID
272          ID   ---------------------------------------------------------------------------
273          ID   01-20-2005
274          ID   Model was modified for the delineation of Wash 6E.
275          ID   The concentration point C618_1 was added before CPI618 to not include
1                                    HEC-1 INPUT
PAGE  6

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

276          ID   RDCP12. CPI618 HC was set to 2. The concentration point C612_1 was added
277          ID   before CPI612 to not include RPI615. CPI612 HC was set to 2. The
278          ID   concentration point C609_1 was added before CPI609 to not include RDCP14.
279          ID   CPI609 HC was set to 2.
280          ID   ---------------------------------------------------------------------------
281          ID
282          ID
283          ID   ***************************************************************************
284          ID   ***************************************************************************
285          ID   **                                                                       **
286          ID   **    WITTMANN AREA DRAINAGE MASTER STUDY UPDATE-HYDROLOGY MODEL 2004    **
287          ID   **                                                                       **
288          ID   ***************************************************************************
289          ID   ***************************************************************************
290          ID
291          ID   PROJECT:                Wittmann ADMS Update
292          ID   CLIENT:                 Flood Control District of Maricopa County
293          ID   PREPARED BY:            Entellus, Inc.
294          ID   PROJECT No:             FCD 2002C029              Entellus 310.032
295          ID   FILE NAME: 6HourMod.hc1                 CREATED DATE: JUL 01, 2004
296          ID                                          MODIFIED DATE: JUL 30, 2005
297          ID
298          ID   STORM:
299          ID                       100-year 6-hour Storm
300          ID
301          ID   DEVELOPMENT CONDITIONS:
302          ID                       Existing Conditions
303          ID
304          ID   MODELING ASSUMPTIONS:
305          ID                       It was assumed that the US60 did not have adequate
306          ID                       storage to cause any significant attenuation.
307          ID
308          ID                       The assumption was made that the CAP Canal embankment
309          ID                       would not be breached under a large flood event.
310          ID
311          ID                       The assumption was made that the Beardsley Canal would
312          ID                       not fail under a large storm event (Per District
313          ID                       Instruction).  In addition, the berm north of the
314          ID                       Beardsley canal and east of US60 was assumed to fail
315          ID                       (per district Instruction).
```

```
 316          ID
 317          ID                    For both the CAP and Beardsley Canals, once the berm
 318          ID                    elevation was reached weir flow was assumed.  It was
 319          ID                    also assumed that any weir flow over the canal that
 320          ID                    might enter the canal and be diverted out of the study
 321          ID                    area was insignificant, and thus was ignored.  In other
 322          ID                    words all weir flow over the canal embankment reaches
 323          ID                    the downstream concentration point.
 324          ID
 325          ID                    Typical X-sects were developed, and it was assumed
 326          ID                    that a typical x-sect could adequately represent
 327          ID                    various reaches.
 328          ID
 329          ID                    Time-Area Relations were used base on the District's
 330          ID                    Hydrology Manual criteria.  Two Time-Area Relation
1                                       HEC-1 INPUT
PAGE  7

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

 331          ID                    Curves were utilized:
 332          ID                            -Urban
 333          ID                            -Natural
 334          ID                    The Time-Area Relation Curves were taken directly
 335          ID                    from the manual
 336          ID
 337          ID   MODELING METHODS:
 338          ID                    This model utilizes QI cards to input the Padelford
 339          ID                    hydrographs from an HEC-1 model developed for 100-yr
 340          ID                    6-hr existing conditions based on the 100-yr 24-hr HEC-1
 341          ID                    model by A-N West Inc. for the Padelford Wash
 342          ID                    Floodplain Delineation Study.  The hydrograph was
 343          ID                    altered from its original form (2 minute interval to
 344          ID                    5-minute interval) through simple interpolation.
 345          ID
 346          ID                    Clark Unit Hydrographs were used for all subbasins
 347          ID                    except the two subbasins directly upstream of the
 348          ID                    Bonita Dam (PD726B and PD740 use S-graphs).  The UC
 349          ID                    parameters were calculated using the WMS7.0 software.
 350          ID
 351          ID                    For Basins PD726B and PD740 S-Graphs were utilized per
 352          ID                    the request of the FCDMC.  Limited details regarding
 353          ID                    the calculations of the S-graphs can be found in the
 354          ID                    model by the basin KK card.  For full details of the
 355          ID                    S-graph calculations refer to the Appendix.
 356          ID
 357          ID                    Normal Depth routing was used for all routing reaches.
 358          ID
 359          ID                    Hard coding was used to account for the percentage of
 360          ID                    area associated with a diversion.  Because of the use
 361          ID                    of JD cards and aereal reduction, hard coding was
 362          ID                    necessary to properly account for area.  For a given
 363          ID                    diversion a percentage of the flow is routed to two
 364          ID                    different locations.  The same percentage of area
 365          ID                    follows that diverted flow.  In addition the area
 366          ID                    downstream of the main path is reduced or increased and
 367          ID                    is hard coded to account for the loss or gain of area.
 368          ID                    Hard coding was performed based on the 6-hour existing
 369          ID                    conditions model.
 370          ID
 371          ID                    Stage-storage was developed for all the structures
 372          ID                    along the CAP Canal, as well as along the Beardsley
 373          ID                    Canal.  In addition several stage-storage locations
 374          ID                    were developed for areas with significant storage
 375          ID                    along the SR74.  No storage was modeled along the US60
 376          ID                    and railroad, but the culverts were analyzed for
 377          ID                    diversion potential.  Diversions were placed in the
 378          ID                    model where deemed appropriate.  See appendix for
 379          ID                    details.
 380          ID
 381          ID                    FLO-2D was utilized to calculate the split flows at
 382          ID                    concentration points CIW351. CIW357, CIW363 and CWI576.
 383          ID                    See appendix for modeling details.
 384          ID
```

```
 385          ID   ****************************************************************************
                                          HEC-1 INPUT
1
PAGE  8

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

 386          ID   ****************************************************************************
 387          ID
              *DIAGRAM
 388          IT       5                0    1500
 389          IO       5
 390          IN      15                0
 391          JD    3.40     0.01
              * 6-hour distribution
 392          PC   0.000    0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 393          PC   0.087    0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 394          PC   0.962    0.972   0.983   0.991   1.000
              *
 395          JD   3.378     0.50
 396          JD   3.314     2.80
 397          PC   0.000    0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
 398          PC   0.087    0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
 399          PC   0.950    0.963   0.975   0.988   1.000
              *
 400          JD   3.135    16.00
 401          PC   0.000    0.009   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
 402          PC   0.135    0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
 403          PC   0.946    0.960   0.973   0.987   1.000
              *
 404          JD   2.761    90.00
 405          PC   0.000    0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
 406          PC   0.179    0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
 407          PC   0.927    0.945   0.964   0.982   1.000
              *
 408          JD   1.938   500.00
 409          PC   0.000    0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
 410          PC   0.212    0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
 411          PC   0.907    0.930   0.954   0.977   1.000
              *
              *
              *
              *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * ************************************************************************** *
              * ************ BEGINNING OF WEST PORTION OF DETAILED MODEL ******************* *
              * ************************************************************************** *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              *
              *
              *
              *
              * ************************************************************************** *
              * ************************************************************************** *
              * ****************** BEGINNING OF WHITE TANKS SUBAREA ************************ *
              * ************************************************************************** *
              * ************************************************************************** *
              *
1
PAGE  9
                                          HEC-1 INPUT

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

 412          KK   WT140
 413          KO       0        0     0.0       1      22
 414          BA  3.7893
 415          LG    0.35     0.35   4.071   0.385  19.488
 416          UC   1.417    1.001
              * Natural Time-Area Relation
 417          UA       0        3       5       8      12      20      43      75      90      96
```

```
418          UA     100
             *
             *
             * ROUTE UPDATED 4/14/04

419          KK  RWT140
420          KO       0       0     0.0       0      22
421          RS       3    FLOW     0.0     0.0
422          RC    0.06   0.035    0.06   13053  0.0192
             * WTTS20_1
423          RX       0      33     134     180     213     256     496     507
424          RY    1394    1394    1392    1388    1388    1392    1394    1394
             *
             *

425          KK   WT130
426          KO       0       0     0.0       1      22
427          BA  2.5672
428          LG    0.35   0.331   4.724   0.282  10.801
429          UC   0.921   0.686
             * Natural Time-Area Relation
430          UA       0       3       5       8      12      20      43      75      90      96
431          UA     100
             *
             *
             * Combines RWT140 and WT130

432          KK  CWT130
433          KO       0       0     0.0       0      22
434          HC       2
             *
             *
             * ROUTE UPDATED 4/14/04

435          KK  RWT130
436          KO       0       0     0.0       0      22
437          RS       5    FLOW     0.0     0.0
438          RC   0.045   0.035   0.045    5750   0.001
             * McMicken Dam Channel
439          RX       0      46     101     121     171     181    1421    3621
440          RY      25      14       4       0       0       4      14      25
             *
             *
1                                                HEC-1 INPUT
PAGE 10

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

441          KK   WT160
442          KO       0       0     0.0       1      22
443          BA  0.8126
444          LG    0.35    0.35    4.39   0.335  17.815
445          UC   0.779   0.681
             * Natural Time-Area Relation
446          UA       0       3       5       8      12      20      43      75      90      96
447          UA     100
             *
             *
             * ROUTE UPDATED 4/14/04

448          KK  RWT160
449          KO       0       0     0.0       0      22
450          RS      12    FLOW     0.0     0.0
451          RC    0.06   0.035    0.06   18961  0.0116
             * WTTS10_1
452          RX       0     280     475     520     570     618     803    1036
453          RY  1424.5    1422    1422    1421    1421    1422  1422.5    1424
             *
             *

454          KK  WT150A
455          KO       0       0     0.0       1      22
456          BA  4.7509
```

```
457          LG    0.35    0.35    3.95     0.4    20.0
458          UC   1.371   0.810
             * Natural Time-Area Relation
459          UA       0       3       5       8      12      20      43      75      90      96
460          UA     100
             *
             *
             * ROUTE UPDATED 4/14/4

461          KK   R150A
462          KO       0       0     0.0       0      22
463          RS       3    FLOW     0.0     0.0
464          RC    0.06   0.035    0.06    9557  0.0209
             * WTTS20_2
465          RX       0      62     124     140     161     193     217     336
466          RY    1410    1408    1402    1401    1402    1406    1408    1410
             *
             *

467          KK   WT150
468          KO       0       0     0.0       1      22
469          BA  1.0865
470          LG    0.35    0.35   4.476   0.316   15.69
471          UC   0.746   0.530
             * Natural Time-Area Relation
472          UA       0       3       5       8      12      20      43      75      90      96
473          UA     100
             *
             *
             * Combines WT150 and R150A
1                                          HEC-1 INPUT
PAGE 11

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


474          KK  CWT150
475          KO       0       0     0.0       0      22
476          HC       2
             *
             *
             * ROUTE UPDATED 4/14/04

477          KK  RWT150
478          KO       0       0     0.0       0      22
479          RS       5    FLOW     0.0     0.0
480          RC    0.06   0.035    0.06   16082  0.0133
             * WTTS20_1
481          RX       0      33     134     180     213     256     496     507
482          RY    1394    1394    1392    1388    1388    1392    1394    1394
             *
             *

483          KK   WT120
484          KO       0       0     0.0       1      22
485          BA  2.8034
486          LG    0.35   0.301   5.261   0.243   3.944
487          UC   1.038   0.773
             * Natural Time-Area Relation
488          UA       0       3       5       8      12      20      43      75      90      96
489          UA     100
             *
             *
             * Combines WT120, RWT150, RWT160 and RWT130

490          KK  CWT120
491          KO       0       0     0.0       0      22
492          HC       4
             *
             *
             * ROUTE UPDATED 4/14/04

493          KK  RWT120
494          KO       0       0     0.0       0      22
```

```
495          RS       7    FLOW     0.0     0.0
496          RC   0.045   0.035   0.045    6168   0.001
             * McMicken Dam Channel
497          RX       0      46     101     121     171     181    1421    3621
498          RY      25      14       4       0       0       4      14      25
             *
             *

499          KK   WT110
500          KO       0       0     0.0       1      22
501          BA  2.8957
502          LG    0.35   0.287   4.795   0.285   7.191
503          UC   0.867   0.549
             * Natural Time-Area Relation
504          UA       0       3       5       8      12      20      43      75      90      96
505          UA     100
             *
             *
             * Combines WT100 and RWT110
1                                          HEC-1 INPUT
PAGE 12

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


506          KK  CWT110
507          KO       0       0     0.0       0      22
508          HC       2
             *
             *
             * ROUTE UPDATED 4/14/04

509          KK  RWT110
510          KO       0       0     0.0       0      22
511          RS       5    FLOW     0.0     0.0
512          RC   0.045   0.035   0.045    7640   0.001
             * McMicken Dam Channel
513          RX       0      46     101     121     171     181    1421    3621
514          RY      25      14       4       0       0       4      14      25
             *
             *

515          KK   WT100
516          KO       0       0     0.0       1      22
517          BA  3.8475
518          LG   0.346   0.287   4.578   0.316  16.889
519          UC   0.983   0.647
             * Natural Time-Area Relation
520          UA       0       3       5       8      12      20      43      75      90      96
521          UA     100
             *
             *
             * Combines WT100 and RWT110

522          KK  CWT100
523          KO       0       0     0.0       0      22
524          HC       2
             *
             *
             * ROUTE UPDATED 4/14/04

525          KK  RWT100
526          KO       0       0     0.0       0      22
527          RS       1    FLOW     0.0     0.0
528          RC   0.045   0.035   0.045    4778   0.001
             * McMicken Dam Channel
529          RX       0      46     101     121     171     181    1421    3621
530          RY      25      14       4       0       0       4      14      25
             *
             *

531          KK   TW406
532          KO       0       0     0.0       1      22
533          BA  0.1632
```

```
534          LG   0.343    0.25   5.689   0.208   14.42
535          UC   0.163   0.089
             * Natural Time-Area Relation
536          UA       0       3       5       8      12      20      43      75      90      96
537          UA     100
             *
             *
             * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 13

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

538          KK  RTW406
539          KO       0       0     0.0       0      22
540          RS       6    FLOW     0.0     0.0
541          RC    0.04    0.04    0.04   14969  0.0078
             * TSR408
542          RX       0     301     727     900    1200    1413    1590    1949
543          RY    1370    1369    1368    1368    1368    1368    1369    1370
             *
             *

544          KK   TW408
545          KO       0       0     0.0       1      22
546          BA  0.9100
547          LG   0.349   0.324   4.317   0.353  21.505
548          UC   1.058   1.218
             * Natural Time-Area Relation
549          UA       0       3       5       8      12      20      43      75      90      96
550          UA     100
             *
             *
             * ROUTE UPDATED 4/14/04

551          KK  RTW408
552          KO       0       0     0.0       0      22
553          RS      10    FLOW     0.0     0.0
554          RC    0.04    0.04    0.04   16567  0.0072
             * TSR408
555          RX       0     301     727     900    1200    1413    1590    1949
556          RY    1370    1369    1368    1368    1368    1368    1369    1370
             *
             *

557          KK   TW404
558          KO       0       0     0.0       1      22
559          BA  2.0927
560          LG   0.347    0.25   4.926   0.261   6.179
561          UC   0.667   0.336
             * Natural Time-Area Relation
562          UA       0       3       5       8      12      20      43      75      90      96
563          UA     100
             *
             *
             * Combines TW404, RTW408, RTW406 and RWT100

564          KK  CTW404
565          KO       0       0     0.0       0      22
566          HC       4
             *
             *
             * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 14

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

567          KK  RTW404
568          KO       0       0     0.0       0      22
569          RS       2    FLOW     0.0     0.0
570          RC   0.045   0.035   0.045    2936   0.001
```

```
                 * McMicken Dam Channel
571              RX       0      46     101     121     171     181    1421    3621
572              RY      25      14       4       0       0       4      14      25
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ********************** END OF WHITE TANKS SUBAREA ************************** *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 *
                 * ------------------------------------------------------------------------
                 *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ******************** BEGINNING OF IONA WASH SUBAREA ************************ *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 *
                 *
                 * ************************************************************************ *
                 * ******************** BEGINNING OF IONA WASH REGION 1 ************************ *
                 * ************************************************************************ *
                 *
                 *

573              KK   IW371
574              KO       0       0     0.0       1      22
575              BA  0.0529
576              LG   0.275    0.25    4.15   0.473   26.25
577              UC   0.275   0.288
                 * Urban Time-Area Relation
578              UA       0       5      16      30      65      77      84      90      94      97
579              UA     100
                 *
                 * Railroad Diversion: Main path to CIW366, Diversion to CIW374
                 * From Structure RR40, See Appendix D.5 for analysis

580              KK    D371
581              KO       0       0     0.0       0      22
582              DT   DO371
583              DI     0.0      14      79     208     383     823    1374    2014    2724
584              DQ     0.0       0      55     173     335     763    1302    1930    2632
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 15

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

585              KK  RIW371
586              KO       0       0     0.0       0      22
587              RS      15    FLOW     0.0     0.0
588              RC    0.04    0.04    0.04   11583  0.0088
                 * TSR371
589              RX       0     142     486     525     651     770    1000    1518
590              RY    1900    1900    1899    1897    1896    1899  1899.5    1900
                 *
                 *

591              KK   IW366
592              KO       0       0     0.0       1      22
593              BA  1.0558
594              LG   0.343    0.25   5.762   0.202   7.207
595              UC   0.763   0.593
                 * Natural Time-Area Relation
596              UA       0       3       5       8      12      20      43      75      90      96
597              UA     100
                 *
                 *
                 * Combines IW366 and RIW371
```

```
598          KK  CIW366
599          KO       0       0     0.0       0      22
             * hard coded
600          HC       2    1.07
             *
             *
             * ROUTE UPDATED 4/14/4

601          KK  RIW366
602          KO       0       0     0.0       0      22
603          RS       4    FLOW     0.0     0.0
604          RC    0.04    0.04    0.04    9657   0.007
             * IWTS30_2
605          RX       0     6.5      13      57     102     104     109     110
606          RY    1728  1725.5    1724    1723    1724  1725.5    1727    1728
             *
             *

607          KK   IW377
608          KO       0       0     0.0       1      22
609          BA  0.1125
610          LG   0.304   0.382   5.921   0.188   5.357
611          UC   0.408   0.519
             * Natural Time-Area Relation
612          UA       0       3       5       8      12      20      43      75      90      96
613          UA     100
             *
             *
             * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR010 (HWY74 CULVERT)
1                                          HEC-1 INPUT
PAGE 16

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

614          KK  SSR010
615          RS       1    STOR       0
616          SQ       0      36     100     160
617          SA       0     .05     .41    1.98
618          SE  2021.3    2024    2026    2028
             *
             *
             * ROUTE UPDATED 4/14/4

619          KK  RIW377
620          KO       0       0     0.0       0      22
621          RS       6    FLOW     0.0     0.0
622          RC    0.04    0.04    0.04    6588  0.0096
             * TSR371
623          RX       0     142     486     525     651     770    1000    1518
624          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
             *
             *

625          KK   IW374
626          KO       0       0     0.0       1      22
627          BA  0.3874
628          LG   0.315   0.161   8.147   0.086  12.602
629          UC   0.442   0.345
             * Natural Time-Area Relation
630          UA       0       3       5       8      12      20      43      75      90      96
631          UA     100
             *
             *
             * RAILROAD DIVERSION RECOVERY: ALONG RAILROAD FROM STRUCTURE RR40

632          KK    D371
633          KO       0       0     0.0       0      22
634          DR   DO371
             *
             *
             * ROUTE UPDATED 4/14/4
```

```
635          KK   RD371
636          KO       0       0     0.0       0      22
637          RS       1    FLOW     0.0     0.0
638          RC   0.043   0.035   0.043    1409  0.0014
             * WITS130
639          RX       0     400     456     575     620     650     660     682
640          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
             *
             *
             * Combines RD371, IW374 and RIW377
1                                          HEC-1 INPUT
PAGE 17

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


641          KK  CIW374
642          KO       0       0     0.0       0      22
             * Hard Coded
643          HC       3    0.54
             *
             *
             * ROUTE UPDATED 4/14/4

644          KK  RIW374
645          KO       0       0     0.0       0      22
646          RS      15    FLOW     0.0     0.0
647          RC    0.04    0.04    0.04   20437  0.0081
             * TSR371
648          RX       0     142     486     525     651     770    1000    1518
649          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
             *
             *

650          KK   IW386
651          KO       0       0     0.0       1      22
652          BA  0.3731
653          LG   0.334   0.192   8.439   0.072   5.278
654          UC   0.838   0.855
             * Natural Time-Area Relation
655          UA       0       3       5       8      12      20      43      75      90      96
656          UA     100
             *
             *
             * ROUTE UPDATED 4/14/4

657          KK  RIW386
658          KO       0       0     0.0       0      22
659          RS       6    FLOW     0.0     0.0
660          RC   0.043   0.035   0.043   10311  0.0078
             * IWTS20_1
661          RX       0      21      75      93     234     280     301     391
662          RY    1952    1949    1948    1946    1945    1948  1948.5    1952
             *
             *

663          KK   IW382
664          KO       0       0     0.0       1      22
665          BA  0.6196
666          LG   0.322   0.275   6.319   0.164   8.175
667          UC   0.642   0.555
             * Urban Time-Area Relation
668          UA       0       5      16      30      65      77      84      90      94      97
669          UA     100
             *
             *
             * Combines IW382 and RIW386
1                                          HEC-1 INPUT
PAGE 18

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


670          KK  CIW382
```

```
671          KO       0       0     0.0       0      22
672          HC       2
             *
             * US60 Diversion: Main path to D382A, Diversion to CIW381
             * From Structures US006 and US007, See Appendix D.5 for analysis

673          KK   D382B
674          KO       0       0     0.0       0      22
675          DT  DO382B
676          DI       0      24     180   10000
677          DQ       0      24     180     180
             *
             * Railroad Diversion: Main path to C359*, Diversion to CIW384
             * From Structure RR90 and RR100, See Appendix D.5 for analysis

678          KK   D382A
679          KO       0       0     0.0       0      22
680          DT  DO382A
681          DI       0      14      60     200     315     448     629    1371
682          DQ       0       0       0       0      55     174     338    1045
             *
             *
             * ROUTE UPDATED 4/14/4

683          KK  RIW382
684          KO       0       0     0.0       0      22
685          RS       3    FLOW     0.0     0.0
686          RC    0.04    0.04    0.04    4964   0.012
             * TSR371
687          RX       0     142     486     525     651     770    1000    1518
688          RY    1900    1900    1899    1897    1896    1899  1899.5    1900
             *
             *

689          KK   IW384
690          KO       0       0     0.0       1      22
691          BA  0.0825
692          LG   0.343    0.15   8.675   0.065   7.206
693          UC   0.308   0.296
             * Natural Time-Area Relation
694          UA       0       3       5       8      12      20      43      75      90      96
695          UA     100
             *
             *
             * Railroad Diversion Recovery: Outflow from structures RR90 AND RR100

696          KK   D382A
697          KO       0       0     0.0       0      22
698          DR  DO382A
             *
             *
             * ROUTE UPDATED 4/14/4
```

1
PAGE 19

HEC-1 INPUT

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

699          KK  RD382A
700          KO       0       0     0.0       0      22
701          RS       1    FLOW     0.0     0.0
702          RC   0.043   0.035   0.043    1172  0.0068
             * WITS130
703          RX       0     400     456     575     620     650     660     682
704          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
             *
             *
             * Combines RD382A and IW384

705          KK  CIW384
706          KO       0       0     0.0       0      22
             * Hard Coded
707          HC       2    0.41
             *
```

```
                 *
                 * ROUTE UPDATED 4/14/4

708              KK  RIW384
709              KO       0       0     0.0       0      22
710              RS       3    FLOW     0.0     0.0
711              RC    0.04    0.04    0.04    4694  0.0124
                 * TSR371
712              RX       0     142     486     525     651     770    1000    1518
713              RY    1900    1900    1899    1897    1896    1899  1899.5    1900
                 *
                 *

714              KK   IW381
715              KO       0       0     0.0       1      22
716              BA  0.3841
717              LG   0.309    0.19   9.152   0.056  11.882
718              UC   0.650   0.799
                 * Natural Time-Area Relation
719              UA       0       3       5       8      12      20      43      75      90      96
720              UA     100
                 *
                 *
                 *
                 * This diversion is not routed because the distance traveled from the actual
                 * point of diversion (not CIW382) to CIW382 is approximately the same as the
                 * distance from the same point of diversion to CIW381.  Thus to avoid double
                 * counting storage in the routes, a route for the diversion was not included
                 * in the model.
                 *
                 * US60 Diversion Recovery: Outflow from structures US006 and US007

721              KK   D382B
722              KO       0       0     0.0       0      22
723              DR  DO382B
                 *
                 *
                 * Combines D382B and IW381
1                                          HEC-1 INPUT
PAGE 20

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


724              KK  CIW381
                 * Hard Coded
725              HC       2    0.64
                 *
                 *
                 * ROUTE UPDATED 4/14/4

726              KK  RIW381
727              KO       0       0     0.0       0      22
728              RS       3    FLOW     0.0     0.0
729              RC    0.04    0.04    0.04    4964  0.0096
                 * TSR371
730              RX       0     142     486     525     651     770    1000    1518
731              RY    1900    1900    1899    1897    1896    1899  1899.5    1900
                 *
                 *
                 * Combines RIW381, RIW382 and RIW384

732              KK   C359*
733              KO       0       0     0.0       0      22
                 * Hard Coded
734              HC       3    1.45
                 *
                 *
                 * ROUTE UPDATED 4/14/4

735              KK   R359*
736              KO       0       0     0.0       0      22
737              RS       4    FLOW     0.0     0.0
738              RC    0.04    0.04    0.04    9280  0.0103
```

```
                 * IWTS30_2
739              RX       0     6.5      13      57     102     104     109     110
740              RY    1728  1725.5    1724    1723    1724  1725.5    1727    1728
                 *
                 *

741              KK   IW359
742              KO       0       0     0.0       1      22
743              BA   2.912
744              LG   0.345    0.25   5.939   0.187   6.181
745              UC   0.983   0.574
                 * Natural Time-Area Relation
746              UA       0       3       5       8      12      20      43      75      90      96
747              UA     100
                 *
                 *
                 * Combines IW359, R359*, RIW374 and RIW366

748              KK  CIW359
749              KO       0       0     0.0       0      22
750              HC       4
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 21

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


751              KK  RIW359
752              KO       0       0     0.0       0      22
753              RS       4    FLOW     0.0     0.0
754              RC    0.04    0.04    0.04   13031  0.0059
                 * IWTS30_2 modified
755              RX       0     6.5      13      57     102     104     109     110
756              RY    1730  1725.5    1724    1723    1724  1725.5    1727    1730
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ********************** END OF IONA WASH REGION 1 *************************** *
                 * ************************************************************************ *
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ******************* BEGINNING OF IONA WASH REGION 2 ************************ *
                 * ************************************************************************ *
                 *
                 *
                 *

757              KK   IW389
758              KO       0       0     0.0       1      22
759              BA  0.1312
760              LG   0.348    0.13    10.1   0.037   5.526
761              UC   0.588   0.753
                 * Natural Time-Area Relation
762              UA       0       3       5       8      12      20      43      75      90      96
763              UA     100
                 *
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR190 (HWY74 CULVERT)

764              KK  SSR190
765              KO       0       0     0.0       1      22
766              RS       1    STOR       0
767              SQ       0      69     161     184     207     230
768              SE  2053.8  2055.5 2056.83  2057.1  2057.4  2057.7
769              SA       0     .01     .08     .22     .39    1.13
770              SE    2052    2054    2056    2058    2060    2062
                 *
                 *
```

```
                 * ROUTE UPDATED 4/14/4

 771             KK  RIW389
 772             KO       0       0     0.0       0      22
 773             RS       6    FLOW     0.0     0.0
 774             RC    0.04    0.04    0.04   11459  0.0124
                 * TSR371
 775             RX       0     142     486     525     651     770    1000    1518
 776             RY    1900    1900    1899    1897    1896    1899  1899.5    1900
                 *
                 *
1                                          HEC-1 INPUT
PAGE 22

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


 777             KK   IW394
 778             KO       0       0     0.0       1      22
 779             BA  4.1731
 780             LG    0.35   0.327   6.166   0.173  16.632
 781             UC   1.367   0.857
                 * Natural Time-Area Relation
 782             UA       0       3       5       8      12      20      43      75      90      96
 783             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4

 784             KK  RIW394
 785             KO       0       0     0.0       0      22
 786             RS       2    FLOW     0.0     0.0
 787             RC   0.043   0.035   0.043    7697  0.0133
                 * IWTS10_1
 788             RX       0      34      89     134     161     198     298     333
 789             RY    2160    2158    2154    2152    2154    2156    2158    2160
                 *
                 *

 790             KK  IW390A
 791             KO       0       0     0.0       1      22
 792             BA  0.9003
 793             LG    0.35    0.25   6.134   0.172  17.033
 794             UC   0.971   0.899
                 * Natural Time-Area Relation
 795             UA       0       3       5       8      12      20      43      75      90      96
 796             UA     100
                 *
                 *
                 * Combines IW390A and RIW394

 797             KK   C390A
 798             KO       0       0     0.0       0      22
 799             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

 800             KK   R390A
 801             KO       0       0     0.0       0      22
 802             RS       2    FLOW     0.0     0.0
 803             RC   0.043   0.035   0.043    8577  0.0134
                 * IWTS10_1
 804             RX       0      34      89     134     161     198     298     333
 805             RY    2160    2158    2154    2152    2154    2156    2158    2160
                 *
                 *
1                                          HEC-1 INPUT
PAGE 23

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


 806             KK   IW390
```

```
807          KO       0       0     0.0       1      22
808          BA  0.3110
809          LG   0.349    0.25   5.071   0.258   5.221
810          UC   0.929   1.173
             * Natural Time-Area Relation
811          UA       0       3       5       8      12      20      43      75      90      96
812          UA     100
             *
             *

813          KK   IW392
814          KO       0       0     0.0       1      22
815          BA  1.1135
816          LG    0.35    0.15   7.459   0.103   8.347
817          UC   0.504   0.280
             * Natural Time-Area Relation
818          UA       0       3       5       8      12      20      43      75      90      96
819          UA     100
             *
             *
             * Combines IW392, IW390 and R390A

820          KK  CIW390
821          KO       0       0     0.0       0      22
822          HC       3
             *
             *
             * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR160 (HWY74 CULVERT)

823          KK  SSR160
824          RS       1    STOR       0
825          SQ       0     762    1440    2640    3840    5040
826          SA     0.0    0.04    0.36    3.17    4.85    6.69
827          SE    2033    2036    2038    2040    2042    2044
             *
             *
             * ROUTE UPDATED 4/14/4

828          KK  RIW390
829          KO       0       0     0.0       0      22
830          RS       3    FLOW     0.0     0.0
831          RC   0.043   0.035   0.043   11626  0.0101
             * IWTS20_1
832          RX       0      21      75      93     234     280     301     391
833          RY    1952    1949    1948    1946    1945    1948  1948.5    1952
             *
             *
```

1
PAGE 24

HEC-1 INPUT

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

834          KK   IW388
835          KO       0       0     0.0       1      22
836          BA  1.2256
837          LG   0.337   0.156   8.775   0.061   9.239
838          UC   1.133   0.900
             * Natural Time-Area Relation
839          UA       0       3       5       8      12      20      43      75      90      96
840          UA     100
             *
             *
             * ------------------------------------------------------------------------------
             * ----------------------------BEGIN 03-14-2005 -------------------------------
             * ------------------------------------------------------------------------------

841          KK  C388_1
842          HC       2
             * * changed combine from 3 to 2
             * *** Combines IW388, RIW390 and RIW389 * ***

843          KK  CIW388
844          KO       0       0     0.0       0      22
```

```
845          HC       2
             *
             * ---------------------------------------------------------------------------
             * ---------------------------- END 03-14-2005 -------------------------------
             * ---------------------------------------------------------------------------
             *
             * ROUTE UPDATED 4/14/4

846          KK  RIW388
847          KO       0       0     0.0       0      22
848          RS       2    FLOW     0.0     0.0
849          RC    0.04    0.04    0.04    7726  0.0094
             * IWTS20_2
850          RX       0      79     201     242     303     327     346     350
851          RY    1940    1938    1936  1933.5    1936  1936.5    1940    1940
             *
             *

852          KK   IW357
853          KO       0       0     0.0       1      22
854          BA  0.7456
855          LG    0.33   0.156   8.059   0.083  11.106
856          UC   0.700   0.705
             * Natural Time-Area Relation
857          UA       0       3       5       8      12      20      43      75      90      96
858          UA     100
             *
             *
             * Combines IW357 and RIW388
1                                          HEC-1 INPUT
PAGE 25

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


859          KK  CIW357
860          KO       0       0     0.0       0      22
861          HC       2
             *
             *
             * This split was determined using FLO-2D.  The model is titled "WEST" and
             * details and documentation about the model are contained in the Appendix D 5.4.

862          KK    D357
863          DT   DO357
864          DI       0     258     530     766     975    1140    1340    1556    1789    1937
865          DI    2120    2357    2514    2736    2992    3255    3301    3472    3610    5000
866          DQ       0      56     144     211     291     357     437     383     451     502
867          DQ     532     601     633     705     737     793     854     930     947    1312
             *
             *
             * ROUTE UPDATED 4/14/4

868          KK  RIW357
869          KO       0       0     0.0       0      22
870          RS       9    FLOW     0.0     0.0
871          RC    0.04    0.04    0.04   16693  0.0079
             * IWTS30_1 modified
872          RX       0      50      96     135     160     177     190     206
873          RY    1881    1879    1878    1876    1876    1878    1879    1881
             *
             *
             *
             * ************************************************************************ *
             * ********************** END OF IONA WASH REGION 2 *************************** *
             * ************************************************************************ *
             *
             *
             *
             * ************************************************************************ *
             * ******************** BEGINNING OF IONA WASH REGION 3 ********************** *
             * ************************************************************************ *
             *
             *
```

```
                    *
874                 KK   IW358
875                 KO       0       0     0.0       1      22
876                 BA  0.1641
877                 LG    0.35    0.25   4.638   0.333     5.0
878                 UC   0.625   0.863
                    * Natural Time-Area Relation
879                 UA       0       3       5       8      12      20      43      75      90      96
880                 UA     100
                    *
                    *
1                                                HEC-1 INPUT
PAGE 26

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


881                 KK   IW353
882                 KO       0       0     0.0       1      22
883                 BA  2.8030
884                 LG    0.35    0.15   7.596   0.098   5.084
885                 UC   0.996   0.710
                    * Natural Time-Area Relation
886                 UA       0       3       5       8      12      20      43      75      90      96
887                 UA     100
                    *
                    *
                    * Combines IW353, IW358, RIW357 and RIW359

888                 KK  CIW353
889                 KO       0       0     0.0       0      22
                    * Hard Coded
890                 HC       4   15.28
                    *
                    *
                    * ROUTE UPDATED 4/14/4

891                 KK  RIW353
892                 KO       0       0     0.0       0      22
893                 RS       2    FLOW     0.0     0.0
894                 RC    0.04    0.04    0.04    7496  0.0053
                    * IWTS40_1
895                 RX       0     147     714     840     930    1073    1087    1417
896                 RY    1708    1704    1700    1696    1696    1700    1704    1708
                    *
                    *

897                 KK   IW350
898                 KO       0       0     0.0       1      22
899                 BA  2.1750
900                 LG    0.35   0.171   6.789   0.135     5.0
901                 UC   1.308   1.150
                    * Natural Time-Area Relation
902                 UA       0       3       5       8      12      20      43      75      90      96
903                 UA     100
                    *
                    *
                    * Combines IW350 and RIW353

904                 KK  CIW350
905                 KO       0       0     0.0       0      22
906                 HC       2
                    *
                    *
                    *
                    * ************************************************************************ *
                    * ********************** END OF IONA WASH REGION 3 ***************************** *
                    * ************************************************************************ *
                    *
                    *
                    *
                    * ************************************************************************ *
                    * ****************** BEGINNING OF IONA WASH REGION 4 ************************** *
```

```
                    * ************************************************************************ *
                    *
                                                HEC-1 INPUT
PAGE 27

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

 907                KK   IW312
 908                KO       0       0     0.0       1      22
 909                BA  0.5682
 910                LG   0.344   0.139   9.923   0.042    6.86
 911                UC   1.004   1.172
                    * Natural Time-Area Relation
 912                UA       0       3       5       8      12      20      43      75      90      96
 913                UA     100
                    *
                    *
                    * Railroad Diversion: Main path to CIW363, Diversion to CIW365
                    * From Structure RR170, See Appendix D.5 for analysis

 914                KK    D312
 915                KO       0       0     0.0       0      22
 916                DT   DO312
 917                DI       0      14      60     116     168     200     240     288     503     650
 918                DQ       0       0       0       0       0       0       0      41     243     386
                    *
                    *
                    * ROUTE UPDATED 4/14/4

 919                KK  RIW312
 920                KO       0       0     0.0       0      22
 921                RS       1    FLOW     0.0     0.0
 922                RC    0.04    0.04    0.04    8292  0.0096
                    * TSR375
 923                RX       0      43      62      75     137     142     237     278
 924                RY    1788    1782    1780    1778    1776    1778    1780    1786
                    *
                    *

 925                KK   IW365
 926                KO       0       0     0.0       1      22
 927                BA  0.4728
 928                LG   0.345    0.13    10.1   0.037   6.579
 929                UC   1.000   1.285
                    * Natural Time-Area Relation
 930                UA       0       3       5       8      12      20      43      75      90      96
 931                UA     100
                    *
                    *

 932                KK    D312
 933                KO       0       0     0.0       0      22
 934                DR   DO312
                    *
                    *
                    * ROUTE UPDATED 4/14/4
1
                                                HEC-1 INPUT
PAGE 28

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

 935                KK   RD312
 936                KO       0       0     0.0       0      22
 937                RS       1    FLOW     0.0     0.0
 938                RC   0.043   0.035   0.043    1034  0.0077
                    * WITS130
 939                RX       0     400     456     575     620     650     660     682
 940                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
                    * Combines RD312 and IW365
```

```
941          KK  CIW365
942          KO       0       0     0.0       0      22
             * Hard Coded
943          HC       2    0.74
             *
             *
             * Railroad Diversion: Main path to CIW363, Diversion to CIW367
             * From Structure RR190 and RR200, See Appendix D.5 for analysis

944          KK    D365
945          KO       0       0     0.0       0      22
946          DT   DO365
947          DI       0     237     281     435     753    1178    1712
948          DQ       0       0       0     141     443     865    1386
             *
             *
             * ROUTE UPDATED 4/14/4

949          KK  RIW365
950          KO       0       0     0.0       0      22
951          RS       5    FLOW     0.0     0.0
952          RC    0.04    0.04    0.04    7351  0.0089
             * IWTS30_1
953          RX       0      50      96     135     160     177     190     206
954          RY    1880    1879    1878    1876    1876    1878    1879    1880
             *
             *

955          KK   IW367
956          KO       0       0     0.0       1      22
957          BA  0.0511
958          LG   0.324    0.13    10.1   0.037  12.895
959          UC   0.338   0.337
             * Natural Time-Area Relation
960          UA       0       3       5       8      12      20      43      75      90      96
961          UA     100
             *
             *
             *
             * Railroad Diversion Recovery: Outflow from structure RR190
```



```
                                        HEC-1 INPUT

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


962          KK    D365
963          KO       0       0     0.0       0      22
964          DR   DO365
             *
             *
             * ROUTE UPDATED 4/14/4

965          KK   RD365
966          KO       0       0     0.0       0      22
967          RS       2    FLOW     0.0     0.0
968          RC   0.043   0.035   0.043    1700  0.0106
             * WITS130
969          RX       0     400     456     575     620     650     660     682
970          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
             *
             *
             * Combines RD365 and IW367

971          KK  CIW367
972          KO       0       0     0.0       0      22
             * Hard Coded
973          HC       2    0.43
             *
             *

974          KK   IW369
975          KO       0       0     0.0       1      22
976          BA  0.7949
```

```
977          LG   0.348   0.142   9.869   0.044   5.514
978          UC   1.175   1.340
             * Natural Time-Area Relation
979          UA       0       3       5       8      12      20      43      75      90      96
980          UA     100
             *
             *
             * Railroad Diversion: Main path to CIW363, Diversion to CIW368
             * From Structure RR240, See Appendix D.5 for analysis

981          KK    D369
982          KO       0       0     0.0       0      22
983          DT   DO369
984          DI       0      30     102     162     191     237     290     353     424
985          DQ       0       0       0       0      17      51      98     155     220
             *
             *
             * Combines CIW367 and D369

986          KK   C363*
987          KO       0       0     0.0       0      22
             * Hard Coded
988          HC       2    0.72
             *
             *
             * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 30

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

989          KK  RIW369
990          KO       0       0     0.0       0      22
991          RS       4    FLOW     0.0     0.0
992          RC    0.04    0.04    0.04    6797  0.0087
             * TSR375
993          RX       0      43      62      75     137     142     237     278
994          RY    1788    1782    1780    1778    1776    1778    1780    1786
             *
             *

995          KK    D357
996          DR   DO357
             *
             *
             * Route updated 04-15-04

997          KK   RD357
998          KO       0       0     0.0       0      22
999          RS       2    FLOW     0.0     0.0
1000         RC    0.04    0.04    0.04    2791  0.0079
             * IWTS30_1
1001         RX       0      50      96     135     160     177     190     206
1002         RY    1880    1879    1878    1876    1876    1878    1879    1880
             *
             * ---------------------------------------------------------------------------
             * ---------------------------- BEGIN 03-14-2005 ------------------------------
             * ---------------------------------------------------------------------------
             *
             *
             *

1003         KK   IW363
1004         KO       0       0     0.0       1      22
1005         BA  0.6277
1006         LG   0.328    0.15   9.339   0.055  11.655
1007         UC   0.529   0.396
             * Natural Time-Area Relation
1008         UA       0       3       5       8      12      20      43      75      90      96
1009         UA     100
             *

1010         KK  C363_2
```

```
1011        HC       2
            *
            * *** Combine changed from 5 to 4 * ***
            * Combines CIW312, IW363, RIW365, RIW369 and RD357

1012        KK  CIW363
1013        KO       0       0     0.0       0      22
            * Hard Coded
1014        HC       4    4.26
            *
            * ---------------------------------------------------------------------------
            * ---------------------------- END 03-14-2005 ------------------------------
            * ---------------------------------------------------------------------------
            *
            *
            * This split was determined using FLO-2D.  The model is titled "WEST" and
            * details and documentation about the model are contained in the Appendix D 5.4.
1                                        HEC-1 INPUT
PAGE 31

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


1015        KK    D363
1016        DT   DO363
1017        DI       0     272     484     655     755     921    1023    1091    1257    1358
1018        DI    1372    1413    1452    3000
1019        DQ       0      79     107     129     165     251     326     355     399     410
1020        DQ     429     448     460     950
            *
            * ROUTE UPDATED 4/14/4

1021        KK  RIW363
1022        KO       0       0     0.0       0      22
1023        RS       4    FLOW     0.0     0.0
1024        RC    0.04    0.04    0.04   11127  0.0077
            * IWTS30_1
1025        RX       0      50      96     135     160     177     190     206
1026        RY    1880    1879    1878    1876    1876    1878    1879    1880
            *
            *
            * ************************************************************************ *
            * ************************* END OF IONA WASH REGION 4 ************************ *
            * ************************************************************************ *
            *
            *
            *
            * ************************************************************************ *
            * ******************** BEGINNING OF IONA WASH REGION 6 AND 7 ***************** *
            * ************************************************************************ *
            *
            *

1027        KK   IW368
1028        KO       0       0     0.0       1      22
1029        BA  0.2906
1030        LG   0.344    0.25     4.0   0.477   6.907
1031        UC   0.754   0.702
            * Natural Time-Area Relation
1032        UA       0       3       5       8      12      20      43      75      90      96
1033        UA     100
            *
            *
            * Railroad Diversion Recovery: Outflow from structure RR240

1034        KK    D369
1035        KO       0       0     0.0       0      22
1036        DR   DO369
            *
            *
            * ROUTE UPDATED 4/14/4
1                                        HEC-1 INPUT
PAGE 32
```

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

1037          KK   RD369
1038          KO       0       0     0.0       0      22
1039          RS       1    FLOW     0.0     0.0
1040          RC   0.043   0.035   0.043    1927  0.0052
              * WITS130
1041          RX       0     400     456     575     620     650     660     682
1042          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD369 and IW368

1043          KK  CIW368
1044          KO       0       0     0.0       0      22
              * Hard Coded
1045          HC       2    0.79
              *
              *
              * ROUTE UPDATED 4/14/4

1046          KK  RIW368
1047          KO       0       0     0.0       0      22
1048          RS       6    FLOW     0.0     0.0
1049          RC    0.04    0.04    0.04   11648  0.0103
              * TSR375
1050          RX       0      43      62      75     137     142     237     278
1051          RY    1788    1782    1780    1778    1776    1778    1780    1786
              *
              *

1052          KK   IW360
1053          KO       0       0     0.0       1      22
1054          BA  0.8306
1055          LG   0.319    0.25   4.127    0.48  13.031
1056          UC   0.654   0.467
              * Urban Time-Area Relation
1057          UA       0       5      16      30      65      77      84      90      94      97
1058          UA     100
              *
              *
              * Combines IW360 and RIW368

1059          KK  CIW360
1060          KO       0       0     0.0       0      22
1061          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1062          KK  RIW360
1063          KO       0       0     0.0       0      22
1064          RS       1    FLOW     0.0     0.0
1065          RC   0.043   0.035   0.043    2593  0.0079
              * TWTS20
1066          RX       0     386     410     430     450     460     471     928
```



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

1067          RY    1965    1964    1962    1960    1960    1962    1964    1965
              *
              *

1068          KK   IW397
1069          KO       0       0     0.0       1      22
1070          BA  4.8148
1071          LG    0.35   0.381    6.39   0.159  39.233
1072          UC   1.213   0.693
              * Natural Time-Area Relation
1073          UA       0       3       5       8      12      20      43      75      90      96
1074          UA     100
```

```
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1075             KK  RIW397
1076             KO       0       0     0.0       0      22
1077             RS       8    FLOW     0.0     0.0
1078             RC   0.043   0.035   0.043   21294  0.0207
                 * TWTS10
1079             RX       0      36     145     269     364     451     605     684
1080             RY    2345    2343  2333.5    2334  2334.5    2341  2343.5    2345
                 *
                 *

1081             KK   IW395
1082             KO       0       0     0.0       1      22
1083             BA  7.8617
1084             LG    0.35   0.374   6.125   0.175  27.313
1085             UC   1.296   0.594
                 * Natural Time-Area Relation
1086             UA       0       3       5       8      12      20      43      75      90      96
1087             UA     100
                 *
                 *
                 * Combines IW395 and RIW367

1088             KK  CIW395
1089             KO       0       0     0.0       0      22
1090             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1091             KK  RIW395
1092             KO       0       0     0.0       0      22
1093             RS       4    FLOW     0.0     0.0
1094             RC   0.043   0.035   0.043   13324  0.0168
                 * TWTS10
1095             RX       0      36     145     269     364     451     605     684
1096             RY    2345    2343  2333.5    2334  2334.5    2341  2343.5    2345
                 *
                 *
1                                                HEC-1 INPUT
PAGE 34

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


1097             KK   IW387
1098             KO       0       0     0.0       1      22
1099             BA  1.3508
1100             LG    0.35    0.25   5.656   0.213    7.45
1101             UC   0.892   0.576
                 * Natural Time-Area Relation
1102             UA       0       3       5       8      12      20      43      75      90      96
1103             UA     100
                 *
                 *
                 * ROUTE UPDATE 4/14/4

1104             KK  RIW387
1105             KO       0       0     0.0       0      22
1106             RS       1    FLOW     0.0     0.0
1107             RC   0.043   0.035   0.043    1005   0.014
                 * TWTS20
1108             RX       0     386     410     430     450     460     471     928
1109             RY    1965    1964    1962    1960    1960    1962    1964    1965
                 *
                 *

1110             KK   IW396
1111             KO       0       0     0.0       1      22
1112             BA  0.5862
1113             LG    0.35    0.25   4.518   0.336   5.192
```

```
1114          UC   1.017   1.142
              * Natural Time-Area Relation
1115          UA       0       3       5       8      12      20      43      75      90      96
1116          UA     100
              *
              * Combines IW396, RIW387 and RIW395

1117          KK  CIW396
1118          KO       0       0     0.0       0      22
1119          HC       3
              *
              *
              * ROUTE UPDATED 4/14/4

1120          KK  RIW396
1121          KO       0       0     0.0       0      22
1122          RS       2    FLOW     0.0     0.0
1123          RC    .043    .035    .043    6512  0.0142
              * TWTS10
1124          RX       0      36     145     269     364     451     605     684
1125          RY    2345    2343  2333.5    2334  2334.5    2341  2343.5    2345
              *
              *
1                                          HEC-1 INPUT
PAGE 35

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


1126          KK   IW380
1127          KO       0       0     0.0       1      22
1128          BA  0.4998
1129          LG    0.35    0.15   7.161   0.111    5.14
1130          UC   0.533   0.581
              * Natural Time-Area Relation
1131          UA       0       3       5       8      12      20      43      75      90      96
1132          UA     100
              *
              *
              * Combines IW380 and RIW396

1133          KK  CIW380
1134          KO       0       0     0.0       0      22
1135          HC       2
              *
              *
              * modified slightly from the 100-yr 24-hr model, 13000/2080.1 ordinate added

1136          KK  SSR310
1137          KO       0       0     0.0       1      22
1138          RS       1    STOR       0
1139          SQ       0    1620    2850    4080    4200   10040   13000
1140          SE  2067.7    2072    2074    2076  2076.2    2080  2080.1
1141          SA       0     .55    3.06    3.07
1142          SE  2067.7    2072    2076    2080
              *
              *
              * SR74 Diversion: Main path to CIW370, Diversion to CTW462
              * Structure SR310: See Appendix D.5 for analysis
              * Modified slightly from 100-yr 24-hr model, 12000/4200 ordinate added.

1143          KK    D380
1144          KO       0       0     0.0       0      22
1145          DT   DO380
1146          DI       0    1620    2850    4080    4200    4638    5078    5740    6541    7348
1147          DI    8154    9013   10040   12000
1148          DQ       0       0       0       0       0      78     338     700    1141    1648
1149          DQ    2214    2833    3500    4200
              *
              *
              * ROUTE UPDATED 4/14/4

1150          KK  RIW380
1151          KO       0       0     0.0       0      22
```

```
1152          RS      11    FLOW     0.0     0.0
1153          RC   0.043   0.035   0.043   16914   0.013
              * TWTS20-modified X-sect
1154          RX       0     772     796     822     836     846     857    1771
1155          RY    1966    1964    1962    1960    1960    1962    1964    1966
              *
              *
1                                          HEC-1 INPUT
PAGE 36

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


1156          KK   IW370
1157          KO       0       0     0.0       1      22
1158          BA  0.8794
1159          LG   0.337    0.25   4.616   0.331   7.933
1160          UC   0.917   1.082
              * Natural Time-Area Relation
1161          UA       0       3       5       8      12      20      43      75      90      96
1162          UA     100
              *
              *
              * Combines IW370 and CIW380

1163          KK  CIW370
1164          KO       0       0     0.0       0      22
              * Hard Coded
1165          HC       2   12.02
              *
              *
              * ROUTE UPDATED 4/14/4

1166          KK  RIW370
1167          KO       0       0     0.0       0      22
1168          RS       3    FLOW     0.0     0.0
1169          RC   0.043   0.035   0.043    7248  0.0095
              * TWTS20-modified X-sect
1170          RX       0     772     796     822     836     846     857    1771
1171          RY    1966    1964    1962    1960    1960    1962    1964    1966
              *
              *

1172          KK   IW349
1173          KO       0       0     0.0       1      22
1174          BA  0.2498
1175          LG   0.315    0.25   4.804   0.321  13.991
1176          UC   0.596   0.763
              * Natural Time-Area Relation
1177          UA       0       3       5       8      12      20      43      75      90      96
1178          UA     100
              *
              *
              * Combines IW349 and RIW370

1179          KK  CIW349
1180          KO       0       0     0.0       0      22
1181          HC       2
              *
              *
              * Diversion Out: Flow split FS1
              * Flow Split Diversion: Main path to IW352, Diversion to IW356
              * 62% of flow is diverted to IW356
1                                          HEC-1 INPUT
PAGE 37

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


1182          KK    D349
1183          KO       0       0     0.0       0      22
1184          DT   DO349
1185          DI       0   10000
1186          DQ       0    6200
```

```
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1187             KK  RIW349
1188             KO       0       0     0.0       0      22
1189             RS       2    FLOW     0.0     0.0
1190             RC   0.043   0.035   0.043    4331  0.0161
                 * TWTS20
1191             RX       0     386     410     430     450     460     471     928
1192             RY    1965    1964    1962    1960    1960    1962    1964    1965
                 *
                 *

1193             KK   IW352
1194             KO       0       0     0.0       1      22
1195             BA  0.0960
1196             LG    0.35    0.25   4.511   0.364     5.0
1197             UC   0.383   0.401
                 * Natural Time-Area Relation
1198             UA       0       3       5       8      12      20      43      75      90      96
1199             UA     100
                 *
                 *
                 * Combines IW352, RIW349 and RIW368

1200             KK  CIW352
1201             KO       0       0     0.0       0      22
                 * Hard Coded
1202             HC       3    6.39
                 *
                 *

1203             KK   IW356
1204             KO       0       0     0.0       1      22
1205             BA  0.2861
1206             LG    0.35    0.15   7.178   0.115     5.0
1207             UC   0.533   0.594
                 * Natural Time-Area Relation
1208             UA       0       3       5       8      12      20      43      75      90      96
1209             UA     100
                 *
                 *
                 * Diversion Recovery: Flow split FS1
1                                          HEC-1 INPUT
PAGE 38

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


1210             KK    D349
1211             KO       0       0     0.0       0      22
1212             DR   DO349
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1213             KK   RD349
1214             KO       0       0     0.0       0      22
1215             RS       1    FLOW     0.0     0.0
1216             RC   0.043   0.035   0.043    4244  0.0111
                 * TWTS20 modified
1217             RX       0     386     410     430     450     460     471     928
1218             RY    1966    1964    1962    1960    1960    1962    1964    1966
                 *
                 *
                 * Combines RD349, IW356 and CIW352

1219             KK  CIW356
1220             KO       0       0     0.0       0      22
                 * Hard Coded
1221             HC       3   14.28
                 *
                 *
```

```
                 * ROUTE UPDATED 4/14/4

1222             KK  RIW356
1223             KO       0       0     0.0       0      22
1224             RS       1    FLOW     0.0     0.0
1225             RC     .04     .04     .04    2643  0.0086
                 * TSR371 modified
1226             RX       0     142     486     525     651     770    1000    1518
1227             RY    1901    1900    1899    1897    1896    1899  1899.5    1901
                 *
                 *

1228             KK   IW354
1229             KO       0       0     0.0       1      22
1230             BA  0.3605
1231             LG    0.35    0.15   8.086   0.083     5.0
1232             UC   0.508   0.468
                 * Natural Time-Area Relation
1233             UA       0       3       5       8      12      20      43      75      90      96
1234             UA     100
                 *
                 *
                 * Combines IW354 and RIW356

1235             KK  CIW354
1236             KO       0       0     0.0       0      22
1237             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 39

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


1238             KK  RIW354
1239             KO       0       0     0.0       0      22
1240             RS       2    FLOW     0.0     0.0
1241             RC     .04     .04     .04    4523  0.0072
                 * TWTS20 modified
1242             RX       0     142     486     525     651     770    1000    1518
1243             RY    1901    1900    1899    1897    1896    1899  1899.5    1901
                 *
                 *

1244             KK   IW362
1245             KO       0       0     0.0       1      22
1246             BA  0.1793
1247             LG    0.35    0.15   7.223   0.113     5.0
1248             UC   0.488   0.550
                 * Natural Time-Area Relation
1249             UA       0       3       5       8      12      20      43      75      90      96
1250             UA     100
                 *
                 *
                 * Combines IW362 and RIW354

1251             KK  CIW362
1252             KO       0       0     0.0       0      22
1253             HC       2
                 *
                 *
                 * ************************************************************************ *
                 * ********************** END OF IONA WASH REGION 6 AND 7 ******************** *
                 * ************************************************************************ *
                 *
                 *
                 *
                 *
                 *
                 *
                 *
                 * ************************************************************************ *
```

```
                 * ******************* BEGINNING OF IONA WASH REGION 8 ********************** *
                 * ************************************************************************** *
                 *
                 *

1254             KK   IW372
1255             KO       0       0     0.0       1      22
1256             BA  0.3175
1257             LG   0.335    0.25   5.001   0.281   9.357
1258             UC   0.442   0.382
                 * Natural Time-Area Relation
1259             UA       0       3       5       8      12      20      43      75      90      96
1260             UA     100
                 *
                 *
                 * Railroad Diversion: Main path to CIW364, Diversion to CIW375
                 * From Structure RR340, RR350 and RR360, See Appendix D.5 for analysis
1                                                HEC-1 INPUT
PAGE 40

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


1261             KK    D372
1262             KO       0       0     0.0       0      22
1263             DT   DO372
1264             DI       0     122     685    1662    3069    4920
1265             DQ       0       0     428    1375    2752    4548
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1266             KK  RIW372
1267             KO       0       0     0.0       0      22
1268             RS       9    FLOW     0.0     0.0
1269             RC    0.04    0.04    0.04   15367  0.0096
                 * TSR375
1270             RX       0      43      62      75     137     142     237     278
1271             RY    1788    1782    1780    1778    1776    1778    1780    1786
                 *
                 *

1272             KK   IW375
1273             KO       0       0     0.0       1      22
1274             BA  0.6582
1275             LG   0.348    0.15   7.035   0.121   5.528
1276             UC   1.296   1.685
                 * Natural Time-Area Relation
1277             UA       0       3       5       8      12      20      43      75      90      96
1278             UA     100
                 *
                 *

1279             KK    D372
1280             KO       0       0     0.0       0      22
1281             DR   DO372
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1282             KK   RD372
1283             KO       0       0     0.0       0      22
1284             RS       1    FLOW     0.0     0.0
1285             RC   0.043   0.035   0.043    1828  0.0033
                 * WITS130
1286             RX       0     400     456     575     620     650     660     682
1287             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * Combines RD372 and IW375

1288             KK  CIW375
1289             KO       0       0     0.0       0      22
                 * Hard Coded
```

```
1290          HC       2    0.85
              *
              *
              * ROUTE UPDATED 4/14/4
1
PAGE 41                                   HEC-1 INPUT

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


1291          KK  RIW375
1292          KO       0       0     0.0       0      22
1293          RS       8    FLOW     0.0     0.0
1294          RC    0.04    0.04    0.04   13330  0.0099
              * TSR375
1295          RX       0      43      62      75     137     142     237     278
1296          RY    1788    1782    1780    1778    1776    1778    1780    1786
              *
              *

1297          KK   IW364
1298          KO       0       0     0.0       1      22
1299          BA  1.1451
1300          LG   0.342    0.14   9.898   0.043   7.515
1301          UC   0.667   0.475
              * Natural Time-Area Relation
1302          UA       0       3       5       8      12      20      43      75      90      96
1303          UA     100
              *
              *
              * Combines IW364, RIW375 and RIW372

1304          KK  CIW364
1305          KO       0       0     0.0       0      22
              * Hard Coded
1306          HC       3    2.13
              *
              *
              * Combines CIW364 and CIW362

1307          KK   C364*
1308          KO       0       0     0.0       0      22
1309          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1310          KK  RIW364
1311          KO       0       0     0.0       0      22
1312          RS       7    FLOW     0.0     0.0
1313          RC     .04     .04     .04   10402  0.0074
              * TSR371 modified
1314          RX       0     142     486     525     651     770    1000    1508
1315          RY    1901    1900    1899    1897    1896    1899  1899.5    1901
              *
              *
              *
              * ************************************************************************ *
              * ******************** END OF IONA WASH REGION 8 ************************** *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ******************* BEGINNING OF IONA WASH REGION 9 ********************** *
              * ************************************************************************ *
              *
              *
1
GE 42                                     HEC-1 INPUT

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

```
1316          KK   IW342
1317          KO       0       0     0.0       1      22
1318          BA  0.3535
1319          LG   0.341   0.268   4.586   0.346     5.0
1320          UC   0.800   0.957
              * Natural Time-Area Relation
1321          UA       0       3       5       8      12      20      43      75      90      96
1322          UA     100
              *
              *
              * Combines IW342 and RIW364

1323          KK  CIW342
1324          KO       0       0     0.0       0      22
1325          HC       2
              *
              *

1326          KK   IW351
1327          KO       0       0     0.0       1      22
1328          BA  0.3163
1329          LG   0.338    0.25   4.426   0.393   7.899
1330          UC   0.596   0.615
              * Natural Time-Area Relation
1331          UA       0       3       5       8      12      20      43      75      90      96
1332          UA     100
              *
              *

1333          KK    D363
1334          DR   DO363
              *
              *
              * Route updated 04-15-04

1335          KK   RD363
1336          KO       0       0     0.0       0      22
1337          RS       1    FLOW     0.0     0.0
1338          RC    0.04    0.04    0.04    3820  0.0094
              * IWTS30_1
1339          RX       0      50      96     135     160     177     190     206
1340          RY    1880    1879    1878    1876    1876    1878    1879    1880
              *
              *
              * Combines IW351 and RD363

1341          KK  CIW351
1342          KO       0       0     0.0       0      22
              * Hard Coded
1343          HC       2    1.67
              *
              *
              * This split was determined using FLO-2D.  The model is titled "WEST" and
              * details and documentation about the model are contained in the Appendix D 5.4.
```

1
PAGE 43

HEC-1 INPUT

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


1344          KK    D351
1345          DT   DO351
1346          DI       0      68      77      98     126     159     200     243     275     351
1347          DI     391     440     509     577     634     700     739    2000
1348          DQ       0      56      62      80     106     130     158     195     220     293
1349          DQ     331     370     434     499     547     602     635    1719
              *
              *
              * ROUTE UPDATED 4/14/4

1350          KK  RIW351
1351          KO       0       0     0.0       0      22
1352          RS      10    FLOW     0.0     0.0
1353          RC    0.04    0.04    0.04   24311  0.0076
```

```
                 * IWTS30_2
1354             RX       0     6.5      13      57     102     104     109     110
1355             RY    1728  1725.5    1724    1723    1724  1725.5    1727    1728
                 *
                 *

1356             KK   IW346
1357             KO       0       0     0.0       1      22
1358             BA  3.4432
1359             LG   0.349   0.253   5.005   0.281     5.0
1360             UC   1.271   0.866
                 * Natural Time-Area Relation
1361             UA       0       3       5       8      12      20      43      75      90      96
1362             UA     100
                 *
                 *
                 * ------------------------------------------------------------------------------
                 * ----------------------- 03-11-2005 ----------------------------------------
                 * ------------------------------------------------------------------------------
                 *
                 * *** Concentration point C346_1 was added
                 * Combines IW346 and RIW351

1363             KK  C346_1
1364             KO       0       0     0.0       0      22
                 * Hard Coded
1365             HC       2    3.68
                 *
                 *
                 * Combines IW346, RIW351 and CIW342

1366             KK  CIW346
1367             KO       0       0     0.0       0      22
                 * Hard Coded
1368             HC       2   20.98
                 *
                 * ------------------------------------------------------------------------------
                 * ------------------------------------------------------------------------------
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 44

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


1369             KK  RIW346
1370             KO       0       0     0.0       0      22
1371             RS       2    FLOW     0.0     0.0
1372             RC    0.04    0.04    0.04    3706  0.0046
                 * WITS30
1373             RX       0     216     426     525     583     771    1184    1444
1374             RY  1465.5    1463    1462    1456    1462    1463    1464    1465
                 *
                 *

1375             KK   IW338
1376             KO       0       0     0.0       1      22
1377             BA  0.3390
1378             LG   0.336    0.25    5.78   0.198   6.399
1379             UC   0.529   0.428
                 * Natural Time-Area Relation
1380             UA       0       3       5       8      12      20      43      75      90      96
1381             UA     100
                 *
                 *
                 * Combines IW338 and RIW346

1382             KK  CIW338
1383             KO       0       0     0.0       0      22
1384             HC       2
                 *
                 *
```

```
                 * ROUTE UPDATED 4/14/4

1385             KK  RIW338
1386             KO       0       0     0.0       0      22
1387             RS       5    FLOW     0.0     0.0
1388             RC    0.04    0.04    0.04    7227  0.0055
                 * TWTS30
1389             RX       0     219     753     855     880    1110    1198    1380
1390             RY    1580    1575    1573    1568    1572    1575    1577    1580
                 *
                 *

1391             KK   IW326
1392             KO       0       0     0.0       1      22
1393             BA  0.3330
1394             LG    0.35    0.25   5.374   0.235     5.0
1395             UC   0.538   0.459
                 * Natural Time-Area Relation
1396             UA       0       3       5       8      12      20      43      75      90      96
1397             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE 45

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


1398             KK  RIW326
1399             KO       0       0     0.0       0      22
1400             RS       5    FLOW     0.0     0.0
1401             RC    0.04    0.04    0.04    8066  0.0057
                 * TWTS30
1402             RX       0     219     753     855     880    1110    1198    1380
1403             RY    1580    1575    1573    1568    1572    1575    1577    1580
                 *
                 *

1404             KK   IW334
1405             KO       0       0     0.0       1      22
1406             BA  1.2571
1407             LG   0.341   0.246   5.789   0.196   5.325
1408             UC   0.808   0.503
                 * Natural Time-Area Relation
1409             UA       0       3       5       8      12      20      43      75      90      96
1410             UA     100
                 *
                 *
                 * Combines IW334, RIW326 and RIW338

1411             KK  CIW334
1412             KO       0       0     0.0       0      22
1413             HC       3
                 *
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP030

1414             KK  SCP030
1415             KO       0       0     0.0       0      22
1416             RS       1    STOR       0
1417             SQ       0     430    2188    4690    7755   11296
1418             SE    1547    1548    1550    1552    1554    1556
1419             SA      .3      .7     2.1       6      10    16.1
1420             SE    1547    1548    1550    1552    1554    1556
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1421             KK  RIW334
1422             KO       0       0     0.0       0      22
1423             RS      12    FLOW     0.0     0.0
1424             RC    0.04    0.04    0.04   21501  0.0067
                 * TWTS40
```

```
1425          RX       0     250     290     491     543     606     920    1197
1426          RY    1535    1531    1529  1528.5    1524  1530.5    1531  1534.5
              *
              *
1                                          HEC-1 INPUT
PAGE 46

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


1427          KK   IW302
1428          KO       0       0     0.0       1      22
1429          BA  1.3264
1430          LG   0.314   0.246   4.918   0.296   12.35
1431          UC   1.367   1.261
              * Natural Time-Area Relation
1432          UA       0       3       5       8      12      20      43      75      90      96
1433          UA     100
              *
              *
              * Combines IW302 and RIW334

1434          KK  CIW302
1435          KO       0       0     0.0       0      22
1436          HC       2
              *
              *
              *
              * D302 diverts all flow out to C302*.  See "README" note below for details.

1437          KK    D302
1438          DT   DO302
1439          DI       0  100000
1440          DQ       0  100000
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ***README**README**README**README**README**README**README**README**README*** *
              * ***README**README**README**README**README**README**README**README**README*** *
              * ************************************************************************ *
              * ************************************************************************ *
              * ***** This diversion takes 100% of the flow (100%; all of it!).  The   ***** *
              * ***** reason for this diversion is to make the logic of the HEC-1      ***** *
              * ***** model.  The problem arises with the fact that there is an area   ***** *
              * ***** where flow is split from CIW357 to CIW353 and CIW363.  Then      ***** *
              * ***** flow is split from CIW363 to CIW361 and CIW351.  Then Flow is    ***** *
              * ***** split from CIW351 to CIW361 and CIW346.  With the complexity of  ***** *
              * ***** this model that creates a problem.  A basic schematic is as      ***** *
              * ***** follows:                                                         ***** *
              * *****                                                                  ***** *
              * *****                          CIW357                                  ***** *
              * *****                           |    |                                 ***** *
              * *****                          |     |                                 ***** *
              * *****                     CIW353      CIW363                           ***** *
              * *****                                 |    |                           ***** *
              * *****                                 |     |                          ***** *
              * *****                                 |     CIW351                     ***** *
              * *****                                 |      |   |                     ***** *
              * *****                                  |    |     |                    ***** *
              * *****                                   |  |       |                   ***** *
              * *****                                   CIW361    CIW346               ***** *
              * *****                                                                  ***** *
              * *****                                                                  ***** *
              * ***** The complexity comes in the fact that a lot is happening between ***** *
              * ***** CIW351 and CIW361.  To compensate, all the flow is diverted out  ***** *
              * ***** after CIW302, the next combine card is then hard coded to not    ***** *
              * ***** include any of the diverted area, and then the flow is brought   ***** *
              * ***** back into the model at C302*, which is hard coded to account for ***** *
              * ***** all the area diverted out at CIW302.                             ***** *
              * ************************************************************************ *
              * ************************************************************************ *
              * ***README**README**README**README**README**README**README**README**README*** *
              * ***README**README**README**README**README**README**README**README**README*** *
              * ************************************************************************ *
```

```
                    * ************************************************************************ *
                    *
                    *
                    *
1                                                HEC-1 INPUT
PAGE 47

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


1441                KK   IW361
1442                KO       0       0     0.0       1      22
1443                BA  0.3547
1444                LG    0.35   0.244   6.061    0.18     5.0
1445                UC   0.733   0.876
                    * Natural Time-Area Relation
1446                UA       0       3       5       8      12      20      43      75      90      96
1447                UA     100
                    *
                    * ---------------------------------------------------------------------------
                    * -------------------------- Begin 03-14-2005 -------------------------------
                    * ---------------------------------------------------------------------------
                    *

1448                KK  C361_1
1449                HC       3   3.322
                    *
                    * Recovers diversion from CIW351

1450                KK    D351
1451                DR   DO351
                    *
                    *
                    * Route updated 04-15-2004

1452                KK   RD351
1453                KO       0       0     0.0       0      22
1454                RS       3    FLOW     0.0     0.0
1455                RC    0.04    0.04    0.04    6586  0.0076
                    * IWTS30_1
1456                RX       0      50      96     135     160     177     190     206
1457                RY    1880    1879    1878    1876    1876    1878    1879    1880
                    *
                    *
                    * changed to combine 2
                    * *** Combines RIW363, CIW302, IW361 and RD351

1458                KK  CIW361
1459                KO       0       0     0.0       0      22
                    * Hard Coded
1460                HC       2    4.76
                    *
                    * ---------------------------------------------------------------------------
                    * ------------------------- END 03-14-2005 ------------------------------------
                    * ---------------------------------------------------------------------------
                    *
                    * ROUTE UPDATED 4/14/4

1461                KK  RIW361
1462                KO       0       0     0.0       0      22
1463                RS      12    FLOW     0.0     0.0
1464                RC    0.04    0.04    0.04   17152  0.0064
                    * IWTS30_1 modified
1465                RX       0      50      96     135     160     177     190     206
1                                                HEC-1 INPUT
PAGE 48

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

1466                RY    1881    1879    1878    1876    1876    1878    1879    1881
                    *
                    *
                    *
                    * ************************************************************************ *
```

```
                 * ********************** END OF IONA WASH REGION 9 ************************* *
                 * ******************************************************************************* *
                 *
                 *
                 *
                 *
                 * ******************************************************************************* *
                 * ************************ BEGINNING OF IONA WASH REGION 5 ******************** *
                 * ******************************************************************************* *
                 *
                 *
                 * Combines RIW361 and CIW350

1467             KK   C350*
1468             KO       0       0     0.0       0      22
1469             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1470             KK   R350*
1471             KO       0       0     0.0       0      22
1472             RS       3    FLOW     0.0     0.0
1473             RC    0.04    0.04    0.04    8310   0.006
                 * IWTS40_1
1474             RX       0     147     714     840     930    1073    1087    1417
1475             RY    1708    1704    1700    1696    1696    1700    1704    1708
                 *
                 *

1476             KK   IW330
1477             KO       0       0     0.0       1      22
1478             BA  1.0371
1479             LG    0.35    0.25   5.701   0.208     5.0
1480             UC   1.008   0.895
                 * Natural Time-Area Relation
1481             UA       0       3       5       8      12      20      43      75      90      96
1482             UA     100
                 *
                 *
                 * Combines IW330 and R350*

1483             KK  CIW330
1484             KO       0       0     0.0       0      22
1485             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 49

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


1486             KK  RIW330
1487             KO       0       0     0.0       0      22
1488             RS       1    FLOW     0.0     0.0
1489             RC    0.04    0.04    0.04    2771  0.0051
                 * IWTS40_2
1490             RX       0     699    1005    1035    1093    1320    1673    1838
1491             RY    1560    1556    1554    1550    1554    1555    1556    1560
                 *
                 *

1492             KK   IW322
1493             KO       0       0     0.0       1      22
1494             BA  1.8922
1495             LG    0.35    0.15   8.622   0.067     5.0
1496             UC   1.371   1.453
                 * Natural Time-Area Relation
1497             UA       0       3       5       8      12      20      43      75      90      96
1498             UA     100
                 *
                 *
```

```
                 * Combines IW322 and RIW330

1499             KK  CIW322
1500             KO       0       0     0.0       0      22
1501             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1502             KK  RIW322
1503             KO       0       0     0.0       0      22
1504             RS      12    FLOW     0.0     0.0
1505             RC    0.04    0.04    0.04   12886  0.0054
                 * IWTS40_2
1506             RX       0     699    1005    1035    1093    1320    1673    1838
1507             RY    1560    1556    1554    1550    1554    1555    1556    1560
                 *
                 *

1508             KK   IW318
1509             KO       0       0     0.0       1      22
1510             BA  0.5831
1511             LG   0.338    0.15   8.597    0.07   7.372
1512             UC   0.863   0.924
                 * Natural Time-Area Relation
1513             UA       0       3       5       8      12      20      43      75      90      96
1514             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 50

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

1515             KK  RIW318
1516             KO       0       0     0.0       0      22
1517             RS      15    FLOW     0.0     0.0
1518             RC    0.04    0.04    0.04   17570  0.0049
                 * TSR294
1519             RX       0     100     359     491     535     639     723     950
1520             RY    1600    1598    1596    1592    1592    1594    1596    1600
                 *
                 *

1521             KK   IW310
1522             KO       0       0     0.0       1      22
1523             BA  1.1671
1524             LG   0.331   0.148   8.143   0.081   6.392
1525             UC   1.117   1.090
                 * Natural Time-Area Relation
1526             UA       0       3       5       8      12      20      43      75      90      96
1527             UA     100
                 *
                 *
                 * Combines IW310 and RIW18

1528             KK  CIW310
1529             KO       0       0     0.0       0      22
1530             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1531             KK  RIW310
1532             KO       0       0     0.0       0      22
1533             RS       1    FLOW     0.0     0.0
1534             RC    0.04    0.04    0.04     860   0.002
                 * IWTS50
1535             RX       0      52     199     216     234     295     611     700
1536             RY    1536    1535    1534    1530    1529    1534    1536    1536
                 *
                 *
```

```
1537          KK   IW314
1538          KO       0       0     0.0       1      22
1539          BA  2.1754
1540          LG   0.346   0.244   6.048    0.18   5.233
1541          UC   1.342   1.113
              * Natural Time-Area Relation
1542          UA       0       3       5       8      12      20      43      75      90      96
1543          UA     100
              *
              *
              * Combines IW314, RIW310 and RIW322
1                                          HEC-1 INPUT
PAGE 51

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


1544          KK  CIW314
1545          KO       0       0     0.0       0      22
1546          HC       3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP020

1547          KK  SCP020
1548          KO       0       0     0.0       0      22
1549          RS       1    STOR       0
1550          SQ       0      94     662    1502    2002   12536
1551          SE  1547.3    1548    1550    1552    1553    1554
1552          SA     5.5    13.6    17.9      67    99.2   118.3
1553          SE    1546  1547.3    1548    1550    1552    1553
              *
              *
              * ROUTE UPDATED 4/14/4

1554          KK  RIW314
1555          KO       0       0     0.0       0      22
1556          RS      15    FLOW     0.0     0.0
1557          RC    0.04    0.04    0.04   20068  0.0051
              * IWTS50- modified
1558          RX       0     104     251     268     286     347     663     821
1559          RY    1538    1535    1534    1530    1529    1534    1536    1538
              *
              *

1560          KK   IW300
1561          KO       0       0     0.0       1      22
1562          BA  1.4799
1563          LG   0.333   0.243   5.605   0.213   5.544
1564          UC   1.288   1.059
              * Natural Time-Area Relation
1565          UA       0       3       5       8      12      20      43      75      90      96
1566          UA     100
              *
              *
              * Combines IW300 and RIW314

1567          KK  CIW300
1568          KO       0       0     0.0       0      22
1569          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

1570          KK  RIW300
1571          KO       0       0     0.0       0      22
1572          RS       3    FLOW     0.0     0.0
1573          RC    0.04    0.04    0.04    6125  0.0043
              * TWTS50
1574          RX       0     465     648     750     760     892    1337    1400
1575          RY  1417.5    1417  1414.5    1409    1409    1415  1415.5    1417
              *
              *
```

```
                    * ****************************************************************************
                    * ***************************** Begin Edits 03-09-2005 **************************
                    * ****************************************************************************
                    *
1                                                HEC-1 INPUT
PAGE 52

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


1576                KK   SV202
1577                KO       0       0     0.0       1      22
1578                BA  1.4364
1579                LG   0.331   0.153   6.942   0.125   6.369
1580                UC   1.017   0.777
                    * Natural Time-Area Relation
1581                UA       0       3       5       8      12      20      43      75      90      96
1582                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

1583                KK  RSV202
1584                KO       0       0     0.0       0      22
1585                RS       5    FLOW     0.0     0.0
1586                RC    0.04    0.04    0.04    6617  0.0044
                    * TWTS50
1587                RX       0     465     648     750     760     892    1337    1400
1588                RY  1417.5    1417  1414.5    1409    1409    1415  1415.5    1417
                    *
                    *
                    * Combines RSV202 and RIW300

1589                KK  C300_1
1590                KO       0       0     0.0       0      22
1591                HC       2
                    *
                    * Recovers all the flow from CIW302
                    * No route needed because the flow is routed through RCIW302

1592                KK    D302
1593                DR   DO302
                    *
                    * 03-09-2005 changed to combine C300_1 and D0302
                    * 03-09-2005 Hard coding was changed from 54.72 to 56.16 (54.72 + 1.44 [SV202])
                    * *** Combines RIW300 and RD302***

1594                KK   C302*
1595                KO       0       0     0.0       0      22
                    * Hard Coded
1596                HC       2   56.16
                    *
                    * ****************************************************************************
                    * ***************************** End Edits 03-09-2005 ****************************
                    * ****************************************************************************
                    *
                    * ROUTE UPDATED 4/14/4

1597                KK  RIW302
1598                KO       0       0     0.0       0      22
1599                RS       3    FLOW     0.0     0.0
1600                RC    0.04    0.04    0.04    5720  0.0044
                    * TWTS50
1601                RX       0     465     648     750     760     892    1337    1400
1                                                HEC-1 INPUT
PAGE 53

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

1602                RY  1417.5    1417  1414.5    1409    1409    1415  1415.5    1417
                    *
                    *
                    *
                    * ************************************************************************ *
```

```
                 * ************************ END OF IONA WASH REGION 5 ************************** *
                 * ************************************************************************** *
                 *
                 *
                 *
                 *
                 * ************************************************************************** *
                 * ************************************************************************** *
                 * ********************** END OF IONA WASH SUBAREA ***************************** *
                 * ************************************************************************** *
                 * ************************************************************************** *
                 *
                 *
                 *
                 *
                 * ************************************************************************** *
                 * ************************************************************************** *
                 * *********************BEGINNING OF SUN VALLEY SUBAREA ************************ *
                 * ************************************************************************** *
                 * ************************************************************************** *
                 *
                 *
                 *
                 * ************************************************************************** *
                 * ******************* BEGINNING OF SUN VALLEY REGION 1 ************************ *
                 * ************************************************************************** *
                 *
                 *

1603             KK  SV264A
1604             KO       0       0     0.0       1      22
1605             BA  2.8974
1606             LG   0.343   0.149   7.303   0.111   6.272
1607             UC   1.358   1.048
                 * Natural Time-Area Relation
1608             UA       0       3       5       8      12      20      43      75      90      96
1609             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1610             KK   R264A
1611             KO       0       0     0.0       0      22
1612             RS       1    FLOW     0.0     0.0
1613             RC    0.04    0.04    0.04    4042   0.003
                 * TSR264A
1614             RX       0      22      32     353     813    1098    1469    1965
1615             RY    1578    1572    1570    1570    1572    1574    1576    1578
                 *
                 *
1                                                HEC-1 INPUT
PAGE 54

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


1616             KK   SV264
1617             KO       0       0     0.0       1      22
1618             BA  1.9188
1619             LG    0.35    0.15   7.529   0.101   5.012
1620             UC   1.121   0.861
                 * Natural Time-Area Relation
1621             UA       0       3       5       8      12      20      43      75      90      96
1622             UA     100
                 *
                 *
                 * Combines SV264 and R264A

1623             KK  CSV264
1624             KO       0       0     0.0       0      22
1625             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04
```

```
1626          KK  RSV264
1627          KO       0       0     0.0       0      22
1628          RS       1    FLOW     0.0     0.0
1629          RC    0.04    0.04    0.04    4870  0.0029
              * TSR264A
1630          RX       0      22      32     353     813    1098    1469    1965
1631          RY    1578    1572    1570    1570    1572    1574    1576    1578
              *
              *

1632          KK   SV298
1633          KO       0       0     0.0       1      22
1634          BA  1.0752
1635          LG   0.342    0.15   8.237   0.081   6.631
1636          UC   1.242   1.529
              * Natural Time-Area Relation
1637          UA       0       3       5       8      12      20      43      75      90      96
1638          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1639          KK  RSV298
1640          KO       0       0     0.0       0      22
1641          RS      14    FLOW     0.0     0.0
1642          RC    0.04    0.04    0.04   15129   0.006
              * TSR294
1643          RX       0     100     359     491     535     639     723     950
1644          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
              *
1                                          HEC-1 INPUT
PAGE 55

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


1645          KK   SV286
1646          KO       0       0     0.0       1      22
1647          BA  1.5379
1648          LG    0.35   0.155   6.951   0.125     5.0
1649          UC   0.992   0.747
              * Natural Time-Area Relation
1650          UA       0       3       5       8      12      20      43      75      90      96
1651          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1652          KK  RSV286
1653          KO       0       0     0.0       0      22
1654          RS       1    FLOW     0.0     0.0
1655          RC    0.04    0.04    0.04    3544   0.006
              * TSR294
1656          RX       0     100     359     491     535     639     723     950
1657          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
              *

1658          KK   SV284
1659          KO       0       0     0.0       1      22
1660          BA  0.2833
1661          LG   0.335    0.15   7.759   0.098   8.058
1662          UC   0.521   0.423
              * Natural Time-Area Relation
1663          UA       0       3       5       8      12      20      43      75      90      96
1664          UA     100
              *
              *
              * Combines SV284 and RSV286

1665          KK  CSV284
1666          KO       0       0     0.0       0      22
```

```
1667          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

1668          KK  RSV284
1669          KO       0       0     0.0       0      22
1670          RS       4    FLOW     0.0     0.0
1671          RC    0.04    0.04    0.04   12013  0.0064
              * TSR294
1672          RX       0     100     359     491     535     639     723     950
1673          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
              * ------------------------------------------------------------------------
              * ------------------------- BEGIN 03-17-2005 ------------------------------
              * ------------------------------------------------------------------------
              *
1                                          HEC-1 INPUT
PAGE 56

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


1674          KK   SV272
1675          KO       0       0     0.0       1      22
1676          BA  1.2009
1677          LG   0.345   0.202   6.541   0.152   5.693
1678          UC   0.883   0.650
              * Natural Time-Area Relation
1679          UA       0       3       5       8      12      20      43      75      90      96
1680          UA     100
              *

1681          KK  C272_2
1682          HC       2
              *

1683          KK   SV290
1684          KO       0       0     0.0       1      22
1685          BA   0.814
1686          LG   0.349   0.229   6.207   0.172   5.276
1687          UC   0.800   0.632
              * Natural Time-Area Relation
1688          UA       0       3       5       8      12      20      43      75      90      96
1689          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1690          KK  RSV290
1691          KO       0       0     0.0       0      22
1692          RS       5    FLOW     0.0     0.0
1693          RC    0.04    0.04    0.04   13500  0.0063
              * TSR294
1694          RX       0     100     359     491     535     639     723     950
1695          RY    1600    1598    1596    1592    1592    1594    1596    1600
              *
              * *** Changed from combining 3 to 2 * ***
              * Combines SV272, RSV290 and RSV284

1696          KK  CSV272
1697          KO       0       0     0.0       0      22
1698          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

1699          KK  RSV272
1700          KO       0       0     0.0       0      22
1701          RS       1    FLOW     0.0     0.0
1702          RC    0.04    0.04    0.04    1628   0.006
              * SVTS50_1
1703          RX       0      48     170     175     182     198     264     338
1704          RY    1530    1528    1526    1520    1520    1526    1528    1530
```

```
                    *
                    *
                                                HEC-1 INPUT
PAGE 57

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


1705                KK   SV276
1706                KO       0       0     0.0       1      22
1707                BA  0.9232
1708                LG   0.347    0.15   7.339   0.109   5.499
1709                UC   0.900   0.812
                    * Natural Time-Area Relation
1710                UA       0       3       5       8      12      20      43      75      90      96
1711                UA     100
                    *

1712                KK  C276_2
1713                HC       2
                    *

1714                KK   SV294
1715                KO       0       0     0.0       1      22
1716                BA  2.6465
1717                LG   0.349    0.15   8.572   0.068   5.247
1718                UC   1.192   0.928
                    * Natural Time-Area Relation
1719                UA       0       3       5       8      12      20      43      75      90      96
1720                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

1721                KK  RSV294
1722                KO       0       0     0.0       0      22
1723                RS       5    FLOW     0.0     0.0
1724                RC    0.04    0.04    0.04   14316  0.0063
                    * TSR294
1725                RX       0     100     359     491     535     639     723     950
1726                RY    1600    1598    1596    1592    1592    1594    1596    1600
                    *
                    *
                    * *** commented out for the delineation of 3 West * ***
                    * KKC276_1
                    * HC     2
                    *
                    * * combine was changed from combing 3 to 2 * *
                    * *** Combines SV276, RSV294 and RSV272 * ***

1727                KK  CSV276
1728                KO       0       0     0.0       0      22
1729                HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/04
1                                               HEC-1 INPUT
PAGE 58

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


1730                KK  RSV276
1731                KO       0       0     0.0       0      22
1732                RS       1    FLOW     0.0     0.0
1733                RC    0.04    0.04    0.04    1016  0.0042
                    * SVTS50_1
1734                RX       0      48     170     175     182     198     264     338
1735                RY  1530.5    1528    1526    1520    1520    1526    1528  1530.5
                    *
                    *

1736                KK   SV280
1737                KO       0       0     0.0       1      22
```

```
1738          BA  1.0563
1739          LG   0.336    0.15   8.395   0.075   6.985
1740          UC   1.021   0.971
              * Natural Time-Area Relation
1741          UA       0       3       5       8      12      20      43      75      90      96
1742          UA     100
              *

1743          KK  C280_1
1744          HC       2
              *
              * *** changed from combining 3 to 2 * ***
              * Combines SV280, RSV276 and RSV298

1745          KK  CSV280
1746          KO       0       0     0.0       0      22
1747          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

1748          KK  RSV280
1749          KO       0       0     0.0       0      22
1750          RS       3    FLOW     0.0     0.0
1751          RC    0.04    0.04    0.04    6288  0.0032
              * SVTS50_1 modified
1752          RX       0      48     170     175     182     198     264     338
1753          RY    1531    1528    1526    1520    1520    1526    1528    1531
              *
              *

1754          KK   SV260
1755          KO       0       0     0.0       1      22
1756          BA  1.2628
1757          LG   0.342   0.229   6.158   0.173   4.892
1758          UC   0.846   0.515
              * Natural Time-Area Relation
1759          UA       0       3       5       8      12      20      43      75      90      96
1760          UA     100
              *
1                                          HEC-1 INPUT
PAGE 59

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


1761          KK  C260_1
1762          HC       2
              *

1763          KK   SV268
1764          KO       0       0     0.0       1      22
1765          BA  1.3755
1766          LG   0.336   0.146   8.834    0.06   5.262
1767          UC   0.871   0.570
              * Natural Time-Area Relation
1768          UA       0       3       5       8      12      20      43      75      90      96
1769          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1770          KK  RSV268
1771          KO       0       0     0.0       0      22
1772          RS       1    FLOW     0.0     0.0
1773          RC    0.04    0.04    0.04    2946  0.0014
              * SVTS50_1
1774          RX       0      48     170     175     182     198     264     338
1775          RY    1530    1528    1526    1520    1520    1526    1528    1530
              *
              * *** changed from combining 4 to 3 * ***
              * Combines SV260, RSV268, RSV280 and RSV264

1776          KK  CSV260
```

```
1777          KO       0       0     0.0       0      22
1778          HC       3
              *
              * ---------------------------------------------------------------------------
              * -------------------------- END 03-17-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP010
              * modified slightly from 100-yr 24-hr model, ordinate 6000/1546.3 added

1779          KK  SCP010
1780          KO       3       0     0.0       0      22
1781          RS       1    STOR       0
1782          SQ       0      68     808    1963    3413    5110    5291    6000
1783          SE  1537.5    1538    1540    1542    1544    1546  1546.2  1546.3
1784          SA     9.9    12.5    26.5    59.2   117.5     184   191.9     192
1785          SE    1537    1538    1540    1542    1544    1546  1546.2  1546.3
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 60

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


1786          KK  RSV260
1787          KO       0       0     0.0       0      22
1788          RS       5    FLOW     0.0     0.0
1789          RC    0.04    0.04    0.04    6946  0.0049
              * SVTS50_1 modified
1790          RX       0      48     170     175     182     198     264     338
1791          RY    1531    1528    1526    1520    1520    1526    1528    1531
              *
              *

1792          KK   SV220
1793          KO       0       0     0.0       1      22
1794          BA  0.6003
1795          LG    0.32   0.195   6.363   0.159   4.564
1796          UC   0.533   0.305
              * Natural Time-Area Relation
1797          UA       0       3       5       8      12      20      43      75      90      96
1798          UA     100
              *
              *
              * ************************************************************************ *
              * ******************* END OF SUN VALLEY REGION 1 ***************************** *
              * ************************************************************************ *
              *
              *

1799          KK   SV252
1800          KO       0       0     0.0       1      22
1801          BA  0.1472
1802          LG   0.338    0.25   3.861   0.499   8.516
1803          UC   0.475   0.645
              * Natural Time-Area Relation
1804          UA       0       3       5       8      12      20      43      75      90      96
1805          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1806          KK  RSV252
1807          KO       0       0     0.0       0      22
1808          RS       5    FLOW     0.0     0.0
1809          RC    0.04    0.04    0.04    9744  0.0094
              * SVTS10
1810          RX       0     201     393     430     468     473     500     525
1811          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *
```

```
1812          KK   SV254
1813          KO       0       0     0.0       1      22
1814          BA  0.0971
1815          LG    0.35    0.25    3.91   0.491     5.0
1816          UC   0.333   0.369
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE 61

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

1817          UA       0       3       5       8      12      20      43      75      90      96
1818          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1819          KK  RSV254
1820          KO       0       0     0.0       0      22
1821          RS       6    FLOW     0.0     0.0
1822          RC    0.04    0.04    0.04   10928    0.01
              * SVTS10
1823          RX       0     201     393     430     468     473     500     525
1824          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1825          KK   SV219
1826          KO       0       0     0.0       1      22
1827          BA  0.8971
1828          LG    0.33   0.185   6.542   0.148   4.721
1829          UC   0.683   0.497
              * Natural Time-Area Relation
1830          UA       0       3       5       8      12      20      43      75      90      96
1831          UA     100
              *
              *
              * Combines SV219, RSV254 and RSV252

1832          KK  CSV219
1833          KO       0       0     0.0       0      22
1834          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

1835          KK  RSV219
1836          KO       0       0     0.0       0      22
1837          RS       3    FLOW     0.0     0.0
1838          RC    0.04    0.04    0.04    5058  0.0042
              * SVTS10
1839          RX       0     201     393     430     468     473     500     525
1840          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1841          KK   SV251
1842          KO       0       0     0.0       1      22
1843          BA  0.2674
1844          LG    0.35    0.25   3.914    0.49     5.0
1845          UC   0.504   0.546
              * Natural Time-Area Relation
1846          UA       0       3       5       8      12      20      43      75      90      96
1847          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 62

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

1848          KK  RSV251
```

```
1849          KO       0       0     0.0       0      22
1850          RS       8    FLOW     0.0     0.0
1851          RC    0.04    0.04    0.04   12592  0.0102
              * SVTS10
1852          RX       0     201     393     430     468     473     500     525
1853          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1854          KK   SV250
1855          KO       0       0     0.0       1      22
1856          BA  0.1212
1857          LG    0.35    0.25    4.57   0.348     5.0
1858          UC   0.417   0.527
              * Natural Time-Area Relation
1859          UA       0       3       5       8      12      20      43      75      90      96
1860          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1861          KK  RSV250
1862          KO       0       0     0.0       0      22
1863          RS       8    FLOW     0.0     0.0
1864          RC    0.04    0.04    0.04   11765  0.0108
              * SVTS10
1865          RX       0     201     393     430     468     473     500     525
1866          RY    1542    1541    1540  1538.5    1540    1540    1541    1542
              *
              *

1867          KK   SV218
1868          KO       0       0     0.0       1      22
1869          BA  1.2862
1870          LG   0.345   0.246   5.599   0.219   4.927
1871          UC   0.838   0.598
              * Natural Time-Area Relation
1872          UA       0       3       5       8      12      20      43      75      90      96
1873          UA     100
              *
              *
              * Combines SV218, RSV250, RSV251 and RSV219

1874          KK  CSV218
1875          KO       0       0     0.0       0      22
1876          HC       4
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 63

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


1877          KK  RSV218
1878          KO       0       0     0.0       0      22
1879          RS       2    FLOW     0.0     0.0
1880          RC    0.04    0.04    0.04    4698  0.0039
              * SVTS10 modified
1881          RX       0     201     393     430     468     473     500     525
1882          RY    1543    1541    1540  1538.5    1540    1540    1541    1543
              *
              *

1883          KK   SV248
1884          KO       0       0     0.0       1      22
1885          BA  1.2718
1886          LG    0.35   0.357   5.288    0.22  10.629
1887          UC   0.871   0.894
              * Natural Time-Area Relation
1888          UA       0       3       5       8      12      20      43      75      90      96
1889          UA     100
              *
```

```
                 *
                 * Diversion Out: Flow split FS2
                 * Flow Split Diversion: Main path to SV244, Diversion to SV246
                 * 47% of flow is diverted to SV246

1890             KK    D248
1891             KO       0       0     0.0       0      22
1892             DT   DO248
1893             DI       0   10000
1894             DQ       0    4700
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1895             KK  RSV248
1896             KO       0       0     0.0       0      22
1897             RS       3    FLOW     0.0     0.0
1898             RC    0.06   0.035    0.06    7772  0.0137
                 * TSR248
1899             RX       0     362     515     618     765     800     820     841
1900             RY    1664    1662    1662    1660    1660    1662    1663    1664
                 *
                 *

1901             KK   SV244
1902             KO       0       0     0.0       1      22
1903             BA  0.9461
1904             LG    0.35   0.311   6.728   0.137   3.116
1905             UC   1.125   1.317
                 * Natural Time-Area Relation
1906             UA       0       3       5       8      12      20      43      75      90      96
1907             UA     100
                 *
                 *
                 * Combines SV244 and RSV248
                                                HEC-1 INPUT
PAGE 64

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

1908             KK  CSV244
1909             KO       0       0     0.0       0      22
                 * Hard Coded
1910             HC       2    1.62
                 *
                 *

1911             KK   SV246
1912             KO       0       0     0.0       1      22
1913             BA  0.1567
1914             LG    0.35   0.159   7.525   0.101    4.75
1915             UC   0.371   0.399
                 * Natural Time-Area Relation
1916             UA       0       3       5       8      12      20      43      75      90      96
1917             UA     100
                 *
                 *
                 * Diversion Recovery: Flow split FS2

1918             KK    D248
1919             KO       0       0     0.0       0      22
1920             DR   DO248
                 *
                 *
                 * ROUTE UPDATED 4/14/4

1921             KK   RD248
1922             KO       0       0     0.0       0      22
1923             RS       2    FLOW     0.0     0.0
1924             RC    0.04    0.04    0.04    4588  0.0164
                 * SVTS10
1925             RX       0     201     393     430     468     473     500     525
1926             RY    1542    1541    1540  1538.5    1540    1540    1541    1542
```

```
                 *
                 *
                 * Combines RD248 and SV246

1927             KK  CSV246
1928             KO       0       0     0.0       0      22
                 * Hard Coded
1929             HC       2    0.76
                 *
                 *
                 * Combines CSV246 and CSV244

1930             KK   C216*
1931             KO       0       0     0.0       0      22
1932             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 65

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


1933             KK  RSV244
1934             KO       0       0     0.0       0      22
1935             RS       8    FLOW     0.0     0.0
1936             RC    0.04    0.04    0.04   11106  0.0095
                 * SVTS10
1937             RX       0     201     393     430     468     473     500     525
1938             RY    1542    1541    1540  1538.5    1540    1540    1541    1542
                 *
                 *

1939             KK   SV216
1940             KO       0       0     0.0       1      22
1941             BA  1.6268
1942             LG   0.348    0.25   5.555   0.222   5.678
1943             UC   0.742   0.448
                 * Natural Time-Area Relation
1944             UA       0       3       5       8      12      20      43      75      90      96
1945             UA     100
                 *
                 *
                 * Combines SV216, C216*, and RSV218

1946             KK  CSV216
1947             KO       0       0     0.0       0      22
1948             HC       3
                 *
                 *
                 * ROUTE UPDATED 4/14/04

1949             KK  RSV216
1950             KO       0       0     0.0       0      22
1951             RS       5    FLOW     0.0     0.0
1952             RC    0.04    0.04    0.04    7196  0.0043
                 * SVTS10-Modified X-sect
1953             RX       0     603     795     832     870     875     902     977
1954             RY    1544    1541    1540  1538.5    1540    1540    1541    1544
                 *
                 *
                 * ************************************************************************ *
                 * ******************* END OF SUN VALLEY REGION 2 ************************** *
                 * ************************************************************************ *
                 *
                 *
                 * ************************************************************************ *
                 * **************** BEGINNING OF SUN VALLEY REGION 3 ************************* *
                 * ************************************************************************ *
                 *
                 *
1                                          HEC-1 INPUT
PAGE 66
```

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

1955          KK   SV236
1956          KO       0       0     0.0       1      22
1957          BA  0.5856
1958          LG   0.344   0.291   4.176   0.446   4.689
1959          UC   0.525   0.419
              * Natural Time-Area Relation
1960          UA       0       3       5       8      12      20      43      75      90      96
1961          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

1962          KK  RSV236
1963          KO       0       0     0.0       0      22
1964          RS       8    FLOW     0.0     0.0
1965          RC    0.04    0.04    0.04    9734  0.0031
              * SVTS20_1
1966          RX       0     120     200     240     251     256     425     450
1967          RY    1498    1497  1496.5    1496    1492    1496    1498    1498
              *
              *

1968          KK   SV240
1969          KO       0       0     0.0       1      22
1970          BA  3.6651
1971          LG    0.35   0.365   5.199   0.235   9.424
1972          UC   0.954   0.605
              * Natural Time-Area Relation
1973          UA       0       3       5       8      12      20      43      75      90      96
1974          UA     100
              *
              *

1975          KK   SV242
1976          KO       0       0     0.0       1      22
1977          BA  0.0939
1978          LG    0.35   0.304     4.3   0.416   2.308
1979          UC   0.458   0.692
              * Natural Time-Area Relation
1980          UA       0       3       5       8      12      20      43      75      90      96
1981          UA     100
              *
              *
              * Combines SV242 and SV240

1982          KK   C242*
1983          KO       0       0     0.0       0      22
1984          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 67

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

1985          KK   R242*
1986          KO       0       0     0.0       0      22
1987          RS       9    FLOW     0.0     0.0
1988          RC    0.04    0.04    0.04   13351  0.0099
              * SVTS10 modified
1989          RX       0     201     393     430     468     473     500     525
1990          RY    1543    1541    1540  1538.5    1540    1540    1541    1543
              *
              *

1991          KK   SV214
1992          KO       0       0     0.0       1      22
1993          BA  1.8699
```

```
1994          LG   0.349   0.249   5.322   0.242   4.982
1995          UC   0.754   0.415
              * Natural Time-Area Relation
1996          UA       0       3       5       8      12      20      43      75      90      96
1997          UA     100
              *
              *
              * Combines SV214, R242*, RSV236, RSV216, SV220 and RSV260

1998          KK  CSV220
1999          KO       0       0     0.0       0      22
2000          HC       6
              *
              *
              * ROUTE UPDATED 4/14/04

2001          KK  RSV220
2002          KO       0       0     0.0       0      22
2003          RS       6    FLOW     0.0     0.0
2004          RC    0.04    0.04    0.04   10623  0.0038
              * SVTS50_2 modified
2005          RX       0     146     251     256     295     305     347     435
2006          RY    1497    1492    1490    1488    1488    1490    1492    1497
              *
              *
              * ************************************************************************ *
              * *************** END OF SUN VALLEY REGION 3 ********************************** *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * **************BEGINNING OF SUN VALLEY REGION 4***************************** *
              * ************************************************************************ *
              *
              *
                                          HEC-1 INPUT
GE 68

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


2007          KK   SV230
2008          KO       0       0     0.0       1      22
2009          BA  0.8513
2010          LG    0.35   0.264   6.169   0.163  10.472
2011          UC   0.354   0.263
              * Natural Time-Area Relation
2012          UA       0       3       5       8      12      20      43      75      90      96
2013          UA     100
              *
              *

2014          KK   SV232
2015          KO       0       0     0.0       1      22
2016          BA  3.0568
2017          LG    0.35    0.35   5.952   0.174    8.61
2018          UC   0.821   0.509
              * Natural Time-Area Relation
2019          UA       0       3       5       8      12      20      43      75      90      96
2020          UA     100
              *
              *
              *
              * Combines SV232 and SV230

2021          KK   C230*
2022          KO       0       0     0.0       0      22
2023          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

2024          KK   R230*
2025          KO       0       0     0.0       0      22
```

```
2026          RS       6    FLOW     0.0     0.0
2027          RC    0.04    0.04    0.04    8744  0.0089
              * SVTS30
2028          RX       0     237     478     580     726     839     890     941
2029          RY    1520    1519    1518    1516    1516    1518    1519    1520
              *
              *

2030          KK   SV212
2031          KO       0       0     0.0       1      22
2032          BA  4.1391
2033          LG   0.348   0.259   4.856   0.299   5.172
2034          UC   0.979   0.552
              * Natural Time-Area Relation
2035          UA       0       3       5       8      12      20      43      75      90      96
2036          UA     100
              *
              *
              * Combines SV212, R230* and RSV220
1                                          HEC-1 INPUT
PAGE 69

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


2037          KK  CSV212
2038          KO       0       0     0.0       0      22
2039          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2040          KK  RSV212
2041          KO       0       0     0.0       0      22
2042          RS       6    FLOW     0.0     0.0
2043          RC    0.04    0.04    0.04    9922   0.005
              * TSR408 modified
2044          RX       0     301     727     900    1200    1413    1590    1949
2045          RY    1371    1369    1368    1368    1368    1368    1369    1371
              *
              * ------------------------------03-09-2005-----------------------------------
              * ---------- SV202 and RSV202 were removed from this point in the model --------
              * ---------------------------------------------------------------------------
              *
              *

2046          KK   SV210
2047          KO       0       0     0.0       1      22
2048          BA  0.7184
2049          LG    0.35    0.25   5.921   0.177   9.038
2050          UC   0.313   0.216
              * Natural Time-Area Relation
2051          UA       0       3       5       8      12      20      43      75      90      96
2052          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2053          KK  RSV210
2054          KO       0       0     0.0       0      22
2055          RS      11    FLOW     0.0     0.0
2056          RC    0.04    0.04    0.04   12156  0.0071
              * SVTS40
2057          RX       0      45     175     345     357     386     559     620
2058          RY    1476  1475.5    1474    1472    1470    1472    1474    1476
              *
              *
              * *****03-09-2005 changed from combining 3 to 2: RSV210 and RSV212**************
              * ***Combines RSV210, RSV202 and RSV212***

2059          KK   C210*
2060          KO       0       0     0.0       0      22
2061          HC       2
              *
```

```
                    *
                                                HEC-1 INPUT
1
PAGE 70

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

2062          KK   SV208
2063          KO       0       0     0.0       1      22
2064          BA  1.0673
2065          LG    0.35   0.319   4.511   0.313  16.724
2066          UC   0.925   0.849
              * Natural Time-Area Relation
2067          UA       0       3       5       8      12      20      43      75      90      96
2068          UA     100
              *
              *

2069          KK   SV205
2070          KO       0       0     0.0       1      22
2071          BA  0.5021
2072          LG    0.35   0.277   6.287   0.156  10.092
2073          UC   0.300   0.256
              * Natural Time-Area Relation
2074          UA       0       3       5       8      12      20      43      75      90      96
2075          UA     100
              *
              *
              * Combines SV205 and SV208

2076          KK   C205*
2077          KO       0       0     0.0       0      22
2078          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

2079          KK   R205*
2080          KO       0       0     0.0       0      22
2081          RS       1    FLOW     0.0     0.0
2082          RC    0.04    0.04    0.04    9517  0.0084
              * SVTS40
2083          RX       0      45     175     345     357     386     559     620
2084          RY    1476  1475.5    1474    1472    1470    1472    1474    1476
              *
              *

2085          KK   SV203
2086          KO       0       0     0.0       1      22
2087          BA  0.0759
2088          LG   0.341    0.25   4.122   0.459   7.679
2089          UC   0.233   0.168
              * Natural Time-Area Relation
2090          UA       0       3       5       8      12      20      43      75      90      96
2091          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04
1                                               HEC-1 INPUT
PAGE 71

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

2092          KK  RSV203
2093          KO       0       0     0.0       0      22
2094          RS       7    FLOW     0.0     0.0
2095          RC    0.04    0.04    0.04    7461  0.0085
              * SVTS40
2096          RX       0      45     175     345     357     386     559     620
2097          RY    1476  1475.5    1474    1472    1470    1472    1474    1476
              *
              *
              * Combines RSV203, R205* and C210*
```

```
2098          KK   C200*
2099          KO       0       0     0.0       0      22
2100          HC       3
              *
              *

2101          KK   SV200
2102          KO       0       0     0.0       1      22
2103          BA  2.2917
2104          LG   0.349    0.25   4.654   0.323   5.221
2105          UC   0.954   0.482
              * Natural Time-Area Relation
2106          UA       0       3       5       8      12      20      43      75      90      96
2107          UA     100
              *
              *
              * Combines SV200, C200* and RIW302

2108          KK  CSV200
2109          KO       0       0     0.0       0      22
2110          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2111          KK  RSV200
2112          KO       0       0     0.0       0      22
2113          RS       5    FLOW     0.0     0.0
2114          RC    0.04    0.04    0.04    5688  0.0047
              * TWTS50-Modified X-sect
2115          RX       0    1860    2043    2145    2155    2287    2532    2814
2116          RY    1419    1417  1414.5    1409    1409    1415  1415.5    1419
              *
              *
              * ************************************************************************ *
              * ************************* END OF SUNVALLEY REGION 4 ************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************* END OF SUNVALLEY SUBAREA ************************ *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ********************* BEGINNING OF TRILBY WASH SUBAREA ********************* *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ********************* BEGINNING OF TRILBY WASH REGION 1 ******************** *
              * ************************************************************************ *
              *
```


HEC-1 INPUT

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

2117          KK   TW416
2118          KO       0       0     0.0       1      22
2119          BA  0.5883
2120          LG   0.148   0.254   5.761    0.25  55.508
2121          UC   0.838   0.798
              * Urban Time-Area Relation
2122          UA       0       5      16      30      65      77      84      90      94      97
```

```
2123          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2124          KK  RTW416
2125          KO       0       0     0.0       0      22
2126          RS      15    FLOW     0.0     0.0
2127          RC    0.04    0.04    0.04   18065  0.0052
              * WITS30
2128          RX       0     216     426     525     583     771    1184    1444
2129          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

2130          KK   TW420
2131          KO       0       0     0.0       1      22
2132          BA  0.8077
2133          LG    0.34    0.25   5.662   0.215   7.606
2134          UC   0.863   0.708
              * Natural Time-Area Relation
2135          UA       0       3       5       8      12      20      43      75      90      96
2136          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2137          KK  RTW420
2138          KO       0       0     0.0       0      22
2139          RS      10    FLOW     0.0     0.0
2140          RC    0.04    0.04    0.04   12733  0.0047
              * WITS30
2141          RX       0     216     426     525     583     771    1184    1444
2142          RY  1465.5    1463    1462    1456    1462    1463    1464    1465
              *
              *

2143          KK   TW412
2144          KO       0       0     0.0       1      22
2145          BA  2.0636
2146          LG   0.332   0.259   5.787   0.198  11.128
2147          UC   1.200   0.894
              * Natural Time-Area Relation
2148          UA       0       3       5       8      12      20      43      75      90      96
2149          UA     100
              *
              *
              * Combines TW412 and RTW420
1                                          HEC-1 INPUT
PAGE 73

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


2150          KK  CTW412
2151          KO       0       0     0.0       0      22
2152          HC       2
              *
              *

2153          KK   TW414
2154          KO       0       0     0.0       1      22
2155          BA  1.1684
2156          LG   0.347   0.339   5.371   0.216   8.252
2157          UC   0.338   0.186
              * Natural Time-Area Relation
2158          UA       0       3       5       8      12      20      43      75      90      96
2159          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2160          KK  RTW414
2161          KO       0       0     0.0       0      22
```

```
2162          RS       8    FLOW     0.0     0.0
2163          RC    0.04    0.04    0.04   10139  0.0074
              * TSR408
2164          RX       0     301     727     900    1200    1413    1590    1949
2165          RY    1370    1369    1368    1368    1368    1368    1369    1370
              *
              *

2166          KK   TW410
2167          KO       0       0     0.0       1      22
2168          BA  0.3079
2169          LG   0.348    0.25   4.358   0.373   5.568
2170          UC   0.775   0.907
              * Natural Time-Area Relation
2171          UA       0       3       5       8      12      20      43      75      90      96
2172          UA     100
              *
              *
              * Combines TW410 and CTW412

2173          KK  CTW410
2174          KO       0       0     0.0       0      22
2175          HC       2
              *
              *
              * Combines CTW410, CTW412, RTW416 and RSV200

2176          KK   C410*
2177          KO       0       0     0.0       0      22
2178          HC       4
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 74

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


2179          KK  RTW410
2180          KO       0       0     0.0       0      22
2181          RS       8    FLOW     0.0     0.0
2182          RC    0.04    0.04    0.04   11703  0.0047
              * TWTS50-Modified X-sect
2183          RX       0    1860    2043    2145    2155    2287    2532    2814
2184          RY    1419    1417  1414.5    1409    1409    1415  1415.5    1419
              *
              *

2185          KK   TW402
2186          KO       0       0     0.0       1      22
2187          BA  4.9143
2188          LG   0.335   0.258   5.155   0.251  10.365
2189          UC   1.367   0.742
              * Natural Time-Area Relation
2190          UA       0       3       5       8      12      20      43      75      90      96
2191          UA     100
              *
              *
              * Combines TW402, RTW410 and RTW404

2192          KK  CTW402
2193          KO       0       0     0.0       0      22
2194          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2195          KK  RTW402
2196          KO       0       0     0.0       0      22
2197          RS       1    FLOW     0.0     0.0
2198          RC   0.045   0.035   0.045    2375   0.001
              * McMicken Dam Channel
2199          RX       0      46     101     121     171     181    1421    3621
```

```
2200        RY      25      14       4       0       0       4      14      25
            *
            *
            * ************************************************************************ *
            * ********************** END OF TRILBY WASH REGION 1 ************************** *
            * ************************************************************************ *
            *
            *
            * ************************************************************************ *
            * ********************** BEGINNING OF TRILBY WASH REGION 2 ******************** *
            * ************************************************************************ *
            *
            *
1                                          HEC-1 INPUT
PAGE 75

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

2201        KK   TW448
2202        KO       0       0     0.0       1      22
2203        BA  0.3468
2204        LG    0.35   0.133  10.036   0.039   6.419
2205        UC   0.950   1.274
            * Natural Time-Area Relation
2206        UA       0       3       5       8      12      20      43      75      90      96
2207        UA     100
            *
            *
            * Railroad Diversion: Main path to CTW446, Diversion to CTW446A
            * From Structure RR410, See Appendix D.5 for analysis

2208        KK    D448
2209        KO       0       0     0.0       0      22
2210        DT   DO448
2211        DI       0      32      72     105     129     144     153     227     381
2212        DQ       0       0       0       0       0       0       0      71     222
            *
            *
            * ROUTE UPDATED 4/14/04

2213        KK  RTW448
2214        KO       0       0     0.0       0      22
2215        RS       5    FLOW     0.0     0.0
2216        RC   0.043   0.035   0.043    8794  0.0095
            * WITS10
2217        RX       0     360     460     552     627     680     876    1005
2218        RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
            *
            *

2219        KK  TW446A
2220        KO       0       0     0.0       1      22
2221        BA  0.3372
2222        LG    0.34    0.15    9.19   0.056  19.497
2223        UC   0.879    1.07
            * Natural Time-Area Relation
2224        UA       0       3       5       8      12      20      43      75      90      96
2225        UA     100
            *
            *

2226        KK    D448
2227        DR   DO448
            *
            *
            * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 76

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

2228        KK   RD448
```

```
2229          KO        0        0      0.0        0       22
2230          RS        1     FLOW      0.0      0.0
2231          RC    0.043    0.035    0.043     1591   0.0126
              * WITS130
2232          RX        0      400      456      575      620      650      660      682
2233          RY   1396.5     1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *
              * Combines TW446A and RD448

2234          KK    C446A
              * Hard Coded
2235          HC        2     0.50
              *
              *
              * Railroad Diversion: Main path to CTW446, Diversion to CTW450
              * From Structure RR420 and RR430, See Appendix D.5 for analysis

2236          KK    D446A
2237          KO        0        0      0.0        0       22
2238          DT   DO446A
2239          DI        0       98      395     2499     6509
2240          DQ        0        0        0     1845     5770
              *
              *
              * ROUTE UPDATED 4/14/4

2241          KK    R446A
2242          KO        0        0      0.0        0       22
2243          RS        4     FLOW      0.0      0.0
2244          RC    0.043    0.035    0.043     6777   0.0086
              * WITS130
2245          RX        0      400      456      575      620      650      660      682
2246          RY   1396.5     1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *

2247          KK    TW446
2248          KO        0        0      0.0        1       22
2249          BA   0.3542
2250          LG    0.326    0.142    9.967    0.041    11.25
2251          UC    0.571    0.603
              * Natural Time-Area Relation
2252          UA        0        3        5        8       12       20       43       75       90       96
2253          UA      100
              *
              *
              * Combines R446A, TW446 and RTW448
```



```
                                                HEC-1 INPUT

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


2254          KK   CTW446
2255          KO        0        0      0.0        0       22
              * Hard Coded
2256          HC        3     1.01
              *
              *
              * ROUTE UPDATED 4/14/04

2257          KK   RTW446
2258          KO        0        0      0.0        0       22
2259          RS        4     FLOW      0.0      0.0
2260          RC     0.04     0.04     0.04     6941   0.0086
              * WITS20
2261          RX        0       10      515      673      779      880     1000     1050
2262          RY     1686   1685.5     1685     1682   1684.5   1684.5   1684.5     1686
              *
              *

2263          KK    TW432
2264          KO        0        0      0.0        1       22
```

```
2265          BA  0.8620
2266          LG   0.338   0.282   5.069   0.275   4.909
2267          UC   0.808   0.701
              * Natural Time-Area Relation
2268          UA       0       3       5       8      12      20      43      75      90      96
2269          UA     100
              *
              *
              * Combines TW432 and RTW446

2270          KK  CTW432
2271          KO       0       0     0.0       0      22
2272          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2273          KK  RTW432
2274          KO       0       0     0.0       0      22
2275          RS       7    FLOW     0.0     0.0
2276          RC    0.04    0.04    0.04    8990  0.0062
              * TWTS30
2277          RX       0     219     753     855     880    1110    1198    1380
2278          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *

2279          KK   TW431
2280          KO       0       0     0.0       1      22
2281          BA  0.8732
2282          LG   0.344   0.172   7.534   0.103   5.325
2283          UC   0.825   0.714
              * Natural Time-Area Relation
2284          UA       0       3       5       8      12      20      43      75      90      96
```



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

2285          UA     100
              *
              *
              * Combines TW431 and RTW432

2286          KK  CTW431
2287          KO       0       0     0.0       0      22
2288          HC       2
              *
              *
              * ************************************************************************ *
              * ************************ END OF TRILBY WASH REGION 2 ************************ *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * ******************** BEGINNING TRILBY WASH REGION 3 ************************ *
              * ************************************************************************ *
              *
              *

2289          KK   TW459
2290          KO       0       0     0.0       1      22
2291          BA  1.0449
2292          LG    0.35   0.249   6.011   0.181   5.065
2293          UC   1.346   1.600
              * Natural Time-Area Relation
2294          UA       0       3       5       8      12      20      43      75      90      96
2295          UA     100
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR350 (HWY74 CULVERT)

2296          KK  SSR350
2297          RS       1    STOR       0
```

```
2298          SQ        0      468     1350     2550
2299          SA        0       .3     1.99     5.35
2300          SE     2058     2060     2064     2068
              *
              *
              * ROUTE UPDATED 4/14/04

2301          KK   RTW459
2302          KO        0        0      0.0        0       22
2303          RS        3     FLOW      0.0      0.0
2304          RC    0.043    0.035    0.043     6625   0.0133
              * TWTS20
2305          RX        0      386      410      430      450      460      471      928
2306          RY     1965     1964     1962     1960     1960     1962     1964     1965
              *
              *
1                                                HEC-1 INPUT
PAGE 79

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


2307          KK    TW462
2308          KO        0        0      0.0        1       22
2309          BA   0.0798
2310          LG    0.342    0.146    9.779    0.046      7.4
2311          UC    0.267    0.287
              * Natural Time-Area Relation
2312          UA        0        3        5        8       12       20       43       75       90       96
2313          UA      100
              *
              *
              * Diversion Recovery from CPIW380

2314          KK     D380
2315          DR    DO380
              *
              *
              * Route updated 04-15-2004

2316          KK    RD380
2317          KO        0        0      0.0        0       22
2318          RS        1     FLOW      0.0      0.0
2319          RC    0.043    0.035    0.043     1142   0.0035
              * TWTS20-modified X-sect
2320          RX        0      772      796      822      836      846      857     1771
2321          RY     1966     1964     1962     1960     1960     1962     1964     1966
              *
              *
              * Combines TW462 and RD380

2322          KK   CTW462
              * Hard Coded
2323          HC        2     4.05
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR330,320 (HWY74 CULVERT)

2324          KK   SSR330
2325          KO        0        0      0.0        1       22
2326          RS        1     STOR        0
2327          SQ        0      436     2000     6000
2328          SA        0      .13     2.74     2.75
2329          SE     2064     2068     2072     2073
              *
              *
              * ROUTE UPDATED 4/14/04

2330          KK   RTW462
2331          KO        0        0      0.0        0       22
2332          RS        2     FLOW      0.0      0.0
2333          RC    0.043    0.035    0.043     6520   0.0135
              * TWTS20
2334          RX        0      386      410      430      450      460      471      928
```

```
2335          RY    1965    1964    1962    1960    1960    1962    1964    1965
              *
              *
                                        HEC-1 INPUT
PAGE 80

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


2336          KK  TW450A
2337          KO       0       0     0.0       1      22
2338          BA  0.8811
2339          LG   0.348    0.15   8.086   0.083   5.465
2340          UC   0.858   0.749
              * Natural Time-Area Relation
2341          UA       0       3       5       8      12      20      43      75      90      96
2342          UA     100
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR410,420 (HWY74 CULVERT)

2343          KK  SSR410
2344          RS       1    STOR       0
2345          SQ       0      30     360    1072   10000
2346          SA       0  0.0001    0.88     3.7    3.71
2347          SE  2048.7  2049.8    2054    2058    2060
              *
              *
              * ROUTE UPDATED 4/14/4

2348          KK   R450A
2349          KO       0       0     0.0       0      22
2350          RS       2    FLOW     0.0     0.0
2351          RC   0.043   0.035   0.043    5936  0.0148
              * WITS10
2352          RX       0     360     460     552     627     680     876    1005
2353          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2354          KK  TW450B
2355          KO       0       0     0.0       1      22
2356          BA  0.4043
2357          LG   0.343    0.15   8.767   0.061   7.095
2358          UC   0.625   0.483
              * Natural Time-Area Relation
2359          UA       0       3       5       8      12      20      43      75      90      96
2360          UA     100
              *
              *
              * Combines RTW462, RTW459, R450A and TW450B

2361          KK   C450B
2362          HC       4
              *
              *
              * ROUTE UPDATED 4/14/4
1                                       HEC-1 INPUT
PAGE 81

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


2363          KK   R450B
2364          KO       0       0     0.0       0      22
2365          RS       8    FLOW     0.0     0.0
2366          RC   0.043   0.035   0.043   18811  0.0122
              * WITS10
2367          RX       0     360     460     552     627     680     876    1005
2368          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2369          KK   TW450
```

```
2370          KO       0       0     0.0       1      22
2371          BA  1.2534
2372          LG   0.349    0.15   9.593    0.05   7.331
2373          UC   1.333   1.369
              * Natural Time-Area Relation
2374          UA       0       3       5       8      12      20      43      75      90      96
2375          UA     100
              *
              *

2376          KK   D446A
2377          KO       0       0     0.0       0      22
2378          DR  DO446A
              *
              *
              *
              * ROUTE UPDATED 4/14/4

2379          KK  RD446A
2380          KO       0       0     0.0       0      22
2381          RS       1    FLOW     0.0     0.0
2382          RC   0.043   0.035   0.043    2942  0.0088
              * WITS130
2383          RX       0     400     456     575     620     650     660     682
2384          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD446A, TW450 and RD450B

2385          KK  CTW450
2386          KO       0       0     0.0       0      22
              * Hard Coded
2387          HC       3    7.62
              *
              *
              * Railroad Diversion: Main path to CTW444, Diversion to CTW452
              * From Structure RR450, See Appendix D.5 for analysis
                                          HEC-1 INPUT
PAGE 82

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


2388          KK    D450
2389          KO       0       0     0.0       0      22
2390          DT   DO450
2391          DI       0     302    2114    2937    3815
2392          DQ       0       0       0     181     351
              *
              *
              * ROUTE UPDATED 4/14/04

2393          KK  RTW450
2394          KO       0       0     0.0       0      22
2395          RS       3    FLOW     0.0     0.0
2396          RC   0.043   0.035   0.043    7274   0.009
              * WITS10
2397          RX       0     360     460     552     627     680     876    1005
2398          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2399          KK   TW444
2400          KO       0       0     0.0       1      22
2401          BA  0.3467
2402          LG   0.285   0.226   6.387   0.172  23.066
2403          UC   0.508   0.475
              * Urban Time-Area Relation
2404          UA       0       5      16      30      65      77      84      90      94      97
2405          UA     100
              *
              *
              * Combines TW444 and RTW450
```

```
2406          KK  CTW444
2407          KO       0       0     0.0       0      22
              * Hard Coded
2408          HC       2    7.29
              *
              *
              * ROUTE UPDATED 4/14/04

2409          KK  RTW444
2410          KO       0       0     0.0       0      22
2411          RS       1    FLOW     0.0     0.0
2412          RC    0.04    0.04    0.04    2739  0.0092
              * WITS20
2413          RX       0      10     515     673     779     880    1000    1050
2414          RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
              *
              *
1                                          HEC-1 INPUT
PAGE 83

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


2415          KK   TW440
2416          KO       0       0     0.0       1      22
2417          BA  0.1082
2418          LG   0.327   0.317   5.883    0.19     5.0
2419          UC   0.375   0.353
              * Natural Time-Area Relation
2420          UA       0       3       5       8      12      20      43      75      90      96
2421          UA     100
              *
              *
              * Combines TW440 and RTW444

2422          KK  CTW440
2423          KO       0       0     0.0       0      22
2424          HC       2
              *
              *
              * ************************************************************************ *
              * ********************** END OF TRILBY WASH REGION 3 ************************ *
              * ************************************************************************ *
              *
              *
              * ************************************************************************ *
              * ******************* BEGINNING OF TRILBY WASH REGION 4 ********************** *
              * ************************************************************************ *
              *
              *

2425          KK   TW460
2426          KO       0       0     0.0       1      22
2427          BA  2.3156
2428          LG    0.35    0.25    5.92   0.188   8.897
2429          UC   1.221   1.103
              * Natural Time-Area Relation
2430          UA       0       3       5       8      12      20      43      75      90      96
2431          UA     100
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR540 (HWY74 CULVERT)

2432          KK  SSR540
2433          KO       0       0     0.0       1      22
2434          RS       1    STOR       0
2435          SQ       0     168    1280    1350    1500
2436          SA       0     .03    1.25    1.26    1.27
2437          SE  2043.2    2044    2048  2049.2
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE 84
```

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

2438          KK  RTW460
2439          KO       0       0     0.0       0      22
2440          RS       2    FLOW     0.0     0.0
2441          RC   0.043   0.035   0.043    4935  0.0166
              * WITS10
2442          RX       0     360     460     552     627     680     876    1005
2443          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2444          KK   TW458
2445          KO       0       0     0.0       1      22
2446          BA  0.6697
2447          LG   0.344    0.15   8.971   0.059   6.768
2448          UC   0.688   0.507
              * Natural Time-Area Relation
2449          UA       0       3       5       8      12      20      43      75      90      96
2450          UA     100
              *
              *
              * Combines TW458 and RTW460

2451          KK  CTW458
2452          KO       0       0     0.0       0      22
2453          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2454          KK  RTW458
2455          KO       0       0     0.0       0      22
2456          RS       2    FLOW     0.0     0.0
2457          RC   0.043   0.035   0.043    3227  0.0135
              * WITS10
2458          RX       0     360     460     552     627     680     876    1005
2459          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2460          KK   TW456
2461          KO       0       0     0.0       1      22
2462          BA  0.1763
2463          LG    0.35   0.249   6.009   0.183     5.0
2464          UC   0.683   0.849
              * Natural Time-Area Relation
2465          UA       0       3       5       8      12      20      43      75      90      96
2466          UA     100
              *
              *
              * Combines TW456 and RTW458
```



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

2467          KK  CTW456
2468          KO       0       0     0.0       0      22
2469          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2470          KK  RTW456
2471          KO       0       0     0.0       0      22
2472          RS       2    FLOW     0.0     0.0
2473          RC   0.043   0.035   0.043    4821   0.012
              * WITS10
2474          RX       0     360     460     552     627     680     876    1005
2475          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
```

```
                 *
                 *
2476             KK   TW454
2477             KO       0       0     0.0       1      22
2478             BA  0.3557
2479             LG    0.35    0.25   5.253    0.25   5.103
2480             UC   1.133   1.596
                 * Natural Time-Area Relation
2481             UA       0       3       5       8      12      20      43      75      90      96
2482             UA     100
                 *
                 *
                 * Combines TW454 and RTW456

2483             KK  CTW454
2484             KO       0       0     0.0       0      22
2485             HC       2
                 *
                 *
                 * Diversion Out: Flow split FS3
                 * Flow Split Diversion: Main path to TW452, Diversion to TW485
                 * 64% of flow is diverted to TW485

2486             KK    D454
2487             KO       0       0     0.0       0      22
2488             DT   DO454
2489             DI       0   10000
2490             DQ       0    6400
                 *
                 *
                 * ROUTE UPDATED 4/14/04

2491             KK  RTW454
2492             KO       0       0     0.0       0      22
2493             RS      10    FLOW     0.0     0.0
2494             RC   0.043   0.035   0.043   13093  0.0103
                 * WITS10
2495             RX       0     360     460     552     627     680     876    1005
2496             RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                 *
                 *
```



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


2497             KK  TW452A
2498             KO       0       0     0.0       1      22
2499             BA  1.0764
2500             LG   0.349    0.15   7.883   0.088   5.286
2501             UC   0.913   0.794
                 * Natural Time-Area Relation
2502             UA       0       3       5       8      12      20      43      75      90      96
2503             UA     100
                 *
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR450,460 (HWY74 CULVERT)

2504             KK  SSR450
2505             RS       1    STOR       0
2506             SQ       0     330    1120    1850    2600
2507             SA       0     .38    1.28    3.27    5.83
2508             SE    2032    2036    2040    2044    2048
                 *
                 *
                 * ROUTE UPDATED 4/14/4

2509             KK   R452A
2510             KO       0       0     0.0       0      22
2511             RS      11    FLOW     0.0     0.0
2512             RC   0.043   0.035   0.043   16523   0.014
                 * WITS10
```

```
2513          RX       0     360     460     552     627     680     876    1005
2514          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2515          KK  TW452B
2516          KO       0       0     0.0       1      22
2517          BA  1.0314
2518          LG   0.349    0.15   7.745   0.093   5.326
2519          UC   1.142   1.084
              * Natural Time-Area Relation
2520          UA       0       3       5       8      12      20      43      75      90      96
2521          UA     100
              *
              *
              * Combines R452A, RTW454 and TW452B

2522          KK   C452B
2523          KO       0       0     0.0       0      22
              * Hard Coded
2524          HC       3    3.38
              *
              *
              * ROUTE UPDATED 4/14/4
1                                        HEC-1 INPUT
PAGE 87

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


2525          KK   R452B
2526          KO       0       0     0.0       0      22
2527          RS       4    FLOW     0.0     0.0
2528          RC   0.043   0.035   0.043    9296  0.0084
              * WITS10
2529          RX       0     360     460     552     627     680     876    1005
2530          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2531          KK   TW452
2532          KO       0       0     0.0       1      22
2533          BA  0.4617
2534          LG   0.341   0.142    9.85   0.044   7.586
2535          UC   0.925   0.970
              * Natural Time-Area Relation
2536          UA       0       3       5       8      12      20      43      75      90      96
2537          UA     100
              *
              *

2538          KK    D450
2539          KO       0       0     0.0       0      22
2540          DR   DO450
              *
              *
              *
              * ROUTE UPDATED 4/14/4

2541          KK   RD450
2542          KO       0       0     0.0       0      22
2543          RS       1    FLOW     0.0     0.0
2544          RC   0.043   0.035   0.043    2017  0.0059
              * WITS130
2545          RX       0     400     456     575     620     650     660     682
2546          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD450, TW452, R452B

2547          KK  CTW452
2548          KO       0       0     0.0       0      22
              * Hard Coded
2549          HC       3    4.52
```

```
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2550                KK  RTW452
2551                KO       0       0     0.0       0      22
2552                RS       6    FLOW     0.0     0.0
2553                RC    0.04    0.04    0.04    8151  0.0099
                    * WITS20
2554                RX       0      10     515     673     779     880    1000    1050
1                                                HEC-1 INPUT
PAGE 88

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

2555                RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
                    *
                    *

2556                KK   TW442
2557                KO       0       0     0.0       1      22
2558                BA  0.3766
2559                LG    0.32   0.227   6.986   0.123   8.387
2560                UC   0.550   0.496
                    * Urban Time-Area Relation
2561                UA       0       5      16      30      65      77      84      90      94      97
2562                UA     100
                    *
                    *
                    * Combines TW442 and RTW452

2563                KK  CTW442
2564                KO       0       0     0.0       0      22
2565                HC       2
                    *
                    *
                    * Combines CTW442 and CTW440

2566                KK   C442*
2567                KO       0       0     0.0       0      22
2568                HC       2
                    *
                    *
                    * ROUTE UPDATED 4/14/4

2569                KK   R442*
2570                KO       0       0     0.0       0      22
2571                RS       6    FLOW     0.0     0.0
2572                RC    0.04    0.04    0.04    9088  0.0071
                    * WITS20
2573                RX       0      10     515     673     779     880    1000    1050
2574                RY    1686  1685.5    1685    1682  1684.5  1684.5  1684.5    1686
                    *
                    *
                    * ************************************************************************ *
                    * **********************END OF TRILBY WASH REGION 4 ************************** *
                    * ************************************************************************ *
                    *
                    *
                    * ************************************************************************ *
                    * ****************** BEGINNING OF TRILBY WASH REGION 5 ********************** *
                    * ************************************************************************ *
                    *
                    *
1                                                HEC-1 INPUT
PAGE 89

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

2575                KK   TW434
2576                KO       0       0     0.0       1      22
2577                BA  0.5690
2578                LG   0.352   0.261   5.746   0.208   5.068
```

```
2579          UC   0.696   0.612
              * Natural Time-Area Relation
2580          UA       0       3       5       8      12      20      43      75      90      96
2581          UA     100
              *
              *
              * ---------------------------------------------------------------------------
              * --------------------------BEGIN 03-11-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              *

2582          KK  C434_1
2583          HC       2
              *
              * *** This CP was changed from combining 3 to 2 [C434_1 & CTW431]
              * Combines TW434, R442* and CTW431

2584          KK  CTW434
2585          KO       0       0     0.0       0      22
2586          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2587          KK  RTW434
2588          KO       0       0     0.0       0      22
2589          RS       5    FLOW     0.0     0.0
2590          RC    0.04    0.04    0.04    7363  0.0046
              * TWTS30
2591          RX       0     219     753     855     880    1110    1198    1380
2592          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              * *** This basin has been moved for the delineation of 2 West *** *

2593          KK   TW430
2594          KO       0       0     0.0       1      22
2595          BA  2.4917
2596          LG   0.334   0.209    6.52    0.15   5.389
2597          UC   0.800   0.391
              * Natural Time-Area Relation
2598          UA       0       3       5       8      12      20      43      75      90      96
2599          UA     100
              *

2600          KK  C430_2
2601          HC       2
              *
1                                          HEC-1 INPUT
PAGE 90

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


2602          KK   TW436
2603          KO       0       0     0.0       1      22
2604          BA  0.6744
2605          LG   0.312   0.171   7.041   0.126  14.794
2606          UC   0.600   0.446
              * Urban Time-Area Relation
2607          UA       0       5      16      30      65      77      84      90      94      97
2608          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

2609          KK  RTW436
2610          KO       0       0     0.0       0      22
2611          RS      10    FLOW     0.0     0.0
2612          RC    0.04    0.04    0.04   13449  0.0051
              * TWTS30
2613          RX       0     219     753     855     880    1110    1198    1380
2614          RY    1580    1575    1573    1568    1572    1575    1577    1580
              *
              *
```

```
                    * *** This was commented out for the delineation of 2 West *** *
                    * This concentration point was added to delineate 2 West tributary-2
                    * KKC430_1
                    * HC      2
                    *

2615                KK   TW429
2616                KO       0       0     0.0       1      22
2617                BA  0.5553
2618                LG   0.321   0.149   8.256   0.078   7.695
2619                UC   0.692   0.587
                    * Urban Time-Area Relation
2620                UA       0       5      16      30      65      77      84      90      94      97
2621                UA     100
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2622                KK  RTW429
2623                KO       0       0     0.0       0      22
2624                RS       2    FLOW     0.0     0.0
2625                RC    0.04    0.04    0.04    3703   0.001
                    * TSR429
2626                RX       0      29      86     123     195     577     756    1133
2627                RY    1552    1552    1550    1546    1546    1548    1550    1556
                    *
                    *
                    * *** This was changed from combining 4 to 3 *** *
                    * Combines RTW429, TW430, RTW436 and RTW434
1                                                HEC-1 INPUT
PAGE 91

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


2628                KK   C430*
2629                KO       0       0     0.0       0      22
2630                HC       3
                    * ------------------------------------------------------------------------------
                    * ----------------------------END 03-11-2005 ---------------------------------
                    * ------------------------------------------------------------------------------
                    *
                    *
                    * ************************************************************************ *
                    * ****************** BEGINNING OF TRILBY WASH REGION 6 ********************** *
                    * ************************************************************************ *
                    *
                    *
                    * Diversion Recovery: Flow split FS3

2631                KK    D454
2632                KO       0       0     0.0       0      22
2633                DR   DO454
                    *
                    *
                    * ROUTE UPDATED 4/14/4

2634                KK   RD454
2635                KO       0       0     0.0       0      22
2636                RS       1    FLOW     0.0     0.0
2637                RC   0.043   0.035   0.043    3342  0.0136
                    * WITS90_2
2638                RX       0      89     186     233     287     396     484     597
2639                RY    1823  1822.5    1821    1819    1817  1819.5  1820.5  1822.5
                    *
                    *

2640                KK   TW485
2641                KO       0       0     0.0       1      22
2642                BA  2.3728
2643                LG   0.348   0.251   5.786   0.199   5.349
2644                UC   1.004   0.795
                    * Natural Time-Area Relation
2645                UA       0       3       5       8      12      20      43      75      90      96
```

```
2646          UA     100
              *
              *

2647          KK  WI576A
2648          KO       0       0     0.0       1      22
2649          BA  1.2238
2650          LG   0.349    0.25    5.97   0.185   7.045
2651          UC   1.042   1.148
              * Natural Time-Area Relation
2652          UA       0       3       5       8      12      20      43      75      90      96
2653          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 92

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

2654          KK   R576A
2655          KO       0       0     0.0       0      22
2656          RS       6    FLOW     0.0     0.0
2657          RC   0.043   0.035   0.043    8797  0.0168
              * WITS10
2658          RX       0     360     460     552     627     680     876    1005
2659          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2660          KK  WI576B
2661          KO       0       0     0.0       1      22
2662          BA  0.4631
2663          LG   0.346    0.25   5.665   0.212   6.275
2664          UC   0.750   0.647
              * Natural Time-Area Relation
2665          UA       0       3       5       8      12      20      43      75      90      96
2666          UA     100
              *
              *
              * Combines WI576B and R576A

2667          KK   C576B
2668          KO       0       0     0.0       0      22
2669          HC       2
              *
              *
              * Diversion Out: Flow split FS5
              * Flow Split Diversion: Main path to TW485, Diversion to CWI576

2670          KK   D576B
2671          KO       0       0     0.0       0      22
2672          DT  DO576B
2673          DI       0   10000
2674          DQ       0    4000
              *
              *
              * ROUTE UPDATED 4/14/4

2675          KK   R576B
2676          KO       0       0     0.0       0      22
2677          RS      16    FLOW     0.0     0.0
2678          RC   0.043   0.035   0.043   18394  0.0114
              * WITS10
2679          RX       0     360     460     552     627     680     876    1005
2680          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              * Combines R76B and TW485
                                           HEC-1 INPUT
GE 93

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

```
2681          KK  C485_1
2682          KO       0       0     0.0       0      22
              * Hard Coded
2683          HC       2    3.39
              *
              *
              * Combines C485_1 And RD454

2684          KK  CTW485
2685          KO       0       0     0.0       0      22
              * Hard Coded
2686          HC       2    5.64
              *
              *
              * ROUTE UPDATED 4/14/04

2687          KK  RTW485
2688          KO       0       0     0.0       0      22
2689          RS       1    FLOW     0.0     0.0
2690          RC    0.04    0.04    0.04    1831  0.0066
              * TSR482
2691          RX       0     102     478     535     709     892    1441    1649
2692          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *

2693          KK   TW484
2694          KO       0       0     0.0       1      22
2695          BA  0.3476
2696          LG   0.301   0.249    6.01   0.191  18.414
2697          UC   0.671   0.752
              * Urban Time-Area Relation
2698          UA       0       5      16      30      65      77      84      90      94      97
2699          UA     100
              *
              *
              * Combines TW484 and RTW485

2700          KK  CTW484
2701          KO       0       0     0.0       0      22
2702          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2703          KK  RTW484
2704          KO       0       0     0.0       0      22
2705          RS       7    FLOW     0.0     0.0
2706          RC    0.04    0.04    0.04   10402  0.0085
              * TSR482
2707          RX       0     102     478     535     709     892    1441    1649
2708          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *
```



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


2709          KK   TW480
2710          KO       0       0     0.0       1      22
2711          BA  0.7538
2712          LG   0.316   0.166   7.274   0.112  11.804
2713          UC   0.663   0.511
              * Urban Time-Area Relation
2714          UA       0       5      16      30      65      77      84      90      94      97
2715          UA     100
              *
              *
              * ------------------------------------------------------------------------------
              * ------------------------ BEGIN 03-25-2005 ------------------------------------
              * ------------------------------------------------------------------------------
```

```
                * Combines RTW484 and TW480
                * KKC480_1
                * KO      0       0     0.0       0      22
                * HC      2
                *
                * ---------------------------------------------------------------------------
                * ------------------------- END 03-25-2005 ------------------------------------
                * ---------------------------------------------------------------------------
                *

2716            KK  WI580A
2717            KO       0       0     0.0       1      22
2718            BA  2.7850
2719            LG   0.349   0.216   6.359   0.161   9.712
2720            UC   1.029   0.764
                * Natural Time-Area Relation
2721            UA       0       3       5       8      12      20      43      75      90      96
2722            UA     100
                *
                *

2723            KK  WI580B
2724            KO       0       0     0.0       1      22
2725            BA  0.6285
2726            LG    0.35   0.251   5.837   0.193  14.022
2727            UC   0.625   0.668
                * Natural Time-Area Relation
2728            UA       0       3       5       8      12      20      43      75      90      96
2729            UA     100
                *
                *
                * Diversion Out: Flow split FS4
                * Flow Split Diversion: Main path to C580A, Diversion to CWI578

2730            KK   D580B
2731            KO       0       0     0.0       0      22
2732            DT  DO580B
2733            DI       0   10000
2734            DQ       0    4600
                *
                *
                * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE 95

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


2735            KK   R580B
2736            KO       0       0     0.0       0      22
2737            RS       5    FLOW     0.0     0.0
2738            RC   0.043   0.035   0.043    8181  0.0203
                * WITS10
2739            RX       0     360     460     552     627     680     876    1005
2740            RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                *
                *
                * Combines R580B and WI580A

2741            KK   C580A
2742            KO       0       0     0.0       0      22
                * Hard Coded
2743            HC       2    3.13
                *
                * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR630 (HWY74 CULVERT)

2744            KK  SSR630
2745            KM   Ordinates 1650/2.65/2023.9, 2350/2.724/2024.1 & 2500/2.725/2024.2 added
2746            RS       1    STOR       0
2747            SQ       0      84     840    1650    1710    2350    2500   10000
2748            SA       0     .04     .21    2.65    2.72   2.724   2.725    2.73
2749            SE  2015.5    2016    2020  2023.9    2024  2024.1  2024.2    2026
                *
                *
```

```
                    * ROUTE UPDATED 4/14/4

2750                KK   R580A
2751                KO       0       0     0.0       0      22
2752                RS      14    FLOW     0.0     0.0
2753                RC   0.043   0.035   0.043   21213  0.0091
                    * WITS10
2754                RX       0     360     460     552     627     680     876    1005
2755                RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
                    *
                    *

2756                KK   WI580
2757                KO       0       0     0.0       1      22
2758                BA  1.3195
2759                LG   0.348    0.25   5.076   0.272   5.692
2760                UC   0.646   0.407
                    * Natural Time-Area Relation
2761                UA       0       3       5       8      12      20      43      75      90      96
2762                UA     100
                    *
                    *
                    * Diversion Recovery: Flow split FS4
1                                                HEC-1 INPUT
PAGE 96

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

2763                KK   D580B
2764                KO       0       0     0.0       0      22
2765                DR  DO580B
                    *
                    *
                    * ROUTE UPDATED 4/14/4

2766                KK  RD580B
2767                KO       0       0     0.0       0      22
2768                RS       6    FLOW     0.0     0.0
2769                RC   0.043   0.035   0.043    9430  0.0199
                    * WITS90_1
2770                RX       0      50     125     200     230     250     260     400
2771                RY    1942    1940    1938    1936    1936    1938    1940    1942
                    *
                    *

2772                KK   WI578
2773                KO       0       0     0.0       1      22
2774                BA  0.4841
2775                LG   0.348   0.208   6.424   0.157   5.662
2776                UC   0.767   0.763
                    * Natural Time-Area Relation
2777                UA       0       3       5       8      12      20      43      75      90      96
2778                UA     100
                    *
                    *
                    * Combines WI578 and RD580B

2779                KK  CWI578
2780                KO       0       0     0.0       0      22
                    * Hard Coded
2781                HC       2    0.77
                    *
                    *
                    * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR700,720 (HWY74 CULVERT)

2782                KK  SSR700
2783                RS       1    STOR       0
2784                SQ       0     940    1040
2785                SA       0     4.4     5.9
2786                SE  1992.4    2004    2005
                    *
                    *
                    * ROUTE UPDATED 4/14/04
```

```
2787          KK  RWI578
2788          KO       0       0     0.0       0      22
2789          RS       8    FLOW     0.0     0.0
2790          RC   0.043   0.035   0.043   12424  0.0132
              * WITS90_1
2791          RX       0      50     125     200     230     250     260     400
2792          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *
              * Combines RWI578, WI580 and R580A
1                                          HEC-1 INPUT
PAGE 97

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


2793          KK  CWI580
2794          KO       0       0     0.0       0      22
2795          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

2796          KK  RWI580
2797          KO       0       0     0.0       0      22
2798          RS       5    FLOW     0.0     0.0
2799          RC   0.043   0.035   0.043    8541  0.0112
              * WITS10
2800          RX       0     360     460     552     627     680     876    1005
2801          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              * ---------------------------------------------------------------------------
              * ------------------------- BEGIN 03-19-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *

2802          KK   WI576
2803          KO       0       0     0.0       1      22
2804          BA  1.1801
2805          LG   0.338   0.274   4.615   0.339     5.0
2806          UC   0.863   0.761
              * Natural Time-Area Relation
2807          UA       0       3       5       8      12      20      43      75      90      96
2808          UA     100
              *

2809          KK  C576_2
2810          HC       2
              *
              * Diversion Recovery: Flow split FS5

2811          KK   D576B
2812          KO       0       0     0.0       0      22
2813          DR  DO576B
              *
              *
              * ROUTE UPDATED 4/14/4

2814          KK  RD576B
2815          KO       0       0     0.0       0      22
2816          RS       9    FLOW     0.0     0.0
2817          RC   0.043   0.035   0.043   13552  0.0118
              * WITS10
2818          RX       0     360     460     552     627     680     876    1005
2819          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              * KKC576_1
              * HC     2    1.86
              *
              * *** changed from combing 3 to 2 * ***
              * Combines WI576, RD576B and RWI580
1                                          HEC-1 INPUT
PAGE 98
```

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

2820          KK  CWI576
2821          KO       0       0     0.0       0      22
              * Hard Coded
2822          HC       2    7.07
              *
              * ------------------------------------------------------------------------------
              * ------------------------- BEGIN 03-19-2005 ----------------------------------
              * ------------------------------------------------------------------------------
              *
              * Diversion Out: Flow split diversion FS16
              * This split was determined using FLO-2D.  The model is titled "EAST" and
              * details and documentation about the model are contained in the Appendix D 5.4.
              * Flow Split Diversion, Main path to TW482, Diversion to CWI560

2823          KK    D576
2824          KO       0       0     0.0       0      22
2825          DT   DO576
2826          DI       0      21      61     265     513     560     639     737     797    1084
2827          DI    1251    1313    3000
2828          DQ       0       9      19     115     202     238     271     297     334     428
2829          DQ     496     501    1189
              *
              *
              * ROUTE UPDATED 4/14/04

2830          KK  RWI576
2831          KO       0       0     0.0       0      22
2832          RS       5    FLOW     0.0     0.0
2833          RC   0.043   0.035   0.043    8726  0.0098
              * WITS10
2834          RX       0     360     460     552     627     680     876    1005
2835          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *

2836          KK   TW482
2837          KO       0       0     0.0       1      22
2838          BA  0.7564
2839          LG   0.334   0.254   5.187   0.262   8.939
2840          UC   0.667   0.516
              * Natural Time-Area Relation
2841          UA       0       3       5       8      12      20      43      75      90      96
2842          UA     100
              *
              *
              * Combines TW482 and RWI576

2843          KK  CTW482
2844          KO       0       0     0.0       0      22
              * Hard Coded
2845          HC       2    5.04
              *
              *
              * Railroad Diversion: Main path to CTW480, Diversion to CWI582
              * From Structure RR520, See Appendix D.5 for analysis
1                                          HEC-1 INPUT
PAGE 99

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

2846          KK    D482
2847          KO       0       0     0.0       0      22
2848          DT   DO482
2849          DI       0       6     370    1098    2131    2935
2850          DQ       0       0       0       0       0     178
              *
              *
              * ROUTE UPDATED 4/14/04
```

```
2851          KK  RTW482
2852          KO       0       0     0.0       0      22
2853          RS       6    FLOW     0.0     0.0
2854          RC    0.04    0.04    0.04    7471  0.0078
              * TSR482
2855          RX       0     102     478     535     709     892    1441    1649
2856          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              * ------------------------------------------------------------------------------
              * ------------------------ BEGIN 03-25-2005 ------------------------------------
              * ------------------------------------------------------------------------------

2857          KK  C480_4
2858          HC       2
              *
              * ------------------------------------------------------------------------------
              * ------------------------ END 03-25-2005 --------------------------------------
              * ------------------------------------------------------------------------------
              *
              * Combines C580_1 and RTW482

2859          KK  CTW480
2860          KO       0       0     0.0       0      22
2861          HC       2
              *
              *
              * Diversion Out
              * Flow Split Diversion: Main path to TW478, Diversion to WI584
              * 95% of flow is diverted to IW356

2862          KK    D480
2863          KO       0       0     0.0       0      22
2864          DT   DO480
2865          DI       0   10000
2866          DQ       0    9500
              *
              *
              * ROUTE UPDATED 4/14/04

2867          KK  RTW480
2868          KO       0       0     0.0       0      22
2869          RS       2    FLOW     0.0     0.0
2870          RC    0.04    0.04    0.04    4817  0.0083
              * TSR482
2871          RX       0     102     478     535     709     892    1441    1649
1                                            HEC-1 INPUT
PAGE100

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

2872          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *

2873          KK   TW478
2874          KO       0       0     0.0       1      22
2875          BA  0.2625
2876          LG   0.329   0.193   6.512   0.151   5.664
2877          UC   0.458   0.351
              * Urban Time-Area Relation
2878          UA       0       5      16      30      65      77      84      90      94      97
2879          UA     100
              *
              *
              * Combines TW478 and RTW480

2880          KK  CTW478
2881          KO       0       0     0.0       0      22
2882          HC       2    0.85
              *
              *
              * ROUTE UPDATED 4/14/04

2883          KK  RTW478
```

```
2884    KO       0       0     0.0       0      22
2885    RS       3    FLOW     0.0     0.0
2886    RC    0.04    0.04    0.04    5969  0.0013
        * TSR478
2887    RX       0      10      22      30     126     506     751    1085
2888    RY    1550    1549    1548    1546    1546    1548    1550    1552
        *
        *
        * ************************************************************************ *
        * ********************* END OF TRILBY WASH REGION 6 ************************* *
        * ************************************************************************ *
        *
        *
        * Combines RTW478 and C430*

2889    KK  CTW430
2890    KO       0       0     0.0       0      22
2891    HC       2
        *
        * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP040

2892    KK  SCP040
2893    KO       0       0     0.0       0      22
2894    RS       1    STOR       0
2895    SQ       0     367    1560    3214    3881   27635
2896    SE  1546.8    1548    1550    1552  1552.7    1554
2897    SA    22.1    37.1    61.1   105.1   160.8   181.3
2898    SE    1546  1546.8    1546    1550    1552  1552.7
        *
        *
        * ROUTE UPDATED 4/14/04
```



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

2899    KK  RTW430
2900    KO       0       0     0.0       0      22
2901    RS       1    FLOW     0.0     0.0
2902    RC    0.04    0.04    0.04   10141  0.0057
        * WITS30
2903    RX       0     216     426     525     583     771    1184    1444
2904    RY  1465.5    1463    1462    1456    1462    1463    1464    1465
        *
        *

2905    KK   TW418
2906    KO       0       0     0.0       1      22
2907    BA  1.3681
2908    LG   0.219   0.178   6.692   0.161  34.138
2909    UC   0.800   0.469
        * Natural Time-Area Relation
2910    UA       0       3       5       8      12      20      43      75      90      96
2911    UA     100
        *
        *
        * Combines TW418 and RTW430

2912    KK  CTW418
2913    KO       0       0     0.0       0      22
2914    HC       2
        *
        *
        * ROUTE UPDATED 4/14/04

2915    KK  RTW418
2916    KO       0       0     0.0       0      22
2917    RS       1    FLOW     0.0     0.0
2918    RC    0.04    0.04    0.04    7044  0.0057
        * WITS30
2919    RX       0     216     426     525     583     771    1184    1444
2920    RY  1465.5    1463    1462    1456    1462    1463    1464    1465
        *
```

```
                 *

2921             KK   TW422
2922             KO       0       0     0.0       1      22
2923             BA  0.7031
2924             LG   0.293   0.287   5.537   0.221  26.254
2925             UC   0.829   0.720
                 * Natural Time-Area Relation
2926             UA       0       3       5       8      12      20      43      75      90      96
2927             UA     100
                 *
                 * Combines TW422 and RTW418
1                                                HEC-1 INPUT
PAGE102

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


2928             KK  C422_1
2929             KO       0       0     0.0       0      22
2930             HC       2
                 *
                 *

2931             KK   TW424
2932             KO       0       0     0.0       1      22
2933             BA  1.4966
2934             LG   0.313   0.161   6.851   0.145  10.935
2935             UC   0.625   0.282
                 * Urban Time-Area Relation
2936             UA       0       5      16      30      65      77      84      90      94      97
2937             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/04

2938             KK  RTW424
2939             KO       0       0     0.0       0      22
2940             RS       3    FLOW     0.0     0.0
2941             RC    0.04    0.04    0.04    5625  0.0052
                 * WITS30
2942             RX       0     216     426     525     583     771    1184    1444
2943             RY  1465.5    1463    1462    1456    1462    1463    1464    1465
                 *
                 *
                 * Combines C422_1 and RTW424

2944             KK  CTW422
2945             KO       0       0     0.0       0      22
2946             HC       2
                 *
                 * ROUTE UPDATED 4/14/04

2947             KK  RTW422
2948             KO       0       0     0.0       0      22
2949             RS      17    FLOW     0.0     0.0
2950             RC    0.04    0.04    0.04   22821  0.0037
                 * WITS30
2951             RX       0     216     426     525     583     771    1184    1444
2952             RY  1465.5    1463    1462    1456    1462    1463    1464    1465
                 *
                 *

2953             KK   TW400
2954             KO       0       0     0.0       1      22
2955             BA  4.2708
2956             LG   0.313   0.267    5.32   0.244   17.35
2957             UC   1.483   0.938
                 * Urban Time-Area Relation
2958             UA       0       5      16      30      65      77      84      90      94      97
2959             UA     100
                 *
                 *
                 * Combines TW400 and RTW422
```

```
1                                                    HEC-1 INPUT
PAGE103

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

2960          KK  C400_2
2961          KO       0       0     0.0       0      22
2962          HC       2
              *
              *
              * Combines C400_2 and RTW402

2963          KK  CTW400
2964          KO       0       0     0.0       0      22
2965          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2966          KK  RTW400
2967          KO       0       0     0.0       0      22
2968          RS       2    FLOW     0.0     0.0
2969          RC   0.045   0.035   0.045    6826  0.0037
              * McMicken Dam Channel
2970          RX       0      46     101     121     171     181    1421    3621
2971          RY      25      14       4       0       0       4      14      25
              *
              *

2972          KK   WI504
2973          KO       0       0     0.0       1      22
2974          BA  1.3494
2975          LG   0.336    0.25   5.982    0.19  10.285
2976          UC   0.771   0.417
              * Natural Time-Area Relation
2977          UA       0       3       5       8      12      20      43      75      90      96
2978          UA     100
              *
              *
              * COMBINES RTW400 AND RWI504

2979          KK  CWI504
2980          KO       0       0     0.0       0      22
2981          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

2982          KK  RWI504
2983          KO       0       0     0.0       0      22
2984          RS       1    FLOW     0.0     0.0
2985          RC   0.045   0.035   0.045    1494   0.001
              * McMicken Dam Channel
2986          RX       0      46     101     121     171     181    1421    3621
2987          RY      25      14       4       0       0       4      14      25
              *
              *
              * ************************************************************************ *
              * ********************** END OF TRILBY WASH REGION 5 ************************** *
              * ************************************************************************ *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * **********************  END OF TRILBY WASH SUBAREA ************************** *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
              * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
```

```
* ********************************************************************** *
* *************** END OF WEST PORTION OF DETAILED MODEL ********************** *
* ********************************************************************** *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
*
*
*
*
* EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
* EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
* EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
* ********************************************************************** *
* ********************************************************************** *
* ********** BEGINNING EAST PORTION OF DETAILED MODEL ********************** *
* ********************************************************************** *
* ********************************************************************** *
* EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
* EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
* EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
*
* ----------------------------------------------------------------------
* ---------------------- Begin 03-25-2005 ------------------------------
* ----------------------------------------------------------------------
*
* ----------------------------------------------------------------------
* ---------------------- Begin 03-19-2005 ------------------------------
* ----------------------------------------------------------------------
*
1                                   HEC-1 INPUT
PAGE104

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

2988          KK   WI560
2989          KO       0       0     0.0       1      22
2990          BA  3.5624
2991          LG   0.298   0.284   5.108   0.265   23.11
2992          UC   0.992   0.648
              * Natural Time-Area Relation
2993          UA       0       3       5       8      12      20      43      75      90      96
2994          UA     100
              *
              * KKC560_1
              * HC     2    6.35
              *

2995          KK   WI574
2996          KO       0       0     0.0       1      22
2997          BA  0.2189
2998          LG    0.35    0.25   4.987   0.283     5.0
2999          UC   0.454   0.454
              * Natural Time-Area Relation
3000          UA       0       3       5       8      12      20      43      75      90      96
3001          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

3002          KK  RWI574
3003          KO       0       0     0.0       0      22
3004          RS       7    FLOW     0.0     0.0
3005          RC   0.043   0.035   0.043   14010  0.0106
              * WITS10
3006          RX       0     360     460     552     627     680     876    1005
3007          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *

3008          KK  C5602A
3009          HC       2
              *
              * Diversion Recovery: Flow split FS16
```

```
3010          KK    D576
3011          KO       0       0     0.0       0      22
3012          DR   DO576
              *
              *
              * ROUTE UPDATED 4/14/4

3013          KK   RD576
3014          KO       0       0     0.0       0      22
3015          RS       2    FLOW     0.0     0.0
3016          RC   0.043   0.035   0.043    4830  0.0095
              * WITS10
3017          RX       0     360     460     552     627     680     876    1005
3018          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
1                                          HEC-1 INPUT
PAGE105

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


3019          KK  C5602B
3020          HC       2    6.57
              *
              *

3021          KK  WI560A
3022          KO       0       0     0.0       1      22
3023          BA  2.0440
3024          LG   0.349    0.25   5.869   0.191  11.973
3025          UC   1.275   1.394
              * Natural Time-Area Relation
3026          UA       0       3       5       8      12      20      43      75      90      96
3027          UA     100
              *
              *

3028          KK   R560A
3029          KO       0       0     0.0       0      22
3030          RS       9    FLOW     0.0     0.0
3031          RC   0.043   0.035   0.043   16408  0.0115
              * WITS10
3032          RX       0     360     460     552     627     680     876    1005
3033          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *

3034          KK  C5602C
3035          HC       2
              *
              *

3036          KK   WI572
3037          KO       0       0     0.0       1      22
3038          BA  2.0606
3039          LG   0.349   0.228    6.63   0.145  17.629
3040          UC   0.679   0.639
              * Natural Time-Area Relation
3041          UA       0       3       5       8      12      20      43      75      90      96
3042          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

3043          KK  RWI572
3044          KO       0       0     0.0       0      22
3045          RS       8    FLOW     0.0     0.0
3046          RC   0.043   0.035   0.043   23543  0.0122
              * WITS90_1
3047          RX       0      50     125     200     230     250     260     400
3048          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *
```

```
1                                                    HEC-1 INPUT
PAGE106

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


3049          KK   WI570
3050          KO       0       0     0.0       1      22
3051          BA  2.2376
3052          LG    0.35   0.164   6.881   0.129  22.117
3053          UC   1.063   0.836
              * Natural Time-Area Relation
3054          UA       0       3       5       8      12      20      43      75      90      96
3055          UA     100
              *
              *
              * Diversion Out: Flow split FS6
              * Flow Split Diversion: Main path to CWI570, Diversion to WI566
              * 21% of flow is diverted to WI566

3056          KK    D570
3057          KO       0       0     0.0       0      22
3058          DT   DO570
3059          DI    0      10000
3060          DQ    0       2100
              *
              *
              * ROUTE UPDATED 4/14/04

3061          KK  RWI570
3062          KO       0       0     0.0       0      22
3063          RS       5    FLOW     0.0     0.0
3064          RC   0.043   0.035   0.043   12212  0.0139
              * WITS90_1
3065          RX       0      50     125     200     230     250     260     400
3066          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *

3067          KK   WI566
3068          KO       0       0     0.0       1      22
3069          BA  0.1109
3070          LG   0.348    0.21     6.4   0.159   5.682
3071          UC   0.467   0.479
              * Natural Time-Area Relation
3072          UA       0       3       5       8      12      20      43      75      90      96
3073          UA     100
              *
              *
              * Diversion Recovery: Flow split FS6
              * No route because route is only 191 feet

3074          KK    D570
3075          KO       0       0     0.0       0      22
3076          DR   DO570
              *
              *
              *
              *  Combines WI566 and D570
1                                                    HEC-1 INPUT
PAGE107

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


3077          KK  CWI566
3078          KO       0       0     0.0       0      22
              * Hard Coded
3079          HC       2    0.58
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR830 (HWY74 CULVERT)

3080          KK  SSR830
```

```
3081          KO       0       0     0.0       1      22
3082          RS       1    STOR       0
3083          SQ       0     300     640   10000
3084          SA       0     .36    1.82    1.83
3085          SE  1977.2    1980    1982    1986
              *
              *
              * ROUTE UPDATED 4/14/04

3086          KK  RWI566
3087          KO       0       0     0.0       0      22
3088          RS       8    FLOW     0.0     0.0
3089          RC   0.043   0.035   0.043   10390  0.0123
              * WITS90_1
3090          RX       0      50     125     200     230     250     260     400
3091          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *

3092          KK   WI564
3093          KO       0       0     0.0       1      22
3094          BA  1.8056
3095          LG    0.35    0.25   5.988   0.181   17.92
3096          UC     1.5   1.385
              * Natural Time-Area Relation
3097          UA       0       3       5       8      12      20      43      75      90      96
3098          UA     100
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR880 (HWY74 CULVERT)

3099          KK  SSR880
3100          KO       0       0     0.0       1      22
3101          RS       1    STOR       0
3102          SQ       0     360    1950    2340
3103          SA       0     .53    2.04     4.6
3104          SE  1960.1    1964    1968    1972
              *
              *
              * ROUTE UPDATED 4/14/04
```



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


3105          KK  RWI564
3106          KO       0       0     0.0       0      22
3107          RS       4    FLOW     0.0     0.0
3108          RC   0.043   0.035   0.043    9364   0.012
              * WITS90_1
3109          RX       0      50     125     200     230     250     260     400
3110          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *

3111          KK   WI562
3112          KO       0       0     0.0       1      22
3113          BA  0.8720
3114          LG   0.344   0.155   6.954   0.125   7.052
3115          UC   0.967   0.942
              * Natural Time-Area Relation
3116          UA       0       3       5       8      12      20      43      75      90      96
3117          UA     100
              *
              *
              * Combines WI562, RWI564 and RWI566

3118          KK  CWI562
3119          KO       0       0     0.0       0      22
3120          HC       3
              *
              *
              * Combines CWI562 and RWI570
```

```
3121          KK   C562*
3122          KO       0       0     0.0       0      22
              * Hard Coded
3123          HC       2    5.03
              *
              *
              * ROUTE UPDATED 4/14/4

3124          KK   R562*
3125          KO       0       0     0.0       0      22
3126          RS       8    FLOW     0.0     0.0
3127          RC   0.043   0.035   0.043   14581  0.0112
              * WITS40
3128          RX       0     100     197     277     349     452     594    1131
3129          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *
              *
              * CombineS WI560, R562*, RWI572, RWI574, RD576 and R560A

3130          KK  CWI560
3131          KO       0       0     0.0       0      22
              * Hard Coded
3132          HC       3   15.70
              *
              * ------------------------------------------------------------------------
              * ------------------------ END 03-19-2005 ------------------------------
              * ------------------------------------------------------------------------
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE109

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


3133          KK  RWI560
3134          KO       0       0     0.0       0      22
3135          RS       8    FLOW     0.0     0.0
3136          RC   0.043   0.035   0.043   11699   0.007
              * WITS40
3137          RX       0     100     197     277     349     452     594    1131
3138          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *
              *

3139          KK   WI554
3140          KO       0       0     0.0       1      22
3141          BA  1.0438
3142          LG   0.332   0.253   4.497   0.367  10.849
3143          UC   0.763   0.545
              * Natural Time-Area Relation
3144          UA       0       3       5       8      12      20      43      75      90      96
3145          UA     100
              *

3146          KK  C554_9
3147          HC       2
              *

3148          KK   WI556
3149          KO       0       0     0.0       1      22
3150          BA  0.0781
3151          LG    0.32   0.265   4.399   0.389  16.111
3152          UC   0.213   0.134
              * Natural Time-Area Relation
3153          UA       0       3       5       8      12      20      43      75      90      96
3154          UA     100
              *
              *
              * ROUTE UPDATED 4/14/04

3155          KK  RWI556
3156          KO       0       0     0.0       0      22
```

```
3157          RS       4    FLOW     0.0     0.0
3158          RC   0.043   0.035   0.043   11635  0.0074
              * WITS40
3159          RX       0     100     197     277     349     452     594    1131
3160          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *

3161          KK  C5541B
3162          HC       2
              *
1                                          HEC-1 INPUT
PAGE110

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


3163          KK   WI582
3164          KO       0       0     0.0       1      22
3165          BA  0.3752
3166          LG   0.343    0.25     5.0   0.281   7.041
3167          UC   0.538   0.464
              * Natural Time-Area Relation
3168          UA       0       3       5       8      12      20      43      75      90      96
3169          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR520

3170          KK    D482
3171          KO       0       0     0.0       0      22
3172          DR   DO482
              *
              *
              *
              * ROUTE UPDATED 4/14/4

3173          KK   RD482
3174          KO       0       0     0.0       0      22
3175          RS       1    FLOW     0.0     0.0
3176          RC   0.043   0.035   0.043    2439  0.0094
              * WITS130
3177          RX       0     400     456     575     620     650     660     682
3178          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD482 and WI582

3179          KK  CWI582
3180          KO       0       0     0.0       0      22
3181          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3182          KK  RWI582
3183          KO       0       0     0.0       0      22
3184          RS       2    FLOW     0.0     0.0
3185          RC   0.043   0.035   0.043    5153  0.0052
              * WITS10
3186          RX       0     360     460     552     627     680     876    1005
3187          RY    1753    1750    1749    1749  1747.5  1750.5    1751    1752
              *
              *
              * ------------------------------------------------------------------------
              * ------------------------ BEGIN 03-18-2005 ------------------------------
              * ------------------------------------------------------------------------
              *
              * KKC554_1
              * HC     2
              *
              * *** Changed from combining 4 to 3 * ***
              * COMBINES RWI582, RWI560, RWI556 AND WI554
1                                          HEC-1 INPUT
PAGE111
```

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

3188          KK  CWI554
3189          KO       0       0     0.0       0      22
3190          HC       2
              *
              * ---------------------------------------------------------------------------
              * ------------------------- END 03-18-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *
              * ---------------------------------------------------------------------------
              * ------------------------- END 03-25-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *
              * ROUTE UPDATED 4/14/04

3191          KK  RWI554
3192          KO       0       0     0.0       0      22
3193          RS       2    FLOW     0.0     0.0
3194          RC   0.043   0.035   0.043    4538   0.014
              * WITS50
3195          RX       0      46      95     115     169     222     328     409
3196          RY    1581    1579    1575    1572    1577    1578  1579.5    1582
              *
              *

3197          KK   WI552
3198          KO       0       0     0.0       1      22
3199          BA  0.4131
3200          LG   0.327    0.25   4.373   0.398  11.892
3201          UC   0.629   0.566
              * Natural Time-Area Relation
3202          UA       0       3       5       8      12      20      43      75      90      96
3203          UA     100
              *
              *
              * Combines WI552 and RWI554

3204          KK  CWI552
3205          KO       0       0     0.0       0      22
3206          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3207          KK  RWI552
3208          KO       0       0     0.0       0      22
3209          RS       1    FLOW     0.0     0.0
3210          RC    0.04    0.04    0.04    1732  0.0122
              * WITS70
3211          RX       0     450     700    1284    1435    1499    1745    2500
3212          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
1                                          HEC-1 INPUT
PAGE112

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

3213          KK   WI584
3214          KO       0       0     0.0       1      22
3215          BA  1.2569
3216          LG   0.323   0.261   5.089    0.27   9.277
3217          UC   0.925   0.683
              * Urban Time-Area Relation
3218          UA       0       5      16      30      65      77      84      90      94      97
3219          UA     100
              *
              *
              * Diversion Recovery: Flow split from CTW480
```

```
3220          KK    D480
3221          KO       0       0     0.0       0      22
3222          DR   DO480
              *
              *
              * ROUTE UPDATED 1/27/05

3223          KK   RD480
3224          KO       0       0     0.0       0      22
3225          RS       2    FLOW     0.0     0.0
3226          RC    0.04    0.04    0.04    5985  0.0065
              * TSR482
3227          RX       0     102     478     535     709     892    1441    1649
3228          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *
              * COMBINES WI584 AND RD480

3229          KK  CWI584
3230          KO       0       0     0.0       0      22
3231          HC       2   12.45
              *
              *
              * ROUTE UPDATED 4/14/04

3232          KK  RWI584
3233          KO       0       0     0.0       0      22
3234          RS       2    FLOW     0.0     0.0
3235          RC    0.04    0.04    0.04    3933   0.001
              * WITS70
3236          RX       0     450     700    1284    1435    1499    1745    2500
3237          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3238          KK   WI550
3239          KO       0       0     0.0       1      22
3240          BA  0.1425
3241          LG   0.271    0.23     4.3    0.41  20.079
3242          UC   0.308   0.220
              * Natural Time-Area Relation
3243          UA       0       3       5       8      12      20      43      75      90      96
1                                                HEC-1 INPUT
PAGE113

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

3244          UA     100
              *
              *
              * COMBINES WI550, RWI552 AND RWI584

3245          KK  CWI550
3246          KO       0       0     0.0       0      22
3247          HC       3
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP050

3248          KK  SCP050
3249          KO       0       0     0.0       0      22
3250          RS       1    STOR       0
3251          SQ       0     209    1075    2314    3833    4684   12000
3252          SE    1545    1546    1548    1550    1552    1553    1554
3253          SA       0      .1      .7    11.5    35.3    54.1
3254          SE    1545    1546    1548    1550    1552    1553
              *
              *
              * ROUTE UPDATED 4/14/04

3255          KK  RWI550
3256          KO       0       0     0.0       0      22
3257          RS       2    FLOW     0.0     0.0
3258          RC    0.04    0.04    0.04    6201  0.0084
              * WITS70
```

```
3259          RX        0      450      700     1284     1435     1499     1745     2500
3260          RY   1401.5   1399.5     1396   1395.5     1390     1396     1399     1400
              *
              *

3261          KK   WI514
3262          KO        0        0      0.0        1       22
3263          BA   0.3524
3264          LG    0.322    0.237    5.113    0.264    6.094
3265          UC    0.450    0.310
              * Natural Time-Area Relation
3266          UA        0        3        5        8       12       20       43       75       90       96
3267          UA      100
              *
              *
              * COMBINES WI514 AND RWI550

3268          KK  CWI514
3269          KO        0        0      0.0        0       22
3270          HC        2
              *
              *
1                                                HEC-1 INPUT
PAGE114

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

3271          KK   WI548
3272          KO        0        0      0.0        1       22
3273          BA   0.3084
3274          LG     0.35    0.162    6.881    0.129      5.0
3275          UC    0.471    0.486
              * Natural Time-Area Relation
3276          UA        0        3        5        8       12       20       43       75       90       96
3277          UA      100
              *
              *
              * ROUTE UPDATED 4/14/04

3278          KK  RWI548
3279          KO        0        0      0.0        0       22
3280          RS        7     FLOW      0.0      0.0
3281          RC    0.043    0.035    0.043    13444   0.0117
              * WITS90_2
3282          RX        0       89      186      233      287      396      484      597
3283          RY     1823   1822.5     1821     1819     1817   1819.5   1820.5   1822.5
              *
              *

3284          KK   WI546
3285          KO        0        0      0.0        1       22
3286          BA   0.6051
3287          LG    0.232    0.309     4.48    0.362   49.331
3288          UC    0.688    0.724
              * Urban Time-Area Relation
3289          UA        0        5       16       30       65       77       84       90       94       97
3290          UA      100
              *
              *
              * Combines WI546 and RWI548

3291          KK  CWI546
3292          KO        0        0      0.0        0       22
3293          HC        2
              *
              *
              * ROUTE UPDATED 4/14/04

3294          KK  RWI546
3295          KO        0        0      0.0        0       22
3296          RS        3     FLOW      0.0      0.0
3297          RC    0.043    0.035    0.043     5296   0.0091
              * WITS90_3
```

```
3298          RX       0     294     436     564     596     685     950    1000
3299          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *
1                                          HEC-1 INPUT
PAGE115

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


3300          KK   WI544
3301          KO       0       0     0.0       1      22
3302          BA  1.7938
3303          LG   0.261   0.295   4.302   0.407  38.479
3304          UC   0.875   0.682
              * Urban Time-Area Relation
3305          UA       0       5      16      30      65      77      84      90      94      97
3306          UA     100
              *
              *
              * Combines WI544 and RWI546

3307          KK  CWI544
3308          KO       0       0     0.0       0      22
3309          HC       2
              *
              *
              * Diversion Out: Flow split FS7
              * Flow Split Diversion: Main path to CWI542, Diversion to WI530
              * 67% of flow is diverted to WI530

3310          KK    D544
3311          KO       0       0     0.0       0      22
3312          DT   DO544
3313          DI    0     10000
3314          DQ    0      6700
              *
              *
              * ROUTE UPDATED 4/14/04

3315          KK  RWI544
3316          KO       0       0     0.0       0      22
3317          RS       5    FLOW     0.0     0.0
3318          RC   0.043   0.035   0.043    9910  0.0083
              * WITS40
3319          RX       0     100     197     277     349     452     594    1131
3320          RY  1644.5    1643    1642  1641.2    1641    1642    1643  1644.5
              *
              *

3321          KK   WI542
3322          KO       0       0     0.0       1      22
3323          BA  1.1740
3324          LG   0.345   0.252   4.299   0.415   6.718
3325          UC   0.996   0.897
              * Natural Time-Area Relation
3326          UA       0       3       5       8      12      20      43      75      90      96
3327          UA     100
              *
              *
              * Combines WI542 and RWI544
1                                          HEC-1 INPUT
PAGE116

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


3328          KK  CWI542
3329          KO       0       0     0.0       0      22
              * Hard Coded
3330          HC       2    2.07
              *
              *
```

```
3331          KK   WI540
3332          KO       0       0     0.0       1      22
3333          BA  1.2455
3334          LG    0.35     0.2   6.497   0.153  24.434
3335          UC   1.008   0.906
              * Natural Time-Area Relation
3336          UA       0       3       5       8      12      20      43      75      90      96
3337          UA     100
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE SR940 (HWY74 CULVERT)
              * storage removed: does not affect peak flow and created numerical instabilities
3338          KM   * KKSSR940
3339          KM   * KO     0       0     0.0       1      22
3340          KM   * RS     1    STOR       0
3341          KM   * SQ     0      78     300    1350    1680
3342          KM   * SA     0  0.0001    0.08    0.79    1.34
3343          KM   * SE1973.8  1974.8    1976    1980  1983.1
              *
              *
              * ROUTE UPDATED 4/14/04

3344          KK  RWI540
3345          KO       0       0     0.0       0      22
3346          RS       1    FLOW     0.0     0.0
3347          RC   0.043   0.035   0.043    4350  0.0169
              * WITS90_1
3348          RX       0      50     125     200     230     250     260     400
3349          RY    1942    1940    1938    1936    1936    1938    1940    1942
              *
              *

3350          KK  WI538A
3351          KO       0       0     0.0       1      22
3352          BA  0.7763
3353          LG   0.345    0.15   7.801   0.092   9.971
3354          UC   0.913   0.882
              * Natural Time-Area Relation
3355          UA       0       3       5       8      12      20      43      75      90      96
3356          UA     100
              *
              *
              * Combines WI538A and RWI540
1                                                HEC-1 INPUT
PAGE117

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


3357          KK   C538A
3358          KO       0       0     0.0       0      22
3359          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

3360          KK   R538A
3361          KO       0       0     0.0       0      22
3362          RS       8    FLOW     0.0     0.0
3363          RC   0.043   0.035   0.043   18226  0.0134
              * WITS90_2
3364          RX       0      89     186     233     287     396     484     597
3365          RY    1823  1822.5    1821    1819    1817  1819.5  1820.5  1822.5
              *
              *

3366          KK   WI538
3367          KO       0       0     0.0       1      22
3368          BA  1.4301
3369          LG   0.336    0.16   8.095   0.082  10.205
3370          UC   1.388   1.401
              * Natural Time-Area Relation
3371          UA       0       3       5       8      12      20      43      75      90      96
3372          UA     100
              *
```

```
                 *
                 * Combines WI538 and R538A

3373             KK  CWI538
3374             KO       0       0     0.0       0      22
3375             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3376             KK  RWI538
3377             KO       0       0     0.0       0      22
3378             RS       9    FLOW     0.0     0.0
3379             RC   0.043   0.035   0.043   15096  0.0075
                 * WITS90_3
3380             RX       0     294     436     564     596     685     950    1000
3381             RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
                 *
                 *
                 * ------------------------------------------------------------------------
                 * ------------------------------- 03-10-2005 ---------------------------------
                 * ------------------------------------------------------------------------
                 *
1                                                HEC-1 INPUT
PAGE118

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


3382             KK   WI530
3383             KO       0       0     0.0       1      22
3384             BA  2.3757
3385             LG   0.348   0.249   4.293   0.415   4.976
3386             UC   1.013   0.651
                 * Natural Time-Area Relation
3387             UA       0       3       5       8      12      20      43      75      90      96
3388             UA     100
                 *
                 *
                 * *** Combines WI530 and RWI538 ***

3389             KK  C530_2
3390             HC       2
                 *
                 *

3391             KK   WI536
3392             KO       0       0     0.0       1      22
3393             BA    1.37
3394             LG   0.328   0.161   9.678   0.049  13.114
3395             UC   1.396   1.532
                 * Natural Time-Area Relation
3396             UA       0       3       5       8      12      20      43      75      90      96
3397             UA     100
                 *
                 *

3398             KK   WI534
3399             KO       0       0     0.0       1      22
3400             BA   0.434
3401             LG    0.32   0.165   9.599    0.05  16.269
3402             UC   0.717   0.636
                 * Natural Time-Area Relation
3403             UA       0       3       5       8      12      20      43      75      90      96
3404             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3405             KK  RWI534
3406             KO       0       0     0.0       0      22
3407             RS       2    FLOW     0.0     0.0
3408             RC   0.043   0.035   0.043    3889  0.0112
                 * WITS90_3
```

```
3409          RX       0     294     436     564     596     685     950    1000
3410          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *
1                                          HEC-1 INPUT
PAGE119

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


3411          KK   WI532
3412          KO       0       0     0.0       1      22
3413          BA  0.3227
3414          LG    0.35    0.25   5.053   0.275     5.0
3415          UC   0.475   0.423
              * Natural Time-Area Relation
3416          UA       0       3       5       8      12      20      43      75      90      96
3417          UA     100
              *
              *
              * Combines WI532 and RWI534

3418          KK  CWI532
3419          KO       0       0     0.0       0      22
3420          HC       2
              *
              *
              * Combines CWI532 and WI536

3421          KK   C530*
3422          KO       0       0     0.0       0      22
3423          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

3424          KK   R530*
3425          KO       0       0     0.0       0      22
3426          RS       9    FLOW     0.0     0.0
3427          RC   0.043   0.035   0.043   14751  0.0082
              * WITS90_3
3428          RX       0     294     436     564     596     685     950    1000
3429          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              * ------------------------------------------------------------------------
              * ------------------------------- 03-10-2005 ----------------------------------
              * ------------------------------------------------------------------------
              * ******* Commented out: See explanation under 03-10-2005 *******
              * *** Combines WI530 and R530* ***
              * KKC530_1
              * HC     2
              *
              * *** Combines C530_2 and R530* ***

3430          KK  C530_3
3431          HC       2
              *
              *
              * Diversion Recovery: Flow split FS7
1                                          HEC-1 INPUT
PAGE120

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


3432          KK    D544
3433          KO       0       0     0.0       0      22
3434          DR   DO544
              *
              *
              * ROUTE UPDATED 4/14/4

3435          KK   RD544
3436          KO       0       0     0.0       0      22
```

```
3437          RS        6    FLOW      0.0      0.0
3438          RC    0.043   0.035    0.043     9401  0.0082
              * WITS40
3439          RX        0     100      197      277      349      452      594     1131
3440          RY   1644.5    1643     1642   1641.2     1641     1642     1643   1644.5
              *
              *
              * ******* 03-10-2005 ********
              * *** Changed to combine two (2) [C530_2 and RD544]
              * Combines RD544, WI530, R530* and RWI538

3441          KK  CWI530
3442          KO        0        0      0.0        0       22
              * Hard Coded
3443          HC        2     9.78
              *
              *
              * COMBINES CWI542 AND CWI530

3444          KK   CAP1*
3445          KM   CAP IMPOUNDMENT AREA
3446          KO        0        0      0.0        0       22
3447          HC        2
              *
              *

3448          KK   PI663
3449          KO        0        0      0.0        1       22
3450          BA   0.6040
3451          LG    0.35     0.15    9.369    0.053    6.578
3452          UC   1.008    1.327
              * Natural Time-Area Relation
3453          UA        0        3        5        8       12       20       43       75       90       96
3454          UA      100
              *
              *
              * ROUTE UPDATED 4/14/04

3455          KK  RPI663
3456          KO        0        0      0.0        0       22
3457          RS       10     FLOW      0.0      0.0
3458          RC    0.043   0.035    0.043    14316  0.0149
              * PITS10_1
3459          RX        0       56       89      161      178      225      256      357
3460          RY     1850     1848     1846     1844     1844     1846     1848     1850
              *
              *
```

1
PAGE121

HEC-1 INPUT

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


3461          KK   PI657
3462          KO        0        0      0.0        1       22
3463          BA   0.8697
3464          LG    0.348    0.139    9.924    0.042    5.669
3465          UC    1.200    1.452
              * Natural Time-Area Relation
3466          UA        0        3        5        8       12       20       43       75       90       96
3467          UA      100
              *
              *

3468          KK   PI660
3469          KO        0        0      0.0        1       22
3470          BA   0.8393
3471          LG    0.346     0.15    9.503    0.052    6.086
3472          UC    1.358    1.975
              * Natural Time-Area Relation
3473          UA        0        3        5        8       12       20       43       75       90       96
3474          UA      100
              *
              *
```

```
                    * Combines PI660, PI657 and RPI663

3475                KK  CPI660
3476                KO       0       0     0.0       0      22
3477                HC       3
                    *
                    *
                    * ROUTE UPDATED 4/14/04

3478                KK  RPI660
3479                KO       0       0     0.0       0      22
3480                RS       1    FLOW     0.0     0.0
3481                RC   0.043   0.035   0.043    5729  0.0127
                    * PITS10_1
3482                RX       0      56      89     161     178     225     256     357
3483                RY    1850    1848    1846    1844    1844    1846    1848    1850
                    *
                    *

3484                KK   PI654
3485                KO       0       0     0.0       1      22
3486                BA  4.0277
3487                LG   0.348    0.15    9.53   0.051   5.671
3488                UC    1.50   1.150
                    * Natural Time-Area Relation
3489                UA       0       3       5       8      12      20      43      75      90      96
3490                UA     100
                    *
                    *
                    * Combines PI654 and RPI660
1                                                HEC-1 INPUT
PAGE122

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

3491                KK  CPI654
3492                KO       0       0     0.0       0      22
3493                HC       2
                    *
                    *
                    * Diversion Out: Flow split FS8
                    * Flow Split Diversion: Main path to CPI651, Diversion to CPI645
                    * 20% of flow is diverted to CPI645

3494                KK    D654
3495                KO       0       0     0.0       0      22
3496                DT   DO654
3497                DI       0   10000
3498                DQ       0    2000
                    *
                    *
                    * ROUTE UPDATED 4/14/04

3499                KK  RPI654
3500                KO       0       0     0.0       0      22
3501                RS       4    FLOW     0.0     0.0
3502                RC   0.043   0.035   0.043    6847  0.0104
                    * PITS10_2 Modified X-sect
3503                RX       0     207     221     254     303     324     379     588
3504                RY    1614  1610.5    1610  1608.5    1610    1611  1611.8    1614
                    *
                    *
                    * ---------------------------------------------------------------------------
                    * ---------------------------- BEGIN 03-14-2005 ------------------------------
                    * ---------------------------------------------------------------------------

3505                KK   PI651
3506                KO       0       0     0.0       1      22
3507                BA  0.4594
3508                LG    0.35   0.173    6.77   0.136     5.0
3509                UC   0.892   0.856
                    * Natural Time-Area Relation
3510                UA       0       3       5       8      12      20      43      75      90      96
```

```
3511          UA     100
              *
              *

3512          KK  C651_1
3513          HC       2    5.53
              *
              *

3514          KK   PI648
3515          KO       0       0     0.0       1      22
3516          BA  1.7278
3517          LG   0.346    0.16   8.694   0.064   5.156
3518          UC   1.317   1.096
              * Natural Time-Area Relation
3519          UA       0       3       5       8      12      20      43      75      90      96
1                                                HEC-1 INPUT
PAGE123

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

3520          UA     100
              *
              *
              *
              * Combines PI651, PI648 and RPI654

3521          KK  CPI651
3522          KO       0       0     0.0       0      22
              * Hard Coded
3523          HC       2    7.26
              *
              * ---------------------------------------------------------------------------
              * --------------------------- END 03-14-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              *
              *
              * ---------------------------------------------------------------------------
              * ------------------------- BEGIN 03-15-2005 -----------------------------------
              * ---------------------------------------------------------------------------
              * ROUTE UPDATED 4/14/04

3524          KK  RPI651
3525          KO       0       0     0.0       0      22
3526          RS       3    FLOW     0.0     0.0
3527          RC   0.043   0.035   0.043    5658  0.0068
              * PITS10_2 Modified X-sect
3528          RX       0     207     221     254     303     324     379     588
3529          RY    1614  1610.5    1610  1608.5    1610    1611  1611.8    1614
              *
              *

3530          KK   PI645
3531          KO       0       0     0.0       1      22
3532          BA  1.5618
3533          LG    0.34   0.277   4.166   0.451   4.792
3534          UC   0.858   0.529
              * Natural Time-Area Relation
3535          UA       0       3       5       8      12      20      43      75      90      96
3536          UA     100
              *
              *

3537          KK  C645_1
3538          HC       2
              *
              *

3539          KK  PI645A
3540          KO       0       0     0.0       1      22
3541          BA  1.6306
3542          LG   0.316   0.154   8.035   0.087  14.307
3543          UC   1.288   1.201
              * Natural Time-Area Relation
```

```
3544          UA       0       3       5       8      12      20      43      75      90      96
3545          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE124

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


3546          KK   R645A
3547          KO       0       0     0.0       0      22
3548          RS       5    FLOW     0.0     0.0
3549          RC   0.043   0.035   0.043    8664   0.012
              * PITS10_2
3550          RX       0      89     103     136     185     206     261     280
3551          RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
              *
              *
              * Diversion Recovery: Flow split FS8

3552          KK    D654
3553          KO       0       0     0.0       0      22
3554          DR   DO654
              *
              *
              * ROUTE UPDATED 4/14/4

3555          KK   RD654
3556          KO       0       0     0.0       0      22
3557          RS       6    FLOW     0.0     0.0
3558          RC   0.043   0.035   0.043   11215  0.0098
              * PITS10_2
3559          RX       0      89     103     136     185     206     261     280
3560          RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
              *
              *
              * *** changed from combining 4 to 3 * ***
              * COMBINES PI645, R645A, DIVERSION RD654 AND RPI651

3561          KK  CPI645
3562          KO       0       0     0.0       0      22
              * Hard Coded
3563          HC       3   11.72
              *
              *
              * ---------------------------------------------------------------------------
              * --------------------------- END 03-15-2005 ---------------------------------
              * ---------------------------------------------------------------------------
              *
              * COMBINES CPI645 AND CAP1*

3564          KK   CAP1*
3565          KO       0       0     0.0       0      22
3566          HC       2
              *
              *

3567          KK   PI689
3568          KO       0       0     0.0       1      22
3569          BA  6.7846
3570          LG    0.35   0.377   6.465   0.154  33.445
3571          UC   1.392   0.780
              * Natural Time-Area Relation
1                                          HEC-1 INPUT
PAGE125

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

3572          UA       0       3       5       8      12      20      43      75      90      96
3573          UA     100
              *
              *
```

```
3574          KK   PI688
3575          KO       0       0     0.0       1      22
3576          BA  3.1967
3577          LG    0.35    0.39   5.752     0.2  32.193
3578          UC   1.117   0.635
              * Natural Time-Area Relation
3579          UA       0       3       5       8      12      20      43      75      90      96
3580          UA     100
              *
              *
              * Combines PI688 and PI689

3581          KK  CPI689
3582          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3583          KK  RPI689
3584          KO       0       0     0.0       0      22
3585          RS       5    FLOW     0.0     0.0
3586          RC   0.043   0.035   0.043   18798  0.0173
              * WITS100
3587          RX       0      16      34      89     132     168     221     326
3588          RY    2127   -2123    2118  2117.5  2116.5    2118    2119    2127
              *
              *

3589          KK   PI687
3590          KO       0       0     0.0       1      22
3591          BA  7.0093
3592          LG    0.35    0.36   5.392   0.232  27.265
3593          UC     1.5   0.868
              * Natural Time-Area Relation
3594          UA       0       3       5       8      12      20      43      75      90      96
3595          UA     100
              *
              *
              * Combines PI687 and  RPI689

3596          KK  CPI687
3597          KO       0       0     0.0       0      22
3598          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04
```



```
                                          HEC-1 INPUT

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

3599          KK  RPI687
3600          KO       0       0     0.0       0      22
3601          RS       2    FLOW     0.0     0.0
3602          RC   0.043   0.035   0.043   10777  0.0167
              * WITS100
3603          RX       0      16      34      89     132     168     221     326
3604          RY    2127    2123    2118  2117.5  2116.5    2118    2119    2127
              *
              *

3605          KK   PI684
3606          KO       0       0     0.0       1      22
3607          BA  0.7361
3608          LG    0.35    0.15    7.86   0.087   6.444
3609          UC   0.788   0.679
              * Natural Time-Area Relation
3610          UA       0       3       5       8      12      20      43      75      90      96
3611          UA     100
              *
              *
              * Combines PI684 and RPI687
```

```
3612          KK  CPI684
3613          KO       0       0     0.0       0      22
3614          HC       2
              *
              *
              * *** STAGE DISCHARGE/STORAGE BEHIND STRUCTURE SR1030,1040,1050 (HWY74 CULVERT)
              * modified slightly from 100-yr 24hr model: 16000/11.21/1992.1 ordinates added

3615          KK  SSR103
3616          KO       0       0     0.0       1      22
3617          RS       1    STOR       0
3618          SQ       0     752    1710    5550    8278   11740   16000
3619          SA       0  0.0001    0.61    3.82    7.57   11.20   11.21
3620          SE  1976.2    1978    1980    1984    1988    1992  1992.1
              *
              *
              * ROUTE UPDATED 4/14/04

3621          KK  RPI684
3622          KO       0       0     0.0       0      22
3623          RS       4    FLOW     0.0     0.0
3624          RC   0.043   0.035   0.043   14047  0.0139
              * WITS110_1
3625          RX       0      82     155     186     241     380     502     570
3626          RY    1909    1903    1900    1899    1900    1903    1903    1909
              *
              *
1                                                HEC-1 INPUT
PAGE127

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


3627          KK   PI681
3628          KO       0       0     0.0       1      22
3629          BA  0.9914
3630          LG   0.338   0.156   8.404   0.071   9.157
3631          UC   1.100   1.126
              * Natural Time-Area Relation
3632          UA       0       3       5       8      12      20      43      75      90      96
3633          UA     100
              *
              *
              * Combines PI681 and RPI684

3634          KK  CPI681
3635          KO       0       0     0.0       0      22
3636          HC       2
              *
              *
              * ROUTE UPDATED 4/14/04

3637          KK  RPI681
3638          KO       0       0     0.0       0      22
3639          RS       7    FLOW     0.0     0.0
3640          RC   0.043   0.035   0.043   19831   0.011
              * WITS110_2 modified
3641          RX       0     190     319     379     460     560     600     667
3642          RY    1572    1569  1568.5    1565  1568.5  1568.5  1569.5    1572
              *
              *

3643          KK   PI678
3644          KO       0       0     0.0       1      22
3645          BA  0.8324
3646          LG   0.324   0.252   4.342   0.417  12.003
3647          UC   0.933   1.049
              * Natural Time-Area Relation
3648          UA       0       3       5       8      12      20      43      75      90      96
3649          UA     100
              *
              *
              * Combines PI678 and RPI681
```

```
3650          KK  CPI678
3651          KO       0       0     0.0       0      22
3652          HC       2
              *
              *
              * Diversion Out: Flow split FS9
              * Flow Split Diversion: Main path to CPI675, Diversion to PI672
              * 28% of flow is diverted to PI672
1                                          HEC-1 INPUT
PAGE128

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


3653          KK    D678
3654          KO       0       0     0.0       0      22
3655          DT   DO678
3656          DI       0   10000
3657          DQ       0    2800
              *

3658          KK   PI690
3659          KO       0       0     0.0       1      22
3660          BA  0.6288
3661          LG    0.35    0.25   4.347   0.404     5.0
3662          UC   0.871   0.990
              * Natural Time-Area Relation
3663          UA       0       3       5       8      12      20      43      75      90      96
3664          UA     100
              *
              *
              * Combines PI690 and D678

3665          KK  CPI690
3666          KO       0       0     0.0       0      22
              * Hard Coded
3667          HC       2   14.71
              *
              *
              * ROUTE UPDATED 4/14/04

3668          KK  RPI690
3669          KO       0       0     0.0       0      22
3670          RS       1    FLOW     0.0     0.0
3671          RC   0.043   0.035   0.043    2823  0.0028
              * WITS110_2 Modified X-sect
3672          RX       0     380     509     569     650     750     790     946
3673          RY    1573    1569  1568.5    1565  1568.5  1568.5  1569.5    1573
              *
              *

3674          KK   PI675
3675          KO       0       0     0.0       1      22
3676          BA  0.0628
3677          LG    0.35    0.25   4.586   0.346     5.0
3678          UC   0.342   0.353
              * Natural Time-Area Relation
3679          UA       0       3       5       8      12      20      43      75      90      96
3680          UA     100
              *
              *
              * Combines PI675 and RPI690
1                                          HEC-1 INPUT
PAGE129

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


3681          KK  CPI675
3682          KO       0       0     0.0       0      22
3683          HC       2
              *
              *
```

```
                    * COMBINES CPI675 AND CAP1*

3684                KK   CAP1*
3685                KO       0       0     0.0       0      22
3686                HC       2
                    *
                    *

3687                KK   PI672
3688                KO       0       0     0.0       1      22
3689                BA  1.5103
3690                LG   0.348   0.248   4.402   0.391   4.918
3691                UC   0.825   0.544
                    * Natural Time-Area Relation
3692                UA       0       3       5       8      12      20      43      75      90      96
3693                UA     100
                    *
                    *
                    * Diversion Recovery: Flow split FS9

3694                KK    D678
3695                KO       0       0     0.0       0      22
3696                DR   DO678
                    *
                    *
                    * ROUTE UPDATED 4/14/4

3697                KK   RD678
3698                KO       0       0     0.0       0      22
3699                RS       1    FLOW     0.0     0.0
3700                RC   0.043   0.035   0.043    6108  0.0039
                    * WITS110_2
3701                RX       0     190     319     379     460     560     600     667
3702                RY    1571    1569  1568.5    1565  1568.5  1568.5  1569.5    1571
                    *
                    *
                    * Combines RD678 and PI672

3703                KK  CPI672
3704                KO       0       0     0.0       0      22
                    * Hard Coded
3705                HC       2    6.98
                    *
                    *
                    * COMBINES CPI672 AND CAP1*
1                                                HEC-1 INPUT
PAGE130

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


3706                KK   CAP1*
3707                KO       0       0     0.0       0      22
3708                HC       2
                    *
                    *

3709                KK   PI693
3710                KO       0       0     0.0       1      22
3711                BA  0.8361
3712                LG   0.345   0.247    4.55   0.354   4.932
3713                UC   0.654   0.446
                    * Natural Time-Area Relation
3714                UA       0       3       5       8      12      20      43      75      90      96
3715                UA     100
                    *
                    *
                    * COMBINES PI693 AND CAP1*

3716                KK   CAP1*
3717                KO       0       0     0.0       0      22
3718                HC       2
                    *
                    *
```

```
3719          KK   PI669
3720          KO       0       0     0.0       1      22
3721          BA  0.2855
3722          LG   0.378   0.248    4.65   0.364   3.929
3723          UC   0.725   0.981
              * Natural Time-Area Relation
3724          UA       0       3       5       8      12      20      43      75      90      96
3725          UA     100
              *
              *
              * COMBINES PI669 AND CAP1*

3726          KK   CAP1*
3727          KO       0       0     0.0       0      22
3728          HC       2
              *
              *

3729          KK   PI642
3730          KO       0       0     0.0       1      22
3731          BA  0.2366
3732          LG   0.332   0.334   4.103   0.501   4.208
3733          UC   0.538   0.530
              * Urban Time-Area Relation
3734          UA       0       5      16      30      65      77      84      90      94      97
3735          UA     100
              *
              *
              * COMBINES PI642 AND CAP1*
1                                          HEC-1 INPUT
PAGE131

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

3736          KK   CAP1*
3737          KO       0       0     0.0       0      22
3738          HC       2
              *
              *
              *
              *
              *
              *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************************************************************ *
              * ******************** BEGIN WEST PADELFORD AREA RECOVERY ********************** *
              * ************************************************************************ *
              * ************************************************************************ *
              * ************************************************************************ *
              *
              * This is the interpolated hydrograph from concentration point CO400 from
              * the Padelford model by A-N West Inc, which corresponds to concentration
              * point PDWEST in the 2004 Wittmann ADMSU.  The Padelford model used a time
              * step of 2 minutes, and the Wittmann ADMSU utilizes a time step of 5 minutes,
              * so interpolation was required.  The QI cards were utilized to avoid the
              * conflict of using DSS files, which can cause errors in the future if not
              * utilized correctly.  This QI card was truncated once the flows reached
              * zero cfs.  Although A-N West calculated the flow through the various CAP
              * structures, they did not take into consideration all of the flow from the
              * west portion of this CAP system.  Thus it was necessary to create the QI
              * card from a point before diversions occur at the CAP, and before storage
              * occurs.
              *
              * There are 2 points where flow is inputted into the model from the Padelford
              * area: PDEAST and PDWEST. A-N WEST hard coded both concentrations points with
              * the entire model area, 23 sq miles.  To remain consistent in the Wittmann
              * ADMSU, this can not occur, so the contributing area is associated with each
              * Inflow point, and they are as follows:
              *        PDEAST = 16.44 sq miles
              *        PDWEST =  7.08 sq miles
              *
```

```
                 * It was necessary to place an IN card prior to the QI cards because the
                 * precipitation interval is 15 minutes.
                 *

3739             KK  PDWEST
3740             IN       5
3741             BA    7.08
3742             QI       0       0       0       0       0       0       0       0       0       0
3743             QI       0       0       0       0       0       0       0       0       0       0
3744             QI       0       0       0       0       1       1       1       1       1       2
3745             QI       2       2       3       3       4       5       7      17      53      93
3746             QI     122     138     153     174     206     249     296     349     405     448
3747             QI     481     527     655     910    1166    1461    1780    2114    2491    2890
3748             QI    3243    3502    3658    3720    3699    3620    3497    3338    3156    2966
3749             QI    2776    2577    2380    2176    1956    1726    1489    1268    1088     945
3750             QI     850     772     703     637     580     527     477     432     390     354
1                                                HEC-1 INPUT
PAGE132

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

3751             QI     325     299     277     259     244     231     218     205     194     183
3752             QI     174     165     159     154     149     143     137     130     123     115
3753             QI     108     100      94      89      85      81      78      74      72      68
3754             QI      66      62      60      57      55      52      51      48      47      45
3755             QI      44      42      40      38      36      34      32      30      29      27
3756             QI      26      25      24      24      23      23      23      22      21      21
3757             QI      20      19      18      17      16      15      15      14      14      13
3758             QI      13      12      12      11      10       9       9       8       7       7
3759             QI       6       5       5       4       4       3       3       3       2       2
3760             QI       2       2       1       1       1       1       1       1       1       1
3761             QI   0.001
                 *
                 * This combine card combines CAP1* and PDWEST which contains all of the
                 * contributing area from the West side of the CAP impoundment system.
                 *
                 * Combines PDWEST and CAP1*

3762             KK   CAP1*
3763             KO       0       0     0.0       0      22
3764             HC       2
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ******************** END WEST PADELFORD AREA RECOVERY ********************** *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 *
                 *
                 *
                 *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 * ************* BEGINNING OF CAP IMPOUNDMENT AREA SYSTEM 1 ******************* *
                 * ************************************************************************ *
                 * ************************************************************************ *
                 *                                                                          *
                 * ************************* STOR1 to STOR2 Diversion ************************* *
                 * ************************************************************************ *
                 * * This storage is part of a large 14 culvert storage system.  Although     * *
                 * * the 14 culverts act as a single system, there is a berm which separates  * *
                 * * the 2 storage areas at low flows.  The two storage areas are connected   * *
                 * * by a diversion once the flow reaches the bottom of the x-sect which      * *
                 * * separates the two areas.  The diversion occurs from Storage STOR1        * *
                 * * to STOR2.  This was determined by first modeling the 2 culvert systems   * *
                 * * separately.  When they were modeled separately it was obvious that the   * *
                 * * west side of this CAP system overflowed into the East side.  The same    * *
                 * * assumption was made by A-N West in their hydrology model (FCD No. 99-12).* *
                 * * Although A-N West Inc. calculated storage in their model, their storage  * *
                 * * calculations were not utilized in this Wittmann ADMSU.  The main reason  * *
```

```
* * is the fact that all the storage west of Padelford is not accounted for  * *
* * in the A-N West model.                                                   * *
* *                                                                          * *
* * The rating curve for the diversion was calculated using BOSS RMS, and    * *
* * details can be found in the appendix.  The invert of the cross section   * *
* * cut by RMS is 1553.5.  Once the flow depth reaches this point, flow      * *
* * will begin to divert from STOR1 to STOR2.  The diversion was calculated  * *
* * assuming critical depth.  The rating curve was then incorporated into   * *
* * the SQ card for STOR1.  The diversion is taken from that card, and the  * *
* * remaining flow represents the capacities of the culverts for that       * *
* * ponding area.                                                            * *
* * The storage was set up in the following order:                           * *
* *    -STOR1 (Storage of 9 culverts on west side of 14 culvert system)     * *
* *    -DCAP* (Diversion from STOR1 to STOR2)                               * *
* *    -STOR2 (Storage of 5 culverts on east side of 14 culvert system)     * *
* *                                                                          * *
* ************************************************************************** *
*                                                                              *
*                                                                              *
* ********************** Culvert/Overchute Capacities ************************ *
* ************************************************************************** *
* * The flows were calculated based upon the capacities of the overchutes or * *
* * culverts.  Once the culvert capacities (inlet controlled) were calculated* *
* * up to the berm elevation (1556), a combined culvert (inlet control) and  * *
* * weir equation was utilized to calculate the flows that would overtop the * *
* * berm for 1 and 2 feet (1557 & 1558).  A weir coefficient (C) of 2.7 was  * *
* * used and the weir length was the basin boundary where overtopping        * *
* * would occur. These will be utilized for both of the CAP storage areas.   * *
* * The following table summarizes the weir flow and parameters.             * *
* *                                                                          * *
* * ------------------------------------------------------------------------ * *
* *                              Q(weir)=C*L*H^1.5                           * *
* * ------------------------------------------------------------------------ * *
* *                *Routes*   *C*   *LENGTH*   *FLOW*    *FLOW*              * *
* *                                   [ft]      [H=1]     [H=2]              * *
* *                ------------------------------------------                * *
* *                 DCAP19 ** 2.7 ** 1641.0  **  4431  ** 12532             * *
* *                 DCAP18 ** 2.7 **  899.1  **  2428  **  6866             * *
* *                 DCAP17 ** 2.7 ** 2059.0  **  5559  ** 15724             * *
* *                 DCAP16 ** 2.7 ** 1947.9  **  5259  ** 14876             * *
* *                 DCAP15 ** 2.7 ** 1127.4  **  3044  **  8610             * *
* *                 DCAP14 ** 2.7 ** 2783.4  **  7515  ** 21256             * *
* *                 DCAP13 ** 2.7 ** 2552.8  **  6893  ** 19495             * *
* *                 DCAP12 ** 2.7 ** 1207.7  **  3261  **  9223             * *
* *                 DCAP11 ** 2.7 ** 1104.9  **  2983  **  8438             * *
* *                 DCAP10 ** 2.7 ** 3508.9  **  9474  ** 26797             * *
* *                 DCAP09 ** 2.7 ** 4908.7  ** 13253  ** 37487             * *
* *                 DCAP08 ** 2.7 **  411.1  **  1110  **  3139             * *
* *                 DCAP07 ** 2.7 ** 2199.3  **  5938  ** 16796             * *
* *                 DCAPOT ** 2.7 ** 2369.2  **  6397  ** 18093             * *
* *                 RWI542 ** 2.7 ** 2034.9  **  5494  ** 15540             * *
* *                                                                          * *
* ************************************************************************** *
* ************************************************************************** *
*
*
* ************************************************************************** *
* ********************************** STOR1 ********************************** *
* ************************************************************************** *
*
*
*
* *** STORAGE IN THE CAP IMPOUNDMENT AREA
```

1
PAGE133

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

3765          KK   STOR1
3766          KO       0       0     0.0       0      22
3767          RS       1    STOR       0
              *
              *
```

```
                 * This SQ card represents not only the flow through the culverts, but also the
                 * flow over the connecting berm between the two ponding areas STOR1 and STOR2.
                 * Only the values in the table following the DCAP* card were calculated, except
                 * for DCAP*.  Values were calculated using BOSS-RMS for all elevations of DCAP*.
                 * The rest of the structure capacities were interpolated assuming linear
                 * interpolation.
                 *
3768             SQ       0     206     638    2223    2900    3271    3545    3961    4255    5071
3769             SQ    5615    6148    6681    7725    8791    9885   79348  204489
3770             SE    1541    1544    1546    1550    1552  1553.5    1554  1554.3  1554.5  1554.8
3771             SE    1555 1555.15  1555.3  1555.5  1555.8    1556    1557    1558
                 *
3772             SA       0   23.20   63.00   98.11  222.56  331.20   442.5  553.04   553.1   553.2
3773             SE    1540    1544    1546    1548    1550    1552    1554    1556    1557    1558
                 *
                 *

3774             KK   DCAP*
3775             DT  DOCAP*
3776             DI       0     206     638    2223    2900    3271    3545    3961    4255    5071
3777             DI    5615    6148    6681    7725    8791    9885   79348  204489
3778             DQ       0       0       0       0       0       0     150     500     750    1500
3779             DQ    2000    2500    3000    4000    5000    6050   13000   24000
                 *
                 * The flow from STOR1 is distributed to the following routes and diversions
                 * The breakdown of where the flow is distributed to is shown below, with the
                 * STOR1 being the summation of the flows at any given elevation.
                 *
                 * ************************************************************************ *
                 *  *ELEV*  1544 *  1546 *  1550 *  1552 *  1554 *  1556 *   1557 *   1558 *    *
                 * ------------------------------------------------------------------------- *
                 * *ROUTES* ********************************************************************** *
                 * *DCAP14*    0 *    27 *   172 *   260 *   335 *   380 *   7930 *  21686 *    *
                 * *DCAP13*   32 *    76 *   270 *   335 *   390 *   440 *   7348 *  19975 *    *
                 * *DCAP12*   27 *    82 *   260 *   335 *   380 *   430 *   3716 *   9703 *    *
                 * *DCAP11*   32 *    95 *   270 *   345 *   400 *   440 *   3448 *   8918 *    *
                 * *DCAP10*   32 *    91 *   270 *   345 *   390 *   440 *   9939 *  27277 *    *
                 * *DCAP09*   27 *    82 *   260 *   335 *   380 *   430 *  13708 *  37967 *    *
                 * *DCAP08*   22 *    65 *   245 *   320 *   375 *   430 *   1550 *   3604 *    *
                 * *DCAP07*   19 *    65 *   238 *   320 *   375 *   430 *   6378 *  17261 *    *
                 * *DCAPOT*    0 *     0 *     0 *     0 *     0 *     0 *   6397 *  18093 *    *
                 * *RWI542*   15 *    55 *   238 *   305 *   370 *   415 *   5934 *  16005 *    *
                 * *DCAP* *    0 *     0 *     0 *     0 *   150 *  6050 *  13000 *  24000 *    *
                 * ========================================================================== *
                 *  *STOR1*  206 *   638 *  1430 *  2223 *  3545 *  9885 *  79348 * 204489 *    *
                 * ************************************************************************ *
                 *
                 *
1                                                HEC-1 INPUT
PAGE134

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

3780             KK  DCAP14
3781             KM   DIVERSON AT STRUCTURE CAP140: MAIN PATH TO DCAP13, DIVERSION TO CPI609
3782             DT  DOCP14
3783             DI     206     638    2223    2900    3395    3835   66348  180489
3784             DQ       0      27     172     260     335     380    7930   21686
                 *
                 *

3785             KK  DCAP13
3786             KM   DIVERSON AT STRUCTURE CAP130: MAIN PATH TO DCAP12, DIVERSION TO CPI615
3787             DT  DOCP13
3788             DI     206     611    2051    2640    3060    3455   58418  158803
3789             DQ      32      76     270     335     390     440    7348   19975
                 *
                 *

3790             KK  DCAP12
3791             KM   DIVERSON AT STRUCTURE CAP120: MAIN PATH TO DCAP11, DIVERSION TO CPI618
3792             DT  DOCP12
3793             DI     174     535    1781    2305    2670    3015   51070  138828
```

```
3794    DQ      27      82     260     335     380     430    3716    9703
        *
        *

3795    KK  DCAP11
3796    KM   DIVERSON AT STRUCTURE CAP110: MAIN PATH TO DCAP10, DIVERSION TO CPI618
3797    DT  DOCP11
3798    DI     147     453    1521    1970    2290    2585   47354  129125
3799    DQ      32      95     270     345     400     440    3448    8918
        *
        *

3800    KK  DCAP10
3801    KM   DIVERSON AT STRUCTURE CAP100: MAIN PATH TO DCAP09, DIVERSION TO CPI628
3802    DT  DOCP10
3803    DI     115     358    1251    1625    1890    2145   43906  120207
3804    DQ      32      91     270     345     390     440    9939   27277
        *
        *

3805    KK  DCAP09
3806    KM   DIVERSON AT STRUCTURE CAP090: MAIN PATH TO DCAP08, DIVERSION TO CWI525
3807    DT  DOCP09
3808    DI      83     267     981    1280    1500    1705   33967   92930
3809    DQ      27      82     260     335     380     430   13708   37967
        *
        *

3810    KK  DCAP08
3811    KM   DIVERSON AT STRUCTURE CAP080: MAIN PATH TO DCAP07, DIVERSION TO CWI526
3812    DT  DOCP08
3813    DI      56     185     721     945    1120    1275   20259   54963
3814    DQ      22      65     245     320     375     430    1550    3604
        *
        *
                                   HEC-1 INPUT
GE135

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

3815    KK  DCAP07
3816    KM   DIVERSON AT STRUCTURE CAP070: MAIN PATH TO DCAPOT, DIVERSION TO CWI528
3817    KM   MAIN FLOW PATH IS OUTFLOW FROM CAP060
3818    DT  DOCP07
3819    DI      34     120     476     625     745     845   18709   51359
3820    DQ      19      65     238     320     375     430    6378   17261
        *
        *

3821    KK  DCAPOT
3822    KM   DIVERSON AT STRUCTURE CAP070: MAIN PATH TO CWI529, DIVERSION TO CWI527
3823    KM   MAIN FLOW PATH IS OVERTOPPING WEIR FLOW ONLY
3824    DT  DOCPOT
3825    DI      15      55     238     305     370     415   12331   34098
3826    DQ       0       0       0       0       0       0    6397   18093
        *
        *
        * THE FOLLOWING IS THE REMAINING FLOW TO RWI542
        * DI  15      55     238     305     370     415    5934   16005
        *
        *
        * ************************************************************************ *
        * ************************************************************************ *
        * **************** END OF CAP IMPOUNDMENT AREA SYSTEM 2 ********************** *
        * ************************************************************************ *
        * ************************************************************************ *
        *
        *
        * ROUTE UPDATED 4/14/04

3827    KK  RWI542
3828    KO       0       0     0.0       0      22
3829    RS       1    FLOW     0.0     0.0
```

```
3830          RC   0.043   0.035   0.043    2706  0.0074
              * WITS90_3
3831          RX       0     294     436     564     596     685     950    1000
3832          RY    1629    1625  1621.5    1619    1621  1625.5  1625.5  1628.5
              *
              *

3833          KK   WI529
3834          KO       0       0     0.0       1      22
3835          BA  0.1663
3836          LG   0.246   0.224     4.3   0.408  24.627
3837          UC   0.442   0.324
              * Natural Time-Area Relation
3838          UA       0       3       5       8      12      20      43      75      90      96
3839          UA     100
              *
              *
              * COMBINES RWI542 AND WI529
1                                          HEC-1 INPUT
PAGE136

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


3840          KK  CWI529
3841          KO       0       0     0.0       0      22
              * Hard Coded
3842          HC       2    4.13
              *
              *
              * Railroad Diversion: Main path to CWI516, Diversion to CWI528
              * From Structure RR580, See Appendix D.5 for analysis

3843          KK    D529
3844          KO       0       0     0.0       0      22
3845          DT   DO529
3846          DI       0      39     481     879   10762
3847          DQ       0       0       0     218    8008
              *
              *
              * ROUTE UPDATED 4/14/04

3848          KK  RWI529
3849          KO       0       0     0.0       0      22
3850          RS       1    FLOW     0.0     0.0
3851          RC    0.04    0.04    0.04    3670  0.0098
              * WITS70
3852          RX       0     450     700    1284    1435    1499    1745    2500
3853          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3854          KK   WI516
3855          KO       0       0     0.0       1      22
3856          BA  0.1435
3857          LG   0.297   0.324     4.3   0.416   9.918
3858          UC   0.450   0.431
              * Natural Time-Area Relation
3859          UA       0       3       5       8      12      20      43      75      90      96
3860          UA     100
              *
              *
              * COMBINES WI516 RIW529

3861          KK  C516_1
3862          KO       0       0     0.0       0      22
3863          HC       2
              *
              * COMBINES C516_1 and RIW529

3864          KK  CWI516
3865          KO       0       0     0.0       0      22
3866          HC       2
              *
```

```
                    *
                    * ROUTE UPDATED 4/14/04
                                                HEC-1 INPUT
PAGE137

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

3867                KK  RWI516
3868                KO       0       0     0.0       0      22
3869                RS       6    FLOW     0.0     0.0
3870                RC    0.04    0.04    0.04   11711  0.0051
                    * WITS70
3871                RX       0     450     700    1284    1435    1499    1745    2500
3872                RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                    *
                    *

3873                KK   WI512
3874                KO       0       0     0.0       1      22
3875                BA  1.3550
3876                LG   0.308   0.273     5.8   0.204  13.487
3877                UC   0.888   0.613
                    * Urban Time-Area Relation
3878                UA       0       5      16      30      65      77      84      90      94      97
3879                UA     100
                    *
                    *
                    * Combines WI512 and RWI516

3880                KK  CWI512
3881                KO       0       0     0.0       0      22
3882                HC       2
                    *
                    *
                    * CAP Diversion Recovery: Outflow from structure CAP070

3883                KK  DCAPOT
3884                KO       0       0     0.0       0      22
3885                DR  DOCPOT
                    *
                    *
                    * Route updated 04-15-2004

3886                KK  RDCPOT
3887                KO       0       0     0.0       0      22
3888                RS       2    FLOW     0.0     0.0
3889                RC    0.04    0.04    0.04    8638  0.0074
                    *
                    * WITS70
3890                RX       0     450     700    1284    1435    1499    1745    2500
3891                RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                    *
                    *

3892                KK   WI527
3893                KO       0       0     0.0       1      22
3894                BA  0.7094
3895                LG   0.328   0.241   4.863   0.296   7.911
3896                UC   0.688   0.480
                    * Natural Time-Area Relation
3897                UA       0       3       5       8      12      20      43      75      90      96
1                                               HEC-1 INPUT
PAGE138

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

3898                UA     100
                    *
                    *
                    * Combines RDCAPOT and WI527

3899                KK  CWI527
3900                HC       2
```

```
                 *
                 *
                 * Railroad Diversion: Main path to CWI518, Diversion to CWI525
                 * From Structure RR600 and RR610, See Appendix D.5 for analysis

3901             KK    D527
3902             KO       0       0     0.0       0      22
3903             DT   DO527
3904             DI       0     523     811    1154    3000
3905             DQ       0       0      92     254    1097
                 *
                 *
                 * Route updated 04-15-2004

3906             KK  RWI527
3907             KO       0       0     0.0       0      22
3908             RS       3    FLOW     0.0     0.0
3909             RC    0.04    0.04    0.04    5909  0.0068
                 * WITS70
3910             RX       0     450     700    1284    1435    1499    1745    2500
3911             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
                 * Railroad Diversion Recovery: Outflow from structure RR580

3912             KK    D529
3913             KO       0       0     0.0       0      22
3914             DR   DO529
                 *
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3915             KK   RD529
3916             KO       0       0     0.0       0      22
3917             RS       1    FLOW     0.0     0.0
3918             RC   0.043   0.035   0.043    4871  0.0078
                 * WITS130
3919             RX       0     400     456     575     620     650     660     682
3920             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP070
1                                                HEC-1 INPUT
PAGE139

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


3921             KK  DCAP07
3922             KO       0       0     0.0       0      22
3923             DR  DOCP07
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3924             KK  RDCP07
3925             KO       0       0     0.0       0      22
3926             RS       2    FLOW     0.0     0.0
3927             RC   0.043   0.035   0.043    6956  0.0083
                 * WITS120
3928             RX       0     100     292     409     492     567     718     886
3929             RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
                 *
                 *
                 *

3930             KK   WI528
3931             KO       0       0     0.0       1      22
3932             BA  0.3585
3933             LG   0.296   0.233   4.353   0.398  13.563
3934             UC   0.617   0.506
                 * Natural Time-Area Relation
3935             UA       0       3       5       8      12      20      43      75      90      96
```

```
3936          UA     100
              *
              *
              * COMBINES BASIN WI528 AND RDCP07

3937          KK  C528_1
3938          KO       0       0     0.0       0      22
              * Hard Coded
3939          HC       2    4.41
              *
              *
              * COMBINES C528_1 and RD529

3940          KK  CWI528
3941          KO       0       0     0.0       0      22
              * Hard Coded
3942          HC       2    4.41
              *
              *
              * ROUTE UPDATED 4/14/04

3943          KK  RWI528
3944          KO       0       0     0.0       0      22
3945          RS       1    FLOW     0.0     0.0
3946          RC    0.04    0.04    0.04    8240  0.0073
              * WITS70
3947          RX       0     450     700    1284    1435    1499    1745    2500
3948          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
1                                                HEC-1 INPUT
PAGE140

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


3949          KK   WI518
3950          KO       0       0     0.0       1      22
3951          BA  0.5317
3952          LG   0.338   0.253   5.205   0.256   8.261
3953          UC   0.638   0.484
              * Natural Time-Area Relation
3954          UA       0       3       5       8      12      20      43      75      90      96
3955          UA     100
              *
              *
              * COMBINES BASIN WI518 and RWI528

3956          KK  C518_1
3957          KO       0       0     0.0       0      22
              *
3958          HC       2
              *
              *
              * COMBINES BASIN C518_1 AND RWI527

3959          KK  CWI518
3960          KO       1       0     0.0       0      21
              * Hard Coded
3961          HC       2    5.54
              *
              *
              * Combines CWI518 and CWI512

3962          KK   C508*
3963          KO       0       0     0.0       0      22
3964          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4

3965          KK   R508*
3966          KO       0       0     0.0       0      22
3967          RS       7    FLOW     0.0     0.0
```

```
3968          RC   0.043   0.035   0.043   12366  0.0053
              * WITS130 modified
3969          RX       0     400     456     575     620     650     660     682
3970          RY    1398    1394  1393.5  1392.5    1392  1392.5    1395    1398
              *
              *

3971          KK   WI508
3972          KO       0       0     0.0       1      22
3973          BA  0.6991
3974          LG   0.336   0.252   5.116   0.271    6.72
3975          UC   0.946   0.856
              * Natural Time-Area Relation
3976          UA       0       3       5       8      12      20      43      75      90      96
3977          UA     100
              *
              *
              * COMBINES WI508 AND R508*
1                                                HEC-1 INPUT
PAGE141

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


3978          KK  CWI508
3979          KO       0       0     0.0       0      22
3980          HC       2
              *
              * Diversion Out: Flow split FS10
              * Flow Split Diversion: Main path to CWI510, Diversion to CWI500
              * 19% of flow is diverted to CWI500

3981          KK    D508
3982          KO       0       0     0.0       0      22
3983          DT   DO508
3984          DI       0   10000
3985          DQ       0    1900
              *
              *

3986          KK  WI510A
3987          KO       0       0     0.0       1      22
3988          BA  1.1293
3989          LG   0.337    0.26   4.622   0.338   5.191
3990          UC   0.783   0.500
              * Natural Time-Area Relation
3991          UA       0       3       5       8      12      20      43      75      90      96
3992          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

3993          KK   R510A
3994          KO       0       0     0.0       0      22
3995          RS       8    FLOW     0.0     0.0
3996          RC    0.04    0.04    0.04   17257  0.0051
              * WITS70
3997          RX       0     450     700    1284    1435    1499    1745    2500
3998          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3999          KK   WI510
4000          KO       0       0     0.0       1      22
4001          BA  1.2273
4002          LG   0.339   0.274   5.732   0.204   5.364
4003          UC   1.258   1.228
              * Natural Time-Area Relation
4004          UA       0       3       5       8      12      20      43      75      90      96
4005          UA     100
              *
              *
              * COMBINES CWI508, WI510 AND R510A
```

```
1                                                HEC-1 INPUT
PAGE142

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


4006          KK  CWI510
4007          KO       0       0     0.0       0      22
              * Hard Coded
4008          HC       3   35.70
              *
              *
              * ROUTE UPDATED 4/14/04

4009          KK  RWI510
4010          KO       0       0     0.0       0      22
4011          RS       2    FLOW     0.0     0.0
4012          RC    0.04    0.04    0.04    6492  0.0048
              * WITS70
4013          RX       0     450     700    1284    1435    1499    1745    2500
4014          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

4015          KK   WI502
4016          KO       0       0     0.0       1      22
4017          BA  1.2082
4018          LG   0.344   0.251   5.448   0.229   6.516
4019          UC   1.133   0.961
              * Natural Time-Area Relation
4020          UA       0       3       5       8      12      20      43      75      90      96
4021          UA     100
              *
              *
              * COMBINES WI502, RWI510 AND RWI504

4022          KK  CWI502
4023          KO       0       0     0.0       0      22
4024          HC       3
              *
              *
              * ROUTE UPDATED 4/14/04

4025          KK  RWI502
4026          KO       0       0     0.0       0      22
4027          RS       1    FLOW     0.0     0.0
4028          RC   0.045   0.035   0.045    1679  0.0026
              * McMicken Dam Channel
4029          RX       0      46     101     121     171     181    1421    3621
4030          RY      25      14       4       0       0       4      14      25
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP080

4031          KK  DCAP08
4032          KO       0       0     0.0       0      22
4033          DR  DOCP08
              *
              *
              * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE143

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


4034          KK  RDCP08
4035          KO       0       0     0.0       0      22
4036          RS       1    FLOW     0.0     0.0
4037          RC   0.043   0.035   0.043    4229  0.0114
              * WITS120
4038          RX       0     100     292     409     492     567     718     886
4039          RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
              *
```

```
                 *

4040             KK   WI526
4041             KO       0       0     0.0       1      22
4042             BA  0.0486
4043             LG    0.35    0.25    4.35   0.403     5.0
4044             UC   0.463   0.764
                 * Natural Time-Area Relation
4045             UA       0       3       5       8      12      20      43      75      90      96
4046             UA     100
                 *
                 *
                 * Combines WI526 and RDCP08

4047             KK  CWI526
4048             KO       0       0     0.0       0      22
                 * Hard Coded
4049             HC       2    4.10
                 *
                 *
                 * ROUTE UPDATED 4/14/04

4050             KK  RWI526
4051             KO       0       0     0.0       0      22
4052             RS       6    FLOW     0.0     0.0
4053             RC   0.043   0.035   0.043   11922  0.0069
                 * WITS120
4054             RX       0     100     292     409     492     567     718     886
4055             RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
                 *
                 *

4056             KK   WI525
4057             KO       0       0     0.0       1      22
4058             BA  1.9406
4059             LG    0.33   0.245   4.547   0.361   8.635
4060             UC   0.896   0.530
                 * Natural Time-Area Relation
4061             UA       0       3       5       8      12      20      43      75      90      96
4062             UA     100
                 *
                 * Combines RWI526 and WI525
                 * KKC525_1
                 * KO     0       0     0.0       0      22
                 *
                 * HC     2
                 *
                 *
                 * Diversion Recovery: Outflow from structure CAP090
1                                                HEC-1 INPUT
PAGE144

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


4063             KK  DCAP09
4064             KO       0       0     0.0       0      22
4065             DR  DOCP09
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4066             KK  RDCP09
4067             KO       0       0     0.0       0      22
4068             RS       8    FLOW     0.0     0.0
4069             RC   0.043   0.035   0.043   14618   0.009
                 * WITS120
4070             RX       0     100     292     409     492     567     718     886
4071             RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
                 *
                 * Combines RDCP09 and WI525

4072             KK  C5251b
4073             KO       0       0     0.0       0      22
```

```
                    * Hard Coded
4074                HC       2    6.01
                    *
                    * Combines C5251b and RWI526
                    * KKC5251a
                    * KO     0       0     0.0       0      22
                    * Hard Coded
                    * HC     2   10.11
                    *
                    * Railroad Diversion Recovery: Outflow from structure RR600

4075                KK    D527
4076                KO       0       0     0.0       0      22
4077                DR   DO527
                    *
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4078                KK   RD527
4079                KO       0       0     0.0       0      22
4080                RS       2    FLOW     0.0     0.0
4081                RC   0.043   0.035   0.043    7666  0.0065
                    * WITS130
4082                RX       0     400     456     575     620     650     660     682
4083                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
                    * Combines C525_1, C5251a and RD527
1                                                HEC-1 INPUT
PAGE145

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


4084                KK  CWI525
4085                KO       0       0     0.0       0      22
                    * Hard Coded
4086                HC       3   10.23
                    *
                    *
                    * Railroad Diversion: Main path to CWI506, Diversion to CWI524
                    * From Structure RR630 and RR640, See Appendix D.5 for analysis

4087                KK    D525
4088                KO       0       0     0.0       0      22
4089                DT   DO525
4090                DI       0     269     463     699     969
4091                DQ       0       0       9      26      48
                    *
                    *
                    * ROUTE UPDATED 4/14/04

4092                KK  RWI525
4093                KO       0       0     0.0       0      22
4094                RS       6    FLOW     0.0     0.0
4095                RC   0.043   0.035   0.043   11015  0.0064
                    * WITS130
4096                RX       0     400     456     575     620     650     660     682
4097                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *

4098                KK   WI506
4099                KO       1       0     0.0       1      21
4100                BA  1.5757
4101                LG   0.326    0.25   5.331   0.254  10.467
4102                UC   1.054   0.758
                    * Urban Time-Area Relation
4103                UA       0       5      16      30      65      77      84      90      94      97
4104                UA     100
                    *
                    * COMBINES WI506 and RWI525
```

```
4105          KK  C506_1
4106          KO       0       0     0.0       0      22
              * Hard Coded
4107          HC       2   11.13
              *

4108          KK   WI524
4109          KO       0       0     0.0       1      22
4110          BA  0.9500
4111          LG   0.347    0.25   4.659   0.322  10.203
4112          UC   0.825   0.607
              * Natural Time-Area Relation
4113          UA       0       3       5       8      12      20      43      75      90      96
4114          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR630
1                                          HEC-1 INPUT
PAGE146

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


4115          KK    D525
4116          KO       0       0     0.0       0      22
4117          DR   DO525
              *
              *
              *
              * ROUTE UPDATED 4/14/4

4118          KK   RD525
4119          KO       0       0     0.0       0      22
4120          RS       6    FLOW     0.0     0.0
4121          RC   0.043   0.035   0.043    6496  0.0065
              * WITS130
4122          RX       0     400     456     575     620     650     660     682
4123          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD525 and WI524

4124          KK  CWI524
4125          KO       0       0     0.0       0      22
              * Hard Coded
4126          HC       2    1.60
              *
              *
              * Railroad Diversion: Main path to CWI506, Diversion to CPI639
              * From Structure RR650, See Appendix D.5 for analysis

4127          KK    D524
4128          KO       0       0     0.0       0      22
4129          DT   DO524
4130          DI       0     595     906    1295    1748
4131          DQ       0       0      38     119     230
              *
              *
              * ROUTE UPDATED 4/14/04

4132          KK  RWI524
4133          KO       0       0     0.0       0      22
4134          RS       2    FLOW     0.0     0.0
4135          RC   0.043   0.035   0.043    4526  0.0062
              * WITS130
4136          RX       0     400     456     575     620     650     660     682
4137          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * COMBINES C506_1 AND RW524

4138          KK  CWI506
4139          KO       0       0     0.0       0      22
              * Hard Coded
```

```
4140          HC       2   12.67
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE147

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


4141          KK  RWI506
4142          KO       0       0     0.0       0      22
4143          RS       3    FLOW     0.0     0.0
4144          RC    0.04    0.04    0.04    5235  0.0042
              * WITS70
4145          RX       0     450     700    1284    1435    1499    1745    2500
4146          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              * ---------------------------------------------------------------------------
              * ---------------------- BEGIN 03-30-2005 ----------------------------------
              * ---------------------------------------------------------------------------
              *
              *

4147          KK   WI500
4148          KO       0       0     0.0       1      22
4149          BA  1.0487
4150          LG   0.349    0.25   5.521   0.224   5.124
4151          UC   0.933   0.659
              * Natural Time-Area Relation
4152          UA       0       3       5       8      12      20      43      75      90      96
4153          UA     100
              *

4154          KK  C500_1
4155          HC       2
              *
              * Diversion Recovery: Flow split FS10

4156          KK    D508
4157          KO       0       0     0.0       0      22
4158          DR   DO508
              *
              *
              * ROUTE UPDATED 4/14/4

4159          KK   RD508
4160          KO       0       0     0.0       0      22
4161          RS       2    FLOW     0.0     0.0
4162          RC    0.04    0.04    0.04    5200  0.0065
              * WITS70
4163          RX       0     450     700    1284    1435    1499    1745    2500
4164          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *

4165          KK  C500_2
4166          HC       2  21.778
              *
              * COMBINES WI500, RD508, RWI506 AND RWI502
1                                          HEC-1 INPUT
PAGE148

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


4167          KK  CWI500
4168          KO       0       0     0.0       0      22
              * Hard Coded
4169          HC       2  224.18
              *
              * ---------------------------------------------------------------------------
              * ------------------------- END 03-30-2005 -----------------------------------
              * ---------------------------------------------------------------------------
              *
```

```
                 * STORAGE AT MCMICKEN DAM SPILLWAY
                 *
                 *

4170             KK  SSPILL
4171             KM   MCMICKEN DAM OUTLET AND SPILLWAY RATING CURVES USED HERE
4172             RS       1    STOR       0       0
4173             SV       0    1370    5505   17501   20816   25623   30850   36661   38754   39849
4174             SQ       0     675     810    4080    4325   21150   47400   81650   93160   99300
4175             SE    1335    1340    1345  1352.5 1353.65 1355.65 1357.65 1359.65 1360.35  1360.7
4176             ST  1360.7   12775    3.05     1.5
                 *
                 *
                 * ROUTE UPDATED 4/14/04

4177             KK  RWI500
4178             KO       0       0     0.0       0      22
4179             RS       3    FLOW     0.0     0.0
4180             RC   0.045   0.035   0.045    5659   0.001
                 * McMicken Dam Channel
4181             RX       0      46     101     121     171     181    1421    3621
4182             RY      25      14       4       0       0       4      14      25
                 *
                 *

4183             KK   PI635
4184             KO       0       0     0.0       1      22
4185             BA  0.6106
4186             LG    0.29    0.27   5.391   0.237  15.959
4187             UC   0.638   0.430
                 * Natural Time-Area Relation
4188             UA       0       3       5       8      12      20      43      75      90      96
4189             UA     100
                 *
                 *
                 * COMBINES PI635 AND RWI500

4190             KK  CPI635
4191             KO       0       0     0.0       0      22
4192             HC       2
                 *
                 * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
PAGE149

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


4193             KK  RPI635
4194             KO       0       0     0.0       0      22
4195             RS       6    FLOW     0.0     0.0
4196             RC   0.045   0.035   0.045    7557   0.001
                 * McMicken Dam Channel
4197             RX       0      46     101     121     171     181    1421    3621
4198             RY      25      14       4       0       0       4      14      25
                 *
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP110

4199             KK  DCAP11
4200             KO       0       0     0.0       0      22
4201             DR  DOCP11
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4202             KK  RDCP11
4203             KO       0       0     0.0       0      22
4204             RS       5    FLOW     0.0     0.0
4205             RC   0.043   0.035   0.043    6377  0.0094
                 * PITS10_2
4206             RX       0      89     103     136     185     206     261     280
4207             RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
```

```
                    *
                    *
4208                KK   PI618
4209                KO       0       0     0.0       1      22
4210                BA  0.2886
4211                LG   0.281   0.235   4.623   0.332    9.32
4212                UC   0.463   0.374
                    * Natural Time-Area Relation
4213                UA       0       3       5       8      12      20      43      75      90      96
4214                UA     100
                    *
                    *
                    * Combines PI618 and RDCP11
                    * KKC618_1
                    * KO     0       0     0.0       0      22
                    * Hard Coded
                    * HC     2    4.55
                    *
                    * CAP Diversion Recovery: Outflow from structure CAP120

4215                KK  DCAP12
4216                KO       0       0     0.0       0      22
4217                DR  DOCP12
                    *
                    * Diversion Out: Flow split FS11
                    * Flow Split Diversion: Main path to CPI618, Diversion to CPI615
                    * 53% of flow is diverted to CPI615
1                                                HEC-1 INPUT
PAGE150

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


4218                KK    D618
4219                KO       0       0     0.0       0      22
4220                DT   DO618
4221                DI       0   10000
4222                DQ       0    5300
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4223                KK  RDCP12
4224                KO       0       0     0.0       0      22
4225                RS       2    FLOW     0.0     0.0
4226                RC   0.043   0.035   0.043    6159  0.0094
                    * PITS30
4227                RX       0      49     199     206     222     231     299     375
4228                RY    1532    1532    1530    1528    1528    1530    1532    1532
                    *
                    * Combines PI618 and RDCP12

4229                KK  C6181a
4230                KO       0       0     0.0       0      22
                    * Hard Coded
4231                HC       2    2.21
                    *
                    *
                    * Combines C618_1 and RDCP12

4232                KK  CPI618
4233                KO       0       0     0.0       0      22
                    * Hard Coded
4234                HC       2    6.46
                    *
                    *
                    *
                    * ROUTE UPDATED 4/14/04

4235                KK  RPI618
4236                KO       0       0     0.0       0      22
4237                RS       5    FLOW     0.0     0.0
4238                RC   0.043   0.035   0.043   10443  0.0075
```

```
                    * PITS20
4239                RX       0      50      84      87     123     125     156     285
4240                RY    1454    1453    1452    1450    1450    1452    1452    1454
                    *
                    *

4241                KK   PI612
4242                KO       0       0     0.0       1      22
4243                BA  0.7377
4244                LG   0.337    0.25   4.365     0.4   6.284
4245                UC   0.821   0.710
                    * Natural Time-Area Relation
4246                UA       0       3       5       8      12      20      43      75      90      96
4247                UA     100
                    *
                    *
                    *
                    * Combines PI612 and RPI618
                    * KKC612_1
                    * KO     0       0     0.0       0      22
                    *
                    * HC     2
                    *
                    *
                    * CAP Diversion Recovery: Outflow from structure CAP130
1                                                HEC-1 INPUT
PAGE151

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


4248                KK  DCAP13
4249                KO       0       0     0.0       0      22
4250                DR  DOCP13
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4251                KK  RDCP13
4252                KO       0       0     0.0       0      22
4253                RS       6    FLOW     0.0     0.0
4254                RC   0.043   0.035   0.043   11034  0.0089
                    * PITS30
4255                RX       0      49     199     206     222     231     299     375
4256                RY    1532    1532    1530    1528    1528    1530    1532    1532
                    *
                    *

4257                KK   PI615
4258                KO       0       0     0.0       1      22
4259                BA  0.8419
4260                LG   0.299   0.243   4.318   0.409   8.997
4261                UC   0.725   0.532
                    * Urban Time-Area Relation
4262                UA       0       5      16      30      65      77      84      90      94      97
4263                UA     100
                    *
                    *
                    * Combines RD618 and PI615

4264                KK  C6151A
4265                KO       0       0     0.0       0      22
                    * Hard Coded
4266                HC       2    5.04
                    *
                    * Diversion Recovery: Flow split FS11

4267                KK    D618
4268                KO       0       0     0.0       0      22
4269                DR   DO618
                    *
                    *
                    * ROUTE UPDATED 4/14/4
```

```
4270          KK   RD618
4271          KO       0       0     0.0       0      22
4272          RS       2    FLOW     0.0     0.0
4273          RC   0.043   0.035   0.043    4541  0.0088
              * PITS20
4274          RX       0      50      84      87     123     125     156     285
4275          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              *
              * Combines RD618 and PI615
              * KKC615_1
              * KO     0       0     0.0       0      22
              * Hard Coded
              * HC     2    3.01
              *
              *
              * Combines C615_1 and RDCP13
1                                          HEC-1 INPUT
PAGE152

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


4276          KK  CPI615
4277          KO       0       0     0.0       0      22
              * Hard Coded
4278          HC       2    7.21
              *
              *
              * ROUTE UPDATED 4/14/04

4279          KK  RPI615
4280          KO       0       0     0.0       0      22
4281          RS       2    FLOW     0.0     0.0
4282          RC   0.043   0.035   0.043    5109  0.0079
              * PITS20
4283          RX       0      50      84      87     123     125     156     285
4284          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              *
              * Combines PI612 and RPI615

4285          KK  C6121a
4286          KO       0       0     0.0       0      22
              *
4287          HC       2
              *
              *
              * COMBINES RD618 and C6121a

4288          KK  CPI612
4289          KO       0       0     0.0       0      22
              *
4290          HC       2
              *
              *
              * Diversion Out: Flow split FS12
              * Flow Split Diversion: Main path to CPI609, Diversion to PI621

4291          KK    D612
4292          KO       0       0     0.0       0      22
4293          DT   DO612
4294          DI       0   10000
4295          DQ       0    7500
              *
              *
              * ROUTE UPDATED 4/14/04

4296          KK  RPI612
4297          KO       0       0     0.0       0      22
4298          RS       3    FLOW     0.0     0.0
4299          RC   0.043   0.035   0.043    5754   0.006
```

```
                 * PITS20
4300             RX       0      50      84      87     123     125     156     285
4301             RY    1454    1453    1452    1450    1450    1452    1452    1454
                 *
                 *
                 *
1                                                HEC-1 INPUT
PAGE153

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


4302             KK   PI609
4303             KO       0       0     0.0       1      22
4304             BA  1.9353
4305             LG   0.321   0.247   4.529   0.368   8.386
4306             UC   1.133   0.904
                 * Urban Time-Area Relation
4307             UA       0       5      16      30      65      77      84      90      94      97
4308             UA     100
                 *
                 *
                 *
                 * Combines PI609 and RPI612

4309             KK  C609_1
4310             KO       0       0     0.0       0      22
                 *
4311             HC       2    5.55
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP140

4312             KK  DCAP14
4313             KO       0       0     0.0       0      22
4314             DR  DOCP14
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4315             KK  RDCP14
4316             KO       0       0     0.0       0      22
4317             RS      12    FLOW     0.0     0.0
4318             RC   0.043   0.035   0.043   20386  0.0086
                 * PITS30
4319             RX       0      49     199     206     222     231     299     375
4320             RY    1532    1532    1530    1528    1528    1530    1532    1532
                 *
                 *
                 * Combines C609_1 and RDCP14

4321             KK  CPI609
4322             KO       0       0     0.0       0      22
                 * Hard Coded
4323             HC       2    9.15
                 *
                 *
                 * ROUTE UPDATED 4/14/04

4324             KK  RPI609
4325             KO       0       0     0.0       0      22
4326             RS       2    FLOW     0.0     0.0
4327             RC   0.043   0.035   0.043    4513  0.0062
                 * PITS40
4328             RX       0       7      14      27      61      79      97     113
4329             RY    1370    1368    1366    1364    1364    1366    1368    1370
                 *
                 *
1                                                HEC-1 INPUT
PAGE154

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


4330             KK  PI600A
```

```
4331          BA  0.5202
4332          LG   0.345   0.246   5.184   0.252   4.929
4333          UC   0.417   0.188
              * Natural Time-Area Relation
4334          UA       0       3       5       8      12      20      43      75      90      96
4335          UA     100
              *
              *
              *
              * Combines RPI609 and PI600A

4336          KK   C600A
4337          HC       2
              *
              *
              * This diversion diverts everything out to CPI603.
              * This was used for ease of logic in HEC-1 model.
              * No flow from PI600A actually combines with CPI633.

4338          KK   D600A
4339          DT  DO600A
4340          DI       0  100000
4341          DQ       0  100000
              *
              *
              *

4342          KK   PI621
4343          KO       0       0     0.0       1      22
4344          BA  0.9050
4345          LG   0.347   0.249   4.621   0.339   5.296
4346          UC   0.850   0.610
              * Natural Time-Area Relation
4347          UA       0       3       5       8      12      20      43      75      90      96
4348          UA     100
              *
              *
              * Diversion Recovery: Flow split FS12

4349          KK    D612
4350          KO       0       0     0.0       0      22
4351          DR   DO612
              *
              *
              * ROUTE UPDATED 4/14/4

4352          KK   RD612
4353          KO       0       0     0.0       0      22
4354          RS       8    FLOW     0.0     0.0
4355          RC   0.043   0.035   0.043   11125  0.0065
              * PITS20
4356          RX       0      50      84      87     123     125     156     285
4357          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              * COMBINES BASIN PI621 AND RD612
```



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

4358          KK  CPI621
4359          KO       0       0     0.0       0      22
              * Hard Coded
4360          HC       2   11.70
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * Berm Elevation = 1342
              * The storage behind this basin is contained, and does not flow to a siphon
              * For overtopping of the berm, the Weir equation was used.
              * Q=C*L*H^1.5
              * C was assumed to be 2.7
```

```
                 * L, the length of the weir was the basin boundary along the canal = 3107 ft

4361             KK  SPI621
4362             KO       0       0     0.0       0      22
4363             RS       1    STOR       0
4364             SQ       0       0       0       0    2966    8389   15411   23727
4365             SA       0    0.10    1.69   21.17   21.18   21.19   21.20   12.21
4366             SE    1336    1338    1340    1342  1342.5    1343  1343.5    1344
                 *
                 *
                 * ROUTE UPDATED 4/14/04

4367             KK  RPI621
4368             KO       0       0     0.0       0      22
4369             RS       1    FLOW     0.0     0.0
4370             RC   0.043   0.035   0.043    2775  0.0079
                 * TSR621
4371             RX       0      20      32      79     118     139     374     400
4372             RY    1344    1343    1342    1342    1340    1342    1344    1344
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP100

4373             KK  DCAP10
4374             KO       0       0     0.0       0      22
4375             DR  DOCP10
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4376             KK  RDCP10
4377             KO       0       0     0.0       0      22
4378             RS       4    FLOW     0.0     0.0
4379             RC   0.043   0.035   0.043    6701  0.0081
                 * WITS120
4380             RX       0     100     292     409     492     567     718     886
4381             RY    1511    1510  1509.5  1507.5    1506    1509  1510.5    1511
                 *
                 *
1                                                HEC-1 INPUT
PAGE156

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


4382             KK   PI628
4383             KO       0       0     0.0       1      22
4384             BA  0.5695
4385             LG   0.285    0.25    4.56   0.349   8.902
4386             UC   0.500   0.292
                 * Natural Time-Area Relation
4387             UA       0       3       5       8      12      20      43      75      90      96
4388             UA     100
                 *
                 *
                 * Combines PI628 and RDCP10

4389             KK  CPI628
4390             KO       0       0     0.0       0      22
                 * Hard Coded
4391             HC       2    4.75
                 *
                 *
                 * ROUTE UPDATED 4/14/04

4392             KK  RPI628
4393             KO       0       0     0.0       0      22
4394             RS       6    FLOW     0.0     0.0
4395             RC   0.043   0.035   0.043   14427  0.0067
                 * PITS20
4396             RX       0      50      84      87     123     125     156     285
4397             RY    1454    1453    1452    1450    1450    1452    1452    1454
                 *
                 *
```

```
4398          KK  PI624A
4399          KO       0       0     0.0       1      22
4400          BA  2.8066
4401          LG   0.391   0.258   4.467   0.431   3.693
4402          UC   1.229   0.732
              * Natural Time-Area Relation
4403          UA       0       3       5       8      12      20      43      75      90      96
4404          UA     100
              *
              *
              * COMBINES RPI628, PI624A

4405          KK   C624A
4406          KO       0       0     0.0       0      22
4407          HC       2
              *
              *
              * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE157

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


4408          KK   R624A
4409          KO       0       0     0.0       0      22
4410          RS       6    FLOW     0.0     0.0
4411          RC   0.043   0.035   0.043   11809  0.0042
              * PDTS40_1
4412          RX       0      86     158     492     543     560     776    1208
4413          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

4414          KK   PI639
4415          KO       0       0     0.0       1      22
4416          BA  0.3431
4417          LG   0.335    0.25   4.598   0.341   9.561
4418          UC   0.854   1.047
              * Natural Time-Area Relation
4419          UA       0       3       5       8      12      20      43      75      90      96
4420          UA     100
              *
              *
              * Railroad Diversion Recovery: Outflow from structure RR650

4421          KK    D524
4422          KO       0       0     0.0       0      22
4423          DR   DO524
              *
              *
              *
              * ROUTE UPDATED 4/14/4

4424          KK   RD524
4425          KO       0       0     0.0       0      22
4426          RS       1    FLOW     0.0     0.0
4427          RC   0.043   0.035   0.043    2235  0.0027
              * WITS130
4428          RX       0     400     456     575     620     650     660     682
4429          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *
              * Combines RD524 and PI639

4430          KK  CPI639
4431          KO       0       0     0.0       0      22
              * Hard Coded
4432          HC       2    0.43
              *
              * ROUTE UPDATED 4/14/04

4433          KK  RPI639
```

```
4434          KO        0        0      0.0        0       22
4435          RS        2     FLOW      0.0      0.0
4436          RC    0.043    0.035    0.043     5380   0.0048
              * WITS130
4437          RX        0      400      456      575      620      650      660      682
1                                                HEC-1 INPUT
PAGE158

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

4438          RY   1396.5     1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *

4439          KK    PI636
4440          KO        0        0      0.0        1       22
4441          BA   0.4286
4442          LG    0.297     0.25     4.65    0.331   20.164
4443          UC    0.646    0.509
              * Natural Time-Area Relation
4444          UA        0        3        5        8       12       20       43       75       90       96
4445          UA      100
              *
              *
              * Combines PI636 and RPI639

4446          KK   CPI636
4447          KO        0        0      0.0        0       22
4448          HC        2
              *
              *
              * ROUTE UPDATED 4/14/04

4449          KK   RPI636
4450          KO        0        0      0.0        0       22
4451          RS        1     FLOW      0.0      0.0
4452          RC    0.043    0.035    0.043      730   0.0137
              * WITS130
4453          RX        0      400      456      575      620      650      660      682
4454          RY   1396.5     1394   1393.5     1393     1392     1394     1395   1396.5
              *
              *

4455          KK    PI624
4456          KO        0        0      0.0        1       22
4457          BA   1.2250
4458          LG    0.234    0.249    4.886    0.341   34.218
4459          UC    0.963    0.684
              * Urban Time-Area Relation
4460          UA        0        5       16       30       65       77       84       90       94       97
4461          UA      100
              *
              *
              * COMBINES R624A, PI624 and RPI636

4462          KK   CPI624
4463          KO        0        0      0.0        0       22
4464          HC        3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * It was assumed that this basin is isolated, and can only overtop the canal.
              * Berm Elevation = 1342
              * For Overtopping of the berm, the Weir equation was used.
              * Q=C*B*H^1.5
              * C was assumed to be 2.7
              * B, the length of the weir was the basin boundary along the canal = 4305 ft
1                                                HEC-1 INPUT
PAGE159

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

4465          KK   SPI624
```

```
4466    KO       0       0     0.0       0      22
4467    RS       1    STOR       0
4468    SQ       0       0       0       0    4110   11624   21354   32876
4469    SE    1336    1338    1340    1342  1342.5    1343  1343.5    1344
4470    SA       0    0.19    5.86   36.95   36.96   36.97
4471    SE    1336    1338    1340    1342    1343    1344
        *
        *
        * ROUTE UPDATED 4/14/04

4472    KK  RPI624
4473    KO       0       0     0.0       0      22
4474    RS       3    FLOW     0.0     0.0
4475    RC   0.043   0.035   0.043    5060  0.0043
        * TSR621-modified X-sect
4476    RX       0      40      52      99     138     159     394   511.5
4477    RY    1345    1343    1342    1342    1340    1342    1344    1345
        *
        *

4478    KK   PI633
4479    KO       0       0     0.0       1      22
4480    BA  0.3359
4481    LG   0.329   0.235   5.231   0.248   4.696
4482    UC   0.667   0.649
        * Natural Time-Area Relation
4483    UA       0       3       5       8      12      20      43      75      90      96
4484    UA     100
        *
        *
        * Combines RPI635, D600A, RPI621, RPI624 and PI633

4485    KK  CPI633
4486    KO       0       0     0.0       0      22
        * Hard Coded
4487    HC       5  246.48
        *
        * ROUTE UPDATED 4/14/04

4488    KK  RPI633
4489    KO       0       0     0.0       0      22
4490    RS       4    FLOW     0.0     0.0
4491    RC   0.045   0.035   0.045    5834   0.001
        * McMicken Dam Channel
4492    RX       0      46     101     121     171     181    1421    3621
4493    RY      25      14       4       0       0       4      14      25
        *
        *
        *
        * ************************************************************************ *
        * ************************************************************************ *
        * ************************************************************************ *
        * ******************* BEGIN EAST PADELFORD AREA RECOVERY ******************** *
        * ************************************************************************ *
        * ************************************************************************ *
        * ************************************************************************ *
        *
        * This is the interpolated hydrograph from concentration point CO500 from
        * the Padelford model by A-N West Inc, which corresponds to concentration
        * point PDEAST in the 2004 Wittmann ADMSU.  The Padelford model used a time
        * step of 2 minutes, and the Wittmann ADMSU utilizes a time step of 5 minutes,
        * so interpolation was required.  The QI cards were utilized to avoid the
        * conflict of using DSS files, which can cause errors in the future if not
        * utilized correctly.  This QI card was truncated once the flows reached
        * zero cfs.  Although A-N West calculated the flow through the various CAP
        * structures, they did not take into consideration all of the flow from the
        * west portion of this CAP system.  Thus it was necessary to create the QI
        * card from a point before diversions occur at the CAP, and before storage
        * occurs.
        *
        * There are 2 points where flow is inputted into the model from the Padelford
        * area: PDEAST and PDWEST. A-N WEST hard coded both concentrations points with
        * the entire model area, 23 sq miles.  To remain consistent in the Wittmann
        * ADMSU, this can not occur, so the contributing area is associated with each
```

```
                    * Inflow point, and they are as follows:
                    *        PDEAST = 16.44 sq miles
                    *        PDWEST =  7.08 sq miles
                    *
                    *
1                                          HEC-1 INPUT
PAGE160

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

4494                KK  PDEAST
4495                BA   16.44
4496                QI       0       0       1       1       1       2       3       3       4       5
4497                QI       7       7       9       9      11      12      13      14      16      16
4498                QI      18      18      19      20      20      21      21      22      22      22
4499                QI      23      23      24      24      25      26      29      32      38      51
4500                QI      71      94     129     194     289     441     734    1115    1511    1883
4501                QI    2186    2414    2536    2585    2635    2801    3129    3533    4218    5054
4502                QI    5651    6122    6489    6672    6607    6333    5893    5371    4870    4399
4503                QI    3926    3450    2936    2444    2096    1766    1453    1183    1006     882
4504                QI     790     709     643     590     539     492     452     418     391     366
4505                QI     339     310     283     258     237     218     200     180     160     142
4506                QI     126     112     100      89      80      72      67      63      60      55
4507                QI      51      47      43      39      36      32      30      27      25      22
4508                QI      21      19      18      17      17      16      15      15      14      14
4509                QI      14      13      13      13      12      12      12      11      11      10
4510                QI      10       9       9       8       8       7       7       6       6       6
4511                QI       5       5       4       4       4       3       3       3       3       2
4512                QI       2       2       2       2       1       1       1       1       1       1
4513                QI       1       1       1   0.001
                    *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ******************** END EAST PADELFORD AREA RECOVERY ********************** *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    *
                    *
                    * This combine card combines DCAP* and PDC24 which contains all of the
                    * contributing area from the Padelford model to the CAP impoundment system.
                    *
                    *

4514                KK   DCAP*
4515                DR  DOCAP*
                    *
                    *

4516                KK   CAP2*
                    * Hard Coded
4517                HC       2   33.74
                    *
                    *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ************* BEGINNING OF CAP IMPOUNDMENT AREA SYSTEM 2 ******************* *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    *
                    * The flow from STOR2 is distributed to the following routes and diversions.
                    * The breakdown of where the flow is distributed to is shown below, with the
                    * STOR2 being the summation of the flows at any given elevation.
                    *
                    * * ---------------------------------------------------------------------- * *
                    * * More details on the 2 CAP impoundment areas can be found above the STOR1 * *
                    * * storage card in this model as well as in the appendix of the report.     * *
                    * * ---------------------------------------------------------------------- * *
                    *
                    * ************************************************************************ *
                    *  *ELEV*  1544 *  1546 *  1550 *  1552 *  1554 *  1556 *   1557 *   1558 *    *
                    * ------------------------------------------------------------------------- *
```

```
* *ROUTES* ************************************************************ *
* *DCAP19*  195 *   450 *   945 *  1140 *  1290 *  1395 *   5931 *  14092 *    *
* *DCAP18*   55 *   145 *   310 *   375 *   430 *   465 *   2908 *   7386 *    *
* *DCAP17*   55 *   140 *   300 *   370 *   430 *   465 *   6039 *  16244 *    *
* *DCAP16*  165 *   420 *   900 *  1125 *  1290 *  1395 *   6699 *  16436 *    *
* *DCAP15*   22 *    66 *   245 *   320 *   380 *   430 *   3499 *   9075 *    *
* ---------------------------------------------------------------------------- *
*  *STOR2*  492 *  1221 *  2700 *  3330 *  3820 *  4150 *  25076 *  63233 *    *
* ***************************************************************************** *
*
*
* *** STORAGE IN THE EAST Padelford CAP IMPOUNDMENT AREA
1                                   HEC-1 INPUT
PAGE161

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

4518          KK   STOR2
4519          KO       0       0     0.0       0      22
4520          RS       1    STOR       0
4521          SQ       0     492    1221    2700    3330    3820    4150   25076   63233
4522          SE    1541    1544    1546    1550    1552    1554    1556    1557    1558
              *
4523          SA       0    0.21    0.79    4.44   37.30   67.70   96.99  126.24  154.80  182.80
4524          SA  210.76  210.77  210.78
4525          SE    1528    1532    1536    1540    1544    1546    1548    1550    1552    1554
4526          SE    1556    1557    1558
              *
              *
              *

4527          KK  DCAP19
4528          KM   DIVERSON AT STRUCTURE CAP190: MAIN PATH TO DCAP18, DIVERSION TO CPD732
4529          DT  DOCP19
4530          DI     492    1221    2700    3330    3820    4150   25076   63233
4531          DQ     195     450     945    1140    1290    1395    5931   14092
              *
              *

4532          KK  DCAP18
4533          KM   DIVERSON AT STRUCTURE CAP180: MAIN PATH TO DCAP17, DIVERSION TO CPD736
4534          DT  DOCP18
4535          DI     297     771    1755    2190    2530    2755   19145   49141
4536          DQ      55     145     310     375     430     465    2908    7386
              *
              *

4537          KK  DCAP17
4538          KM   DIVERSON AT STRUCTURE CAP170: MAIN PATH TO DCAP16, DIVERSION TO CPD740
4539          DT  DOCP17
4540          DI     242     626    1445    1815    2100    2290   16237   41755
4541          DQ      55     140     300     370     430     465    6039   16244
              *
              *

4542          KK  DCAP16
4543          KM   DIVERSON AT STRUCTURE CAP160: MAIN PATH TO DCAP15, DIVERSION TO CPD740
4544          DT  DOCP16
4545          DI     187     486    1145    1445    1670    1825   10198   25511
4546          DQ     165     420     900    1125    1290    1395    6699   16436
              *
              *
              * ***************************************************************************** *
              * ***************************************************************************** *
              * **************** END OF CAP IMPOUNDMENT AREA SYSTEM 2 ********************** *
              * ***************************************************************************** *
              * ***************************************************************************** *
              *
              *
              * ROUTE UPDATED 4/14/4
1                                   HEC-1 INPUT
PAGE162
```

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

4547          KK  RDCP15
4548          KO       0       0     0.0       0      22
4549          RS       6    FLOW     0.0     0.0
4550          RC   0.043   0.035   0.043    9602  0.0106
              * PITS30
4551          RX       0      49     199     206     222     231     299     375
4552          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *

4553          KK  PI606A
4554          KO       0       0     0.0       1      22
4555          BA  0.4572
4556          LG   0.308   0.245   4.449   0.378  10.151
4557          UC   0.608   0.529
              * Natural Time-Area Relation
4558          UA       0       3       5       8      12      20      43      75      90      96
4559          UA     100
              *
              *
              * COMBINES BASIN PI606A, RDCP15

4560          KK   C606A
4561          KO       0       0     0.0       0      22
              * Hard Coded
4562          HC       2    3.55
              *
              *
              * Diversion Out: Flow split FS14
              * Flow Split Diversion: Main path to CPI606, Diversion to CPI604
              * 41% of flow is diverted to CPI604

4563          KK   D606A
4564          KO       0       0     0.0       0      22
4565          DT  DO606A
4566          DI       0   10000
4567          DQ       0    4100
              *
              *
              * ROUTE UPDATED 4/14/4

4568          KK   R606A
4569          KO       0       0     0.0       0      22
4570          RS       7    FLOW     0.0     0.0
4571          RC   0.043   0.035   0.043   12583  0.0081
              * PDTS30
4572          RX       0      47     318     322     356     364     463     604
4573          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
1                                          HEC-1 INPUT
PAGE163

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

4574          KK   PI606
4575          KO       0       0     0.0       1      22
4576          BA  1.0765
4577          LG   0.324    0.25   4.383   0.419  10.725
4578          UC   0.842   0.605
              * Urban Time-Area Relation
4579          UA       0       5      16      30      65      77      84      90      94      97
4580          UA     100
              *
              *
              * COMBINES BASIN PI606, R606A

4581          KK  CPI606
4582          KO       0       0     0.0       0      22
              * Hard Coded
```

```
4583          HC       2    3.17
              *
              *
              * ROUTE UPDATED 4/14/04

4584          KK  RPI606
4585          KO       0       0     0.0       0      22
4586          RS       1    FLOW     0.0     0.0
4587          RC   0.043   0.035   0.043    2654  0.0055
              * TSR606
4588          RX       0     241     598     949    1098    1381    2002    2039
4589          RY    1354    1354    1350    1348    1348    1350    1352    1354
              *
              *

4590          KK   PI604
4591          KO       0       0     0.0       1      22
4592          BA  0.3628
4593          LG   0.307    0.25    4.97   0.285  22.848
4594          UC   0.629   0.525
              * Urban Time-Area Relation
4595          UA       0       5      16      30      65      77      84      90      94      97
4596          UA     100
              *
              *
              * Diversion Recovery: Flow split FS14

4597          KK   D606A
4598          KO       0       0     0.0       0      22
4599          DR  DO606A
              *
              *
              * ROUTE UDPATED 4/14/4
1                                          HEC-1 INPUT
PAGE164

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


4600          KK  RD606A
4601          KO       0       0     0.0       0      22
4602          RS       6    FLOW     0.0     0.0
4603          RC   0.043   0.035   0.043    7507  0.0087
              * PITS30
4604          RX       0      49     199     206     222     231     299     375
4605          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *
              * Combines RD606A and PI604

4606          KK  CPI604
4607          KO       0       0     0.0       0      22
              * Hard Coded
4608          HC       2    1.82
              *
              *
              * ROUTE UPDATED 4/14/04

4609          KK  RPI604
4610          KO       0       0     0.0       0      22
4611          RS       4    FLOW     0.0     0.0
4612          RC   0.043   0.035   0.043    7442   0.007
              * PDTS30
4613          RX       0      47     318     322     356     364     463     604
4614          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * ------------------------------------------------------------------------------
              * ------------------------- BEGIN EDITS 03-10-2005 ----------------------------
              * ------------------------------------------------------------------------------
              * 03-10-2005 moved basin

4615          KK   PI603
4616          KO       0       0     0.0       1      22
```

```
4617          BA  0.5190
4618          LG   0.344    0.25    4.66   0.316   7.957
4619          UC   0.675   0.558
              * Natural Time-Area Relation
4620          UA       0       3       5       8      12      20      43      75      90      96
4621          UA     100
              *
              *
              * 03-10-2005 This was added to combine 3: RPI604, RPI606 & PI603

4622          KK  C603_1
4623          KO       0       0     0.0       0      22
4624          HC       3
              *
1                                                HEC-1 INPUT
PAGE165

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


4625          KK   PD744
4626          KO       0       0     0.0       1      22
4627          BA  0.7975
4628          LG   0.342   0.249   4.427   0.357   5.989
4629          UC   0.850   0.674
              * Natural Time-Area Relation
4630          UA       0       3       5       8      12      20      43      75      90      96
4631          UA     100
              *
              *
              * This diversion contains all the flow from C600A.

4632          KK   D600A
4633          DR  DO600A
              *
              *
              * ROUTE UPDATED 4/14/4

4634          KK  RD600A
4635          RS       2    FLOW     0.0     0.0
4636          RC   0.043   0.035   0.043    4775  0.0013
              * TSBEAR
4637          RX       0      25      30      35      60     110     460     600
4638          RY    1344    1344    1342    1340    1340    1342    1344    1345
              *
              *
              * 03-10-2005 This was edited to combine only 3: C603_1, RD600A and PD744
              * *** COMBINES RD600A, RPI606, RPI604, PD744 AND PI603 ***

4639          KK  CPI603
4640          KO       0       0     0.0       0      22
              * Hard Coded
4641          HC       3   15.98
              *
              * ---------------------------------------------------------------------------
              * -------------------------- END EDITS 03-10-2005 ----------------------------
              * ---------------------------------------------------------------------------
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * *** This storage includes the storage at basins PI603, PI600A and PD744
              * *** The Discharge represents the Discharge through the Beardsley Canal
              * *** structure as well as the weir flow across PI603, PI600A and PD744,
              * *** so the SQ card can be calculated by adding the flows for basins PI603
              * *** and PD744 as found in the appendix.
              * *** The Weir flow across PD744 is diverted out on the next KK card.
              * *** The weir flow for Basin PI600A is not diverted, because both
              * *** flows (from PI600A and PI603) go to CPI600.

4642          KK  SPI603
4643          KO       0       0     0.0       0      22
4644          RS       1    STOR       0
4645          SQ       0     309     874    1605    2471    3453    4539   14797   33095   56636
4646          SQ   84417
4647          SE    1338    1339    1340    1341    1342    1343    1344  1344.5    1345  1345.5
```

```
1                                                HEC-1 INPUT
PAGE166

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

4648          SE    1346
              *
4649          SA       0    0.48    5.26   27.16  105.96  105.98     106
4650          SE    1336    1338    1340    1342    1344    1345    1346
              *
              *
              * This diversion is only weir flow across the boundary of Basin PD744
              * over the Beardsley Canal to CPD720.  This Diversion is being combined
              * with CPD726 and they are routed together.
              *
              * For overtopping of the berm, the Weir equation was used.
              * Q=C*L*H^1.5
              * C was assumed to be 2.7
              * L, the length of the weir was the basin boundary along the canal = 3652 ft
              * Berm Elevation was 1344
              * *** The remaining flow goes to CPI600 ***

4651          KK    D744
4652          DT   DO744
4653          DI       0     309     874    1605    2471    3453    4539   14797   33095   56636
4654          DI   84417
4655          DQ       0       0       0       0       0       0       0    3486    9860   18115
4656          DQ   27889
              *
              *
              * ROUTE UPDATED 4/14/04

4657          KK  RPI603
4658          KO       0       0     0.0       0      22
4659          RS       1    FLOW     0.0     0.0
4660          RC   0.043   0.035   0.043    3427  0.0044
              * PDTS40_1
4661          RX       0      86     158     492     543     560     776    1208
4662          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *
              *

4663          KK   PI600
4664          KO       0       0     0.0       1      22
4665          BA  0.6050
4666          LG   0.342   0.244   5.047   0.268   4.887
4667          UC   0.513   0.321
              * Natural Time-Area Relation
4668          UA       0       3       5       8      12      20      43      75      90      96
4669          UA     100
              *
              *
              * COMBINES BASIN RPI633, RPI603 and  PI600
1                                                HEC-1 INPUT
PAGE167

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


4670          KK  CPI600
4671          KO       0       0     0.0       0      22
4672          HC       3
              *
              * ROUTE UPDATED 4/14/04

4673          KK  RPI600
4674          KO       0       0     0.0       0      22
4675          RS       2    FLOW     0.0     0.0
4676          RC   0.045   0.035   0.045    4937   0.001
              * McMicken Dam Channel
4677          RX       0      46     101     121     171     181    1421    3621
4678          RY      25      14       4       0       0       4      14      25
              *
```

```
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP160

4679             KK  DCAP16
4680             KO       0       0     0.0       0      22
4681             DR  DOCP16
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4682             KK  RDCP16
4683             KO       0       0     0.0       0      22
4684             RS       8    FLOW     0.0     0.0
4685             RC   0.043   0.035   0.043   10754  0.0112
                 * PDTS30
4686             RX       0      47     318     322     356     364     463     604
4687             RY    1416    1414    1410    1408    1408    1410    1412    1414
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP170

4688             KK  DCAP17
4689             KO       0       0     0.0       0      22
4690             DR  DOCP17
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4691             KK  RDCP17
4692             KO       0       0     0.0       0      22
4693             RS       4    FLOW     0.0     0.0
4694             RC   0.043   0.035   0.043   10400  0.0115
                 * PDTS30
4695             RX       0      47     318     322     356     364     463     604
4696             RY    1416    1414    1410    1408    1408    1410    1412    1414
                 *
                 *
```



```
                                          HEC-1 INPUT

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


4697             KK   PD740
4698             KO       0       0     0.0       1      22
4699             BA  1.2839
4700             LG   0.315   0.242   4.227   0.427   8.181
                 *
                 * Per the District the Clark Unit hydrograph was changed to an S-Graph
                 *
                 * Desert/Rangeland S-Graph for Basin PD740
                 * KN = 0.059
                 * Basin Area [mi2] = 1.2839
                 * Basin Lag [hr] = 0.96
                 * Time Step [min] = 5
                 * Qult = 9942
                 *
4701             UI       0      75      75     124     249     353     452     537     631     672
4702             UI     718     719     692     657     561     491     417     361     310     269
4703             UI     226     197     167     141     125     115      83      80      68      51
4704             UI      51      51      34      18      18      18      18      18      18      18
4705             UI      18      18      18       0
                 *
                 *
                 * Combines PD740, RDCP17 and RDCP16

4706             KK  CPD740
4707             KO       0       0     0.0       0      22
                 * Hard Coded
4708             HC       3   16.31
                 *
                 *
                 * Route updated 04-15-04
```

```
4709          KK  RPD740
4710          KO       0       0     0.0       0      22
4711          RS       5    FLOW     0.0     0.0
4712          RC   0.043   0.035   0.043    5434  0.0063
              * PDTS30
4713          RX       0      47     318     322     356     364     463     604
4714          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4715          KK  PD726B
4716          KO       0       0     0.0       1      22
4717          BA  0.9345
4718          LG    0.32    0.25   4.368   0.399   9.751
              *
              * Desert/Rangeland S-Graph for Basin PD726B
              * KN = 0.059
              * Basin Area [mi2] = 0.9345
              * Basin Lag [hr] = 0.88
              * Time Step [min] = 5
              * Qult = 7237
              *
4719          UI       0      60      60     123     221     315     397     469     529     559
1                                                HEC-1 INPUT
PAGE169

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

4720          UI     571     551     518     438     376     317     269     227     193     166
4721          UI     135     115     100      91      63      63      48      41      41      37
4722          UI      15      15      15      15      15      15      15      15      15       0
              *
              *
              * Combines RPD740 and PD726B

4723          KK   C726B
4724          KO       0       0     0.0       0      22
4725          HC       2
              *
              *
              * Route updated 04-15-04

4726          KK   R726B
4727          KO       0       0     0.0       0      22
4728          RS       2    FLOW     0.0     0.0
4729          RC   0.043   0.035   0.043    4094  0.0083
              * PDTS30
4730          RX       0      47     318     322     356     364     463     604
4731          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP180

4732          KK  DCAP18
4733          KO       0       0     0.0       0      22
4734          DR  DOCP18
              *
              *
              * ROUTE UPDATED 4/14/4

4735          KK  RDCP18
4736          KO       0       0     0.0       0      22
4737          RS       7    FLOW     0.0     0.0
4738          RC   0.043   0.035   0.043   14927    0.01
              * PDTS30
4739          RX       0      47     318     322     356     364     463     604
4740          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4741          KK   PD736
4742          KO       0       0     0.0       1      22
4743          BA  0.7789
```

```
4744          LG   0.347   0.248   4.632   0.334   5.248
4745          UC     1.5   1.546
              * Natural Time-Area Relation
4746          UA       0       3       5       8      12      20      43      75      90      96
4747          UA     100
              *
              *
              * Combines PD736 and RDCP18
1                                          HEC-1 INPUT
PAGE170

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


4748          KK  CPD736
4749          KO       0       0     0.0       0      22
              * Hard Coded
4750          HC       2    4.64
              *
              *
              * ROUTE UPDATED 4/14/04

4751          KK  RPD736
4752          KO       0       0     0.0       0      22
4753          RS       1    FLOW     0.0     0.0
4754          RC   0.043   0.035   0.043    1894  0.0053
              * PDTS30
4755          RX       0      47     318     322     356     364     463     604
4756          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP190

4757          KK  DCAP19
4758          KO       0       0     0.0       0      22
4759          DR  DOCP19
              *
              *
              * ROUTE UPDATED 4/14/4

4760          KK  RDCP19
4761          KO       0       0     0.0       0      22
4762          RS       4    FLOW     0.0     0.0
4763          RC   0.043   0.035   0.043    5902  0.0149
              * PDTS30
4764          RX       0      47     318     322     356     364     463     604
4765          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4766          KK   PD760
4767          KO       0       0     0.0       1      22
4768          BA  0.8670
4769          LG   0.344   0.336   5.039   0.275   6.919
4770          UC   0.533   0.244
              * Natural Time-Area Relation
4771          UA       0       3       5       8      12      20      43      75      90      96
4772          UA     100
              *
              *
              * *** Storage CAP200 *** This storage is located at the CAP Canal at CP 740.
              * *** CP 740 is located at the CAP Canal at Lone Mountain Rd and 147th Ave.
1                                          HEC-1 INPUT
PAGE171

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


4773          KK  SCP200
4774          KO       0       0       0       0      22
4775          RS       1    STOR       0
              * CAP 200, R-8 STA 342+40
              * THE WEIR LENGTH IS 3800 FT AND THE WEIR COEF - 2.7
              * THE WEIR FLOW WAS CALCULATED AT H = 1 FT (1542.4) AND H = 2 FT (1543.4)
```

```
4776          SQ      0.0     25.0    175.0    335.0    440.0    530.0    600.0    620.0    10910    29690
4777          SE   1518.5     1520     1524     1528     1532     1536     1540   1541.4   1542.4   1543.4
4778          SA        0      1.3      6.0     18.0       40     69.9     80.6     80.7     80.8
4779          SE     1520     1524     1528     1532     1536     1540   1541.4   1542.4   1543.4
              *
              *
              * ROUTE UPDATED 4/14/04

4780          KK   RPD760
4781          KO        0        0      0.0        0       22
4782          RS        2     FLOW      0.0      0.0
4783          RC    0.043    0.035    0.043     5149   0.0101
              * PDTS30
4784          RX        0       47      318      322      356      364      463      604
4785          RY     1416     1414     1410     1408     1408     1410     1412     1414
              *
              *

4786          KK    PD732
4787          KO        0        0      0.0        1       22
4788          BA   0.4793
4789          LG    0.325    0.232    4.928    0.286    4.645
4790          UC    0.675    0.426
              * Natural Time-Area Relation
4791          UA        0        3        5        8       12       20       43       75       90       96
4792          UA      100
              *
              *
              * Combines PD732, RPD760 and RDCP19

4793          KK   CPD732
4794          KO        0        0      0.0        0       22
              * Hard Coded
4795          HC        3    13.11
              *
              * ROUTE UPDATED 4/14/04

4796          KK   RPD732
4797          KO        0        0      0.0        0       22
4798          RS        6     FLOW      0.0      0.0
4799          RC    0.043    0.035    0.043    10623   0.0064
              * PDTS30
4800          RX        0       47      318      322      356      364      463      604
4801          RY     1416     1414     1410     1408     1408     1410     1412     1414
              *
              *
```



```
                                          HEC-1 INPUT

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


4802          KK   PD726A
4803          BA   1.1030
4804          LG    0.346    0.247    4.501    0.366    8.937
4805          UC    1.471    1.191
              * Natural Time-Area Relation
4806          UA        0        3        5        8       12       20       43       75       90       96
4807          UA      100
              *
              *
              * COMBINES RPD736, RPD732 and PD726A

4808          KK    C726A
4809          KO        0        0      0.0        0       22
4810          HC        3
              *
              *
              *
              * Route updated 04-15-2004

4811          KK    R726A
4812          KO        0        0      0.0        0       22
4813          RS        2     FLOW      0.0      0.0
```

```
4814          RC   0.043   0.035   0.043    3986   0.007
              * PDTS30
4815          RX       0      47     318     322     356     364     463     604
4816          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *
              * Combines R726A and R726B

4817          KK   C726*
4818          KO       0       0     0.0       0      22
4819          HC       2
              *
              *
              * Route updated 04-15-2004

4820          KK   R726*
4821          KO       0       0     0.0       0      22
4822          RS       2    FLOW     0.0     0.0
4823          RC   0.046    0.07   0.046 10639.1  0.0060
              * PDTS30
4824          RX       0      47     318     322     356     364     463     604
4825          RY    1416    1414    1410    1408    1408    1410    1412    1414
              *
              *

4826          KK   PD726
4827          KO       0       0     0.0       1      22
4828          BA  1.3471
4829          LG   0.335    0.25   4.531   0.353   6.505
4830          UC   0.758   0.742
              * Natural Time-Area Relation
4831          UA       0       3       5       8      12      20      43      75      90      96
1                                                HEC-1 INPUT
PAGE173

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

4832          UA     100
              *
              *

4833          KK   PD716
4834          KO       0       0     0.0       1      22
4835          BA  1.7545
4836          LG   0.348   0.249   5.684   0.209   9.472
4837          UC   0.488   0.235
              * Natural Time-Area Relation
4838          UA       0       3       5       8      12      20      43      75      90      96
4839          UA     100
              *
              *
              * COMBINES PD726, R726*, and PD716

4840          KK  CPD726
4841          KO       0       0     0.0       0      22
4842          HC       3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * *** This storage includes the storage at basins PD726 and PD716
              * *** The Discharge represents the Discharge through the Beardsley Canal
              * *** structure as well as the weir flow across PD726 and PD716
              * *** The Weir flow across PD716 is diverted out on the next KK card.

4843          KK  SPD726
4844          KO       0       0     0.0       0      22
4845          RS       1    STOR       0
4846          SQ       0     154     437     803    1236    1727    2270   10223   24536   42993
4847          SQ   64802
4848          SE    1338    1339    1340    1341    1342    1343    1344  1344.5    1345  1345.5
4849          SE    1346
              *
4850          SA       0    0.50    4.14   35.33   35.34   35.35
4851          SE    1338    1340    1342    1344    1345    1346
```

```
                    *
                    *
                    * This diversion is only weir flow across the boundary of Basin PD716
                    * over the Beardsley Canal to CPD700.
                    *
                    * For overtopping of the berm, the Weir equation was used.
                    * Q=C*L*H^1.5
                    * C was assumed to be 2.7
                    * L, the length of the weir was the basin boundary along the canal = 6745 ft
                    * Berm Elevation was 1344
                    * *** The remaining flow goes to CPD720 ***

4852                KK    D716
4853                DT   DO716
4854                DI       0     154     437     803    1236    1727    2270   10223   24536   42993
4855                DI   64802
4856                DQ       0       0       0       0       0       0       0    6439   18212   33457
4857                DQ   51510
                    *
                    *
                    * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE174

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


4858                KK  RPD726
4859                KO       0       0     0.0       0      22
4860                RS       2    FLOW     0.0     0.0
4861                RC   0.043   0.035   0.043    4959  0.0044
                    * PDTS40_1
4862                RX       0      86     158     492     543     560     776    1208
4863                RY    1330  1326.5    1326    1324    1320    1326    1328    1330
                    *
                    *

4864                KK   PD720
4865                KO       0       0     0.0       1      22
4866                BA  0.5944
4867                LG   0.341   0.243   5.039   0.275   4.865
4868                UC   0.558   0.345
                    * Natural Time-Area Relation
4869                UA       0       3       5       8      12      20      43      75      90      96
4870                UA     100
                    *
                    *
                    * This is the Weir flow across the Basin PD744 boundary over the Beardsley Canal

4871                KK    D744
4872                DR   DO744
                    *
                    *
                    * ROUTE UPDATED 4/14/4

4873                KK   RD744
4874                KO       0       0     0.0       0      22
4875                RS       1    FLOW     0.0     0.0
4876                RC   0.043   0.035   0.043    3177  0.0057
                    * TSR606
4877                RX       0     241     598     949    1098    1381    2002    2039
4878                RY    1354    1354    1350    1348    1348    1350    1352    1354
                    *
                    *
                    * Combines RD744, PD720, RPD726 and RPI600

4879                KK  CPD720
4880                KO       0       0     0.0       0      22
                    * Hard Coded
4881                HC       4  296.13
                    *
                    *
                    * ROUTE UPDATED 4/14/4
```

```
4882          KK  RPD720
4883          KO       0       0     0.0       0      22
4884          RS       1    FLOW     0.0     0.0
4885          RC   0.045   0.035   0.045    1840  0.0099
              * McMicken Dam Channel
4886          RX       0      46     101     121     171     181    1421    3621
4887          RY      25      14       4       0       0       4      14      25
              *
              *
              * This diversion is the weir flow over the boundary of Basin PD716
1                                          HEC-1 INPUT
PAGE175

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


4888          KK    D716
4889          DR   DO716
              *
              *
              * Route updated 04-15-2004

4890          KK   RD716
4891          KO       0       0     0.0       0      22
4892          RS       2    FLOW     0.0     0.0
4893          RC   0.043   0.035   0.043    4300  0.0091
              * PDTS40_1
4894          RX       0      86     158     492     543     560     776    1208
4895          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *
              * COMBINES BASIN RPD716 AND RPD720

4896          KK   C700*
4897          KO       0       0     0.0       0      22
              * Hard Coded
4898          HC       2  302.88
              *
              *
              * ROUTE UPDATED 4/14/4

4899          KK   R700*
4900          KO       0       0     0.0       0      22
4901          RS       2    FLOW     0.0     0.0
4902          RC   0.045   0.035   0.045    5757   0.001
              * McMicken Dam Channel
4903          RX       0      46     101     121     171     181    1421    3621
4904          RY      25      14       4       0       0       4      14      25
              *
              *

4905          KK   PD752
4906          KO       0       0     0.0       1      22
4907          BA  0.1897
4908          LG   0.325   0.277    4.16   0.413  30.417
4909          UC   0.388   0.317
              * Natural Time-Area Relation
4910          UA       0       3       5       8      12      20      43      75      90      96
4911          UA     100
              *
              *

4912          KK   PD748
4913          KO       0       0     0.0       1      22
4914          BA  0.2838
4915          LG    0.35   0.283   4.527   0.356   31.29
4916          UC   0.417   0.291
              * Natural Time-Area Relation
4917          UA       0       3       5       8      12      20      43      75      90      96
4918          UA     100
              *
              *
              * Combine PD748 and PD752
```

```
1                                                HEC-1 INPUT
PAGE176

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

4919          KK  CPD748
4920          KO       0       0     0.0       0      22
4921          HC       2
              *
              *

4922          KK  SCP220
4923          KO       0       0     0.0       0      22
4924          RS       1    STOR       0
              * CAP 220, R-8 STA 433+85
              * THE WEIR LENGTH IS 2000 FT AND THE WEIR COEF - 2.7
              * THE WEIR FLOW WAS CALCULATED AT H = 1 FT (1541) AND H = 2 FT (1542)
4925          SQ     0.0    28.0   155.0   335.0   440.0   530.0   600.0   680.0    6090   15974
4926          SE  1514.9    1516    1520    1524    1528    1532    1536    1540    1541    1542
4927          SA       0      .1      .2      .5     4.4    15.4    29.2    29.3    29.4
4928          SE    1512    1520    1524    1528    1532    1536    1540    1541    1542
              *
              *
              * ROUTE UPDATED 4/14/04

4929          KK  RPD748
4930          KO       0       0     0.0       0      22
4931          RS       3    FLOW     0.0     0.0
4932          RC   0.043   0.035   0.043    6476  0.0145
              * PDTS40_2
4933          RX       0      38      74     209     245     263     401     541
4934          RY    1448    1446    1444    1440    1440    1444    1446    1448
              *
              *

4935          KK   PD756
4936          KO       0       0     0.0       1      22
4937          BA  3.2304
4938          LG   0.349   0.346   4.292   0.415  27.514
4939          UC     1.5   1.093
              * Natural Time-Area Relation
4940          UA       0       3       5       8      12      20      43      75      90      96
4941          UA     100
              *
              *

4942          KK  SCP210
4943          KO       0       0     0.0       0      22
4944          RS       1    STOR       0
              * CAP 210, R-8 STA 376+80
              * THE WEIR LENGTH IS 2200 FT AND THE WEIR COEF - 2.7
              * THE WEIR FLOW WAS CALCULATED AT H = 1 FT (1543) AND H = 2 FT (1544)
4945          SQ     0.0   372.0  1240.0  1900.0  2480.0  2888.0  3280.0  3600.0  3760.0    9740
4946          SQ   20641
4947          SE  1512.7    1516    1520    1524    1528    1532    1536    1540  1541.8  1542.8
4948          SE  1543.8
4949          SA       0      .3      .8     1.4     2.7     6.5    13.8    22.4      27    27.1
4950          SA    27.2
4951          SE    1512    1516    1520    1524    1528    1532    1536    1540    1542    1543
1                                                HEC-1 INPUT
PAGE177

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

4952          SE    1544
              *
              *
              * ROUTE UPDATED 4/14/04

4953          KK  RPD756
4954          KO       0       0     0.0       0      22
4955          RS       4    FLOW     0.0     0.0
4956          RC   0.043   0.035   0.043    8775  0.0125
```

```
                 * PDTS40_2
4957             RX       0      38      74     209     245     263     401     541
4958             RY    1448    1446    1444    1440    1440    1444    1446    1448
                 *
                 *
                 * Combine RPD756 and RPD748

4959             KK   C708*
4960             KO       0       0     0.0       0      22
4961             HC       2
                 *
                 *
                 * ROUTE UPDATED 4/14/4

4962             KK   R708*
4963             KO       0       0     0.0       0      22
4964             RS       6    FLOW     0.0     0.0
4965             RC   0.043   0.035   0.043   10484  0.0078
                 * PDTS40_2
4966             RX       0      38      74     209     245     263     401     541
4967             RY    1448    1446    1444    1440    1440    1444    1446    1448
                 *
                 *

4968             KK   PD708
4969             KO       0       0     0.0       1      22
4970             BA  2.4018
4971             LG   0.342   0.245   4.987   0.268  10.121
4972             UC   1.046   0.696
                 * Natural Time-Area Relation
4973             UA       0       3       5       8      12      20      43      75      90      96
4974             UA     100
                 *
                 *

4975             KK  PD712A
4976             KO       0       0     0.0       1      22
4977             BA  0.7664
4978             LG    0.35    0.25   4.955    0.28    15.0
4979             UC   1.150   0.993
                 * Natural Time-Area Relation
4980             UA       0       3       5       8      12      20      43      75      90      96
4981             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE178

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

4982             KK   R712A
4983             KO       0       0     0.0       0      22
4984             RS       6    FLOW     0.0     0.0
4985             RC   0.043   0.035   0.043    6448  0.0092
                 * PDTS40_2
4986             RX       0      38      74     209     245     263     401     541
4987             RY    1448    1446    1444    1440    1440    1444    1446    1448
                 *
                 *

4988             KK   PD712
4989             KO       0       0     0.0       1      22
4990             BA  0.8916
4991             LG   0.311    0.25   5.374   0.248  28.595
4992             UC   0.879   0.584
                 * Natural Time-Area Relation
4993             UA       0       3       5       8      12      20      43      75      90      96
4994             UA     100
                 *
                 *
                 * Combine R712A, PD712, PD708 and R708*
```

```
4995          KK  CPD708
4996          KO       0       0     0.0       0      22
4997          HC       4
              *
              *
              * ROUTE UPDATED 4/14/4

4998          KK  RPD708
4999          KO       0       0     0.0       0      22
5000          RS       1    FLOW     0.0     0.0
5001          RC   0.043   0.035   0.043    2780  0.0058
              * PDTS40_1
5002          RX       0      86     158     492     543     560     776    1208
5003          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

5004          KK   PD704
5005          KO       0       0     0.0       1      22
5006          BA  0.3619
5007          LG   0.299   0.297   4.461   0.342   2.516
5008          UC   0.571   0.460
              * Natural Time-Area Relation
5009          UA       0       3       5       8      12      20      43      75      90      96
5010          UA     100
              *
              *
1                                          HEC-1 INPUT
PAGE179

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


5011          KK   AF800
5012          KO       0       0     0.0       1      22
5013          BA  0.7163
5014          LG   0.276   0.328   6.447   0.135   1.369
5015          UC   0.654   0.482
              * Natural Time-Area Relation
5016          UA       0       3       5       8      12      20      43      75      90      96
5017          UA     100
              *
              *
              * Combines RPD708, PD704 and AF800

5018          KK  CPD704
5019          KO       0       0     0.0       0      22
5020          HC       3
              *
              *
              * *** STAGE DISCHARGE / STORAGE BEHIND Beardsley Canal
              * *** This storage includes the storage at basins PD704 and AF800
              * *** The Discharge represents the Discharge through the Beardsley Canal
              * *** structure as well as the weir flow across PD704 and AF800
              * *** The Weir flow across AF800 is diverted out on the next KK card.

5021          KK  SPD704
5022          KO       0       0     0.0       0      22
5023          RS       1    STOR       0
5024          SQ       0     154     437     802    1236    1727    2270    2860    3495    4170
5025          SQ    4884    5635    6420   11206   19630   30423   43134
5026          SE    1334    1335    1336    1337    1338    1339    1340    1341    1342    1343
5027          SE    1344    1345    1346  1346.5    1347  1347.5    1348
              *
5028          SA       0    0.65    2.07    5.40   10.99   23.99   45.97   45.98      46
5029          SE    1334    1336    1338    1340    1342    1344    1346    1347    1348
              *
              *
              * This diversion is only weir flow across the boundary of Basin AF800
              * over the Beardsley Canal to CPD700.
              *
              * For overtopping of the berm, the Weir equation was used.
              * Q=C*L*H^1.5
              * C was assumed to be 2.7
```

```
                 * L, the length of the weir was the basin boundary along the canal = 2281 ft
                 * Berm Elevation was 1346
                 * *** The remaining flow goes to CPD700 ***

5030             KK    D800
5031             DT   DO800
5032             DI       0     154     437     802    1236    1727    2270    2860    3495    4170
5033             DI    4884    5635    6420   11206   19630   30423   43134
5034             DQ       0       0       0       0       0       0       0       0       0       0
5035             DQ       0       0       0    2177    6159   11314   17419
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE180

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


5036             KK  RPD704
5037             KO       0       0     0.0       0      22
5038             RS       4    FLOW     0.0     0.0
5039             RC   0.043   0.035   0.043    5924  0.0055
                 * PDTS40_1
5040             RX       0      86     158     492     543     560     776    1208
5041             RY    1330  1326.5    1326    1324    1320    1326    1328    1330
                 *
                 *

5042             KK   PD700
5043             KO       0       0     0.0       1      22
5044             BA  1.3997
5045             LG   0.344   0.246   5.243    0.25   4.918
5046             UC   0.700   0.381
                 * Natural Time-Area Relation
5047             UA       0       3       5       8      12      20      43      75      90      96
5048             UA     100
                 *
                 *
                 * COMBINES BASIN PD700, RPD704, R700*

5049             KK  CPD700
5050             KO       0       0     0.0       0      22
5051             HC       3
                 *
                 *

5052             KK    D800
5053             DR   DO800
                 *
                 *
                 * ROUTE UDPATED 4/14/4

5054             KK   RD800
5055             KO       0       0     0.0       0      22
5056             RS       2    FLOW     0.0     0.0
5057             RC   0.043   0.035   0.043    5888  0.0059
                 * PDTS40_1
5058             RX       0      86     158     492     543     560     776    1208
5059             RY    1330  1326.5    1326    1324    1320    1326    1328    1330
                 *
                 *

5060             KK   AF802
5061             KO       0       0     0.0       1      22
5062             BA  0.3902
5063             LG   0.342   0.244   5.222   0.251   4.882
5064             UC   0.563   0.374
                 * Natural Time-Area Relation
5065             UA       0       3       5       8      12      20      43      75      90      96
5066             UA     100
                 *
                 *
                 * Combines CPD700, RD800 and AF802
```

```
1                                                HEC-1 INPUT
PAGE181

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

5067          KK   C802*
5068          HC       3
              *
              *
              * Route updated 04-15-2004

5069          KK   R810*
5070          KO       0       0     0.0       0      22
5071          RS       8    FLOW     0.0     0.0
5072          RC   0.043   0.035   0.043   10685  0.0058
              * PDTS40_1
5073          RX       0      86     158     492     543     560     776    1208
5074          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

5075          KK   AF803
5076          KO       0       0     0.0       1      22
5077          BA  2.8368
5078          LG   0.253   0.279   5.068   0.289  24.728
5079          UC   1.117   0.742
              * Urban Time-Area Relation
5080          UA       0       5      16      30      65      77      84      90      94      97
5081          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4

5082          KK  RAF803
5083          KO       0       0     0.0       0      22
5084          RS       3    FLOW     0.0     0.0
5085          RC   0.045   0.035   0.045    5287  0.0019
              * TSAF10
5086          RX       0      25      50      65     110     125     150     175
5087          RY      10     7.5       5       0       0       5     7.5      10
              *
              *

5088          KK   AF805
5089          KO       0       0     0.0       1      22
5090          BA  0.6276
5091          LG   0.325   0.283   5.475   0.217   3.741
5092          UC   0.754   0.467
              * Natural Time-Area Relation
5093          UA       0       3       5       8      12      20      43      75      90      96
5094          UA     100
              *
              *
              * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE182

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

5095          KK  RAF805
5096          KO       0       0     0.0       0      22
5097          RS       6    FLOW     0.0     0.0
5098          RC   0.043   0.035   0.043    6821  0.0059
              * PDTS40_1
5099          RX       0      86     158     492     543     560     776    1208
5100          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

5101          KK   AF807
5102          KO       0       0     0.0       1      22
5103          BA  1.0224
```

```
5104          LG   0.358   0.282   6.738    0.15    0.17
5105          UC   0.467   0.238
              * Natural Time-Area Relation
5106          UA       0       3       5       8      12      20      43      75      90      96
5107          UA     100
              *
              *
              * Combines RAF803, RAF805 and AF807

5108          KK  CAF807
5109          HC       3
              *
              *
              * ROUTE UPDATED 4/14/4

5110          KK  RAF807
5111          KO       0       0     0.0       0      22
5112          RS       1    FLOW     0.0     0.0
5113          RC   0.045   0.035   0.045    2485   0.004
              * TSAF10
5114          RX       0      25      50      65     110     125     150     175
5115          RY      10     7.5       5       0       0       5     7.5      10
              *
              *

5116          KK   AF810
5117          KO       0       0     0.0       1      22
5118          BA  2.1166
5119          LG   0.325   0.251   4.419   0.389  10.927
5120          UC   1.121   0.665
              * Natural Time-Area Relation
5121          UA       0       3       5       8      12      20      43      75      90      96
5122          UA     100
              *
              *
              * Combines R810*, RAF807 and AF810
                                          HEC-1 INPUT
PAGE183

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

5123          KK  CAF810
5124          HC       3
              *
              *
              * ROUTE UPDATED 4/14/4

5125          KK  RAF810
5126          KO       0       0     0.0       0      22
5127          RS       3    FLOW     0.0     0.0
5128          RC   0.043   0.035   0.043    8372  0.0084
              * PDTS40_1
5129          RX       0      86     158     492     543     560     776    1208
5130          RY    1330  1326.5    1326    1324    1320    1326    1328    1330
              *
              *

5131          KK   AF820
5132          KO       0       0     0.0       1      22
5133          BA  0.6957
5134          LG    0.35    0.25   4.217   0.423     5.0
5135          UC   0.838   0.743
              * Natural Time-Area Relation
5136          UA       0       3       5       8      12      20      43      75      90      96
5137          UA     100
              *
              *
              * Combines RAF810 and AF820

5138          KK  CAF820
5139          HC       2
              *
              *
```

```
                    *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * ************* END EAST PORTION OF DETAILED MODEL *************************** *
                    * ************************************************************************ *
                    * ************************************************************************ *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    * EASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEASTEAST *
                    *
                    *
                    *
                    *  * START SEGMENT THAT DOES NOT CONTRIBUTE TO DOWNSTREAM WATERSHED*
                    *
                    *
1                                                HEC-1 INPUT
PAGE184

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

        5140        KK   AF830
        5141        KO       0       0     0.0       1      22
        5142        BA  0.2662
        5143        LG    0.35   0.162    6.88    0.13     5.0
        5144        UC   0.608   0.603
                    * Natural Time-Area Relation
        5145        UA       0       3       5       8      12      20      43      75      90      96
        5146        UA     100
                    *
                    *

        5147        KK   AF854
        5148        BA  0.3382
        5149        LG   0.208    0.25   5.078   0.304  43.333
        5150        UC   0.313   0.185
                    * Urban Time-Area Relation
        5151        UA       0       5      16      30      65      77      84      90      94      97
        5152        UA     100
                    *
                    *

        5153        KK  RAF854
        5154        RS       1    FLOW     0.0     0.0
        5155        RC   0.045   0.035   0.045    2113  0.0047
                    * TSAF10
        5156        RX       0      25      50      65     110     125     150     175
        5157        RY      10     7.5       5       0       0       5     7.5      10
                    *
                    *

        5158        KK   AF852
        5159        BA  0.1678
        5160        LG   0.211   0.181   6.691   0.168  42.843
        5161        UC   0.238   0.153
                    * Urban Time-Area Relation
        5162        UA       0       5      16      30      65      77      84      90      94      97
        5163        UA     100
                    *
                    *
                    * Combines RAF854 and AF852

        5164        KK  CAF852
        5165        HC       2
                    *
                    *

        5166        KK  RAF852
        5167        RS       1    FLOW     0.0     0.0
        5168        RC   0.045   0.035   0.045    1378  0.0044
                    * TSAF10
```

```
5169          RX       0      25      50      65     110     125     150     175
5170          RY      10     7.5       5       0       0       5     7.5      10
              *
              *
              *
1                                          HEC-1 INPUT
PAGE185

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


5171          KK   AF850
5172          BA  0.2178
5173          LG   0.213    0.25    5.05   0.307  44.259
5174          UC   0.271   0.168
              * Urban Time-Area Relation
5175          UA       0       5      16      30      65      77      84      90      94      97
5176          UA     100
              *
              *
              * Combines RAF852 and AF850

5177          KK  CAF850
5178          HC       2
              *
              *

5179          KK   AF864
5180          BA  0.0868
5181          LG    0.15    0.25   5.594    0.28    55.0
5182          UC   0.467   0.659
              * Urban Time-Area Relation
5183          UA       0       5      16      30      65      77      84      90      94      97
5184          UA     100
              *
              *

5185          KK  RAF864
5186          RS       1    FLOW     0.0     0.0
5187          RC   0.045   0.035   0.045    4666   0.003
              * TSAF20
5188          RX       0      13      45      61      96     113     130     135
5189          RY       6       4       2       0       0       2       4       6
              *
              *

5190          KK   AF862
5191          BA  0.1772
5192          LG   0.273    0.25   4.025   0.487  24.286
5193          UC   0.200   0.088
              * Urban Time-Area Relation
5194          UA       0       5      16      30      65      77      84      90      94      97
5195          UA     100
              *
              *
              * Combines RAF854 and AF862

5196          KK  CAF862
5197          HC       2
              *
              *
1                                          HEC-1 INPUT
PAGE186

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


5198          KK  RAF862
5199          RS       1    FLOW     0.0     0.0
5200          RC   0.045   0.035   0.045    2136  0.0047
              * TSAF20
5201          RX       0      13      45      61      96     113     130     135
5202          RY       6       4       2       0       0       2       4       6
              *
```

```
                 *

5203             KK   AF866
5204             BA  0.4549
5205             LG   0.204   0.207   6.431   0.192  44.271
5206             UC   0.446   0.324
                 * Urban Time-Area Relation
5207             UA       0       5      16      30      65      77      84      90      94      97
5208             UA     100
                 *
                 *

5209             KK  RAF866
5210             RS       1    FLOW     0.0     0.0
5211             RC   0.045   0.035   0.045    6743  0.0044
                 * TSAF20
5212             RX       0      13      45      61      96     113     130     135
5213             RY       6       4       2       0       0       2       4       6
                 *
                 *

5214             KK   AF860
5215             BA  0.3627
5216             LG   0.229    0.25   4.023   0.518  35.172
5217             UC   0.525   0.527
                 * Urban Time-Area Relation
5218             UA       0       5      16      30      65      77      84      90      94      97
5219             UA     100
                 *
                 *
                 * Combines RAF866, RAF862 and AF860

5220             KK  CAF860
5221             HC       3
                 *
                 *

5222             KK   SV258
5223             KO       0       0     0.0       1      22
5224             BA  0.7359
5225             LG    0.35   0.343   6.344    0.15   7.423
5226             UC   0.613   0.557
                 * Natural Time-Area Relation
5227             UA       0       3       5       8      12      20      43      75      90      96
5228             UA     100
                 *
                 *
                 *
                 * DIVERSION OUT: FLOW SPLIT* Diversion Out: Flow split FS15
                 * FLOW SPLIT: MAIN PATH TO SV256, DIVERSION OUT OF WATERSHED
                 * PERCENTAGE OF SPLIT OUT OF WATERSHED IS 49%,
                 * SEE APPENDIX D OF TDN-ADMSU HYDROLOGY
1                                          HEC-1 INPUT
PAGE187

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

5229             KK    D258
5230             KO       0       0     0.0       0      22
5231             DT   DO258
5232             DI       0   10000
5233             DQ       0    4900
                 *
                 *
                 * ROUTE UPDATED 4/14/04

5234             KK  RSV258
5235             KO       0       0     0.0       0      22
5236             RS       1    FLOW     0.0     0.0
5237             RC    0.06   0.035    0.06    2155  0.0181
                 * TSR248
5238             RX       0     362     515     618     765     800     820     841
5239             RY    1664    1662    1662    1660    1660    1662    1663    1664
```

```
                *
                *
5240            KK   SV256
5241            KO       0       0     0.0       1      22
5242            BA  0.0604
5243            LG    0.35   0.269   3.427   0.575     5.0
5244            UC   0.271   0.298
                * Natural Time-Area Relation
5245            UA       0       3       5       8      12      20      43      75      90      96
5246            UA     100
                *
                *
                * Combines SV256 and RSV258

5247            KK  CSV256
5248            KO       0       0     0.0       0      22
                * Hard Coded
5249            HC       2    0.44
                *
                *
                *
                * *****END SEGMENT THAT DOES NOT CONTRIBUTE TO DOWNSTREAM WATERSHED*
                *
                *
5250            ZZ
```

```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

NO.        (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

412         WT140
                V
                V
419        RWT140
                .
                .
425             .       WT130
                .           .
                .           .
432        CWT130............
                V
                V
435        RWT130
                .
                .
441             .       WT160
                .           V
                .           V
448             .      RWT160
                .           .
                .           .
454             .           .      WT150A
                .           .           V
                .           .           V
461             .           .       R150A
                .           .           .
                .           .           .
467             .           .           .       WT150
                .           .           .           .
                .           .           .           .
474             .           .      CWT150............
                .           .           V
                .           .           V
477             .           .      RWT150
                .           .           .
                .           .           .
483             .           .           .       WT120
                .           .           .           .
                .           .           .           .
490        CWT120.................................
                V
                V
493        RWT120
                .
                .
499             .       WT110
                .           .
                .           .
506        CWT110............
                V
                V
509        RWT110
                .
                .
515             .       WT100
                .           .
                .           .
522        CWT100............
                V
                V
525        RWT100
                .
                .
531             .       TW406
                .           V
                .           V
538             .      RTW406
                .           .
```

```
                .           .
544             .           .       TW408
                .           .           V
                .           .           V
551             .           .      RTW408
                .           .           .
                .           .           .
557             .           .           .       TW404
                .           .           .           .
                .           .           .           .
564       CTW404.....................................
                V
                V
567       RTW404
                .
                .
573             .       IW371
                .           .
                .           .
582             .           .-------->   DO371
580             .        D371
                .           V
                .           V
585             .      RIW371
                .           .
                .           .
591             .           .       IW366
                .           .           .
                .           .           .
598             .      CIW366............
                .           V
                .           V
601             .      RIW366
                .           .
                .           .
607             .           .       IW377
                .           .           V
                .           .           V
614             .           .      SSR010
                .           .           V
                .           .           V
619             .           .      RIW377
                .           .           .
                .           .           .
625             .           .           .       IW374
                .           .           .           .
                .           .           .           .
634             .           .           .           .           .<-------   DO371
632             .           .           .           .        D371
                .           .           .           .           V
                .           .           .           .           V
635             .           .           .           .       RD371
                .           .           .           .           .
                .           .           .           .           .
641             .           .      CIW374........................
                .           .           V
                .           .           V
644             .           .      RIW374
                .           .           .
                .           .           .
650             .           .           .       IW386
                .           .           .           V
                .           .           .           V
657             .           .           .      RIW386
                .           .           .           .
                .           .           .           .
663             .           .           .           .       IW382
                .           .           .           .           .
                .           .           .           .           .
670             .           .           .      CIW382............
                .           .           .           .
                .           .           .           .
675             .           .           .           .-------->  DO382B
673             .           .           .       D382B
```

```
                .           .           .           .
                .           .           .           .
680             .           .           .           .-------> DO382A
678             .           .           .       D382A
                .           .           .           V
                .           .           .           V
683             .           .           .      RIW382
                .           .           .           .
                .           .           .           .
689             .           .           .           .       IW384
                .           .           .           .           .
                .           .           .           .           .
698             .           .           .           .           .           .<-------  DO382A
696             .           .           .           .           .       D382A
                .           .           .           .           .           V
                .           .           .           .           .           V
699             .           .           .           .           .      RD382A
                .           .           .           .           .           .
                .           .           .           .           .           .
705             .           .           .           .      CIW384............
                .           .           .           .           V
                .           .           .           .           V
708             .           .           .           .      RIW384
                .           .           .           .           .
                .           .           .           .           .
714             .           .           .           .           .       IW381
                .           .           .           .           .           .
                .           .           .           .           .           .
723             .           .           .           .           .           .           .<-------  DO382B
721             .           .           .           .           .           .       D382B
                .           .           .           .           .           .           .
                .           .           .           .           .           .           .
724             .           .           .           .           .      CIW381............
                .           .           .           .           .           V
                .           .           .           .           .           V
726             .           .           .           .           .      RIW381
                .           .           .           .           .           .
                .           .           .           .           .           .
732             .           .           .       C359*......................
                .           .           .           V
                .           .           .           V
735             .           .           .       R359*
                .           .           .           .
                .           .           .           .
741             .           .           .           .       IW359
                .           .           .           .           .
                .           .           .           .           .
748             .      CIW359.................................
                .           V
                .           V
751             .      RIW359
                .           .
                .           .
757             .           .       IW389
                .           .           V
                .           .           V
764             .           .      SSR190
                .           .           V
                .           .           V
771             .           .      RIW389
                .           .           .
                .           .           .
777             .           .           .       IW394
                .           .           .           V
                .           .           .           V
784             .           .           .      RIW394
                .           .           .           .
                .           .           .           .
790             .           .           .           .      IW390A
                .           .           .           .           .
                .           .           .           .           .
797             .           .           .       C390A............
                .           .           .           V
                .           .           .           V
```

```
800                 .           .           .       R390A
                    .           .           .           .
                    .           .           .           .
806                 .           .           .           .       IW390
                    .           .           .           .           .
                    .           .           .           .           .
813                 .           .           .           .           .       IW392
                    .           .           .           .           .           .
                    .           .           .           .           .           .
820                 .           .           .      CIW390.......................
                    .           .           .           V
                    .           .           .           V
823                 .           .           .      SSR160
                    .           .           .           V
                    .           .           .           V
828                 .           .           .      RIW390
                    .           .           .           .
                    .           .           .           .
834                 .           .           .           .       IW388
                    .           .           .           .           .
                    .           .           .           .           .
841                 .           .           .      C388_1............
                    .           .           .           .
                    .           .           .           .
843                 .           .      CIW388............
                    .           .           V
                    .           .           V
846                 .           .      RIW388
                    .           .           .
                    .           .           .
852                 .           .           .       IW357
                    .           .           .           .
                    .           .           .           .
859                 .           .      CIW357............
                    .           .           .
                    .           .           .
863                 .           .           .------->   DO357
862                 .           .        D357
                    .           .           V
                    .           .           V
868                 .           .      RIW357
                    .           .           .
                    .           .           .
874                 .           .           .       IW358
                    .           .           .           .
                    .           .           .           .
881                 .           .           .           .       IW353
                    .           .           .           .           .
                    .           .           .           .           .
888                 .      CIW353.....................................
                    .           V
                    .           V
891                 .      RIW353
                    .           .
                    .           .
897                 .           .       IW350
                    .           .           .
                    .           .           .
904                 .      CIW350............
                    .           .
                    .           .
907                 .           .       IW312
                    .           .           .
                    .           .           .
916                 .           .           .------->   DO312
914                 .           .        D312
                    .           .           V
                    .           .           V
919                 .           .      RIW312
                    .           .           .
                    .           .           .
925                 .           .           .       IW365
                    .           .           .           .
                    .           .           .           .
```

```
934                                                   .<-------   DO312
932                                             D312
                                                   V
                                                   V
935                                            RD312
                                                   .
                                                   .
941                                 CIW365............
                                        .
                                        .
946                                     .------->   DO365
944                                 D365
                                       V
                                       V
949                                 RIW365
                                        .
                                        .
955                                            IW367
                                                   .
                                                   .
964                                                   .<-------   DO365
962                                                D365
                                                      V
                                                      V
965                                               RD365
                                                      .
                                                      .
971                                        CIW367............
                                                   .
                                                   .
974                                                   IW369
                                                      .
                                                      .
983                                                   .------->   DO369
981                                                D369
                                                      .
                                                      .
986                                            C363*............
                                                   V
                                                   V
989                                        RIW369
                                                   .
                                                   .
996                                                   .<-------   DO357
995                                                D357
                                                      V
                                                      V
997                                               RD357
                                                      .
                                                      .
1003                                                  .       IW363
                                                      .           .
                                                      .           .
1010                                              C363_2............
                                                      .
                                                      .
1012                           CIW363...................................
                                   .
                                   .
1016                               .------->   DO363
1015                           D363
                                  V
                                  V
1021                           RIW363
                                   .
                                   .
1027                                IW368
                                        .
                                        .
1036                                    .<-------   DO369
1034                                D369
                                       V
                                       V
1037                                RD369
```

```
                 .         .         .         .         .
                 .         .         .         .         .
1043             .         .         .   CIW368...........
                 .         .         .        V
                 .         .         .        V
1046             .         .         .   RIW368
                 .         .         .        .
                 .         .         .        .
1052             .         .         .        .      IW360
                 .         .         .        .         .
                 .         .         .        .         .
1059             .         .         .   CIW360...........
                 .         .         .        V
                 .         .         .        V
1062             .         .         .   RIW360
                 .         .         .        .
                 .         .         .        .
1068             .         .         .        .      IW397
                 .         .         .        .         V
                 .         .         .        .         V
1075             .         .         .        .     RIW397
                 .         .         .        .         .
                 .         .         .        .         .
1081             .         .         .        .         .      IW395
                 .         .         .        .         .         .
                 .         .         .        .         .         .
1088             .         .         .        .     CIW395...........
                 .         .         .        .         V
                 .         .         .        .         V
1091             .         .         .        .     RIW395
                 .         .         .        .         .
                 .         .         .        .         .
1097             .         .         .        .         .      IW387
                 .         .         .        .         .         V
                 .         .         .        .         .         V
1104             .         .         .        .         .     RIW387
                 .         .         .        .         .         .
                 .         .         .        .         .         .
1110             .         .         .        .         .         .      IW396
                 .         .         .        .         .         .         .
                 .         .         .        .         .         .         .
1117             .         .         .        .     CIW396......................
                 .         .         .        .         V
                 .         .         .        .         V
1120             .         .         .        .     RIW396
                 .         .         .        .         .
                 .         .         .        .         .
1126             .         .         .        .         .      IW380
                 .         .         .        .         .         .
                 .         .         .        .         .         .
1133             .         .         .        .     CIW380...........
                 .         .         .        .         V
                 .         .         .        .         V
1136             .         .         .        .     SSR310
                 .         .         .        .         .
                 .         .         .        .         .
1145             .         .         .        .         .-------> DO380
1143             .         .         .        .       D380
                 .         .         .        .         V
                 .         .         .        .         V
1150             .         .         .        .     RIW380
                 .         .         .        .         .
                 .         .         .        .         .
1156             .         .         .        .         .      IW370
                 .         .         .        .         .         .
                 .         .         .        .         .         .
1163             .         .         .        .     CIW370...........
                 .         .         .        .         V
                 .         .         .        .         V
1166             .         .         .        .     RIW370
                 .         .         .        .         .
                 .         .         .        .         .
1172             .         .         .        .         .      IW349
                 .         .         .        .         .         .
```

```
1179                                  CIW349...........
                                          .
1184                                      .-------->   DO349
1182                                   D349
                                          V
                                          V
1187                                  RIW349
                                          .
                                          .
1193                                      .       IW352
                                          .           .
                                          .           .
1200                          CIW352......................
                                  .
                                  .
1203                              .       IW356
                                  .           .
                                  .           .
1212                              .           .           .<-------   DO349
1210                              .           .       D349
                                  .           .          V
                                  .           .          V
1213                              .           .      RD349
                                  .           .           .
                                  .           .           .
1219                          CIW356......................
                                  V
                                  V
1222                          RIW356
                                  .
                                  .
1228                              .       IW354
                                  .           .
                                  .           .
1235                          CIW354...........
                                  V
                                  V
1238                          RIW354
                                  .
                                  .
1244                              .       IW362
                                  .           .
                                  .           .
1251                          CIW362...........
                                  .
                                  .
1254                              .       IW372
                                  .           .
                                  .           .
1263                              .           .-------->   DO372
1261                              .        D372
                                  .           V
                                  .           V
1266                              .      RIW372
                                  .           .
                                  .           .
1272                              .           .       IW375
                                  .           .           .
                                  .           .           .
1281                              .           .           .           .<-------   DO372
1279                              .           .           .        D372
                                  .           .           .           V
                                  .           .           .           V
1282                              .           .           .       RD372
                                  .           .           .           .
                                  .           .           .           .
1288                              .           .      CIW375...........
                                  .           .           V
                                  .           .           V
1291                              .           .      RIW375
                                  .           .           .
                                  .           .           .
```

```
1297                                                                  IW364
1304                                      CIW364.......................
1307                                 C364*............
                                        V
                                        V
1310                                 RIW364
1316                                          IW342
1323                                 CIW342............
1326                                          IW351
1334                                                                .<-------   DO363
1333                                                          D363
                                                                 V
                                                                 V
1335                                                         RD363
1341                                      CIW351............
1345                                                        .------->   DO351
1344                                           D351
                                                  V
                                                  V
1350                                      RIW351
1356                                                         IW346
1363                                      C346_1............
1366                                 CIW346............
                                        V
                                        V
1369                                 RIW346
1375                                          IW338
1382                                 CIW338............
                                        V
                                        V
1385                                 RIW338
1391                                          IW326
                                                  V
                                                  V
1398                                      RIW326
1404                                                         IW334
1411                                 CIW334........................
                                        V
                                        V
1414                                 SCP030
                                        V
                                        V
```

```
1421          .           .           .      RIW334
              .           .           .           .
              .           .           .           .
1427          .           .           .           .       IW302
              .           .           .           .           .
              .           .           .           .           .
1434          .           .           .      CIW302............
              .           .           .           .
              .           .           .           .
1438          .           .           .           .-------->   DO302
1437          .           .           .        D302
              .           .           .           .
              .           .           .           .
1441          .           .           .           .       IW361
              .           .           .           .           .
              .           .           .           .           .
1448          .           .      C361_1........................
              .           .           .
              .           .           .
1451          .           .           .           .<-------   DO351
1450          .           .           .        D351
              .           .           .           V
              .           .           .           V
1452          .           .           .       RD351
              .           .           .           .
              .           .           .           .
1458          .           .      CIW361............
              .           .           V
              .           .           V
1461          .           .      RIW361
              .           .           .
              .           .           .
1467          .       C350*............
              .           V
              .           V
1470          .       R350*
              .           .
              .           .
1476          .           .       IW330
              .           .           .
              .           .           .
1483          .      CIW330............
              .           V
              .           V
1486          .      RIW330
              .           .
              .           .
1492          .           .       IW322
              .           .           .
              .           .           .
1499          .      CIW322............
              .           V
              .           V
1502          .      RIW322
              .           .
              .           .
1508          .           .       IW318
              .           .           V
              .           .           V
1515          .           .      RIW318
              .           .           .
              .           .           .
1521          .           .           .       IW310
              .           .           .           .
              .           .           .           .
1528          .           .      CIW310............
              .           .           V
              .           .           V
1531          .           .      RIW310
              .           .           .
              .           .           .
1537          .           .           .       IW314
              .           .           .           .
              .           .           .           .
```

```
1544          .      CIW314.......................
              .           V
              .           V
1547          .      SCP020
              .           V
              .           V
1554          .      RIW314
              .           .
              .           .
1560          .           .       IW300
              .           .           .
              .           .           .
1567          .      CIW300............
              .           V
              .           V
1570          .      RIW300
              .           .
              .           .
1576          .           .       SV202
              .           .           V
              .           .           V
1583          .           .      RSV202
              .           .           .
              .           .           .
1589          .      C300_1............
              .           .
              .           .
1593          .           .           .<-------   DO302
1592          .           .        D302
              .           .           .
              .           .           .
1594          .       C302*............
              .           V
              .           V
1597          .      RIW302
              .           .
              .           .
1603          .           .      SV264A
              .           .           V
              .           .           V
1610          .           .       R264A
              .           .           .
              .           .           .
1616          .           .           .       SV264
              .           .           .           .
              .           .           .           .
1623          .           .      CSV264............
              .           .           V
              .           .           V
1626          .           .      RSV264
              .           .           .
              .           .           .
1632          .           .           .       SV298
              .           .           .           V
              .           .           .           V
1639          .           .           .      RSV298
              .           .           .           .
              .           .           .           .
1645          .           .           .           .       SV286
              .           .           .           .           V
              .           .           .           .           V
1652          .           .           .           .      RSV286
              .           .           .           .           .
              .           .           .           .           .
1658          .           .           .           .           .       SV284
              .           .           .           .           .           .
              .           .           .           .           .           .
1665          .           .           .           .      CSV284............
              .           .           .           .           V
              .           .           .           .           V
1668          .           .           .           .      RSV284
              .           .           .           .           .
              .           .           .           .           .
1674          .           .           .           .           .       SV272
```

```
                .         .         .         .         .         .
                .         .         .         .         .         .
1681            .         .         .         .     C272_2.........
                .         .         .         .         .
                .         .         .         .         .
1683            .         .         .         .         .      SV290
                .         .         .         .         .          V
                .         .         .         .         .          V
1690            .         .         .         .         .     RSV290
                .         .         .         .         .          .
                .         .         .         .         .          .
1696            .         .         .         .     CSV272.........
                .         .         .         .             V
                .         .         .         .             V
1699            .         .         .         .     RSV272
                .         .         .         .         .
                .         .         .         .         .
1705            .         .         .         .         .      SV276
                .         .         .         .         .          .
                .         .         .         .         .          .
1712            .         .         .         .     C276_2.........
                .         .         .         .         .
                .         .         .         .         .
1714            .         .         .         .         .      SV294
                .         .         .         .         .          V
                .         .         .         .         .          V
1721            .         .         .         .         .     RSV294
                .         .         .         .         .          .
                .         .         .         .         .          .
1727            .         .         .         .     CSV276.........
                .         .         .         .             V
                .         .         .         .             V
1730            .         .         .         .     RSV276
                .         .         .         .         .
                .         .         .         .         .
1736            .         .         .         .         .      SV280
                .         .         .         .         .          .
                .         .         .         .         .          .
1743            .         .         .         .     C280_1.........
                .         .         .         .         .
                .         .         .         .         .
1745            .         .         .     CSV280.........
                .         .         .             V
                .         .         .             V
1748            .         .         .     RSV280
                .         .         .         .
                .         .         .         .
1754            .         .         .         .      SV260
                .         .         .         .         .
                .         .         .         .         .
1761            .         .         .     C260_1.........
                .         .         .         .
                .         .         .         .
1763            .         .         .         .      SV268
                .         .         .         .         V
                .         .         .         .         V
1770            .         .         .         .     RSV268
                .         .         .         .         .
                .         .         .         .         .
1776            .         .     CSV260.......................
                .         .         V
                .         .         V
1779            .         .     SCP010
                .         .         V
                .         .         V
1786            .         .     RSV260
                .         .         .
                .         .         .
1792            .         .         .     SV220
                .         .         .         .
                .         .         .         .
1799            .         .         .         .      SV252
                .         .         .         .         V
                .         .         .         .         V
```

```
1806                    RSV252
                          .
1812                      .      SV254
                          .          V
                          .          V
1819                      .     RSV254
                          .          .
                          .          .
1825                      .          .       SV219
                          .          .          .
                          .          .          .
1832                      .  CSV219.......................
                          .      V
                          .      V
1835                      .  RSV219
                          .      .
                          .      .
1841                      .      .      SV251
                          .      .          V
                          .      .          V
1848                      .      .     RSV251
                          .      .          .
                          .      .          .
1854                      .      .          .       SV250
                          .      .          .          V
                          .      .          .          V
1861                      .      .          .      RSV250
                          .      .          .          .
                          .      .          .          .
1867                      .      .          .          .       SV218
                          .      .          .          .          .
                          .      .          .          .          .
1874                      .  CSV218.................................
                          .      V
                          .      V
1877                      .  RSV218
                          .      .
                          .      .
1883                      .      .      SV248
                          .      .          .
                          .      .          .
1892                      .      .          .-------->   DO248
1890                      .      .       D248
                          .      .          V
                          .      .          V
1895                      .      .     RSV248
                          .      .          .
                          .      .          .
1901                      .      .          .       SV244
                          .      .          .          .
                          .      .          .          .
1908                      .      .     CSV244............
                          .      .          .
                          .      .          .
1911                      .      .          .       SV246
                          .      .          .          .
                          .      .          .          .
1920                      .      .          .          .          .<-------
DO248
1918                      .      .          .          .       D248
                          .      .          .          .          V
                          .      .          .          .          V
1921                      .      .          .          .      RD248
                          .      .          .          .          .
                          .      .          .          .          .
1927                      .      .          .      CSV246............
                          .      .          .          .
                          .      .          .          .
1930                      .      .      C216*...........
                          .      .          V
                          .      .          V
1933                      .      .     RSV244
                          .      .          .
```

```
1939                                                  SV216
                                                        .
                                                        .
1946                                  CSV216.......................
                                          V
                                          V
1949                                  RSV216
                                          .
                                          .
1955                                          SV236
                                                V
                                                V
1962                                          RSV236
                                                .
                                                .
1968                                                  SV240
                                                        .
                                                        .
1975                                                        .       SV242
                                                        .           .
                                                        .           .
1982                                                  C242*............
                                                        V
                                                        V
1985                                                  R242*
                                                        .
                                                        .
1991                                                        .       SV214
                                                        .           .
                                                        .           .
1998                  CSV220.............................................
                          V
                          V
2001                  RSV220
                          .
                          .
2007                      .       SV230
                                      .
                                      .
2014                      .           .       SV232
                          .           .           .
                          .           .           .
2021                      .       C230*............
                          .           V
                          .           V
2024                      .       R230*
                          .           .
                          .           .
2030                      .           .       SV212
                          .           .           .
                          .           .           .
2037                  CSV212......................
                          V
                          V
2040                  RSV212
                          .
                          .
2046                      .       SV210
                          .           V
                          .           V
2053                      .      RSV210
                          .           .
                          .           .
2059                   C210*............
                          .
                          .
2062                      .       SV208
                          .           .
                          .           .
2069                      .           .       SV205
                          .           .           .
                          .           .           .
2076                      .       C205*............
```

```
                 .          .          .          V
                 .          .          .          V
2079             .          .          .      R205*
                 .          .          .          .
                 .          .          .          .
2085             .          .          .          .      SV203
                 .          .          .          .          V
                 .          .          .          .          V
2092             .          .          .          .     RSV203
                 .          .          .          .          .
                 .          .          .          .          .
2098             .          .      C200*.......................
                 .          .          .
                 .          .          .
2101             .          .          .      SV200
                 .          .          .          .
                 .          .          .          .
2108             .     CSV200.......................
                 .          V
                 .          V
2111             .     RSV200
                 .          .
                 .          .
2117             .          .      TW416
                 .          .          V
                 .          .          V
2124             .          .     RTW416
                 .          .          .
                 .          .          .
2130             .          .          .      TW420
                 .          .          .          V
                 .          .          .          V
2137             .          .          .     RTW420
                 .          .          .          .
                 .          .          .          .
2143             .          .          .          .      TW412
                 .          .          .          .          .
                 .          .          .          .          .
2150             .          .          .     CTW412............
                 .          .          .          .
                 .          .          .          .
2153             .          .          .          .      TW414
                 .          .          .          .          V
                 .          .          .          .          V
2160             .          .          .          .     RTW414
                 .          .          .          .          .
                 .          .          .          .          .
2166             .          .          .          .          .      TW410
                 .          .          .          .          .          .
                 .          .          .          .          .          .
2173             .          .          .          .     CTW410............
                 .          .          .          .          .
                 .          .          .          .          .
2176             .      C410*...................................
                 .          V
                 .          V
2179             .     RTW410
                 .          .
                 .          .
2185             .          .      TW402
                 .          .          .
                 .          .          .
2192      CTW402.......................
               V
               V
2195      RTW402
                 .
                 .
2201             .      TW448
                 .          .
                 .          .
2210             .          .-------->   DO448
2208             .       D448
                 .          V
```

```
                 .          V
2213             .     RTW448
                 .          .
                 .          .
2219             .          .      TW446A
                 .          .          .
                 .          .          .
2227             .          .          .          .<-------   DO448
2226             .          .          .       D448
                 .          .          .          V
                 .          .          .          V
2228             .          .          .      RD448
                 .          .          .          .
                 .          .          .          .
2234             .          .      C446A............
                 .          .          .
                 .          .          .
2238             .          .          .-------> DO446A
2236             .          .      D446A
                 .          .          V
                 .          .          V
2241             .          .      R446A
                 .          .          .
                 .          .          .
2247             .          .          .      TW446
                 .          .          .          .
                 .          .          .          .
2254             .     CTW446........................
                 .          V
                 .          V
2257             .     RTW446
                 .          .
                 .          .
2263             .          .      TW432
                 .          .          .
                 .          .          .
2270             .     CTW432............
                 .          V
                 .          V
2273             .     RTW432
                 .          .
                 .          .
2279             .          .      TW431
                 .          .          .
                 .          .          .
2286             .     CTW431............
                 .          .
                 .          .
2289             .          .      TW459
                 .          .          V
                 .          .          V
2296             .          .     SSR350
                 .          .          V
                 .          .          V
2301             .          .     RTW459
                 .          .          .
                 .          .          .
2307             .          .          .      TW462
                 .          .          .          .
                 .          .          .          .
2315             .          .          .          .          .<-------   DO380
2314             .          .          .          .       D380
                 .          .          .          .          V
                 .          .          .          .          V
2316             .          .          .          .      RD380
                 .          .          .          .          .
                 .          .          .          .          .
2322             .          .          .     CTW462............
                 .          .          .          V
                 .          .          .          V
2324             .          .          .     SSR330
                 .          .          .          V
                 .          .          .          V
2330             .          .          .     RTW462
```

```
                 .         .         .         .
                 .         .         .         .
2336             .         .         .      TW450A
                 .         .         .          V
                 .         .         .          V
2343             .         .         .      SSR410
                 .         .         .          V
                 .         .         .          V
2348             .         .         .       R450A
                 .         .         .          .
                 .         .         .          .
2354             .         .         .          .      TW450B
                 .         .         .          .          .
                 .         .         .          .          .
2361             .         .   C450B.....................................
                 .         .       V
                 .         .       V
2363             .         .   R450B
                 .         .       .
                 .         .       .
2369             .         .       .      TW450
                 .         .       .         .
                 .         .       .         .
2378             .         .       .         .<-------  DO446A
2376             .         .       .      D446A
                 .         .       .          V
                 .         .       .          V
2379             .         .       .      RD446A
                 .         .       .          .
                 .         .       .          .
2385             .         .  CTW450........................
                 .         .       .
                 .         .       .
2390             .         .       .-------> DO450
2388             .         .     D450
                 .         .       V
                 .         .       V
2393             .         .  RTW450
                 .         .       .
                 .         .       .
2399             .         .       .      TW444
                 .         .       .         .
                 .         .       .         .
2406             .         .  CTW444............
                 .         .       V
                 .         .       V
2409             .         .  RTW444
                 .         .       .
                 .         .       .
2415             .         .       .      TW440
                 .         .       .         .
                 .         .       .         .
2422             .         .  CTW440............
                 .         .       .
                 .         .       .
2425             .         .       .      TW460
                 .         .       .         V
                 .         .       .         V
2432             .         .       .     SSR540
                 .         .       .         V
                 .         .       .         V
2438             .         .       .     RTW460
                 .         .       .         .
                 .         .       .         .
2444             .         .       .         .      TW458
                 .         .       .         .          .
                 .         .       .         .          .
2451             .         .       .     CTW458............
                 .         .       .         V
                 .         .       .         V
2454             .         .       .     RTW458
                 .         .       .         .
                 .         .       .         .
2460             .         .       .         .      TW456
```

```
                .           .           .           .           .
                .           .           .           .           .
2467            .           .           .      CTW456............
                .           .           .           V
                .           .           .           V
2470            .           .           .      RTW456
                .           .           .           .
                .           .           .           .
2476            .           .           .           .      TW454
                .           .           .           .           .
                .           .           .           .           .
2483            .           .           .      CTW454............
                .           .           .           .
                .           .           .           .
2488            .           .           .           .-------->  DO454
2486            .           .           .        D454
                .           .           .           V
                .           .           .           V
2491            .           .           .      RTW454
                .           .           .           .
                .           .           .           .
2497            .           .           .           .     TW452A
                .           .           .           .          V
                .           .           .           .          V
2504            .           .           .           .     SSR450
                .           .           .           .          V
                .           .           .           .          V
2509            .           .           .           .      R452A
                .           .           .           .           .
                .           .           .           .           .
2515            .           .           .           .           .     TW452B
                .           .           .           .           .          .
                .           .           .           .           .          .
2522            .           .           .       C452B......................
                .           .           .           V
                .           .           .           V
2525            .           .           .       R452B
                .           .           .           .
                .           .           .           .
2531            .           .           .           .      TW452
                .           .           .           .           .
                .           .           .           .           .
2540            .           .           .           .           .          .<-------  DO450
2538            .           .           .           .           .       D450
                .           .           .           .           .          V
                .           .           .           .           .          V
2541            .           .           .           .           .      RD450
                .           .           .           .           .          .
                .           .           .           .           .          .
2547            .           .           .      CTW452......................
                .           .           .           V
                .           .           .           V
2550            .           .           .      RTW452
                .           .           .           .
                .           .           .           .
2556            .           .           .           .      TW442
                .           .           .           .           .
                .           .           .           .           .
2563            .           .           .      CTW442............
                .           .           .           .
                .           .           .           .
2566            .           .      C442*............
                .           .           V
                .           .           V
2569            .           .      R442*
                .           .           .
                .           .           .
2575            .           .           .       TW434
                .           .           .           .
                .           .           .           .
2582            .           .      C434_1............
                .           .           .
                .           .           .
2584            .      CTW434............
```

```
                 .          V
                 .          V
2587             .     RTW434
                 .          .
                 .          .
2593             .          .      TW430
                 .          .          .
                 .          .          .
2600             .     C430_2...........
                 .          .
                 .          .
2602             .          .      TW436
                 .          .          V
                 .          .          V
2609             .          .     RTW436
                 .          .          .
                 .          .          .
2615             .          .          .      TW429
                 .          .          .          V
                 .          .          .          V
2622             .          .          .     RTW429
                 .          .          .          .
                 .          .          .          .
2628             .     C430*......................
                 .          .
                 .          .
2633             .          .          .<-------   DO454
2631             .          .       D454
                 .          .          V
                 .          .          V
2634             .          .      RD454
                 .          .          .
                 .          .          .
2640             .          .          .      TW485
                 .          .          .          .
                 .          .          .          .
2647             .          .          .          .     WI576A
                 .          .          .          .          V
                 .          .          .          .          V
2654             .          .          .          .      R576A
                 .          .          .          .          .
                 .          .          .          .          .
2660             .          .          .          .          .     WI576B
                 .          .          .          .          .          .
                 .          .          .          .          .          .
2667             .          .          .          .      C576B...........
                 .          .          .          .          .
                 .          .          .          .          .
2672             .          .          .          .          .-------> DO576B
2670             .          .          .          .      D576B
                 .          .          .          .          V
                 .          .          .          .          V
2675             .          .          .          .      R576B
                 .          .          .          .          .
                 .          .          .          .          .
2681             .          .          .     C485_1...........
                 .          .          .          .
                 .          .          .          .
2684             .          .     CTW485...........
                 .          .          V
                 .          .          V
2687             .          .     RTW485
                 .          .          .
                 .          .          .
2693             .          .          .      TW484
                 .          .          .          .
                 .          .          .          .
2700             .          .     CTW484...........
                 .          .          V
                 .          .          V
2703             .          .     RTW484
                 .          .          .
                 .          .          .
2709             .          .          .      TW480
```

```
2716          WI580A
                 .
2723             .        WI580B
                 .           .
2732             .           .-------> DO580B
2730             .       D580B
                 .          V
                 .          V
2735             .       R580B
                 .           .
2741          C580A............
                 V
                 V
2744          SSR630
                 V
                 V
2750          R580A
                 .
2756             .       WI580
                 .           .
2765             .           .          .<------- DO580B
2763             .           .      D580B
                 .           .          V
2766             .           .          V
                 .           .      RD580B
2772             .           .           .
                 .           .           .
                 .           .           .       WI578
                 .           .           .         .
2779             .           .      CWI578.........
                 .           .          V
2782             .           .          V
                 .           .      SSR700
                 .           .          V
2787             .           .          V
                 .           .      RWI578
                 .           .           .
2793          CWI580......................
                 V
                 V
2796          RWI580
                 .
2802             .       WI576
                 .           .
2809          C576_2...........
                 .
2813             .           .<------- DO576B
2811             .       D576B
                 .          V
2814             .          V
                 .      RD576B
2820          CWI576...........
                 .
2825             .-------> DO576
2823          D576
                 V
                 V
2830          RWI576
                 .
```

```
2836                                                  TW482
                                                        .
                                                        .
2843                                        CTW482............
                                                        .
                                                        .
2848                                                    .-------> DO482
2846                                          D482
                                                 V
                                                 V
2851                                        RTW482
                                                        .
                                                        .
2857                                  C480_4............
                                                 .
                                                 .
2859                        CTW480............
                                                 .
                                                 .
2864                                  .-------> DO480
2862                          D480
                                 V
                                 V
2867                        RTW480
                                                 .
                                                 .
2873                                    TW478
                                                 .
                                                 .
2880                        CTW478............
                                 V
                                 V
2883                        RTW478
                                                 .
                                                 .
2889                  CTW430............
                           V
                           V
2892                  SCP040
                           V
                           V
2899                  RTW430
                           .
                           .
2905                            TW418
                                    .
                                    .
2912                  CTW418............
                           V
                           V
2915                  RTW418
                           .
                           .
2921                            TW422
                                    .
                                    .
2928                  C422_1............
                           .
                           .
2931                            TW424
                                    V
                                    V
2938                            RTW424
                                    .
                                    .
2944                  CTW422............
                           V
                           V
2947                  RTW422
                           .
                           .
2953                            TW400
                                    .
```

```
                .          .          .
2960            .      C400_2.........
                .          .
                .          .
2963       CTW400.........
                V
                V
2966       RTW400
                .
                .
2972            .       WI504
                .          .
                .          .
2979       CWI504.........
                V
                V
2982       RWI504
                .
                .
2988            .       WI560
                .          .
                .          .
2995            .          .       WI574
                .          .          V
                .          .          V
3002            .          .      RWI574
                .          .          .
                .          .          .
3008            .      C5602A.........
                .          .
                .          .
3012            .          .          .<-------   DO576
3010            .          .        D576
                .          .          V
                .          .          V
3013            .          .       RD576
                .          .          .
                .          .          .
3019            .      C5602B.........
                .          .
                .          .
3021            .          .      WI560A
                .          .          V
                .          .          V
3028            .          .       R560A
                .          .          .
                .          .          .
3034            .      C5602C.........
                .          .
                .          .
3036            .          .       WI572
                .          .          V
                .          .          V
3043            .          .      RWI572
                .          .          .
                .          .          .
3049            .          .          .       WI570
                .          .          .          .
                .          .          .          .
3058            .          .          .          .-------> DO570
3056            .          .          .        D570
                .          .          .          V
                .          .          .          V
3061            .          .          .      RWI570
                .          .          .          .
                .          .          .          .
3067            .          .          .          .       WI566
                .          .          .          .          .
                .          .          .          .          .
3076            .          .          .          .          .          .<-------   DO570
3074            .          .          .          .          .       D570
                .          .          .          .          .          .
                .          .          .          .          .          .
3077            .          .          .          .      CWI566.........
```

```
                 .          .          .          .          V
                 .          .          .          .          V
3080             .          .          .          .     SSR830
                 .          .          .          .          V
                 .          .          .          .          V
3086             .          .          .          .     RWI566
                 .          .          .          .          .
                 .          .          .          .          .
3092             .          .          .          .          .      WI564
                 .          .          .          .          .          V
                 .          .          .          .          .          V
3099             .          .          .          .          .     SSR880
                 .          .          .          .          .          V
                 .          .          .          .          .          V
3105             .          .          .          .          .     RWI564
                 .          .          .          .          .          .
                 .          .          .          .          .          .
3111             .          .          .          .          .          .      WI562
                 .          .          .          .          .          .          .
                 .          .          .          .          .          .          .
3118             .          .          .          .     CWI562.......................
                 .          .          .          .          .
                 .          .          .          .          .
3121             .          .          .      C562*............
                 .          .          .          V
                 .          .          .          V
3124             .          .          .      R562*
                 .          .          .          .
                 .          .          .          .
3130             .     CWI560........................
                 .          V
                 .          V
3133             .     RWI560
                 .          .
                 .          .
3139             .          .      WI554
                 .          .          .
                 .          .          .
3146             .     C554_9............
                 .          .
                 .          .
3148             .          .      WI556
                 .          .          V
                 .          .          V
3155             .          .     RWI556
                 .          .          .
                 .          .          .
3161             .     C5541B............
                 .          .
                 .          .
3163             .          .      WI582
                 .          .          .
                 .          .          .
3172             .          .          .          .<-------   DO482
3170             .          .          .      D482
                 .          .          .          V
                 .          .          .          V
3173             .          .          .      RD482
                 .          .          .          .
                 .          .          .          .
3179             .          .     CWI582............
                 .          .          V
                 .          .          V
3182             .          .     RWI582
                 .          .          .
                 .          .          .
3188             .     CWI554............
                 .          V
                 .          V
3191             .     RWI554
                 .          .
                 .          .
3197             .          .      WI552
                 .          .          .
```

```
                .           .
3204            .      CWI552............
                .           V
                .           V
3207            .      RWI552
                .           .
                .           .
3213            .           .       WI584
                .           .           .
                .           .           .
3222            .           .           .           .<-------   DO480
3220            .           .           .        D480
                .           .           .           V
                .           .           .           V
3223            .           .           .       RD480
                .           .           .           .
                .           .           .           .
3229            .           .      CWI584............
                .           .           V
                .           .           V
3232            .           .      RWI584
                .           .           .
                .           .           .
3238            .           .           .       WI550
                .           .           .           .
                .           .           .           .
3245            .      CWI550........................
                .           V
                .           V
3248            .      SCP050
                .           V
                .           V
3255            .      RWI550
                .           .
                .           .
3261            .           .       WI514
                .           .           .
                .           .           .
3268            .      CWI514............
                .           .
                .           .
3271            .           .       WI548
                .           .           V
                .           .           V
3278            .           .      RWI548
                .           .           .
                .           .           .
3284            .           .           .       WI546
                .           .           .           .
                .           .           .           .
3291            .           .      CWI546............
                .           .           V
                .           .           V
3294            .           .      RWI546
                .           .           .
                .           .           .
3300            .           .           .       WI544
                .           .           .           .
                .           .           .           .
3307            .           .      CWI544............
                .           .           .
                .           .           .
3312            .           .           .------->   DO544
3310            .           .        D544
                .           .           V
                .           .           V
3315            .           .      RWI544
                .           .           .
                .           .           .
3321            .           .           .       WI542
                .           .           .           .
                .           .           .           .
3328            .           .      CWI542............
                .           .           .
```

```
3331                 .         .         .      WI540
                     .         .         .          V
                     .         .         .          V
3344                 .         .         .     RWI540
                     .         .         .          .
                     .         .         .          .
3350                 .         .         .          .      WI538A
                     .         .         .          .           .
                     .         .         .          .           .
3357                 .         .         .      C538A............
                     .         .         .          V
                     .         .         .          V
3360                 .         .         .      R538A
                     .         .         .          .
                     .         .         .          .
3366                 .         .         .          .       WI538
                     .         .         .          .           .
                     .         .         .          .           .
3373                 .         .         .     CWI538............
                     .         .         .          V
                     .         .         .          V
3376                 .         .         .     RWI538
                     .         .         .          .
                     .         .         .          .
3382                 .         .         .          .       WI530
                     .         .         .          .           .
                     .         .         .          .           .
3389                 .         .         .     C530_2............
                     .         .         .          .
                     .         .         .          .
3391                 .         .         .          .       WI536
                     .         .         .          .           .
                     .         .         .          .           .
3398                 .         .         .          .           .      WI534
                     .         .         .          .           .          V
                     .         .         .          .           .          V
3405                 .         .         .          .           .     RWI534
                     .         .         .          .           .          .
                     .         .         .          .           .          .
3411                 .         .         .          .           .          .       WI532
                     .         .         .          .           .          .           .
                     .         .         .          .           .          .           .
3418                 .         .         .          .           .     CWI532............
                     .         .         .          .           .          .
                     .         .         .          .           .          .
3421                 .         .         .          .       C530*............
                     .         .         .          .           V
                     .         .         .          .           V
3424                 .         .         .          .       R530*
                     .         .         .          .           .
                     .         .         .          .           .
3430                 .         .         .     C530_3............
                     .         .         .          .
                     .         .         .          .
3434                 .         .         .          .           .<-------   DO544
3432                 .         .         .          .        D544
                     .         .         .          .           V
                     .         .         .          .           V
3435                 .         .         .          .       RD544
                     .         .         .          .           .
                     .         .         .          .           .
3441                 .         .         .     CWI530............
                     .         .         .          .
                     .         .         .          .
3444                 .         .      CAP1*............
                     .         .         .
                     .         .         .
3448                 .         .         .      PI663
                     .         .         .          V
                     .         .         .          V
3455                 .         .         .     RPI663
                     .         .         .          .
                     .         .         .          .
```

```
3461                                  PI657
                                        .
                                        .
3468                                    .        PI660
                                        .           .
                                        .           .
3475                            CPI660.......................
                                     V
                                     V
3478                            RPI660
                                        .
                                        .
3484                                    .        PI654
                                        .           .
                                        .           .
3491                            CPI654............
                                        .
                                        .
3496                                    .-------->   DO654
3494                              D654
                                     V
                                     V
3499                            RPI654
                                        .
                                        .
3505                                    .        PI651
                                        .           .
                                        .           .
3512                            C651_1............
                                        .
                                        .
3514                                    .        PI648
                                        .           .
                                        .           .
3521                            CPI651............
                                     V
                                     V
3524                            RPI651
                                        .
                                        .
3530                                    .        PI645
                                        .           .
                                        .           .
3537                            C645_1............
                                        .
                                        .
3539                                    .      PI645A
                                        .          V
                                        .          V
3546                                    .       R645A
                                        .           .
                                        .           .
3554                                    .           .           .<-------   DO654
3552                                    .           .        D654
                                        .           .           V
                                        .           .           V
3555                                    .           .       RD654
                                        .           .           .
                                        .           .           .
3561                            CPI645........................
                                        .
                                        .
3564                       CAP1*............
                                   .
                                   .
3567                            PI689
                                        .
                                        .
3574                                    .        PI688
                                        .           .
                                        .           .
3581                            CPI689............
                                     V
                                     V
```

```
3583                    RPI689
                           .
                           .
3589                       .        PI687
                           .           .
                           .           .
3596                    CPI687............
                           V
                           V
3599                    RPI687
                           .
                           .
3605                       .        PI684
                           .           .
                           .           .
3612                    CPI684............
                           V
                           V
3615                    SSR103
                           V
                           V
3621                    RPI684
                           .
                           .
3627                       .        PI681
                           .           .
                           .           .
3634                    CPI681............
                           V
                           V
3637                    RPI681
                           .
                           .
3643                       .        PI678
                           .           .
                           .           .
3650                    CPI678............
                           .
                           .
3655                       .-------->   DO678
3653                      D678
                           .
                           .
3658                       .        PI690
                           .           .
                           .           .
3665                    CPI690............
                           V
                           V
3668                    RPI690
                           .
                           .
3674                       .        PI675
                           .           .
                           .           .
3681                    CPI675............
                           .
                           .
3684                 CAP1*............
                        .
                        .
3687                    PI672
                           .
                           .
3696                       .           .<-------   DO678
3694                       .        D678
                           .           V
                           .           V
3697                       .       RD678
                           .           .
                           .           .
3703                    CPI672............
                           .
                           .
```

```
3706          .          .      CAP1*............
              .          .          .
              .          .          .
3709          .          .          .       PI693
              .          .          .           .
              .          .          .           .
3716          .          .      CAP1*............
              .          .          .
              .          .          .
3719          .          .          .       PI669
              .          .          .           .
              .          .          .           .
3726          .          .      CAP1*............
              .          .          .
              .          .          .
3729          .          .          .       PI642
              .          .          .           .
              .          .          .           .
3736          .          .      CAP1*............
              .          .          .
              .          .          .
3739          .          .          .      PDWEST
              .          .          .           .
              .          .          .           .
3762          .          .      CAP1*............
              .          .          V
              .          .          V
3765          .          .      STOR1
              .          .          .
              .          .          .
3775          .          .          .-------> DOCAP*
3774          .          .      DCAP*
              .          .          .
              .          .          .
3782          .          .          .-------> DOCP14
3780          .          .     DCAP14
              .          .          .
              .          .          .
3787          .          .          .-------> DOCP13
3785          .          .     DCAP13
              .          .          .
              .          .          .
3792          .          .          .-------> DOCP12
3790          .          .     DCAP12
              .          .          .
              .          .          .
3797          .          .          .-------> DOCP11
3795          .          .     DCAP11
              .          .          .
              .          .          .
3802          .          .          .-------> DOCP10
3800          .          .     DCAP10
              .          .          .
              .          .          .
3807          .          .          .-------> DOCP09
3805          .          .     DCAP09
              .          .          .
              .          .          .
3812          .          .          .-------> DOCP08
3810          .          .     DCAP08
              .          .          .
              .          .          .
3818          .          .          .-------> DOCP07
3815          .          .     DCAP07
              .          .          .
              .          .          .
3824          .          .          .-------> DOCPOT
3821          .          .     DCAPOT
              .          .          V
              .          .          V
3827          .          .     RWI542
              .          .          .
              .          .          .
3833          .          .          .       WI529
```

```
                 .           .           .           .
                 .           .           .           .
3840             .           .      CWI529...........
                 .           .           .
                 .           .           .
3845             .           .           .-------> DO529
3843             .           .       D529
                 .           .          V
                 .           .          V
3848             .           .      RWI529
                 .           .           .
                 .           .           .
3854             .           .           .      WI516
                 .           .           .           .
                 .           .           .           .
3861             .           .      C516_1...........
                 .           .           .
                 .           .           .
3864             .      CWI516...........
                 .           V
                 .           V
3867             .      RWI516
                 .           .
                 .           .
3873             .           .      WI512
                 .           .           .
                 .           .           .
3880             .      CWI512...........
                 .           .
                 .           .
3885             .           .           .<------- DOCPOT
3883             .           .      DCAPOT
                 .           .          V
                 .           .          V
3886             .           .      RDCPOT
                 .           .           .
                 .           .           .
3892             .           .           .      WI527
                 .           .           .           .
                 .           .           .           .
3899             .           .      CWI527...........
                 .           .           .
                 .           .           .
3903             .           .           .-------> DO527
3901             .           .       D527
                 .           .          V
                 .           .          V
3906             .           .      RWI527
                 .           .           .
                 .           .           .
3914             .           .           .           .<------- DO529
3912             .           .           .       D529
                 .           .           .          V
                 .           .           .          V
3915             .           .           .      RD529
                 .           .           .           .
                 .           .           .           .
3923             .           .           .           .           .<------- DOCP07
3921             .           .           .           .      DCAP07
                 .           .           .           .           V
                 .           .           .           .           V
3924             .           .           .           .      RDCP07
                 .           .           .           .           .
                 .           .           .           .           .
3930             .           .           .           .           .      WI528
                 .           .           .           .           .           .
                 .           .           .           .           .           .
3937             .           .           .           .      C528_1...........
                 .           .           .           .           .
                 .           .           .           .           .
3940             .           .           .      CWI528...........
                 .           .           .           V
                 .           .           .           V
3943             .           .           .      RWI528
```

```
                .           .           .           .
                .           .           .           .
3949            .           .           .           .       WI518
                .           .           .           .           .
                .           .           .           .           .
3956            .           .           .      C518_1............
                .           .           .           .
                .           .           .           .
3959            .           .      CWI518............
                .           .           .
                .           .           .
3962            .       C508*............
                .           V
                .           V
3965            .       R508*
                .           .
                .           .
3971            .           .       WI508
                .           .           .
                .           .           .
3978            .      CWI508............
                .           .
                .           .
3983            .           .-------->   DO508
3981            .        D508
                .           .
                .           .
3986            .           .      WI510A
                .           .           V
                .           .           V
3993            .           .       R510A
                .           .           .
                .           .           .
3999            .           .           .       WI510
                .           .           .           .
                .           .           .           .
4006            .      CWI510........................
                .           V
                .           V
4009            .      RWI510
                .           .
                .           .
4015            .           .       WI502
                .           .           .
                .           .           .
4022      CWI502........................
               V
               V
4025      RWI502
                .
                .
4033            .           .<-------  DOCP08
4031            .      DCAP08
                .           V
                .           V
4034            .      RDCP08
                .           .
                .           .
4040            .           .       WI526
                .           .           .
                .           .           .
4047            .      CWI526............
                .           V
                .           V
4050            .      RWI526
                .           .
                .           .
4056            .           .       WI525
                .           .           .
                .           .           .
4065            .           .           .           .<-------  DOCP09
4063            .           .           .      DCAP09
                .           .           .           V
                .           .           .           V
```

```
4066          .           .           .      RDCP09
              .           .           .           .
              .           .           .           .
4072          .           .      C5251b...........
              .           .           .
              .           .           .
4077          .           .           .           .<-------   DO527
4075          .           .           .        D527
              .           .           .           V
              .           .           .           V
4078          .           .           .       RD527
              .           .           .           .
              .           .           .           .
4084          .      CWI525......................
              .           .
              .           .
4089          .           .------->   DO525
4087          .        D525
              .           V
              .           V
4092          .      RWI525
              .           .
              .           .
4098          .           .       WI506
              .           .           .
              .           .           .
4105          .      C506_1...........
              .           .
              .           .
4108          .           .       WI524
              .           .           .
              .           .           .
4117          .           .           .           .<-------   DO525
4115          .           .           .        D525
              .           .           .           V
              .           .           .           V
4118          .           .           .       RD525
              .           .           .           .
              .           .           .           .
4124          .           .      CWI524...........
              .           .           .
              .           .           .
4129          .           .           .------->   DO524
4127          .           .        D524
              .           .           V
              .           .           V
4132          .           .      RWI524
              .           .           .
              .           .           .
4138          .      CWI506...........
              .           V
              .           V
4141          .      RWI506
              .           .
              .           .
4147          .           .       WI500
              .           .           .
              .           .           .
4154          .      C500_1...........
              .           .
              .           .
4158          .           .           .<-------   DO508
4156          .           .        D508
              .           .           V
              .           .           V
4159          .           .       RD508
              .           .           .
              .           .           .
4165          .      C500_2...........
              .           .
              .           .
4167     CWI500...........
              V
              V
```

```
4170      SSPILL
               V
               V
4177      RWI500
               .
               .
4183           .       PI635
               .           .
               .           .
4190      CPI635............
               V
               V
4193      RPI635
               .
               .
4201           .           .<-------  DOCP11
4199           .      DCAP11
               .           V
               .           V
4202           .      RDCP11
               .           .
               .           .
4208           .           .       PI618
               .           .           .
               .           .           .
4217           .           .           .           .<-------  DOCP12
4215           .           .           .      DCAP12
               .           .           .           .
               .           .           .           .
4220           .           .           .           .------->   DO618
4218           .           .           .        D618
               .           .           .           V
               .           .           .           V
4223           .           .           .      RDCP12
               .           .           .           .
               .           .           .           .
4229           .           .      C6181a............
               .           .           .
               .           .           .
4232           .      CPI618............
               .           V
               .           V
4235           .      RPI618
               .           .
               .           .
4241           .           .       PI612
               .           .           .
               .           .           .
4250           .           .           .           .<-------  DOCP13
4248           .           .           .      DCAP13
               .           .           .           V
               .           .           .           V
4251           .           .           .      RDCP13
               .           .           .           .
               .           .           .           .
4257           .           .           .           .       PI615
               .           .           .           .           .
               .           .           .           .           .
4264           .           .           .      C6151A............
               .           .           .           .
               .           .           .           .
4269           .           .           .           .           .<-------   DO618
4267           .           .           .           .        D618
               .           .           .           .           V
               .           .           .           .           V
4270           .           .           .           .       RD618
               .           .           .           .           .
               .           .           .           .           .
4276           .           .           .      CPI615............
               .           .           .           V
               .           .           .           V
4279           .           .           .      RPI615
               .           .           .           .
               .           .           .           .
```

```
4285          .           .      C6121a............
              .           .           .
              .           .           .
4288          .      CPI612............
              .           .
              .           .
4293          .           .-------->   DO612
4291          .        D612
              .           V
              .           V
4296          .      RPI612
              .           .
              .           .
4302          .           .       PI609
              .           .           .
              .           .           .
4309          .      C609_1............
              .           .
              .           .
4314          .           .           .<-------  DOCP14
4312          .           .      DCAP14
              .           .           V
              .           .           V
4315          .           .      RDCP14
              .           .           .
              .           .           .
4321          .      CPI609............
              .           V
              .           V
4324          .      RPI609
              .           .
              .           .
4330          .           .      PI600A
              .           .           .
              .           .           .
4336          .       C600A............
              .           .
              .           .
4339          .           .-------->  DO600A
4338          .       D600A
              .           .
              .           .
4342          .           .       PI621
              .           .           .
              .           .           .
4351          .           .           .           .<-------   DO612
4349          .           .           .        D612
              .           .           .           V
              .           .           .           V
4352          .           .           .       RD612
              .           .           .           .
              .           .           .           .
4358          .           .      CPI621............
              .           .           V
              .           .           V
4361          .           .      SPI621
              .           .           V
              .           .           V
4367          .           .      RPI621
              .           .           .
              .           .           .
4375          .           .           .           .<-------  DOCP10
4373          .           .           .      DCAP10
              .           .           .           V
              .           .           .           V
4376          .           .           .      RDCP10
              .           .           .           .
              .           .           .           .
4382          .           .           .           .       PI628
              .           .           .           .           .
              .           .           .           .           .
4389          .           .           .      CPI628............
              .           .           .           V
              .           .           .           V
```

```
4392          .           .           .      RPI628
              .           .           .           .
              .           .           .           .
4398          .           .           .           .      PI624A
              .           .           .           .           .
              .           .           .           .           .
4405          .           .           .       C624A............
              .           .           .           V
              .           .           .           V
4408          .           .           .       R624A
              .           .           .           .
              .           .           .           .
4414          .           .           .           .       PI639
              .           .           .           .           .
              .           .           .           .           .
4423          .           .           .           .           .           .<-------   DO524
4421          .           .           .           .           .        D524
              .           .           .           .           .           V
              .           .           .           .           .           V
4424          .           .           .           .           .       RD524
              .           .           .           .           .           .
              .           .           .           .           .           .
4430          .           .           .           .      CPI639............
              .           .           .           .           V
              .           .           .           .           V
4433          .           .           .           .      RPI639
              .           .           .           .           .
              .           .           .           .           .
4439          .           .           .           .           .       PI636
              .           .           .           .           .           .
              .           .           .           .           .           .
4446          .           .           .           .      CPI636............
              .           .           .           .           V
              .           .           .           .           V
4449          .           .           .           .      RPI636
              .           .           .           .           .
              .           .           .           .           .
4455          .           .           .           .           .       PI624
              .           .           .           .           .           .
              .           .           .           .           .           .
4462          .           .           .      CPI624........................
              .           .           .           V
              .           .           .           V
4465          .           .           .      SPI624
              .           .           .           V
              .           .           .           V
4472          .           .           .      RPI624
              .           .           .           .
              .           .           .           .
4478          .           .           .           .       PI633
              .           .           .           .           .
              .           .           .           .           .
4485      CPI633.............................................
              V
              V
4488      RPI633
              .
              .
4494          .       PDEAST
              .           .
              .           .
4515          .           .           .<-------  DOCAP*
4514          .           .       DCAP*
              .           .           .
              .           .           .
4516          .       CAP2*............
              .           V
              .           V
4518          .       STOR2
              .           .
              .           .
4529          .           .-------> DOCP19
4527          .       DCAP19
              .           .
```

```
                 .          .
4534             .          .-------> DOCP18
4532             .     DCAP18
                 .          .
                 .          .
4539             .          .-------> DOCP17
4537             .     DCAP17
                 .          .
                 .          .
4544             .          .-------> DOCP16
4542             .     DCAP16
                 .          V
                 .          V
4547             .     RDCP15
                 .          .
                 .          .
4553             .          .      PI606A
                 .          .           .
                 .          .           .
4560             .      C606A............
                 .          .
                 .          .
4565             .          .-------> DO606A
4563             .      D606A
                 .          V
                 .          V
4568             .      R606A
                 .          .
                 .          .
4574             .          .       PI606
                 .          .           .
                 .          .           .
4581             .     CPI606............
                 .          V
                 .          V
4584             .     RPI606
                 .          .
                 .          .
4590             .          .       PI604
                 .          .           .
                 .          .           .
4599             .          .           .           .<-------  DO606A
4597             .          .       D606A
                 .          .           V
                 .          .           V
4600             .          .      RD606A
                 .          .           .
                 .          .           .
4606             .          .      CPI604............
                 .          .           V
                 .          .           V
4609             .          .      RPI604
                 .          .           .
                 .          .           .
4615             .          .           .       PI603
                 .          .           .           .
                 .          .           .           .
4622             .     C603_1........................
                 .          .
                 .          .
4625             .          .       PD744
                 .          .           .
                 .          .           .
4633             .          .           .           .<-------  DO600A
4632             .          .       D600A
                 .          .           V
                 .          .           V
4634             .          .      RD600A
                 .          .           .
                 .          .           .
639              .     CPI603........................
                 .          V
                 .          V
4642             .     SPI603
```

```
                .           .
                .           .
4652            .           .-------->   DO744
4651            .        D744
                .           V
                .           V
4657            .      RPI603
                .           .
                .           .
4663            .           .       PI600
                .           .           .
                .           .           .
4670       CPI600.......................
                V
                V
4673       RPI600
                .
                .
4681            .           .<-------  DOCP16
4679            .      DCAP16
                .           V
                .           V
4682            .      RDCP16
                .           .
                .           .
4690            .           .           .<-------  DOCP17
4688            .           .      DCAP17
                .           .           V
                .           .           V
4691            .           .      RDCP17
                .           .           .
                .           .           .
4697            .           .           .       PD740
                .           .           .           .
                .           .           .           .
4706            .      CPD740.......................
                .           V
                .           V
4709            .      RPD740
                .           .
                .           .
4715            .           .      PD726B
                .           .           .
                .           .           .
4723            .       C726B............
                .           V
                .           V
4726            .       R726B
                .           .
                .           .
4734            .           .           .<-------  DOCP18
4732            .           .      DCAP18
                .           .           V
                .           .           V
4735            .           .      RDCP18
                .           .           .
                .           .           .
4741            .           .           .       PD736
                .           .           .           .
                .           .           .           .
4748            .           .      CPD736............
                .           .           V
                .           .           V
4751            .           .      RPD736
                .           .           .
                .           .           .
4759            .           .           .           .<-------  DOCP19
4757            .           .           .      DCAP19
                .           .           .           V
                .           .           .           V
760             .           .           .      RDCP19
                .           .           .           .
                .           .           .           .
4766            .           .           .           .       PD760
```

```
                 .           .           .           .           V
                 .           .           .           .           V
4773             .           .           .           .      SCP200
                 .           .           .           .           V
                 .           .           .           .           V
4780             .           .           .           .      RPD760
                 .           .           .           .           .
                 .           .           .           .           .
4786             .           .           .           .           .       PD732
                 .           .           .           .           .           .
                 .           .           .           .           .           .
4793             .           .           .      CPD732.......................
                 .           .           .           V
                 .           .           .           V
4796             .           .           .      RPD732
                 .           .           .           .
                 .           .           .           .
4802             .           .           .           .      PD726A
                 .           .           .           .           .
                 .           .           .           .           .
4808             .           .       C726A.......................
                 .           .           V
                 .           .           V
4811             .           .       R726A
                 .           .           .
                 .           .           .
4817             .       C726*............
                 .           V
                 .           V
4820             .       R726*
                 .           .
                 .           .
4826             .           .       PD726
                 .           .           .
                 .           .           .
4833             .           .           .       PD716
                 .           .           .           .
                 .           .           .           .
4840             .      CPD726........................
                 .           V
                 .           V
4843             .      SPD726
                 .           .
                 .           .
4853             .           .-------->   DO716
4852             .        D716
                 .           V
                 .           V
4858             .      RPD726
                 .           .
                 .           .
4864             .           .       PD720
                 .           .           .
                 .           .           .
4872             .           .           .           .<-------   DO744
4871             .           .           .        D744
                 .           .           .           V
                 .           .           .           V
4873             .           .           .       RD744
                 .           .           .           .
                 .           .           .           .
4879      CPD720.................................
               V
               V
4882      RPD720
                 .
                 .
4889             .           .<-------   DO716
4888             .        D716
                 .           V
                 .           V
4890             .       RD716
                 .           .
                 .           .
```

```
4896        C700*............
                V
                V
4899        R700*
                .
                .
4905            .       PD752
                .           .
                .           .
4912            .           .       PD748
                .           .           .
                .           .           .
4919            .      CPD748............
                .           V
                .           V
4922            .      SCP220
                .           V
                .           V
4929            .      RPD748
                .           .
                .           .
4935            .           .       PD756
                .           .           V
                .           .           V
4942            .           .      SCP210
                .           .           V
                .           .           V
4953            .           .      RPD756
                .           .           .
                .           .           .
4959            .       C708*............
                .           V
                .           V
4962            .       R708*
                .           .
                .           .
4968            .           .       PD708
                .           .           .
                .           .           .
4975            .           .           .      PD712A
                .           .           .           V
                .           .           .           V
4982            .           .           .       R712A
                .           .           .           .
                .           .           .           .
4988            .           .           .           .       PD712
                .           .           .           .           .
                .           .           .           .           .
4995            .      CPD708.....................................
                .           V
                .           V
4998            .      RPD708
                .           .
                .           .
5004            .           .       PD704
                .           .           .
                .           .           .
5011            .           .           .       AF800
                .           .           .           .
                .           .           .           .
5018            .      CPD704........................
                .           V
                .           V
5021            .      SPD704
                .           .
                .           .
5031            .           .-------->   DO800
5030            .       D800
                .           V
                .           V
5036            .      RPD704
                .           .
                .           .
5042            .           .       PD700
```

```
                .           .           .
                .           .           .
5049      CPD700.......................
                .
                .
5053            .           .<-------   DO800
5052            .        D800
                .           V
                .           V
5054            .       RD800
                .           .
                .           .
5060            .           .       AF802
                .           .           .
                .           .           .
5067      C802*.......................
              V
              V
5069      R810*
                .
                .
5075            .       AF803
                .           V
                .           V
5082            .      RAF803
                .           .
                .           .
5088            .           .       AF805
                .           .           V
                .           .           V
5095            .           .      RAF805
                .           .           .
                .           .           .
5101            .           .           .       AF807
                .           .           .           .
                .           .           .           .
5108            .      CAF807.......................
                .           V
                .           V
5110            .      RAF807
                .           .
                .           .
5116            .           .       AF810
                .           .           .
                .           .           .
5123      CAF810.......................
              V
              V
5125      RAF810
                .
                .
5131            .       AF820
                .           .
                .           .
5138      CAF820............
                .
                .
5140            .       AF830
                .           .
                .           .
5147            .           .       AF854
                .           .           V
                .           .           V
5153            .           .      RAF854
                .           .           .
                .           .           .
5158            .           .           .       AF852
                .           .           .           .
                .           .           .           .
5164            .           .      CAF852............
                .           .           V
                .           .           V
5166            .           .      RAF852
                .           .           .
```

```
5171                AF850
                      .
                      .
5177          CAF850...........
                      .
                      .
5179                AF864
                      V
                      V
5185                RAF864
                      .
                      .
5190                      .       AF862
                      .           .
                      .           .
5196                CAF862...........
                      V
                      V
5198                RAF862
                      .
                      .
5203                      .       AF866
                      .           V
                      .           V
5209                      .     RAF866
                      .           .
                      .           .
5214                      .           .       AF860
                      .           .           .
                      .           .           .
5220                CAF860......................
                      .
                      .
5222                      .       SV258
                      .           .
                      .           .
5231                      .           .-------->   DO258
5229                      .        D258
                      .           V
                      .           V
5234                      .     RSV258
                      .           .
                      .           .
5240                      .           .       SV256
                      .           .           .
                      .           .           .
5247                      .     CSV256...........
```

Wittmann ADMSU HEC-1 Modifications
100-year 6-hour Existing Conditions

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
+	HYDROGRAPH AT	WT140	1939.	5.17	607.	156.	52.	3.79
+	ROUTED TO	RWT140	1849.	5.42	605.	156.	52.	3.79
+	HYDROGRAPH AT	WT130	1876.	4.75	430.	109.	36.	2.57
+	2 COMBINED AT	CWT130	2655.	5.25	949.	245.	82.	6.36
+	ROUTED TO	RWT130	2498.	5.83	946.	245.	82.	6.36
+	HYDROGRAPH AT	WT160	767.	4.58	156.	40.	13.	.81
+	ROUTED TO	RWT160	501.	6.25	155.	40.	13.	.81
+	HYDROGRAPH AT	WT150A	2644.	5.08	747.	191.	64.	4.75
+	ROUTED TO	R150A	2582.	5.25	746.	191.	64.	4.75
	HYDROGRAPH AT	WT150	1126.	4.50	203.	51.	17.	1.09
+	2 COMBINED AT	CWT150	2868.	5.17	894.	229.	76.	5.84
+	ROUTED TO	RWT150	2752.	5.58	892.	229.	76.	5.84
+	HYDROGRAPH AT	WT120	1864.	4.83	452.	113.	38.	2.80
+	4 COMBINED AT	CWT120	5370.	5.67	2082.	539.	180.	15.81
+	ROUTED TO	RWT120	5198.	6.17	2081.	539.	180.	15.81
+	HYDROGRAPH AT	WT110	2333.	4.67	472.	118.	39.	2.90
+	2 COMBINED AT	CWT110	5207.	6.17	2358.	613.	204.	18.71
+	ROUTED TO	RWT110	4924.	6.83	2347.	613.	204.	18.71
+	HYDROGRAPH AT	WT100	2800.	4.75	662.	167.	56.	3.85
+	2 COMBINED AT	CWT100	4921.	6.75	2739.	727.	242.	22.55
	ROUTED TO	RWT100	4614.	7.17	2710.	724.	241.	22.55
+	HYDROGRAPH AT	TW406	521.	4.08	36.	9.	3.	.16

	ROUTED TO	RTW406	40.	8.42	30.	9.	3.	.16
	HYDROGRAPH AT	TW408	565.	4.83	176.	46.	15.	.91
+	ROUTED TO	RTW408	298.	7.75	151.	46.	15.	.91
+	HYDROGRAPH AT	TW404	2442.	4.42	370.	93.	31.	2.09
+	4 COMBINED AT	CTW404	4612.	7.17	2987.	817.	272.	25.72
+	ROUTED TO	RTW404	4499.	7.50	2941.	808.	269.	25.72
+	HYDROGRAPH AT	IW371	103.	4.08	12.	3.	1.	.05
+	DIVERSION TO	DO371	77.	4.08	6.	2.	1.	.05
+	HYDROGRAPH AT	D371	26.	4.08	5.	1.	0.	.05
+	ROUTED TO	RIW371	15.	6.50	5.	1.	0.	.05
+	HYDROGRAPH AT	IW366	1107.	4.58	209.	52.	17.	1.06
+	2 COMBINED AT	CIW366	1105.	4.58	213.	54.	18.	1.07
+	ROUTED TO	RIW366	957.	5.00	212.	54.	18.	1.07
+	HYDROGRAPH AT	IW377	153.	4.25	22.	6.	2.	.11
+	ROUTED TO	SSR010	121.	4.50	22.	6.	2.	.11
+	ROUTED TO	RIW377	98.	5.25	22.	6.	2.	.11
+	HYDROGRAPH AT	IW374	758.	4.25	97.	24.	8.	.39
+	HYDROGRAPH AT	D371	77.	4.08	6.	2.	1.	.05
+	ROUTED TO	RD371	40.	4.33	6.	2.	1.	.05
+	3 COMBINED AT	CIW374	784.	4.25	124.	31.	10.	.54
+	ROUTED TO	RIW374	404.	5.92	121.	31.	10.	.54
+	HYDROGRAPH AT	IW386	395.	4.58	90.	23.	8.	.37
+	ROUTED TO	RIW386	301.	5.42	89.	23.	8.	.37
	HYDROGRAPH AT	IW382	738.	4.33	131.	33.	11.	.62
+	2 COMBINED AT	CIW382	685.	4.33	211.	54.	18.	.99

	DIVERSION TO	DO382B	180.	3.92	112.	29.	10.	.99
	HYDROGRAPH AT	D382B	505.	4.33	99.	25.	8.	.99
+	DIVERSION TO	DO382A	226.	4.33	20.	5.	2.	.99
+	HYDROGRAPH AT	D382A	279.	4.33	79.	20.	7.	.99
+	ROUTED TO	RIW382	253.	4.83	79.	20.	7.	.99
+	HYDROGRAPH AT	IW384	184.	4.17	21.	5.	2.	.08
+	HYDROGRAPH AT	D382A	226.	4.33	20.	5.	2.	.99
+	ROUTED TO	RD382A	196.	4.42	20.	5.	2.	.99
+	2 COMBINED AT	CIW384	390.	4.33	47.	12.	4.	.41
+	ROUTED TO	RIW384	310.	4.67	47.	12.	4.	.41
+	HYDROGRAPH AT	IW381	454.	4.50	98.	25.	8.	.38
+	HYDROGRAPH AT	D382B	180.	3.92	112.	29.	10.	.99
+	2 COMBINED AT	CIW381	619.	4.50	208.	54.	18.	.64
+	ROUTED TO	RIW381	574.	4.83	207.	54.	18.	.64
+	3 COMBINED AT	C359*	990.	4.83	320.	82.	27.	1.45
+	ROUTED TO	R359*	937.	5.17	317.	82.	27.	1.45
+	HYDROGRAPH AT	IW359	2496.	4.75	537.	135.	45.	2.91
+	4 COMBINED AT	CIW359	3423.	5.00	1059.	274.	91.	5.97
+	ROUTED TO	RIW359	3233.	5.33	1045.	274.	91.	5.97
+	HYDROGRAPH AT	IW389	168.	4.42	35.	9.	3.	.13
+	ROUTED TO	SSR190	166.	4.42	35.	9.	3.	.13
+	ROUTED TO	RIW389	102.	5.75	34.	9.	3.	.13
+	HYDROGRAPH AT	IW394	2700.	5.08	777.	198.	66.	4.17
+	ROUTED TO	RIW394	2613.	5.25	776.	198.	66.	4.17
	HYDROGRAPH AT							

+	IW390A	771.	4.75	197.	50.	17.	.90
2 COMBINED AT	C390A	3030.	5.25	936.	239.	80.	5.07
ROUTED TO +	R390A	2925.	5.42	935.	239.	80.	5.07
HYDROGRAPH AT +	IW390	221.	4.75	61.	16.	5.	.31
HYDROGRAPH AT +	IW392	1985.	4.33	262.	66.	22.	1.11
3 COMBINED AT +	CIW390	3093.	5.42	1193.	305.	102.	6.50
ROUTED TO +	SSR160	3068.	5.50	1193.	305.	102.	6.50
ROUTED TO +	RIW390	2969.	5.75	1183.	305.	102.	6.50
HYDROGRAPH AT +	IW388	1107.	4.83	303.	76.	25.	1.23
2 COMBINED AT +	C388_1	3460.	5.67	1435.	371.	124.	7.72
2 COMBINED AT +	CIW388	3532.	5.67	1464.	378.	126.	7.85
ROUTED TO +	RIW388	3450.	5.92	1457.	378.	126.	7.85
HYDROGRAPH AT	IW357	879.	4.50	184.	46.	15.	.75
2 COMBINED AT +	CIW357	3583.	5.92	1595.	416.	139.	8.60
DIVERSION TO +	DO357	937.	5.92	416.	108.	36.	8.60
HYDROGRAPH AT +	D357	2646.	5.92	1179.	308.	103.	8.60
ROUTED TO +	RIW357	2608.	6.42	1169.	308.	103.	8.60
HYDROGRAPH AT +	IW358	146.	4.50	31.	8.	3.	.16
HYDROGRAPH AT +	IW353	2512.	4.83	629.	158.	53.	2.80
4 COMBINED AT +	CIW353	5494.	5.50	2574.	686.	229.	15.28
ROUTED TO +	RIW353	5328.	5.75	2550.	686.	229.	15.28
HYDROGRAPH AT +	IW350	1410.	5.08	457.	116.	39.	2.17
2 COMBINED AT +	CIW350	6037.	5.75	2870.	771.	257.	17.45
HYDROGRAPH AT	IW312	492.	4.75	147.	37.	12.	.57
DIVERSION TO +	DO312	233.	4.75	31.	8.	3.	.57

+	HYDROGRAPH AT D312	259.	4.75	116.	30.	10.	.57
+	ROUTED TO RIW312	238.	5.83	114.	30.	10.	.57
+	HYDROGRAPH AT IW365	394.	4.83	124.	32.	11.	.47
+	HYDROGRAPH AT D312	233.	4.75	31.	8.	3.	.57
+	ROUTED TO RD312	223.	4.92	31.	8.	3.	.57
+	2 COMBINED AT CIW365	583.	4.83	152.	39.	13.	.74
+	DIVERSION TO DO365	282.	4.83	33.	8.	3.	.74
+	HYDROGRAPH AT D365	301.	4.83	120.	31.	10.	.74
+	ROUTED TO RIW365	298.	5.42	119.	31.	10.	.74
+	HYDROGRAPH AT IW367	109.	4.25	14.	4.	1.	.05
+	HYDROGRAPH AT D365	282.	4.83	33.	8.	3.	.74
+	ROUTED TO RD365	268.	5.00	33.	8.	3.	.74
+	2 COMBINED AT CIW367	320.	5.00	50.	12.	4.	.43
+	HYDROGRAPH AT IW369	590.	4.92	199.	51.	17.	.79
+	DIVERSION TO DO369	372.	4.92	75.	19.	6.	.79
+	HYDROGRAPH AT D369	218.	4.92	124.	32.	11.	.79
+	2 COMBINED AT C363*	508.	5.00	170.	44.	15.	.72
+	ROUTED TO RIW369	463.	5.33	169.	44.	15.	.72
+	HYDROGRAPH AT D357	937.	5.92	416.	108.	36.	8.60
+	ROUTED TO RD357	930.	6.00	416.	108.	36.	8.60
+	HYDROGRAPH AT IW363	1112.	4.33	163.	41.	14.	.63
+	2 COMBINED AT C363_2	1257.	4.42	657.	170.	57.	.63
+	4 COMBINED AT CIW363	1903.	5.50	970.	254.	85.	4.26
+	DIVERSION TO DO363	603.	5.50	288.	75.	25.	4.26
+	HYDROGRAPH AT D363	1300.	5.50	682.	178.	59.	4.26

	ROUTED TO	RIW363	1281.	6.08	674.	178.	59.	4.26
+	HYDROGRAPH AT	IW368	271.	4.50	51.	13.	4.	.29
+	HYDROGRAPH AT	D369	372.	4.92	75.	19.	6.	.79
+	ROUTED TO	RD369	344.	5.17	75.	19.	6.	.79
+	2 COMBINED AT	CIW368	479.	5.08	124.	31.	10.	.79
+	ROUTED TO	RIW368	438.	5.67	123.	31.	10.	.79
+	HYDROGRAPH AT	IW360	898.	4.25	148.	37.	12.	.83
+	2 COMBINED AT	CIW360	771.	4.33	248.	63.	21.	1.62
+	ROUTED TO	RIW360	751.	4.42	248.	63.	21.	1.62
+	HYDROGRAPH AT	IW397	3845.	4.92	1079.	276.	92.	4.81
+	ROUTED TO	RIW397	3662.	5.42	1071.	276.	92.	4.81
	HYDROGRAPH AT	IW395	5796.	5.00	1509.	383.	128.	7.86
+	2 COMBINED AT	CIW395	7766.	5.25	2407.	624.	208.	12.68
+	ROUTED TO	RIW395	7558.	5.50	2402.	624.	208.	12.68
+	HYDROGRAPH AT	IW387	1332.	4.67	260.	65.	22.	1.35
+	ROUTED TO	RIW387	1332.	4.67	260.	65.	22.	1.35
+	HYDROGRAPH AT	IW396	390.	4.75	108.	27.	9.	.59
+	3 COMBINED AT	CIW396	8001.	5.42	2643.	686.	229.	14.61
+	ROUTED TO	RIW396	7911.	5.58	2640.	686.	229.	14.61
+	HYDROGRAPH AT	IW380	701.	4.42	118.	30.	10.	.50
+	2 COMBINED AT	CIW380	7995.	5.58	2726.	709.	236.	15.11
+	ROUTED TO	SSR310	7993.	5.58	2726.	709.	236.	15.11
+	DIVERSION TO	DO380	2100.	5.58	296.	74.	25.	15.11
+	HYDROGRAPH AT	D380	5893.	5.58	2430.	635.	212.	15.11
	ROUTED TO							

+	RIW380	5586.	6.67	2428.	635.	212.	15.11
HYDROGRAPH AT	IW370	588.	4.75	160.	41.	14.	.88
2 COMBINED AT +	CIW370	5750.	6.58	2566.	670.	223.	12.02
ROUTED TO +	RIW370	5504.	7.17	2563.	670.	223.	12.02
HYDROGRAPH AT +	IW349	258.	4.42	51.	13.	4.	.25
2 COMBINED AT +	CIW349	5506.	7.17	2589.	679.	226.	12.27
DIVERSION TO +	DO349	3414.	7.17	1605.	421.	140.	12.27
HYDROGRAPH AT +	D349	2092.	7.17	984.	258.	86.	12.27
ROUTED TO +	RIW349	2088.	7.25	983.	258.	86.	12.27
HYDROGRAPH AT +	IW352	148.	4.25	18.	4.	1.	.10
3 COMBINED AT +	CIW352	2291.	7.17	1219.	322.	107.	6.39
HYDROGRAPH AT +	IW356	395.	4.42	67.	17.	6.	.29
HYDROGRAPH AT	D349	3414.	7.17	1605.	421.	140.	12.27
ROUTED TO +	RD349	3318.	7.42	1603.	421.	140.	12.27
3 COMBINED AT +	CIW356	5452.	7.33	2781.	738.	246.	14.28
ROUTED TO +	RIW356	5405.	7.42	2776.	738.	246.	14.28
HYDROGRAPH AT +	IW354	596.	4.33	87.	22.	7.	.36
2 COMBINED AT +	CIW354	5405.	7.42	2835.	756.	252.	14.64
ROUTED TO +	RIW354	5317.	7.75	2823.	755.	252.	14.64
HYDROGRAPH AT +	IW362	266.	4.33	42.	11.	4.	.18
2 COMBINED AT +	CIW362	5316.	7.75	2846.	763.	254.	14.82
HYDROGRAPH AT +	IW372	511.	4.33	65.	16.	5.	.32
DIVERSION TO +	DO372	296.	4.33	25.	6.	2.	.32
HYDROGRAPH AT	D372	215.	4.33	40.	10.	3.	.32
ROUTED TO +	RIW372	153.	5.50	40.	10.	3.	.32

+	HYDROGRAPH AT IW375	384.	5.08	146.	38.	13.	.66
+	HYDROGRAPH AT D372	296.	4.33	25.	6.	2.	.32
+	ROUTED TO RD372	203.	4.50	25.	6.	2.	.32
+	2 COMBINED AT CIW375	446.	4.92	166.	43.	14.	.85
+	ROUTED TO RIW375	413.	5.58	164.	43.	14.	.85
+	HYDROGRAPH AT IW364	1624.	4.50	295.	74.	25.	1.15
+	3 COMBINED AT CIW364	1456.	4.50	472.	124.	41.	2.13
+	2 COMBINED AT C364*	5401.	7.67	3186.	862.	287.	16.95
+	ROUTED TO RIW364	5302.	8.33	3171.	862.	287.	16.95
+	HYDROGRAPH AT IW342	279.	4.58	65.	16.	5.	.35
+	2 COMBINED AT CIW342	5302.	8.33	3199.	871.	290.	17.30
+	HYDROGRAPH AT IW351	354.	4.42	59.	15.	5.	.32
+	HYDROGRAPH AT D363	603.	5.50	288.	75.	25.	4.26
+	ROUTED TO RD363	598.	5.75	287.	75.	25.	4.26
+	2 COMBINED AT CIW351	697.	5.42	352.	92.	31.	1.67
+	DIVERSION TO DO351	600.	5.42	299.	78.	26.	1.67
+	HYDROGRAPH AT D351	97.	5.42	53.	14.	5.	1.67
+	ROUTED TO RIW351	80.	8.25	47.	14.	5.	1.67
+	HYDROGRAPH AT IW346	2036.	5.00	546.	138.	46.	3.44
+	2 COMBINED AT C346_1	2016.	5.00	569.	150.	50.	3.68
+	2 COMBINED AT CIW346	5297.	8.25	3535.	969.	323.	20.98
+	ROUTED TO RIW346	5250.	8.50	3520.	967.	322.	20.98
+	HYDROGRAPH AT IW338	525.	4.33	71.	18.	6.	.34
+	2 COMBINED AT CIW338	5248.	8.50	3541.	979.	326.	21.32
+	ROUTED TO RIW338	5177.	8.92	3523.	977.	326.	21.32

	HYDROGRAPH AT	IW326	478.	4.33	67.	17.	6.	.33
+	ROUTED TO	RIW326	355.	4.92	67.	17.	6.	.33
+	HYDROGRAPH AT	IW334	1392.	4.58	245.	61.	20.	1.26
+	3 COMBINED AT	CIW334	5175.	8.92	3636.	1032.	344.	22.91
+	ROUTED TO	SCP030	5130.	9.00	3602.	1022.	341.	22.91
+	ROUTED TO	RIW334	5042.	9.83	3514.	1022.	341.	22.91
+	HYDROGRAPH AT	IW302	746.	5.08	247.	64.	21.	1.33
+	2 COMBINED AT	CIW302	5042.	9.83	3562.	1062.	355.	24.24
+	DIVERSION TO	DO302	5023.	9.83	3546.	1058.	353.	24.24
+	HYDROGRAPH AT	D302	0.	.00	0.	0.	0.	24.24
+	HYDROGRAPH AT	IW361	334.	4.58	74.	19.	6.	.35
+	3 COMBINED AT	C361_1	1379.	5.92	744.	197.	66.	3.32
+	HYDROGRAPH AT	D351	600.	5.42	299.	78.	26.	1.67
+	ROUTED TO	RD351	595.	5.75	297.	78.	26.	1.67
+	2 COMBINED AT	CIW361	1886.	5.92	1001.	266.	89.	4.76
+	ROUTED TO	RIW361	1870.	6.58	987.	266.	89.	4.76
+	2 COMBINED AT	C350*	6985.	5.92	3586.	976.	325.	22.22
+	ROUTED TO	R350*	6886.	6.25	3562.	976.	325.	22.22
+	HYDROGRAPH AT	IW330	805.	4.75	199.	50.	17.	1.04
+	2 COMBINED AT	CIW330	6979.	6.17	3633.	1004.	335.	23.25
+	ROUTED TO	RIW330	6885.	6.33	3617.	1004.	335.	23.25
+	HYDROGRAPH AT	IW322	1161.	5.17	437.	113.	38.	1.89
+	2 COMBINED AT	CIW322	7314.	6.33	3887.	1086.	362.	25.14
+	ROUTED TO	RIW322	7151.	7.00	3842.	1086.	362.	25.14
	HYDROGRAPH AT							

+	IW318	585.	4.67	144.	36.	12.	.58
ROUTED TO	RIW318	415.	6.33	140.	36.	12.	.58
HYDROGRAPH AT +	IW310	924.	4.92	277.	70.	23.	1.17
2 COMBINED AT +	CIW310	885.	4.92	400.	104.	35.	1.75
ROUTED TO +	RIW310	880.	5.00	399.	104.	35.	1.75
HYDROGRAPH AT +	IW314	1305.	5.08	408.	103.	34.	2.18
3 COMBINED AT +	CIW314	7566.	7.00	4158.	1221.	407.	29.07
ROUTED TO +	SCP020	7214.	7.42	3764.	1215.	405.	29.07
ROUTED TO +	RIW314	6625.	8.50	3756.	1214.	405.	29.07
HYDROGRAPH AT +	IW300	948.	5.00	278.	70.	23.	1.48
2 COMBINED AT +	CIW300	6611.	8.50	3753.	1255.	420.	30.55
ROUTED TO +	RIW300	6532.	8.83	3733.	1250.	418.	30.55
HYDROGRAPH AT	SV202	1323.	4.75	323.	81.	27.	1.44
ROUTED TO +	RSV202	1237.	5.17	323.	81.	27.	1.44
2 COMBINED AT +	C300_1	6511.	8.83	3728.	1305.	437.	31.99
HYDROGRAPH AT +	D302	5023.	9.83	3546.	1058.	353.	24.24
2 COMBINED AT +	C302*	9826.	9.33	6276.	2113.	707.	56.16
ROUTED TO +	RIW302	9772.	9.67	6267.	2113.	707.	56.16
HYDROGRAPH AT +	SV264A	2000.	5.08	639.	162.	54.	2.90
ROUTED TO +	R264A	1691.	5.50	628.	162.	54.	2.90
HYDROGRAPH AT +	SV264	1603.	4.92	434.	109.	36.	1.92
2 COMBINED AT +	CSV264	2714.	5.25	1010.	259.	86.	4.82
ROUTED TO +	RSV264	2353.	5.75	986.	259.	86.	4.82
HYDROGRAPH AT	SV298	672.	5.00	249.	64.	21.	1.08
ROUTED TO +	RSV298	591.	6.25	241.	64.	21.	1.08

+	HYDROGRAPH AT	SV286	1427.	4.75	340.	85.	28.	1.54
+	ROUTED TO	RSV286	1299.	5.00	339.	85.	28.	1.54
+	HYDROGRAPH AT	SV284	491.	4.33	69.	17.	6.	.28
+	2 COMBINED AT	CSV284	1449.	4.92	402.	101.	34.	1.82
+	ROUTED TO	RSV284	1213.	5.58	396.	101.	34.	1.82
+	HYDROGRAPH AT	SV272	1212.	4.67	253.	63.	21.	1.20
+	2 COMBINED AT	C272_2	1586.	5.50	620.	159.	53.	3.02
+	HYDROGRAPH AT	SV290	881.	4.58	168.	42.	14.	.81
+	ROUTED TO	RSV290	543.	5.67	166.	42.	14.	.81
+	2 COMBINED AT	CSV272	1966.	5.58	754.	194.	65.	3.84
+	ROUTED TO	RSV272	1949.	5.67	754.	194.	65.	3.84
+	HYDROGRAPH AT	SV276	905.	4.67	213.	54.	18.	.92
+	2 COMBINED AT	C276_2	2268.	5.58	934.	240.	80.	4.76
+	HYDROGRAPH AT	SV294	2100.	5.00	620.	156.	52.	2.65
+	ROUTED TO	RSV294	1815.	5.75	610.	156.	52.	2.65
+	2 COMBINED AT	CSV276	3738.	5.67	1460.	377.	126.	7.41
+	ROUTED TO	RSV276	3729.	5.75	1460.	377.	126.	7.41
+	HYDROGRAPH AT	SV280	925.	4.83	255.	64.	21.	1.06
+	2 COMBINED AT	C280_1	4109.	5.67	1670.	431.	144.	8.46
+	2 COMBINED AT	CSV280	4248.	5.83	1852.	484.	161.	9.54
+	ROUTED TO	RSV280	4153.	6.08	1847.	484.	161.	9.54
+	HYDROGRAPH AT	SV260	1404.	4.58	253.	63.	21.	1.26
+	2 COMBINED AT	C260_1	4217.	6.08	2025.	532.	177.	10.80
+	HYDROGRAPH AT	SV268	1628.	4.67	337.	84.	28.	1.38
+	ROUTED TO	RSV268	1363.	4.92	336.	84.	28.	1.38

	3 COMBINED AT						
		CSV260	6422.	5.92	3107.	817.	272.	16.99
	ROUTED TO						
+		SCP010	4367.	6.92	3002.	815.	272.	16.99
	ROUTED TO						
+		RSV260	4358.	7.17	2994.	815.	272.	16.99
	HYDROGRAPH AT						
+		SV220	1114.	4.33	131.	33.	11.	.60
	HYDROGRAPH AT						
+		SV252	158.	4.33	26.	7.	2.	.15
	ROUTED TO						
+		RSV252	95.	5.25	26.	7.	2.	.15
	HYDROGRAPH AT						
+		SV254	150.	4.25	17.	4.	1.	.10
	ROUTED TO						
+		RSV254	71.	5.25	17.	4.	1.	.10
	HYDROGRAPH AT						
+		SV219	1167.	4.50	195.	49.	16.	.90
	3 COMBINED AT						
+		CSV219	1122.	4.50	230.	58.	19.	1.14
	ROUTED TO						
+		RSV219	903.	5.00	229.	58.	19.	1.14
	HYDROGRAPH AT						
+		SV251	313.	4.33	46.	11.	4.	.27
	ROUTED TO						
+		RSV251	196.	5.33	46.	11.	4.	.27
	HYDROGRAPH AT						
+		SV250	156.	4.33	23.	6.	2.	.12
	ROUTED TO						
+		RSV250	94.	5.33	23.	6.	2.	.12
	HYDROGRAPH AT						
+		SV218	1258.	4.58	242.	61.	20.	1.29
	4 COMBINED AT						
+		CSV218	1767.	4.83	494.	125.	42.	2.82
	ROUTED TO						
+		RSV218	1634.	5.25	493.	125.	42.	2.82
	HYDROGRAPH AT						
+		SV248	944.	4.67	236.	60.	20.	1.27
	DIVERSION TO						
+		DO248	444.	4.67	111.	28.	9.	1.27
	HYDROGRAPH AT						
+		D248	500.	4.67	125.	32.	11.	1.27
	ROUTED TO						
+		RSV248	423.	5.17	124.	32.	11.	1.27
	HYDROGRAPH AT						
+		SV244	576.	4.92	185.	47.	16.	.95
	2 COMBINED AT						
+		CSV244	917.	5.08	299.	76.	25.	1.62
	HYDROGRAPH AT						

+	SV246	287.	4.25	37.	9.	3.	.16
HYDROGRAPH AT	D248	444.	4.67	111.	28.	9.	1.27
ROUTED TO +	RD248	407.	5.00	111.	28.	9.	1.27
2 COMBINED AT +	CSV246	514.	4.83	152.	38.	13.	.76
2 COMBINED AT +	C216*	1295.	5.08	428.	109.	36.	2.38
ROUTED TO +	RSV244	1194.	5.75	425.	109.	36.	2.38
HYDROGRAPH AT +	SV216	1787.	4.50	301.	75.	25.	1.63
3 COMBINED AT +	CSV216	2621.	5.33	1077.	276.	92.	6.82
ROUTED TO +	RSV216	2571.	5.83	1072.	276.	92.	6.82
HYDROGRAPH AT +	SV236	763.	4.33	97.	24.	8.	.59
ROUTED TO +	RSV236	386.	5.58	97.	24.	8.	.59
HYDROGRAPH AT +	SV240	2706.	4.75	593.	149.	50.	3.67
HYDROGRAPH AT	SV242	93.	4.33	16.	4.	1.	.09
2 COMBINED AT +	C242*	2739.	4.75	602.	152.	51.	3.76
ROUTED TO +	R242*	2472.	5.33	601.	152.	51.	3.76
HYDROGRAPH AT +	SV214	2019.	4.50	333.	83.	28.	1.87
6 COMBINED AT +	CSV220	6403.	5.92	4234.	1168.	389.	30.63
ROUTED TO +	RSV220	6369.	6.42	4211.	1168.	389.	30.63
HYDROGRAPH AT +	SV230	1582.	4.25	181.	45.	15.	.85
HYDROGRAPH AT +	SV232	2720.	4.58	543.	136.	45.	3.06
2 COMBINED AT +	C230*	3331.	4.50	692.	174.	58.	3.91
ROUTED TO +	R230*	3153.	4.92	689.	174.	58.	3.91
HYDROGRAPH AT +	SV212	3072.	4.75	631.	158.	53.	4.14
3 COMBINED AT	CSV212	6822.	6.08	4803.	1351.	451.	38.68
ROUTED TO +	RSV212	6708.	6.67	4703.	1351.	451.	38.68

+	HYDROGRAPH AT	SV210	1553.	4.17	152.	38.	13.	.72
+	ROUTED TO	RSV210	897.	5.08	152.	38.	13.	.72
+	2 COMBINED AT	C210*	6719.	6.67	4755.	1371.	457.	39.40
+	HYDROGRAPH AT	SV208	831.	4.67	203.	52.	17.	1.07
+	HYDROGRAPH AT	SV205	1102.	4.17	110.	27.	9.	.50
+	2 COMBINED AT	C205*	1114.	4.50	297.	76.	25.	1.57
+	ROUTED TO	R205*	760.	5.00	294.	76.	25.	1.57
+	HYDROGRAPH AT	SV203	182.	4.08	14.	3.	1.	.08
+	ROUTED TO	RSV203	111.	4.67	14.	3.	1.	.08
+	3 COMBINED AT	C200*	6875.	6.58	4842.	1411.	471.	41.04
+	HYDROGRAPH AT	SV200	2003.	4.67	371.	93.	31.	2.29
+	3 COMBINED AT	CSV200	11890.	9.50	9020.	3069.	1027.	99.49
+	ROUTED TO	RSV200	11839.	9.83	9009.	3069.	1027.	99.49
+	HYDROGRAPH AT	TW416	627.	4.42	164.	42.	14.	.59
+	ROUTED TO	RTW416	532.	5.58	163.	42.	14.	.59
+	HYDROGRAPH AT	TW420	778.	4.67	161.	41.	14.	.81
+	ROUTED TO	RTW420	647.	5.42	161.	41.	14.	.81
+	HYDROGRAPH AT	TW412	1453.	4.92	399.	101.	34.	2.06
+	2 COMBINED AT	CTW412	1661.	5.25	532.	135.	45.	2.87
+	HYDROGRAPH AT	TW414	2191.	4.17	219.	55.	18.	1.17
+	ROUTED TO	RTW414	1019.	5.17	215.	55.	18.	1.17
+	HYDROGRAPH AT	TW410	254.	4.58	57.	14.	5.	.31
+	2 COMBINED AT	CTW410	1107.	5.17	259.	66.	22.	1.48
+	4 COMBINED AT	C410*	11839.	9.75	9230.	3189.	1067.	104.43
+	ROUTED TO	RTW410	11560.	10.42	9071.	3147.	1054.	104.43

	HYDROGRAPH AT	TW402	3158.	5.08	825.	209.	70.	4.91
+	3 COMBINED AT	CTW402	11560.	10.33	10207.	3663.	1228.	135.06
+	ROUTED TO	RTW402	10822.	10.42	9527.	3452.	1158.	135.06
+	HYDROGRAPH AT	TW448	291.	4.75	90.	23.	8.	.35
+	DIVERSION TO	DO448	134.	4.75	17.	4.	1.	.35
+	HYDROGRAPH AT	D448	157.	4.75	73.	19.	6.	.35
+	ROUTED TO	RTW448	155.	5.75	72.	19.	6.	.35
+	HYDROGRAPH AT	TW446A	322.	4.67	89.	23.	8.	.34
+	HYDROGRAPH AT	D448	134.	4.75	17.	4.	1.	.35
+	ROUTED TO	RD448	118.	4.92	17.	4.	1.	.35
+	2 COMBINED AT	C446A	420.	4.75	106.	27.	9.	.50
+	DIVERSION TO	DO446A	22.	4.75	1.	0.	0.	.50
+	HYDROGRAPH AT	D446A	398.	4.75	105.	27.	9.	.50
+	ROUTED TO	R446A	356.	5.33	105.	27.	9.	.50
+	HYDROGRAPH AT	TW446	522.	4.42	95.	24.	8.	.35
+	3 COMBINED AT	CTW446	634.	5.25	264.	68.	23.	1.01
+	ROUTED TO	RTW446	603.	5.67	262.	68.	23.	1.01
+	HYDROGRAPH AT	TW432	787.	4.58	157.	39.	13.	.86
+	2 COMBINED AT	CTW432	976.	4.83	400.	104.	35.	1.87
+	ROUTED TO	RTW432	925.	5.42	397.	104.	35.	1.87
+	HYDROGRAPH AT	TW431	940.	4.58	200.	50.	17.	.87
+	2 COMBINED AT	CTW431	1408.	5.08	573.	150.	50.	2.75
+	HYDROGRAPH AT	TW459	535.	5.08	199.	52.	17.	1.04
+	ROUTED TO	SSR350	533.	5.17	199.	52.	17.	1.04
	ROUTED TO							

+	RTW459	524.	5.33	199.	52.	17.	1.04
HYDROGRAPH AT	TW462	184.	4.17	21.	5.	2.	.08
HYDROGRAPH AT +	D380	2100.	5.58	296.	74.	25.	15.11
ROUTED TO +	RD380	1967.	5.75	296.	74.	25.	15.11
2 COMBINED AT +	CTW462	3039.	5.67	504.	126.	42.	4.05
ROUTED TO +	SSR330	3017.	5.67	504.	126.	42.	4.05
ROUTED TO +	RTW462	2659.	6.00	504.	126.	42.	4.05
HYDROGRAPH AT +	TW450A	937.	4.67	210.	53.	18.	.88
ROUTED TO +	SSR410	878.	4.83	210.	53.	18.	.88
ROUTED TO +	R450A	796.	5.08	209.	53.	18.	.88
HYDROGRAPH AT +	TW450B	651.	4.42	103.	26.	9.	.40
4 COMBINED AT +	C450B	3226.	5.92	885.	225.	75.	6.38
ROUTED TO	R450B	2994.	6.58	879.	225.	75.	6.38
HYDROGRAPH AT +	TW450	857.	5.08	306.	79.	26.	1.25
HYDROGRAPH AT +	D446A	22.	4.75	1.	0.	0.	.50
ROUTED TO +	RD446A	7.	4.92	1.	0.	0.	.50
3 COMBINED AT +	CTW450	3229.	6.50	1119.	290.	97.	7.62
DIVERSION TO +	DO450	235.	6.50	32.	8.	3.	7.62
HYDROGRAPH AT +	D450	2994.	6.50	1087.	282.	94.	7.62
ROUTED TO +	RTW450	2904.	6.83	1083.	282.	94.	7.62
HYDROGRAPH AT +	TW444	524.	4.25	84.	21.	7.	.35
2 COMBINED AT +	CTW444	2931.	6.83	1137.	302.	101.	7.29
ROUTED TO +	RTW444	2877.	6.92	1134.	302.	101.	7.29
HYDROGRAPH AT	TW440	191.	4.25	22.	5.	2.	.11
2 COMBINED AT +	CTW440	2872.	6.92	1145.	306.	102.	7.40

+	HYDROGRAPH AT	TW460	1412.	5.00	439.	112.	37.	2.32
+	ROUTED TO	SSR540	1244.	4.83	396.	101.	34.	2.32
+	ROUTED TO	RTW460	1201.	5.25	396.	101.	34.	2.32
+	HYDROGRAPH AT	TW458	985.	4.50	168.	42.	14.	.67
+	2 COMBINED AT	CTW458	1686.	5.08	587.	150.	50.	2.99
+	ROUTED TO	RTW458	1670.	5.25	587.	150.	50.	2.99
+	HYDROGRAPH AT	TW456	172.	4.50	37.	9.	3.	.18
+	2 COMBINED AT	CTW456	1736.	5.25	615.	157.	52.	3.16
+	ROUTED TO	RTW456	1701.	5.42	614.	157.	52.	3.16
+	HYDROGRAPH AT	TW454	195.	4.92	68.	18.	6.	.36
+	2 COMBINED AT	CTW454	1811.	5.42	664.	170.	57.	3.52
+	DIVERSION TO	DO454	1159.	5.42	425.	109.	36.	3.52
	HYDROGRAPH AT	D454	652.	5.42	239.	61.	20.	3.52
+	ROUTED TO	RTW454	611.	6.25	237.	61.	20.	3.52
+	HYDROGRAPH AT	TW452A	1062.	4.67	253.	64.	21.	1.08
+	ROUTED TO	SSR450	1047.	4.75	253.	64.	21.	1.08
+	ROUTED TO	R452A	907.	5.58	252.	64.	21.	1.08
+	HYDROGRAPH AT	TW452B	813.	4.92	240.	61.	20.	1.03
+	3 COMBINED AT	C452B	1645.	5.92	699.	180.	60.	3.38
+	ROUTED TO	R452B	1578.	6.33	693.	180.	60.	3.38
+	HYDROGRAPH AT	TW452	466.	4.67	120.	30.	10.	.46
+	HYDROGRAPH AT	D450	235.	6.50	32.	8.	3.	7.62
+	ROUTED TO	RD450	206.	6.67	32.	8.	3.	7.62
	3 COMBINED AT	CTW452	1841.	6.42	824.	216.	72.	4.52
+	ROUTED TO	RTW452	1796.	6.92	820.	216.	72.	4.52

	HYDROGRAPH AT	TW442	546.	4.25	86.	22.	7.	.38
+	2 COMBINED AT	CTW442	1793.	6.92	860.	235.	78.	4.90
+	2 COMBINED AT	C442*	4121.	6.92	1825.	494.	165.	12.29
+	ROUTED TO	R442*	3934.	7.50	1816.	494.	165.	12.29
+	HYDROGRAPH AT	TW434	657.	4.50	114.	29.	10.	.57
+	2 COMBINED AT	C434_1	3928.	7.50	1862.	514.	171.	12.86
+	2 COMBINED AT	CTW434	4103.	7.50	2271.	628.	209.	15.61
+	ROUTED TO	RTW434	3981.	7.92	2261.	628.	209.	15.61
+	HYDROGRAPH AT	TW430	2825.	4.58	505.	126.	42.	2.49
+	2 COMBINED AT	C430_2	3981.	8.00	2571.	735.	245.	18.10
+	HYDROGRAPH AT	TW436	1001.	4.25	163.	41.	14.	.67
+	ROUTED TO	RTW436	775.	5.17	162.	41.	14.	.67
+	HYDROGRAPH AT	TW429	728.	4.33	138.	35.	12.	.56
+	ROUTED TO	RTW429	450.	5.00	136.	35.	12.	.56
+	3 COMBINED AT	C430*	3981.	7.92	2782.	788.	263.	19.33
+	HYDROGRAPH AT	D454	1159.	5.42	425.	109.	36.	3.52
+	ROUTED TO	RD454	1139.	5.58	424.	109.	36.	3.52
+	HYDROGRAPH AT	TW485	1746.	4.83	433.	109.	36.	2.37
+	HYDROGRAPH AT	WI576A	806.	4.83	240.	61.	20.	1.22
+	ROUTED TO	R576A	755.	5.33	239.	61.	20.	1.22
+	HYDROGRAPH AT	WI576B	522.	4.50	95.	24.	8.	.46
+	2 COMBINED AT	C576B	919.	5.25	318.	81.	27.	1.69
+	DIVERSION TO	DO576B	368.	5.25	127.	33.	11.	1.69
+	HYDROGRAPH AT	D576B	552.	5.25	191.	49.	16.	1.69
	ROUTED TO							

+	R576B	420.	6.67	188.	49.	16.	1.69
2 COMBINED AT	C485_1	1746.	4.83	610.	158.	53.	3.39
2 COMBINED AT +	CTW485	2200.	5.08	958.	248.	83.	5.64
ROUTED TO +	RTW485	2168.	5.25	955.	248.	83.	5.64
HYDROGRAPH AT +	TW484	365.	4.33	79.	20.	7.	.35
2 COMBINED AT +	CTW484	2286.	5.17	1011.	263.	88.	5.99
ROUTED TO +	RTW484	2206.	5.92	999.	263.	88.	5.99
HYDROGRAPH AT +	TW480	999.	4.33	181.	45.	15.	.75
HYDROGRAPH AT +	WI580A	2197.	4.83	562.	142.	47.	2.79
HYDROGRAPH AT +	WI580B	711.	4.42	136.	34.	11.	.63
DIVERSION TO +	DO580B	327.	4.42	63.	16.	5.	.63
HYDROGRAPH AT +	D580B	384.	4.42	74.	19.	6.	.63
ROUTED TO	R580B	336.	4.92	73.	19.	6.	.63
2 COMBINED AT +	C580A	2424.	4.83	622.	157.	52.	3.13
ROUTED TO +	SSR630	2423.	4.83	622.	157.	52.	3.13
ROUTED TO +	R580A	2131.	5.83	620.	157.	52.	3.13
HYDROGRAPH AT +	WI580	1574.	4.42	238.	60.	20.	1.32
HYDROGRAPH AT +	D580B	327.	4.42	63.	16.	5.	.63
ROUTED TO +	RD580B	288.	4.92	63.	16.	5.	.63
HYDROGRAPH AT +	WI578	517.	4.58	106.	27.	9.	.48
2 COMBINED AT +	CWI578	680.	4.75	165.	42.	14.	.77
ROUTED TO +	SSR700	615.	5.00	165.	42.	14.	.77
ROUTED TO +	RWI578	576.	5.50	164.	42.	14.	.77
3 COMBINED AT	CWI580	2520.	5.83	928.	238.	79.	5.22
ROUTED TO +	RWI580	2408.	6.17	924.	238.	79.	5.22

	HYDROGRAPH AT						
+		WI576	915.	4.67	198.	50.	17.	1.18
	2 COMBINED AT						
+		CS76_2	2474.	6.17	1056.	273.	91.	6.40
	HYDROGRAPH AT						
+		D576B	368.	5.25	127.	33.	11.	1.69
	ROUTED TO						
+		RD576B	304.	6.50	126.	33.	11.	1.69
	2 COMBINED AT						
+		CWI576	2695.	6.17	1152.	298.	99.	7.07
	DIVERSION TO						
+		DO576	1065.	6.17	455.	118.	39.	7.07
	HYDROGRAPH AT						
+		D576	1631.	6.17	697.	181.	60.	7.07
	ROUTED TO						
+		RWI576	1562.	6.67	693.	181.	60.	7.07
	HYDROGRAPH AT						
+		TW482	909.	4.50	149.	37.	12.	.76
	2 COMBINED AT						
+		CTW482	1655.	6.58	820.	218.	73.	5.04
	DIVERSION TO						
+		DO482	0.	.00	0.	0.	0.	5.04
	HYDROGRAPH AT						
+		D482	1655.	6.58	820.	218.	73.	5.04
	ROUTED TO						
+		RTW482	1596.	7.00	810.	218.	73.	5.04
	2 COMBINED AT						
+		C480_4	1574.	7.00	911.	256.	85.	5.79
	2 COMBINED AT						
+		CTW480	3071.	5.83	1747.	483.	161.	11.78
	DIVERSION TO						
+		DO480	2918.	5.83	1660.	458.	153.	11.78
	HYDROGRAPH AT						
+		D480	154.	5.83	87.	24.	8.	11.78
	ROUTED TO						
+		RTW480	141.	6.58	85.	24.	8.	11.78
	HYDROGRAPH AT						
+		TW478	465.	4.17	59.	15.	5.	.26
	2 COMBINED AT						
+		CTW478	422.	4.17	151.	43.	14.	.85
	ROUTED TO						
+		RTW478	167.	7.58	137.	43.	14.	.85
	2 COMBINED AT						
+		CTW430	3980.	7.92	2812.	804.	268.	20.18
	ROUTED TO						
+		SCP040	2936.	8.75	2266.	777.	259.	20.18
	ROUTED TO						
		RTW430	2687.	9.42	2240.	776.	259.	20.18
	HYDROGRAPH AT						
+		TW418	1784.	4.58	353.	89.	30.	1.37

	2 COMBINED AT						
		CTW418	2684.	9.42	2252.	847.	284.	21.55
	ROUTED TO						
+		RTW418	2616.	9.58	2218.	837.	281.	21.55
	HYDROGRAPH AT						
+		TW422	741.	4.58	161.	41.	14.	.70
	2 COMBINED AT						
+		C422_1	2609.	9.58	2223.	865.	291.	22.25
	HYDROGRAPH AT						
+		TW424	2266.	4.25	339.	85.	28.	1.50
	ROUTED TO						
+		RTW424	2063.	4.50	338.	85.	28.	1.50
	2 COMBINED AT						
+		CTW422	2603.	9.58	2225.	931.	313.	23.75
	ROUTED TO						
+		RTW422	2432.	12.50	2152.	919.	309.	23.75
	HYDROGRAPH AT						
+		TW400	2394.	4.83	778.	199.	66.	4.27
	2 COMBINED AT						
+		C400_2	3045.	5.75	2172.	1042.	352.	28.02
	2 COMBINED AT						
+		CTW400	11455.	10.50	9998.	3833.	1289.	163.08
	ROUTED TO						
		RTW400	11377.	10.75	9969.	3832.	1289.	163.08
	HYDROGRAPH AT						
+		WI504	1645.	4.50	273.	68.	23.	1.35
	2 COMBINED AT						
+		CWI504	11361.	10.75	9955.	3856.	1297.	164.43
	ROUTED TO						
+		RWI504	11308.	10.83	9919.	3847.	1294.	164.43
	HYDROGRAPH AT						
+		WI560	2829.	4.75	692.	175.	58.	3.56
	HYDROGRAPH AT						
+		WI574	318.	4.33	43.	11.	4.	.22
	ROUTED TO						
+		RWI574	180.	5.33	42.	11.	4.	.22
	2 COMBINED AT						
+		C5602A	2828.	4.83	721.	183.	61.	3.78
	HYDROGRAPH AT						
+		D576	1065.	6.17	455.	118.	39.	7.07
	ROUTED TO						
+		RD576	1020.	6.50	452.	118.	39.	7.07
	2 COMBINED AT						
+		C5602B	2956.	4.92	1104.	292.	97.	6.57
	HYDROGRAPH AT						
+		WI560A	1098.	5.08	393.	102.	34.	2.04
	ROUTED TO						
+		R560A	994.	5.92	390.	102.	34.	2.04
	2 COMBINED AT						

+	C5602C	2956.	4.92	1425.	380.	127.	8.61
HYDROGRAPH AT	WI572	2021.	4.50	453.	114.	38.	2.06
ROUTED TO +	RWI572	1732.	5.25	450.	114.	38.	2.06
HYDROGRAPH AT +	WI570	1907.	4.83	530.	135.	45.	2.24
DIVERSION TO +	DO570	400.	4.83	111.	28.	9.	2.24
HYDROGRAPH AT +	D570	1507.	4.83	419.	107.	36.	2.24
ROUTED TO +	RWI570	1439.	5.17	418.	107.	36.	2.24
HYDROGRAPH AT +	WI566	170.	4.33	24.	6.	2.	.11
HYDROGRAPH AT +	D570	400.	4.83	111.	28.	9.	2.24
2 COMBINED AT +	CWI566	562.	4.75	141.	36.	12.	.58
ROUTED TO +	SSR830	553.	4.83	141.	36.	12.	.58
ROUTED TO +	RWI566	519.	5.25	140.	36.	12.	.58
HYDROGRAPH AT	WI564	1005.	5.25	370.	96.	32.	1.81
ROUTED TO +	SSR880	1003.	5.25	370.	96.	32.	1.81
ROUTED TO +	RWI564	970.	5.58	368.	96.	32.	1.81
HYDROGRAPH AT +	WI562	768.	4.75	199.	50.	17.	.87
3 COMBINED AT +	CWI562	1723.	5.50	667.	173.	58.	3.26
2 COMBINED AT +	C562*	2896.	5.33	1040.	269.	90.	5.03
ROUTED TO +	R562*	2748.	6.00	1032.	269.	90.	5.03
3 COMBINED AT +	CWI560	5384.	5.92	2600.	693.	231.	15.70
ROUTED TO +	RWI560	5269.	6.50	2586.	693.	231.	15.70
HYDROGRAPH AT +	WI554	1054.	4.58	189.	48.	16.	1.04
2 COMBINED AT +	C554_9	5268.	6.50	2658.	723.	241.	16.74
HYDROGRAPH AT	WI556	217.	4.08	16.	4.	1.	.08
ROUTED TO +	RWI556	36.	5.58	15.	4.	1.	.08

+	2 COMBINED AT C5541B	5267.	6.50	2660.	723.	241.	16.82
+	HYDROGRAPH AT WI582	527.	4.33	75.	19.	6.	.38
+	HYDROGRAPH AT D482	0.	.00	0.	0.	0.	5.04
+	ROUTED TO RD482	0.	.00	0.	0.	0.	5.04
+	2 COMBINED AT CWI582	527.	4.33	75.	19.	6.	.38
+	ROUTED TO RWI582	321.	4.83	74.	19.	6.	.38
+	2 COMBINED AT CWI554	5275.	6.50	2696.	733.	244.	17.20
+	ROUTED TO RWI554	5262.	6.58	2695.	733.	244.	17.20
+	HYDROGRAPH AT WI552	490.	4.42	80.	20.	7.	.41
+	2 COMBINED AT CWI552	5260.	6.58	2726.	744.	248.	17.61
+	ROUTED TO RWI552	5245.	6.67	2721.	743.	248.	17.61
+	HYDROGRAPH AT WI584	1038.	4.50	235.	59.	20.	1.26
+	HYDROGRAPH AT D480	2918.	5.83	1660.	458.	153.	11.78
+	ROUTED TO RD480	2734.	6.42	1648.	458.	153.	11.78
+	2 COMBINED AT CWI584	2798.	6.33	1778.	501.	167.	12.45
+	ROUTED TO RWI584	2723.	6.92	1758.	501.	167.	12.45
+	HYDROGRAPH AT WI550	321.	4.17	31.	8.	3.	.14
+	3 COMBINED AT CWI550	6778.	6.92	3979.	1118.	373.	30.20
+	ROUTED TO SCP050	6612.	6.92	3977.	1118.	373.	30.20
+	ROUTED TO RWI550	6327.	7.50	3967.	1118.	373.	30.20
+	HYDROGRAPH AT WI514	639.	4.25	71.	18.	6.	.35
+	2 COMBINED AT CWI514	6311.	7.50	3967.	1127.	376.	30.56
+	HYDROGRAPH AT WI548	486.	4.33	71.	18.	6.	.31
	ROUTED TO RWI548	324.	5.17	71.	18.	6.	.31
+	HYDROGRAPH AT WI546	660.	4.33	156.	40.	13.	.61

	2 COMBINED AT	CWI546	631.	5.00	220.	57.	19.	.91
+	ROUTED TO	RWI546	617.	5.17	220.	57.	19.	.91
+	HYDROGRAPH AT	WI544	1536.	4.50	394.	100.	33.	1.79
+	2 COMBINED AT	CWI544	1903.	4.58	588.	151.	50.	2.71
+	DIVERSION TO	DO544	1275.	4.58	394.	101.	34.	2.71
+	HYDROGRAPH AT	D544	628.	4.58	194.	50.	17.	2.71
+	ROUTED TO	RWI544	545.	5.33	192.	50.	17.	2.71
+	HYDROGRAPH AT	WI542	783.	4.75	192.	48.	16.	1.17
+	2 COMBINED AT	CWI542	1117.	5.08	374.	96.	32.	2.07
+	HYDROGRAPH AT	WI540	1072.	4.75	292.	75.	25.	1.25
+	ROUTED TO	RWI540	1025.	4.92	292.	75.	25.	1.25
	HYDROGRAPH AT	WI538A	756.	4.67	187.	47.	16.	.78
+	2 COMBINED AT	C538A	1595.	4.92	468.	119.	40.	2.02
+	ROUTED TO	R538A	1462.	5.58	466.	119.	40.	2.02
+	HYDROGRAPH AT	WI538	915.	5.17	333.	86.	29.	1.43
+	2 COMBINED AT	CWI538	2143.	5.50	772.	199.	66.	3.45
+	ROUTED TO	RWI538	2041.	6.08	766.	199.	66.	3.45
+	HYDROGRAPH AT	WI530	1628.	4.75	349.	88.	29.	2.38
+	2 COMBINED AT	C530_2	2188.	6.08	1014.	269.	90.	5.83
+	HYDROGRAPH AT	WI536	868.	5.17	337.	88.	29.	1.37
+	HYDROGRAPH AT	WI534	596.	4.50	115.	29.	10.	.43
+	ROUTED TO	RWI534	544.	4.75	115.	29.	10.	.43
+	HYDROGRAPH AT	WI532	490.	4.33	63.	16.	5.	.32
+	2 COMBINED AT	CWI532	781.	4.58	174.	44.	15.	.76
	2 COMBINED AT							

+	C530*	1333.	4.92	496.	129.	43.	2.13
ROUTED TO							
	R530*	1279.	5.58	491.	129.	43.	2.13
2 COMBINED AT							
+	C530_3	3122.	6.00	1431.	381.	127.	7.95
HYDROGRAPH AT							
+	D544	1275.	4.58	394.	101.	34.	2.71
ROUTED TO							
+	RD544	1182.	5.17	392.	101.	34.	2.71
2 COMBINED AT							
+	CWI530	3730.	5.92	1750.	466.	155.	9.78
2 COMBINED AT							
+	CAP1*	4214.	5.92	2022.	537.	179.	11.85
HYDROGRAPH AT							
+	PI663	468.	4.83	150.	38.	13.	.60
ROUTED TO							
+	RPI663	428.	5.58	148.	38.	13.	.60
HYDROGRAPH AT							
+	PI657	607.	5.00	218.	56.	19.	.87
HYDROGRAPH AT							
+	PI660	455.	5.17	196.	53.	18.	.84
3 COMBINED AT							
+	CPI660	1270.	5.42	542.	143.	48.	2.31
ROUTED TO							
	RPI660	1231.	5.58	538.	143.	48.	2.31
HYDROGRAPH AT							
+	PI654	2695.	5.25	942.	240.	80.	4.03
2 COMBINED AT							
+	CPI654	3587.	5.33	1421.	369.	123.	6.34
DIVERSION TO							
+	DO654	717.	5.33	284.	74.	25.	6.34
HYDROGRAPH AT							
+	D654	2870.	5.33	1137.	296.	99.	6.34
ROUTED TO							
+	RPI654	2828.	5.67	1134.	296.	99.	6.34
HYDROGRAPH AT							
+	PI651	459.	4.67	104.	26.	9.	.46
2 COMBINED AT							
+	C651_1	3035.	5.58	1229.	321.	107.	5.53
HYDROGRAPH AT							
+	PI648	1286.	5.08	408.	103.	34.	1.73
2 COMBINED AT							
+	CPI651	3894.	5.50	1582.	411.	137.	7.26
ROUTED TO							
+	RPI651	3828.	5.75	1578.	411.	137.	7.26
HYDROGRAPH AT							
	PI645	1292.	4.58	229.	57.	19.	1.56
2 COMBINED AT							
+	C645_1	3928.	5.75	1719.	450.	150.	8.82

+	HYDROGRAPH AT	PI645A	1162.	5.08	391.	100.	33.	1.63
+	ROUTED TO	R645A	1127.	5.42	390.	100.	33.	1.63
+	HYDROGRAPH AT	D654	717.	5.33	284.	74.	25.	6.34
+	ROUTED TO	RD654	692.	5.92	282.	74.	25.	6.34
+	3 COMBINED AT	CPI645	5320.	5.75	2294.	601.	200.	11.72
+	2 COMBINED AT	CAP1*	8564.	5.83	3966.	1051.	350.	23.57
+	HYDROGRAPH AT	PI689	4695.	5.08	1410.	362.	121.	6.78
+	HYDROGRAPH AT	PI688	2650.	4.83	675.	171.	57.	3.20
+	2 COMBINED AT	CPI689	6591.	5.00	1977.	508.	169.	9.98
+	ROUTED TO	RPI689	6362.	5.33	1968.	508.	169.	9.98
+	HYDROGRAPH AT	PI687	4123.	5.17	1281.	330.	110.	7.01
+	2 COMBINED AT	CPI687	9390.	5.33	3035.	787.	262.	16.99
+	ROUTED TO	RPI687	9166.	5.50	3027.	787.	262.	16.99
+	HYDROGRAPH AT	PI684	864.	4.58	176.	44.	15.	.74
+	2 COMBINED AT	CPI684	9384.	5.50	3154.	819.	273.	17.73
+	ROUTED TO	SSR103	9163.	5.67	3154.	819.	273.	17.73
+	ROUTED TO	RPI684	8893.	5.92	3148.	819.	273.	17.73
+	HYDROGRAPH AT	PI681	792.	4.92	241.	61.	20.	.99
+	2 COMBINED AT	CPI681	9152.	5.92	3323.	864.	288.	18.72
+	ROUTED TO	RPI681	8711.	6.50	3313.	864.	288.	18.72
+	HYDROGRAPH AT	PI678	556.	4.75	149.	38.	13.	.83
+	2 COMBINED AT	CPI678	8723.	6.50	3368.	884.	295.	19.55
+	DIVERSION TO	DO678	2442.	6.50	943.	248.	83.	19.55
+	HYDROGRAPH AT	D678	6280.	6.50	2425.	637.	212.	19.55
+	HYDROGRAPH AT	PI690	447.	4.67	109.	28.	9.	.63

	2 COMBINED AT						
		CPI690	6659.	6.50	2578.	678.	226.	14.71
	ROUTED TO						
+		RPI690	6474.	6.67	2571.	678.	226.	14.71
	HYDROGRAPH AT						
+		PI675	106.	4.25	12.	3.	1.	.06
	2 COMBINED AT						
+		CPI675	6471.	6.67	2573.	679.	226.	14.77
	2 COMBINED AT						
+		CAP1*	11447.	6.42	5872.	1567.	522.	38.34
	HYDROGRAPH AT						
+		PI672	1342.	4.58	241.	60.	20.	1.51
	HYDROGRAPH AT						
+		D678	2442.	6.50	943.	248.	83.	19.55
	ROUTED TO						
+		RD678	2122.	6.92	934.	248.	83.	19.55
	2 COMBINED AT						
+		CPI672	2483.	6.83	1192.	323.	108.	6.98
	2 COMBINED AT						
+		CAP1*	12480.	6.58	6619.	1775.	592.	45.32
	HYDROGRAPH AT						
+		PI693	1003.	4.42	148.	37.	12.	.84
	2 COMBINED AT						
+		CAP1*	12442.	6.58	6661.	1789.	596.	46.16
	HYDROGRAPH AT						
+		PI669	219.	4.58	51.	13.	4.	.29
	2 COMBINED AT						
+		CAP1*	12441.	6.58	6676.	1793.	598.	46.44
	HYDROGRAPH AT						
+		PI642	247.	4.25	37.	9.	3.	.24
	2 COMBINED AT						
+		CAP1*	12429.	6.58	6680.	1795.	598.	46.68
	HYDROGRAPH AT						
+		PDWEST	3720.	5.25	1106.	284.	95.	7.08
	2 COMBINED AT						
+		CAP1*	13205.	6.33	7592.	2036.	679.	53.76
	ROUTED TO						
+		STOR1	5254.	8.17	4159.	2032.	679.	53.76
	DIVERSION TO						
+		DOCAP*	1689.	8.08	736.	184.	61.	53.76
	HYDROGRAPH AT						
+		DCAP*	3568.	8.33	3423.	1848.	617.	53.76
	DIVERSION TO						
+		DOCP14	353.	8.33	336.	161.	54.	53.76
	HYDROGRAPH AT						
+		DCAP14	3216.	8.33	3088.	1687.	564.	53.76
	DIVERSION TO						
+		DOCP13	410.	8.33	393.	220.	75.	53.76
	HYDROGRAPH AT						

+		DCAP13	2806.	8.33	2695.	1467.	489.	53.76
	DIVERSION TO	DOCP12	400.	8.33	384.	215.	72.	53.76
	HYDROGRAPH AT							
+		DCAP12	2406.	8.33	2310.	1252.	417.	53.76
	DIVERSION TO							
+		DOCP11	416.	8.33	402.	224.	75.	53.76
	HYDROGRAPH AT							
+		DCAP11	1990.	8.33	1909.	1028.	343.	53.76
	DIVERSION TO							
+		DOCP10	410.	8.33	394.	220.	73.	53.76
	HYDROGRAPH AT							
+		DCAP10	1581.	8.33	1514.	808.	269.	53.76
	DIVERSION TO							
+		DOCP09	400.	8.33	384.	212.	71.	53.76
	HYDROGRAPH AT							
+		DCAP09	1181.	8.33	1130.	596.	199.	53.76
	DIVERSION TO							
+		DOCP08	397.	8.33	379.	202.	67.	53.76
	HYDROGRAPH AT							
+		DCAP08	784.	8.33	751.	394.	131.	53.76
	DIVERSION TO							
+		DOCP07	397.	8.33	379.	200.	67.	53.76
	HYDROGRAPH AT							
		DCAP07	388.	8.33	371.	194.	65.	53.76
	DIVERSION TO							
+		DOCPOT	0.	.00	0.	0.	0.	53.76
	HYDROGRAPH AT							
+		DCAPOT	388.	8.33	371.	194.	65.	53.76
	ROUTED TO							
+		RWI542	388.	8.50	371.	194.	65.	53.76
	HYDROGRAPH AT							
+		WI529	302.	4.25	37.	9.	3.	.17
	2 COMBINED AT							
+		CWI529	466.	7.67	396.	220.	74.	4.13
	DIVERSION TO							
+		DO529	1.	7.67	0.	0.	0.	4.13
	HYDROGRAPH AT							
+		D529	465.	7.67	396.	220.	74.	4.13
	ROUTED TO							
+		RWI529	447.	7.75	395.	220.	74.	4.13
	HYDROGRAPH AT							
+		WI516	199.	4.33	26.	7.	2.	.14
	2 COMBINED AT							
+		C516_1	447.	7.75	395.	225.	75.	4.27
	2 COMBINED AT							
		CWI516	6473.	7.50	4211.	1307.	436.	34.83
	ROUTED TO							
+		RWI516	6235.	8.08	4100.	1307.	436.	34.83

+	HYDROGRAPH AT	WI512	1256.	4.42	275.	69.	23.	1.36
+	2 COMBINED AT	CWI512	6187.	8.08	4097.	1347.	450.	36.18
+	HYDROGRAPH AT	DCAPOT	0.	.00	0.	0.	0.	53.76
+	ROUTED TO	RDCPOT	0.	.00	0.	0.	0.	53.76
+	HYDROGRAPH AT	WI527	886.	4.50	138.	35.	12.	.71
+	2 COMBINED AT	CWI527	886.	4.50	184.	47.	16.	.71
+	DIVERSION TO	DO527	132.	4.50	8.	2.	1.	.71
+	HYDROGRAPH AT	D527	753.	4.50	177.	45.	15.	.71
+	ROUTED TO	RWI527	651.	4.83	175.	45.	15.	.71
+	HYDROGRAPH AT	D529	1.	7.67	0.	0.	0.	4.13
+	ROUTED TO	RD529	0.	7.75	0.	0.	0.	4.13
+	HYDROGRAPH AT	DCAP07	397.	8.33	379.	200.	67.	53.76
+	ROUTED TO	RDCP07	396.	8.83	379.	200.	67.	53.76
+	HYDROGRAPH AT	WI528	469.	4.42	72.	18.	6.	.36
+	2 COMBINED AT	C528_1	458.	7.83	405.	234.	78.	4.41
+	2 COMBINED AT	CWI528	458.	7.83	405.	234.	78.	4.41
+	ROUTED TO	RWI528	437.	8.25	403.	233.	78.	4.41
+	HYDROGRAPH AT	WI518	718.	4.42	108.	27.	9.	.53
+	2 COMBINED AT	C518_1	588.	4.58	406.	254.	85.	4.94
+	2 COMBINED AT	CWI518	1019.	4.75	512.	281.	94.	5.54
+	2 COMBINED AT	C508*	6337.	8.25	4366.	1559.	521.	41.72
+	ROUTED TO	R508*	6248.	8.75	4355.	1558.	521.	41.72
+	HYDROGRAPH AT	WI508	581.	4.67	134.	34.	11.	.70
+	2 COMBINED AT	CWI508	6228.	8.75	4351.	1573.	526.	42.42
+	DIVERSION TO	DO508	1183.	8.75	827.	299.	100.	42.42

	HYDROGRAPH AT						
		D508	5044.	8.75	3525.	1274.	426.	42.42
	HYDROGRAPH AT						
+		WI510A	1156.	4.58	194.	49.	16.	1.13
	ROUTED TO						
+		R510A	751.	5.67	193.	49.	16.	1.13
	HYDROGRAPH AT						
+		WI510	725.	5.00	229.	58.	19.	1.23
	3 COMBINED AT						
+		CWI510	5322.	8.67	3742.	1374.	460.	35.70
	ROUTED TO						
+		RWI510	4956.	9.33	3637.	1374.	460.	35.70
	HYDROGRAPH AT						
+		WI502	851.	4.92	228.	58.	19.	1.21
	3 COMBINED AT						
+		CWI502	12692.	10.75	11141.	4372.	1471.	201.34
	ROUTED TO						
+		RWI502	12678.	10.83	11134.	4372.	1471.	201.34
	HYDROGRAPH AT						
+		DCAP08	397.	8.33	379.	202.	67.	53.76
	ROUTED TO						
+		RDCP08	396.	8.58	379.	202.	67.	53.76
	HYDROGRAPH AT						
		WI526	48.	4.33	9.	2.	1.	.05
	2 COMBINED AT						
+		CWI526	436.	7.67	403.	222.	74.	4.10
	ROUTED TO						
+		RWI526	429.	8.58	402.	222.	74.	4.10
	HYDROGRAPH AT						
+		WI525	1695.	4.67	325.	81.	27.	1.94
	HYDROGRAPH AT						
+		DCAP09	400.	8.33	384.	212.	71.	53.76
	ROUTED TO						
+		RDCP09	399.	9.25	384.	212.	71.	53.76
	2 COMBINED AT						
+		C5251b	1695.	4.67	619.	319.	107.	6.01
	HYDROGRAPH AT						
+		D527	132.	4.50	8.	2.	1.	.71
	ROUTED TO						
+		RD527	31.	5.08	8.	2.	1.	.71
	3 COMBINED AT						
+		CWI525	1695.	4.67	904.	546.	183.	10.23
	DIVERSION TO						
+		DO525	71.	4.67	34.	18.	6.	10.23
	HYDROGRAPH AT						
+		D525	1181.	4.67	766.	491.	164.	10.23
	ROUTED TO						
+		RWI525	988.	5.42	765.	491.	164.	10.23
	HYDROGRAPH AT						

+		WI506	1175.	4.58	296.	75.	25.	1.58
	2 COMBINED AT	C506_1	1507.	5.25	866.	548.	184.	11.13
	HYDROGRAPH AT							
+		WI524	944.	4.58	178.	45.	15.	.95
	HYDROGRAPH AT							
+		D525	71.	4.67	34.	18.	6.	10.23
	ROUTED TO							
+		RD525	50.	5.50	34.	18.	6.	10.23
	2 COMBINED AT							
+		CWI524	940.	4.58	217.	67.	22.	1.60
	DIVERSION TO							
+		DO524	35.	4.58	2.	1.	0.	1.60
	HYDROGRAPH AT							
+		D524	810.	4.58	201.	63.	21.	1.60
	ROUTED TO							
+		RWI524	715.	4.92	199.	63.	21.	1.60
	2 COMBINED AT							
+		CWI506	1951.	5.25	1005.	594.	200.	12.67
	ROUTED TO							
+		RWI506	1886.	5.50	1001.	594.	200.	12.67
	HYDROGRAPH AT							
+		WI500	985.	4.67	199.	50.	17.	1.05
	2 COMBINED AT							
		C500_1	2201.	5.42	1114.	629.	212.	13.72
	HYDROGRAPH AT							
+		D508	1183.	8.75	827.	299.	100.	42.42
	ROUTED TO							
+		RD508	1167.	9.00	825.	299.	100.	42.42
	2 COMBINED AT							
+		C500_2	2283.	5.50	1839.	936.	315.	21.78
	2 COMBINED AT							
+		CWI500	13196.	10.75	11598.	4714.	1586.	224.18
	ROUTED TO							
+		SSPILL	1524.	18.75	1515.	1407.	1073.	224.18
	ROUTED TO							
+		RWI500	1524.	19.33	1515.	1407.	1073.	224.18
	HYDROGRAPH AT							
+		PI635	889.	4.42	132.	33.	11.	.61
	2 COMBINED AT							
+		CPI635	1523.	19.33	1515.	1407.	1073.	224.79
	ROUTED TO							
+		RPI635	1521.	20.08	1512.	1404.	1072.	224.79
	HYDROGRAPH AT							
+		DCAP11	416.	8.33	402.	224.	75.	53.76
	ROUTED TO							
		RDCP11	416.	8.67	401.	224.	75.	53.76
	HYDROGRAPH AT							
+		PI618	470.	4.33	58.	15.	5.	.29

+	HYDROGRAPH AT	DCAP12	400.	8.33	384.	215.	72.	53.76
+	DIVERSION TO	DO618	212.	8.33	204.	114.	38.	53.76
+	HYDROGRAPH AT	D618	188.	8.33	181.	101.	34.	53.76
+	ROUTED TO	RDCP12	188.	8.58	181.	101.	34.	53.76
+	2 COMBINED AT	C6181a	470.	4.33	226.	128.	43.	2.21
+	2 COMBINED AT	CPI618	661.	7.83	609.	360.	120.	6.46
+	ROUTED TO	RPI618	647.	8.42	608.	359.	120.	6.46
+	HYDROGRAPH AT	PI612	656.	4.58	129.	32.	11.	.74
+	HYDROGRAPH AT	DCAP13	410.	8.33	393.	220.	75.	53.76
+	ROUTED TO	RDCP13	409.	9.00	393.	220.	75.	53.76
+	HYDROGRAPH AT	PI615	852.	4.33	151.	38.	13.	.84
+	2 COMBINED AT	C6151A	631.	4.42	435.	268.	91.	5.04
+	HYDROGRAPH AT	D618	212.	8.33	204.	114.	38.	53.76
+	ROUTED TO	RD618	212.	8.50	204.	114.	38.	53.76
+	2 COMBINED AT	CPI615	681.	8.08	628.	386.	131.	7.21
+	ROUTED TO	RPI615	676.	8.33	628.	386.	131.	7.21
+	2 COMBINED AT	C6121a	978.	4.67	681.	408.	138.	7.95
+	2 COMBINED AT	CPI612	1278.	8.58	1223.	753.	254.	14.41
+	DIVERSION TO	DO612	959.	8.58	917.	565.	190.	14.41
+	HYDROGRAPH AT	D612	320.	8.58	306.	188.	63.	14.41
+	ROUTED TO	RPI612	319.	8.83	306.	188.	63.	14.41
+	HYDROGRAPH AT	PI609	1135.	4.67	318.	81.	27.	1.94
+	2 COMBINED AT	C609_1	1217.	4.83	544.	262.	89.	5.55
+	HYDROGRAPH AT	DCAP14	353.	8.33	336.	161.	54.	53.76
+	ROUTED TO	RDCP14	352.	9.50	335.	161.	54.	53.76

	2 COMBINED AT						
		CPI609	1215.	4.83	784.	440.	148.	9.15
	ROUTED TO						
+		RPI609	1105.	4.92	752.	430.	145.	9.15
	HYDROGRAPH AT						
+		PI600A	1191.	4.25	104.	26.	9.	.52
	2 COMBINED AT						
+		C600A	1225.	4.75	786.	447.	151.	9.67
	DIVERSION TO						
+		DO600A	1225.	4.75	786.	447.	151.	9.67
	HYDROGRAPH AT						
+		D600A	0.	.00	0.	0.	0.	9.67
	HYDROGRAPH AT						
+		PI621	865.	4.58	160.	40.	13.	.90
	HYDROGRAPH AT						
+		D612	959.	8.58	917.	565.	190.	14.41
	ROUTED TO						
+		RD612	957.	9.33	917.	564.	190.	14.41
	2 COMBINED AT						
+		CPI621	1040.	5.25	920.	595.	201.	11.70
	ROUTED TO						
+		SPI621	1039.	5.33	920.	587.	197.	11.70
	ROUTED TO						
		RPI621	1023.	5.50	920.	586.	197.	11.70
	HYDROGRAPH AT						
+		DCAP10	410.	8.33	394.	220.	73.	53.76
	ROUTED TO						
+		RDCP10	409.	8.75	394.	220.	73.	53.76
	HYDROGRAPH AT						
+		PI628	1004.	4.33	111.	28.	9.	.57
	2 COMBINED AT						
+		CPI628	594.	4.33	419.	261.	87.	4.75
	ROUTED TO						
+		RPI628	468.	8.67	419.	260.	87.	4.75
	HYDROGRAPH AT						
+		PI624A	1577.	4.92	371.	93.	31.	2.81
	2 COMBINED AT						
+		C624A	1746.	5.00	674.	335.	112.	7.56
	ROUTED TO						
+		R624A	1342.	5.92	667.	335.	112.	7.56
	HYDROGRAPH AT						
+		PI639	261.	4.67	67.	17.	6.	.34
	HYDROGRAPH AT						
+		D524	35.	4.58	2.	1.	0.	1.60
	ROUTED TO						
+		RD524	16.	4.83	2.	1.	0.	1.60
	2 COMBINED AT						
+		CPI639	288.	4.67	71.	18.	6.	.43
	ROUTED TO						

+	RPI639	203.	5.33	71.	18.	6.	.43
HYDROGRAPH AT	PI636	576.	4.42	93.	23.	8.	.43
2 COMBINED AT +	CPI636	546.	4.50	153.	39.	13.	.86
ROUTED TO +	RPI636	544.	4.50	153.	39.	13.	.86
HYDROGRAPH AT +	PI624	1112.	4.50	278.	71.	24.	1.23
3 COMBINED AT +	CPI624	1662.	5.83	909.	415.	141.	9.64
ROUTED TO +	SPI624	1657.	5.92	885.	398.	134.	9.64
ROUTED TO +	RPI624	1595.	6.25	870.	398.	134.	9.64
HYDROGRAPH AT +	PI633	383.	4.50	68.	17.	6.	.34
5 COMBINED AT +	CPI633	2195.	14.42	2124.	1726.	1204.	246.48
ROUTED TO +	RPI633	2196.	15.00	2122.	1725.	1204.	246.48
HYDROGRAPH AT +	PDEAST	6672.	5.25	1746.	441.	147.	16.44
HYDROGRAPH AT	DCAP*	1689.	8.08	736.	184.	61.	53.76
2 COMBINED AT +	CAP2*	6672.	5.25	2715.	722.	241.	33.74
ROUTED TO +	STOR2	2451.	6.08	2151.	712.	237.	33.74
DIVERSION TO +	DOCP19	862.	6.08	761.	269.	90.	33.74
HYDROGRAPH AT +	DCAP19	1589.	6.08	1390.	444.	148.	33.74
DIVERSION TO +	DOCP18	282.	6.08	248.	82.	27.	33.74
HYDROGRAPH AT +	DCAP18	1307.	6.08	1142.	362.	121.	33.74
DIVERSION TO +	DOCP17	273.	6.08	240.	78.	26.	33.74
HYDROGRAPH AT +	DCAP17	1034.	6.08	902.	284.	95.	33.74
DIVERSION TO +	DOCP16	819.	6.08	722.	230.	77.	33.74
HYDROGRAPH AT +	DCAP16	215.	6.08	180.	54.	18.	33.74
ROUTED TO	RDCP15	213.	6.50	180.	54.	18.	33.74
HYDROGRAPH AT +	PI606A	575.	4.42	89.	22.	7.	.46

	2 COMBINED AT						
+		C606A	368.	4.50	280.	110.	37.	3.55
	DIVERSION TO						
+		DO606A	151.	4.50	115.	45.	15.	3.55
	HYDROGRAPH AT						
+		D606A	217.	4.50	165.	65.	22.	3.55
	ROUTED TO						
+		R606A	192.	10.17	165.	65.	22.	3.55
	HYDROGRAPH AT						
+		PI606	921.	4.42	187.	47.	16.	1.08
	2 COMBINED AT						
+		CPI606	753.	4.50	285.	108.	36.	3.17
	ROUTED TO						
+		RPI606	668.	4.83	280.	108.	36.	3.17
	HYDROGRAPH AT						
+		PI604	469.	4.25	82.	21.	7.	.36
	HYDROGRAPH AT						
+		D606A	151.	4.50	115.	45.	15.	3.55
	ROUTED TO						
+		RD606A	142.	4.83	115.	45.	15.	3.55
	2 COMBINED AT						
+		CPI604	469.	4.58	179.	70.	23.	1.82
	ROUTED TO						
+		RPI604	414.	4.92	168.	67.	22.	1.82
	HYDROGRAPH AT						
		PI603	623.	4.50	102.	25.	8.	.52
	3 COMBINED AT						
+		C603_1	1297.	4.75	483.	178.	59.	5.51
	HYDROGRAPH AT						
+		PD744	732.	4.58	143.	36.	12.	.80
	HYDROGRAPH AT						
+		D600A	1225.	4.75	786.	447.	151.	9.67
	ROUTED TO						
+		RD600A	1053.	5.33	767.	447.	151.	9.67
	3 COMBINED AT						
+		CPI603	2202.	4.92	1214.	606.	205.	15.98
	ROUTED TO						
+		SPI603	2089.	5.25	1212.	606.	205.	15.98
	DIVERSION TO						
+		DO744	0.	.00	0.	0.	0.	15.98
	HYDROGRAPH AT						
+		D744	2089.	5.25	1212.	606.	205.	15.98
	ROUTED TO						
+		RPI603	2036.	5.42	1197.	606.	205.	15.98
	HYDROGRAPH AT						
+		PI600	1023.	4.33	118.	29.	10.	.61
	3 COMBINED AT						
		CPI600	2591.	13.17	2525.	1932.	1271.	263.07
	ROUTED TO						
+		RPI600	2591.	14.17	2524.	1932.	1271.	263.07

	HYDROGRAPH AT	DCAP16	819.	6.08	722.	230.	77.	33.74
+	ROUTED TO	RDCP16	814.	6.50	720.	230.	77.	33.74
+	HYDROGRAPH AT	DCAP17	273.	6.08	240.	78.	26.	33.74
+	ROUTED TO	RDCP17	271.	6.50	240.	78.	26.	33.74
+	HYDROGRAPH AT	PD740	991.	4.75	215.	54.	18.	1.28
+	3 COMBINED AT	CPD740	1249.	9.42	1138.	413.	138.	16.31
+	ROUTED TO	RPD740	1248.	9.67	1137.	413.	138.	16.31
+	HYDROGRAPH AT	PD726B	832.	4.75	167.	42.	14.	.93
+	2 COMBINED AT	C726B	1229.	9.67	1147.	436.	145.	17.24
+	ROUTED TO	R726B	1227.	9.92	1147.	436.	145.	17.24
+	HYDROGRAPH AT	DCAP18	282.	6.08	248.	82.	27.	33.74
+	ROUTED TO	RDCP18	279.	6.67	248.	82.	27.	33.74
+	HYDROGRAPH AT	PD736	373.	5.17	136.	35.	12.	.78
+	2 COMBINED AT	CPD736	441.	6.17	387.	149.	50.	4.64
+	ROUTED TO	RPD736	439.	6.25	387.	149.	50.	4.64
+	HYDROGRAPH AT	DCAP19	862.	6.08	761.	269.	90.	33.74
+	ROUTED TO	RDCP19	859.	6.33	760.	269.	90.	33.74
+	HYDROGRAPH AT	PD760	1444.	4.33	156.	39.	13.	.87
+	ROUTED TO	SCP200	398.	4.83	155.	39.	13.	.87
+	ROUTED TO	RPD760	396.	5.00	155.	39.	13.	.87
+	HYDROGRAPH AT	PD732	681.	4.42	95.	24.	8.	.48
+	3 COMBINED AT	CPD732	1085.	5.75	963.	377.	126.	13.11
+	ROUTED TO	RPD732	1073.	6.33	960.	376.	126.	13.11
+	HYDROGRAPH AT	PD726A	605.	5.17	192.	49.	16.	1.10
	3 COMBINED AT							

+	C726A	1657.	6.08	1346.	504.	168.	18.85
ROUTED TO	R726A	1650.	6.33	1343.	504.	168.	18.85
2 COMBINED AT +	C726*	2672.	6.58	2210.	785.	262.	36.10
ROUTED TO +	R726*	2568.	7.25	2164.	784.	262.	36.10
HYDROGRAPH AT +	PD726	1071.	4.58	229.	58.	19.	1.35
HYDROGRAPH AT +	PD716	2644.	4.33	339.	85.	28.	1.75
3 COMBINED AT +	CPD726	2581.	7.17	2159.	860.	287.	39.20
ROUTED TO +	SPD726	2518.	7.67	2134.	855.	286.	39.20
DIVERSION TO +	DO716	201.	7.67	92.	23.	8.	39.20
HYDROGRAPH AT +	D716	2317.	7.67	2042.	832.	278.	39.20
ROUTED TO +	RPD726	2306.	7.92	2040.	832.	278.	39.20
HYDROGRAPH AT +	PD720	942.	4.33	115.	29.	10.	.59
HYDROGRAPH AT	D744	0.	.00	0.	0.	0.	15.98
ROUTED TO +	RD744	0.	.00	0.	0.	0.	15.98
4 COMBINED AT +	CPD720	4042.	9.17	3596.	2280.	1369.	296.13
ROUTED TO +	RPD720	4043.	9.25	3595.	2280.	1369.	296.13
HYDROGRAPH AT +	D716	201.	7.67	92.	23.	8.	39.20
ROUTED TO +	RD716	198.	7.25	91.	23.	8.	39.20
2 COMBINED AT +	C700*	4040.	9.25	3594.	2276.	1367.	302.88
ROUTED TO +	R700*	3992.	9.92	3559.	2256.	1355.	302.88
HYDROGRAPH AT +	PD752	354.	4.25	43.	11.	4.	.19
HYDROGRAPH AT +	PD748	557.	4.25	66.	16.	5.	.28
2 COMBINED AT +	CPD748	910.	4.25	108.	27.	9.	.47
ROUTED TO	SCP220	531.	4.50	108.	27.	9.	.47
ROUTED TO +	RPD748	518.	4.75	108.	27.	9.	.47

+	HYDROGRAPH AT PD756	1655.	5.17	560.	146.	49.	3.23
+	ROUTED TO SCP210	1639.	5.25	560.	146.	49.	3.23
+	ROUTED TO RPD756	1599.	5.58	560.	146.	49.	3.23
+	2 COMBINED AT C708*	1685.	5.50	640.	167.	56.	3.70
+	ROUTED TO R708*	1638.	5.92	639.	167.	56.	3.70
+	HYDROGRAPH AT PD708	1840.	4.83	432.	109.	36.	2.40
+	HYDROGRAPH AT PD712A	570.	4.83	155.	39.	13.	.77
+	ROUTED TO R712A	551.	5.17	155.	39.	13.	.77
+	HYDROGRAPH AT PD712	1003.	4.67	205.	52.	17.	.89
+	4 COMBINED AT CPD708	2957.	5.00	1249.	327.	109.	7.76
+	ROUTED TO RPD708	2911.	5.17	1249.	327.	109.	7.76
+	HYDROGRAPH AT PD704	480.	4.42	65.	16.	5.	.36
	HYDROGRAPH AT AF800	945.	4.42	146.	37.	12.	.72
+	3 COMBINED AT CPD704	3265.	5.08	1392.	364.	121.	8.84
+	ROUTED TO SPD704	3181.	5.25	1392.	364.	121.	8.84
+	DIVERSION TO DO800	0.	.00	0.	0.	0.	8.84
+	HYDROGRAPH AT D800	3181.	5.25	1392.	364.	121.	8.84
+	ROUTED TO RPD704	3146.	5.50	1391.	364.	121.	8.84
+	HYDROGRAPH AT PD700	1703.	4.50	255.	64.	21.	1.40
+	3 COMBINED AT CPD700	4072.	9.75	3633.	2327.	1379.	313.12
+	HYDROGRAPH AT D800	0.	.00	0.	0.	0.	8.84
+	ROUTED TO RD800	0.	.00	0.	0.	0.	8.84
+	HYDROGRAPH AT AF802	618.	4.33	78.	20.	7.	.39
	3 COMBINED AT C802*	4071.	9.75	3632.	2327.	1379.	313.51
+	ROUTED TO R810*	4067.	10.17	3626.	2322.	1378.	313.51

	HYDROGRAPH AT	AF803	2044.	4.67	563.	143.	48.	2.84
	ROUTED TO	RAF803	2001.	4.83	562.	143.	48.	2.84
+	HYDROGRAPH AT	AF805	810.	4.50	123.	31.	10.	.63
+	ROUTED TO	RAF805	618.	5.17	123.	31.	10.	.63
+	HYDROGRAPH AT	AF807	1789.	4.25	196.	49.	16.	1.02
+	3 COMBINED AT	CAF807	2926.	4.67	812.	206.	69.	4.49
+	ROUTED TO	RAF807	2904.	4.75	811.	206.	69.	4.49
+	HYDROGRAPH AT	AF810	1543.	4.83	350.	88.	29.	2.12
+	3 COMBINED AT	CAF810	4062.	10.17	3620.	2349.	1387.	320.12
+	ROUTED TO	RAF810	4053.	10.50	3610.	2345.	1386.	320.12
+	HYDROGRAPH AT	AF820	592.	4.58	119.	30.	10.	.70
	2 COMBINED AT	CAF820	4051.	10.50	3608.	2345.	1386.	320.81
+	HYDROGRAPH AT	AF830	356.	4.42	61.	15.	5.	.27
+	HYDROGRAPH AT	AF854	863.	4.08	89.	22.	7.	.34
+	ROUTED TO	RAF854	792.	4.17	89.	22.	7.	.34
+	HYDROGRAPH AT	AF852	479.	4.08	47.	12.	4.	.17
+	2 COMBINED AT	CAF852	1174.	4.08	135.	34.	11.	.51
+	ROUTED TO	RAF852	1167.	4.17	135.	34.	11.	.51
+	HYDROGRAPH AT	AF850	585.	4.08	58.	14.	5.	.22
+	2 COMBINED AT	CAF850	1545.	4.17	190.	48.	16.	.72
+	HYDROGRAPH AT	AF864	116.	4.25	24.	6.	2.	.09
+	ROUTED TO	RAF864	74.	4.67	24.	6.	2.	.09
+	HYDROGRAPH AT	AF862	542.	4.00	38.	9.	3.	.18
+	2 COMBINED AT	CAF862	555.	4.00	60.	16.	5.	.26
	ROUTED TO							

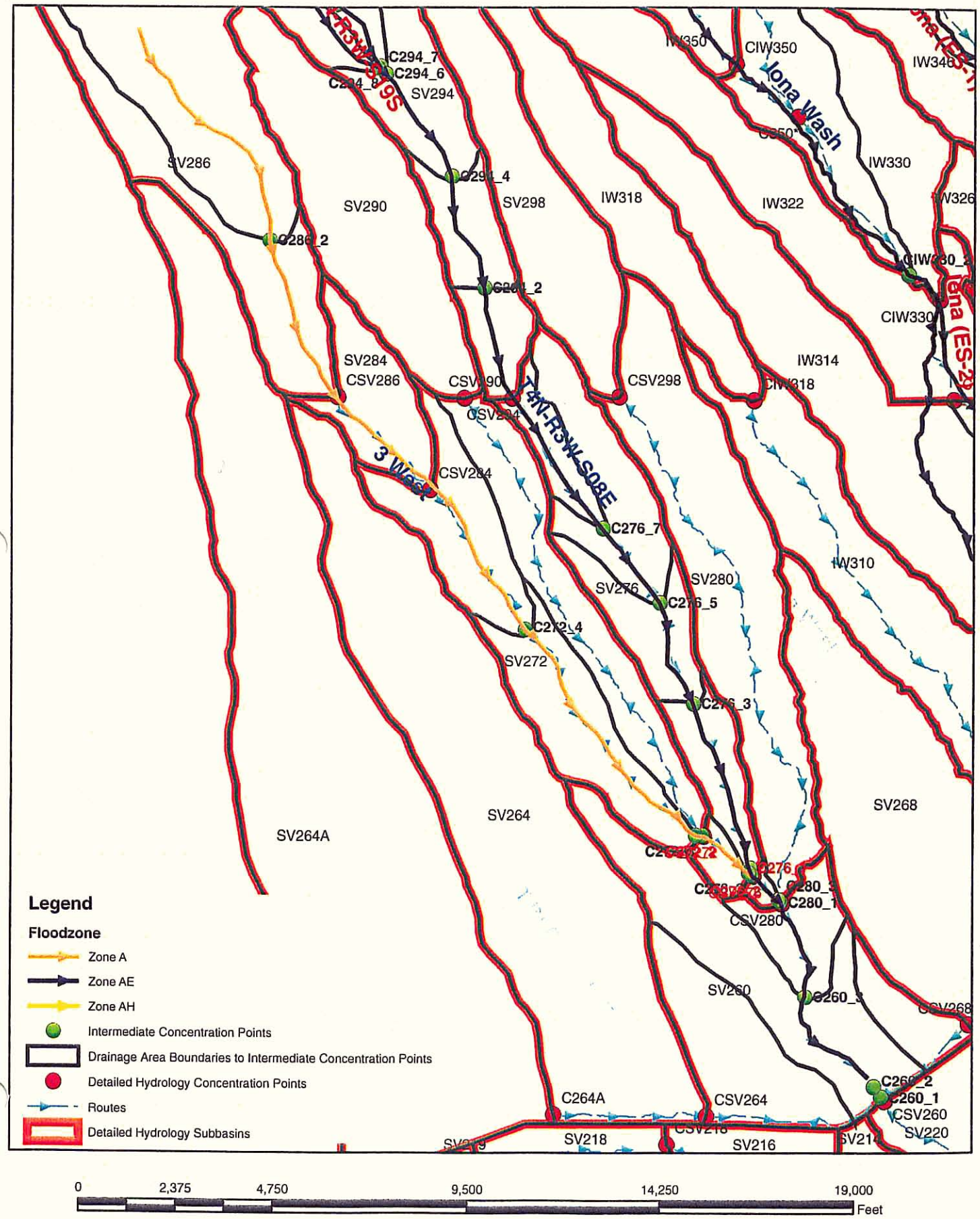
```
+                    RAF862     457.   4.08      60.      16.       5.      .26

     HYDROGRAPH AT
                     AF866     896.   4.17     126.      32.      11.      .45

     ROUTED TO
+                   RAF866     616.   4.42     123.      32.      11.      .45

     HYDROGRAPH AT
+                    AF860     476.   4.25      84.      21.       7.      .36

     3 COMBINED AT
+                   CAF860    1151.   4.25     254.      66.      22.     1.08

     HYDROGRAPH AT
+                    SV258     888.   4.42     150.      38.      13.      .74

     DIVERSION TO
+                    DO258     435.   4.42      73.      18.       6.      .74

     HYDROGRAPH AT
+                     D258     453.   4.42      76.      19.       6.      .74

     ROUTED TO
+                   RSV258     420.   4.58      76.      19.       6.      .74

     HYDROGRAPH AT
+                    SV256     104.   4.17      10.       2.       1.      .06

     2 COMBINED AT
+                   CSV256     484.   4.50      88.      22.       7.      .44

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

D.3 Flow Spreadsheets

List of Washes

1. WASH 3 WEST
2. T4N-R3W-S08E
3. T5N-R3W-S19
4. IONA WASH
5. IONA WASH (ZONE AO)
6. IONA WASH (NORTH)
7. IONA NORTH WEST SPLIT-1
8. IONA TRIBUTARY (ZONE A)
9. IONA EAST SPLIT-1
10. IONA EAST SPLIT-2
11. TRILBY WASH
12. CIRCLE CITY AREA WASH 1
13. WASH 2 WEST (NORTH OF CAP)
14. 2 WEST TRIBUTARY-1
15. 2 WEST TRIBUTARY-2
16. WITTMANN WASH
17. WITTMANN TRIBUTARY
18. T5N-R3W-S24E
19. T5N-R2W-S19E
20. T5N-R2W-S19W
21. T5N-R3W-S01S
22. T5N-R2W-S07
23. WASH 2 EAST (NORTH OF CAP)
24. 2 EAST TRIBUTARY
25. T5N-R2W-S14N (ZONE A)
26. T5N-R2W-S14S (ZONE A)
27. T5N-R2W-S14W (ZONE A)
28. T5N-R2W-S11 (ZONE A)
29. WASH 7 EAST
30. 7 EAST TRIBUTARY
31. IONA EAST & WEST (SOUTH OF CAP)
32. WASH 2 WEST (SOUTH OF CAP)
33. WASH 1 WEST
34. WASH 1 EAST
35. WASH 2 EAST (SOUTH OF CAP)
36. WASH 3 EAST
37. WASH 4 EAST
38. WASH 5 EAST
39. WASH 5 EAST (ZONE AO)
40. WASH 6 EAST
41. 7 EAST (SOUTH OF CAP)
42. WASH 8 EAST
43. WASH 9 EAST
44. WASH 10 EAST
45. WASH 10 EAST (ES-1 AND ES-2)
46. WASH 11 EAST
47. WASH 12 EAST
48. WASH 13 EAST
49. WASH 14 EAST

3 West


Iona Wash
3 West
T4N-R3W-S08E
T4N-R3W-S09S
Iona (ES-29)
C294_7
C294_6
SV294
SV286
SV290
SV298
IW318
IW322
IW330
IW350
CIW350
IW346
IW326
CIW330
IW314
CIW318
CSV298
SV284
CSV286
CSV290
CSV294
CSV284
C276_7
SV280
SV276
C276_5
IW310
SV272
SV268
SV264
SV264A
CSV280
SV260
CSV268
C260_2
C260_1
CSV260
SV220
C264A
CSV264
SV218
SV216
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
2,375
4,750
9,500
14,250
19,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/17/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : Wash 3 West

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 3 West.

Wash Reach Summary

Reach ID	Upstream Concentration Pt. ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	Downstream Concentration Pt. ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	log(Area) =C*log(Flow) + B: C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 3 West - 1 *	No Upstream Concentration Point	N/A	N/A	SV286	6-Hour	1.54	1427	N/A	N/A
Wash 3 West - 2	SV286	1.54	1427	CSV284	6-Hour	1.82	1449	10.9190	-34.2558
Wash 3 West - 3	CSV284	1.82	1449	C272_2	6-Hour	3.02	1586	5.6056	-17.4597
Wash 3 West - 4	CSV272	3.84	1966	C276_2	6-Hour	4.76	2268	1.5030	-4.3659
Wash 3 West - 5	CSV276	7.41	3738	C280_1	6-Hour	8.46	4109	1.4004	-4.1333
Wash 3 West - 6	CSV280	9.54	4248	C260_1	6-Hour	10.8	4217	-16.9371	62.4305
Wash 3 West - 7	CSV280	9.54	4248	CSV260	6-Hour	16.99	6422	1.3965	-4.0871

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C286_2	Wash 3 West - 1 *	0.0000	1.08	6-Hour	1.08	N/A	N/A	1001
Detailed Hydrology	SV286	Wash 3 West - 1 *	1.0800	0.4600	6-Hour	1.54	N/A	N/A	1427
Detailed Hydrology	CSV284	Wash 3 West - 2	1.5400	0.2800	6-Hour	1.82	10.9190	-34.2558	1449
Intermediate	C272_4	Wash 3 West - 3	1.8200	0.3430	6-Hour	2.163	5.6056	-17.4597	1494
Intermediate	C272_3	Wash 3 West - 3	2.1630	0.3850	6-Hour	2.548	5.6056	-17.4597	1539
Detailed Hydrology	C272_2	Wash 3 West - 3	2.5480	0.4720	6-Hour	3.02	5.6056	-17.4597	1586
Detailed Hydrology	CSV272	Wash 3 West - 4	3.0200	0.8200	6-Hour	3.84	1.5030	-4.3659	1966
Intermediate	C276_3	Wash 3 West - 4	3.8400	0.0580	6-Hour	3.898	1.5030	-4.3659	1986 2000
Detailed Hydrology	C276_2	Wash 3 West - 4	3.8980	0.8620	6-Hour	4.76	1.5030	-4.3659	2268 2300
Detailed Hydrology	CSV276	Wash 3 West - 5	4.7600	2.6500	6-Hour	7.41	1.4004	-4.1333	3738 3750
Intermediate	C280_3	Wash 3 West - 5	7.4100	0.0210	6-Hour	7.431	1.4004	-4.1333	3746
Detailed Hydrology	C280_1	Wash 3 West - 5	7.4310	1.0290	6-Hour	8.46	1.4004	-4.1333	4109
Detailed Hydrology	CSV280	Wash 3 West - 6	8.4600	1.0800	6-Hour	9.54	-16.9371	62.4305	4248
Intermediate	C260_3	Wash 3 West - 6	9.5400	0.1770	6-Hour	9.717	-16.9371	62.4305	4243
Intermediate	C260_2	Wash 3 West - 6	9.7170	0.5710	6-Hour	10.288	-16.9371	62.4305	4229
Detailed Hydrology	C260_1	Wash 3 West - 6	10.2880	0.5120	6-Hour	10.8	-16.9371	62.4305	4217
Detailed Hydrology	CSV260	Wash 3 West - 7	10.8000	6.1900	6-Hour	16.99	1.3965	-4.0871	6422

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

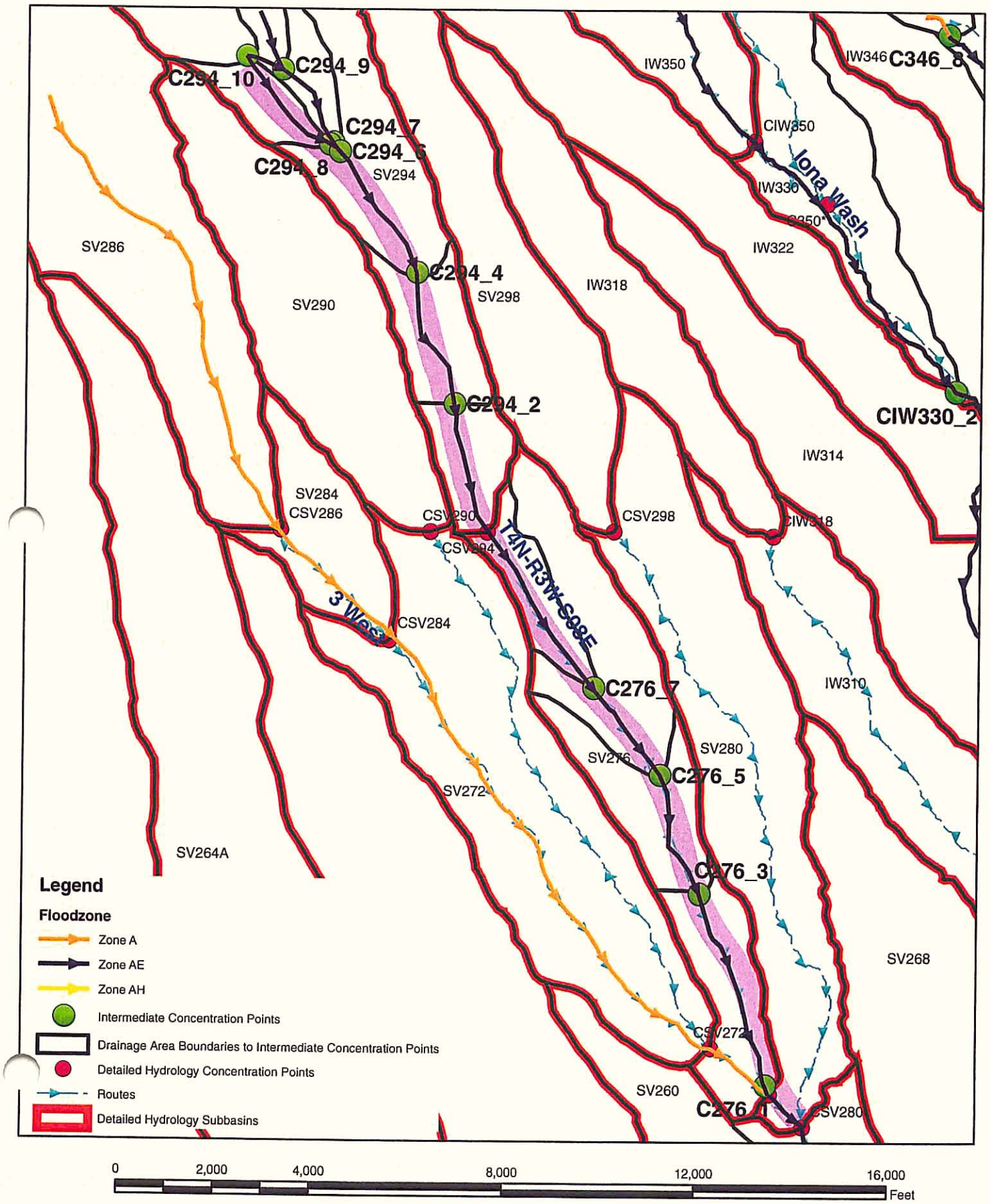
* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi^2 to Q=1427cfs, and A=1.54 mi^2 (this is SV286).

Downstream Ponding Stage Calc:

	Area [sq miles]	Stage [ft]
	16	1545.16
	90	1544.05
Interpolated Value	16.99	1545.15

Note: The above Downstream Ponding Stage Calc was performed based on the controlling storm (6-hour) for the HEC-1 stage-storage relationship ***SCP010***.

T4N-R3W-S08E


C294_10
C294_9
C294_7
C294_6
C294_8
SV294
C294_4
SV298
C294_2
SV286
SV290
IW350
IW346
C346_8
CIW350
Iona Wash
IW330
IW322
IW318
CIW330_2
IW314
SV284
CSV286
CSV290
CSV298
CIW318
CSV294
T4N-R3W-S08E
3 Wash
CSV284
C276_7
IW310
SV280
SV276
C276_5
SV272
SV264A
C276_3
SV268
CSV272
SV260
C276_1
CSV280
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
2,000
4,000
8,000
12,000
16,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/17/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T4N-R3W-S08E

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T4N-R3W-S08E.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T4N-R3W-S08E - 1 *	No Upstream Concentration Point	N/A	N/A	SV294	6-Hour	2.65	2100	N/A	N/A
T4N-R3W-S08E - 2	SV294	2.65	2100	C276_1	6-Hour	3.57	2094	-104.1530	346.4424

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C294_10 (pre-split)	T4N-R3W-S08E - 1 *	0.0000	0.893	6-Hour	0.893	N/A	N/A	708
Intermediate	C294_10 (post-split)	T4N-R3W-S08E - 1 *	0.8930	-0.4465	6-Hour	0.4465	N/A	N/A	354
Intermediate	C294_8	T4N-R3W-S08E - 1 *	0.4465	0.0900	6-Hour	0.5365	N/A	N/A	425
Intermediate	C294_6	T4N-R3W-S08E - 1 *	0.5365	1.3495	6-Hour	1.886	N/A	N/A	1495
Intermediate	C294_4	T4N-R3W-S08E - 1 *	1.8860	0.4480	6-Hour	2.334	N/A	N/A	1850
Intermediate	C294_2	T4N-R3W-S08E - 1 *	2.3340	0.1770	6-Hour	2.511	N/A	N/A	1990
Detailed Hydrology	SV294	T4N-R3W-S08E - 1 *	2.5110	0.1390	6-Hour	2.65	N/A	N/A	2100
Intermediate	C276_7	T4N-R3W-S08E - 2	2.6500	0.1240	6-Hour	2.774	-104.1530	346.4424	2099
Intermediate	C276_5	T4N-R3W-S08E - 2	2.7740	0.3460	6-Hour	3.12	-104.1530	346.4424	2097
Intermediate	C276_3	T4N-R3W-S08E - 2	3.1200	0.2170	6-Hour	3.337	-104.1530	346.4424	2095
Detailed Hydrology	C276_1	T4N-R3W-S08E - 2	3.3370	0.2330	6-Hour	3.57	-104.1530	346.4424	2094

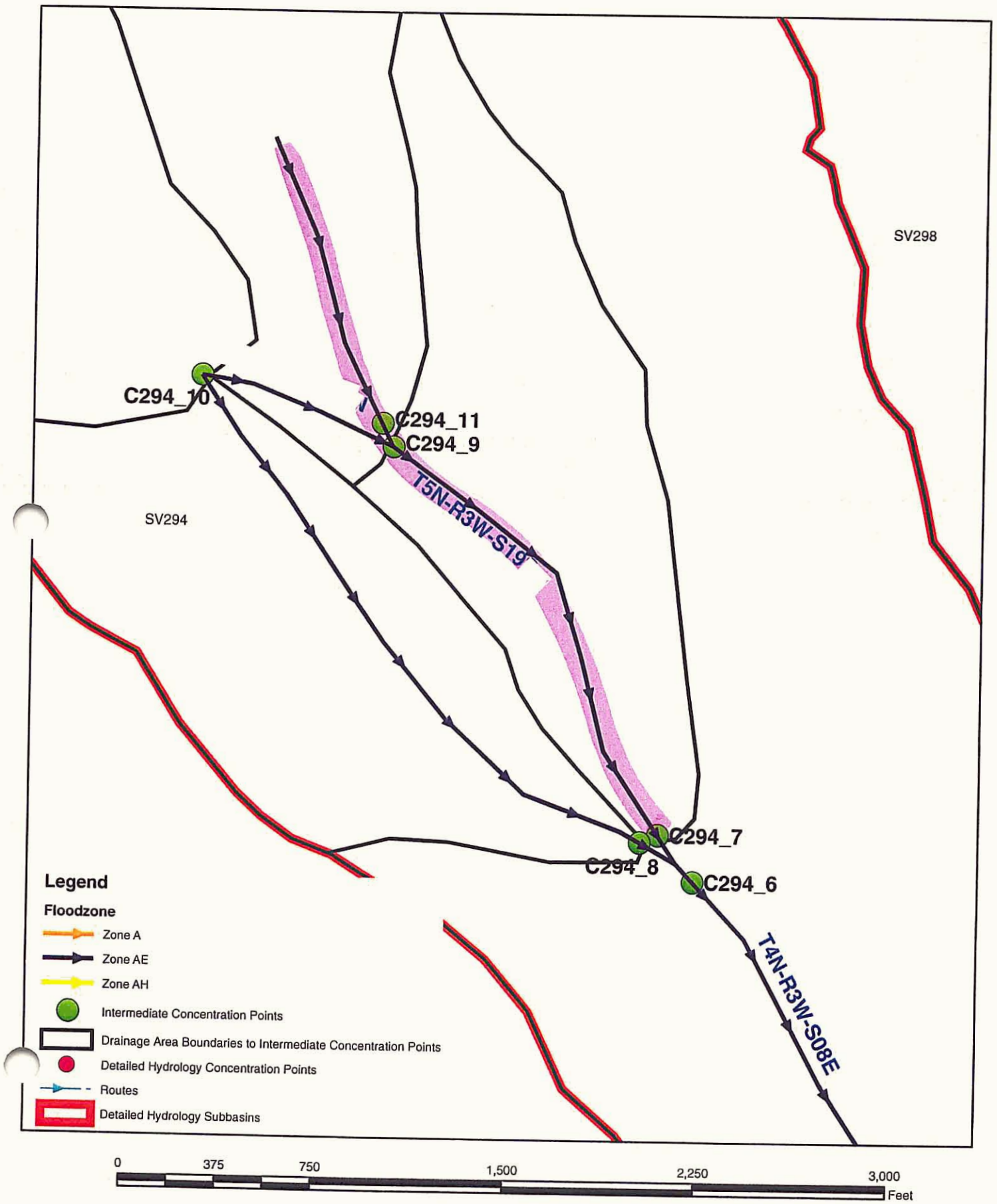
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi2 to Q=2100cfs, and A=0.2.65 mi2 (this is SV294).

The following percentages were used to hydraulically calculate the split flow at C294_10:

% to T4N-R3W-S08E	50.00%
% to T5N-R3W-S19N	50.00%

T5N-R3W-S19


SV298
SV294
C294_10
C294_11
C294_9
T5N-R3W-S19
C294_7
C294_8
C294_6
T4N-R3W-S08E
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
375
750
1,500
2,250
3,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/17/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R3W-S19

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R3W-S19

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R3W-S19 - 1 *	No Upstream Concentration Point	N/A	N/A	SV294	6-Hour	2.65	2100	N/A	N/A

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C294_11	T5N-R3W-S19 - 1 *	0.0000	0.826	6-Hour	0.826	N/A	N/A	655
Intermediate	C294_9 (post-confluence)	T5N-R3W-S19 - 1 *	0.8260	0.4465	6-Hour	1.2725	N/A	N/A	1008
Intermediate	C294_7	T5N-R3W-S19 - 1 *	1.2725	0.0770	6-Hour	1.3495	N/A	N/A	1069

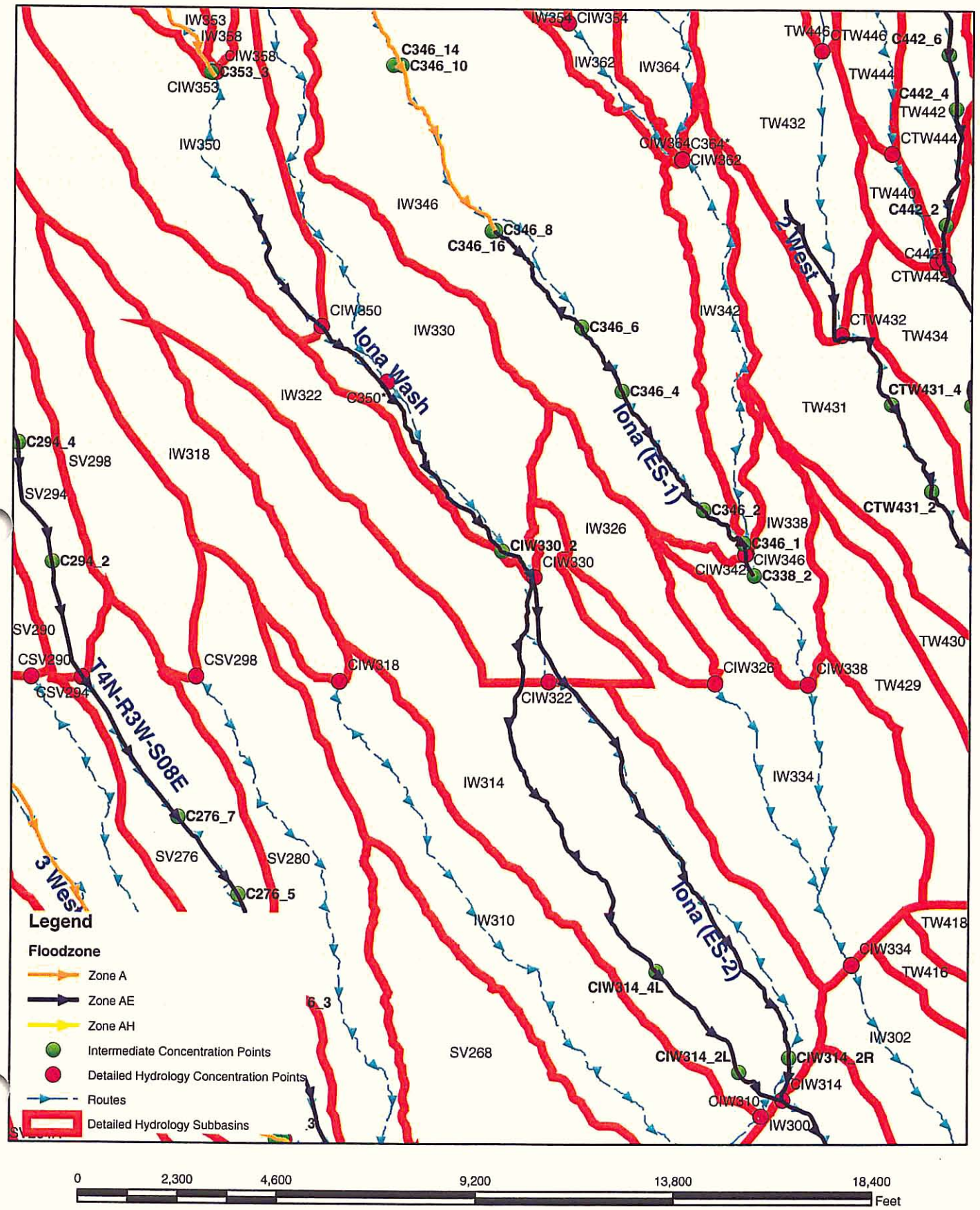
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi2 to Q=2100cfs, and A=0.2.65 mi2 (this is SV294).

The following percentages were used to hydraulically calculate the split flow at C294_10:

% to T4N-R3W-S08E	50.00%
% to T5N-R3W-S19N which flows into T5N-R3W-S19	50.00%

IONA WASH


IW353
IW358
CIW358
C353_3
CIW353
IW350
C346_14
C346_10
IW354
CIW354
IW362
IW364
TW446
CTW446
C442_6
TW444
C442_4
TW442
CTW444
TW432
CIW364
C364*
CIW362
TW440
C442_2
IW346
C346_8
C346_16
2 West
CTW442
CIW350
IW330
C346_6
IW342
CTW432
TW434
Iona Wash
IW322
C350*
C346_4
Iona (ES-1)
TW431
CTW431_4
C294_4
SV298
IW318
SV294
C346_2
IW338
CTW431_2
IW326
CIW330_2
C346_1
CIW330
CIW346
CIW342
C338_2
C294_2
SV290
TW430
CSV290
CSV298
CIW318
CIW326
CIW338
CSV294
CIW322
TW429
T4N-R3W-S08E
IW314
IW334
C276_7
SV276
SV280
3 West
C276_5
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
IW310
Iona (ES-2)
TW418
CIW334
TW416
CIW314_4L
IW302
SV268
CIW314_2L
CIW314_2R
CIW314
CIW310
IW300
0
2,300
4,600
9,200
13,800
18,400
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/9/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : IONA WASH

Wash Reach Summary

Reach ID	Upstream Concentration Pt. ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	Downstream Concentration Pt. ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	log(Area) =C*log(Flow) + B: C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Iona - 1	CIW353	15.24	5023	CIW350	24-Hour	17.41	5647	1.1368	-3.0244
Iona - 2	CIW350	17.41	5647	CIW330	24-Hour	23.27	6608	1.8461	-5.6853
Iona - 3	CIW330	23.27	6608	CIW322	24-Hour	25.16	7021	1.2881	-3.5538
Iona - 4	CIW322 (SPLIT)	10.064	2810	C314_1	24-Hour	27.34	7102	1.0779	-2.7145

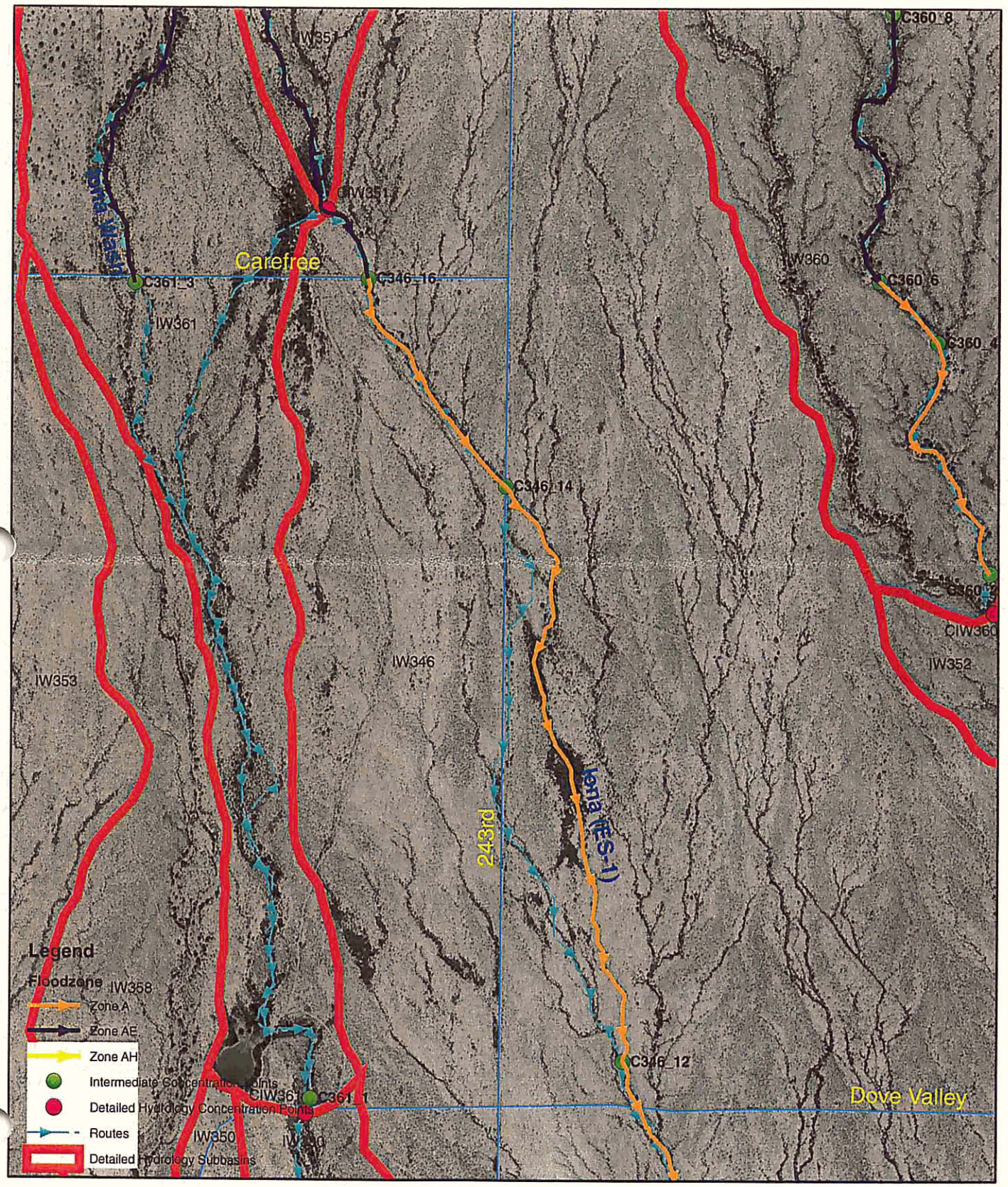
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	CIW350	IONA - 1	15.24	2.17	24-Hour	17.41	1.1368	-3.0244	5647
Intermediate	CIW330_2	IONA - 2	17.4100	1.1700	24-Hour	18.58	1.8461	-5.6853	5850
Intermediate	CIW330	IONA - 3	18.5800	4.6900	24-Hour	23.27	1.2881	-3.5538	6608
Intermediate	CIW322	IONA - 3	23.2700	1.8900	24-Hour	25.16	1.2881	-3.5538	7021
Intermediate	CIW322 (SPLIT)	IONA - 4	25.1600	-15.0960	24-Hour	10.064	1.0779	-2.7145	2810
Intermediate	CIW314_4L	IONA - 4	10.0640	1.3550	24-Hour	11.419	1.0779	-2.7145	3159
Intermediate	C314_1	IONA - 4	11.4190	15.9210	24-Hour	27.34	1.0779	-2.7145	7102

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

IONA ZONE AO



0 500 1,000 2,000 3,000 4,000 Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	7/21/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : IONA Zone-AO

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R3W-S19N.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
IONA AO-A	No Upstream Concentration Point	N/A	N/A	DO351	6-Hour	1.67	600	N/A	N/A
IONA AO-B	No Upstream Concentration Point	N/A	N/A	IW346	6-Hour	3.44	2036	N/A	N/A

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

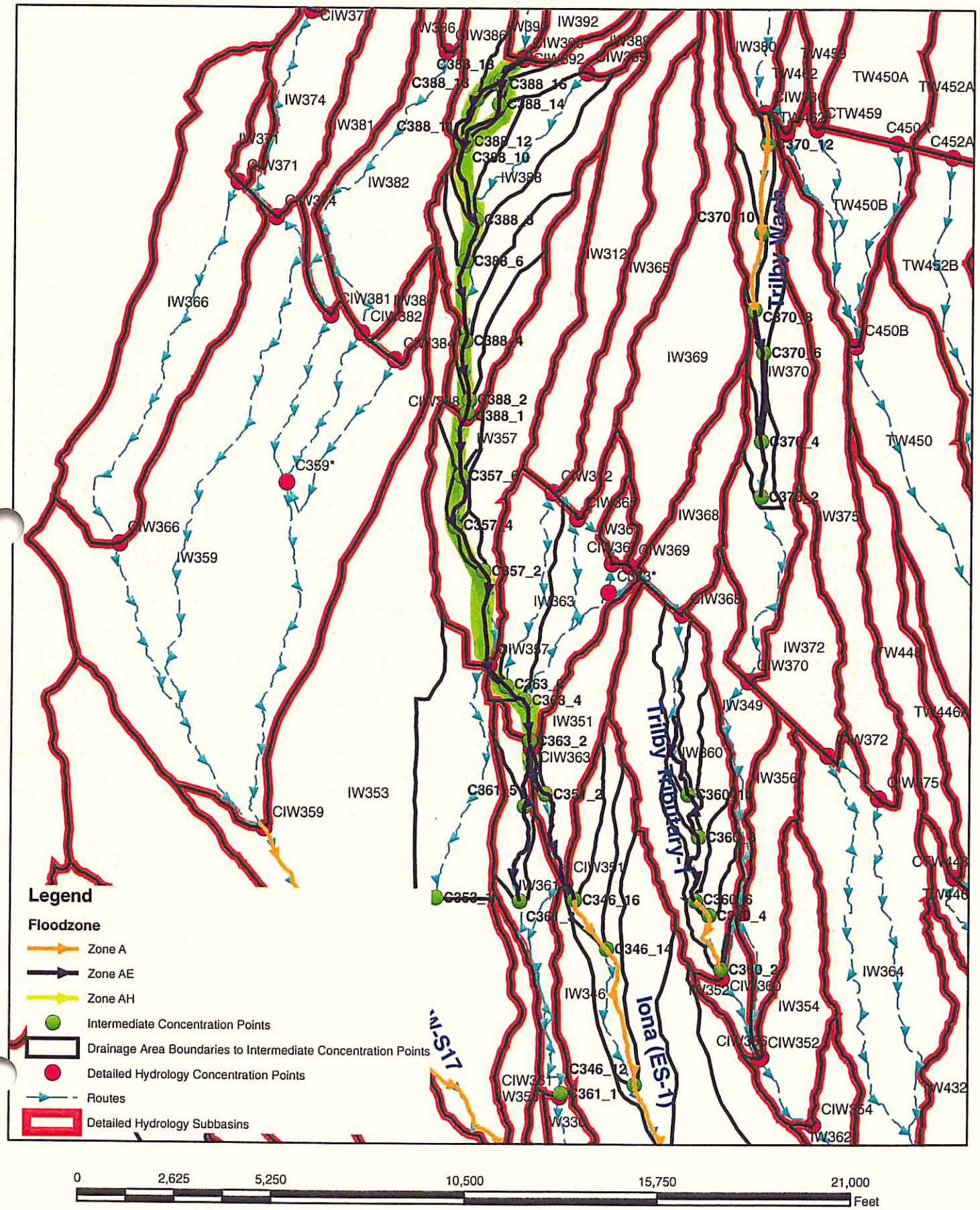
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	DO351	IONA AO-A	0.0000	1.67	6-Hour	1.67	N/A	N/A	600
Intermediate	C346_14	IONA AO-B	0.0000	0.222	6-Hour	0.222	N/A	N/A	131
Intermediate	C346_16	IONA AO-B	0.2220	0.288	6-Hour	0.51	N/A	N/A	302

Check

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi2 to Q=2036cfs, and A=0.222 mi^2, and 0.51 mi^2 (this is IW346).

Iona Wash North of the CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/142005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : IONA WASH (NORTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for IONA WASH, North of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Iona - 1	CIW390	6.5	3093	C388_1	6-Hour	7.72	3460	1.5341	-4.5416
Iona - 2	CIW390	6.5	3093	CIW388	6-Hour	7.85	3532	1.4218	-4.1499
Iona - 3	CIW388	7.85	3532	CIW357	6-Hour	8.6	3583	6.3649	-21.6880
Iona - 4	DO357	2.249	937	C363_2	6-Hour	0.63	1257	-4.3313	13.2233
Iona - 5	DO357	2.249	937	CIW363	6-Hour	4.26	1903	0.9016	-2.3273
Iona - 6	D363	2.91	1300	C361_1	6-Hour	3.32	1379	2.2343	-6.4936
Iona - 7 *	No upstream Concentration Point	N/A	N/A	IW353	6-Hour	2.8	2512	N/A	N/A

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	CIW390	Iona - 1	6.5	0	6-Hour	6.5	1.5341	-4.5416	3093
Intermediate	C388_18	Iona - 1	6.5000	0.0140	6-Hour	6.514	1.5341	-4.5416	3097
Intermediate	C388_16	Iona - 1	6.5140	-1.9542	6-Hour	4.5598	1.5341	-4.5416	2455
Intermediate	C388_14	Iona - 1	4.5598	0.0030	6-Hour	4.5628	1.5341	-4.5416	2456
Intermediate	C388_12	Iona - 1	4.5628	0.1120	6-Hour	4.6748	1.5341	-4.5416	2495
Intermediate	C388_10	Iona - 1	4.6748	2.1952	6-Hour	6.87	1.5341	-4.5416	3207
Intermediate	C388_8	Iona - 1	6.8700	0.0800	6-Hour	6.95	1.5341	-4.5416	3231
Intermediate	C388_6	Iona - 2	6.9500	0.2380	6-Hour	7.188	1.4218	-4.1499	3320
Intermediate	C388_4	Iona - 2	7.1880	0.2830	6-Hour	7.471	1.4218	-4.1499	3411
Intermediate	C388_2	Iona - 2	7.4710	0.1370	6-Hour	7.608	1.4218	-4.1499	3455
Detailed Hydrology	CIW388	Iona - 3	7.6080	0.2420	6-Hour	7.85	6.3649	-21.6880	3532
Intermediate	C357_6	Iona - 3	7.8500	0.0490	6-Hour	7.899	6.3649	-21.6880	3535
Intermediate	C357_4	Iona - 3	7.8990	0.0290	6-Hour	7.928	6.3649	-21.6880	3537
Intermediate	C357_2	Iona - 3	7.9280	0.0270	6-Hour	7.955	6.3649	-21.6880	3539
Detailed Hydrology	CIW357	Iona - 3	7.9550	0.6450	6-Hour	8.6	6.3649	-21.6880	3583
Detailed Hydrology	DO357	Iona - 4	8.6000	-6.3510	6-Hour	2.249	-4.3313	13.2233	937
Intermediate	C363_6	Iona - 4	2.2490	0.0100	6-Hour	2.259	-4.3313	13.2233	936
Intermediate	C363_4	Iona - 5	2.2590	0.2690	6-Hour	2.528	0.9016	-2.3273	1067
Detailed Hydrology	CIW363	Iona - 5	2.5280	1.7320	6-Hour	4.26	0.9016	-2.3273	1903
Detailed Hydrology	D363	Iona - 6	4.2600	-1.3500	6-Hour	2.91	2.2343	-6.4936	1300
Intermediate	C361_5	Iona - 6	2.9100	0.0510	6-Hour	2.961	2.2343	-6.4936	1310
Intermediate	C361_3	Iona - 6	2.9610	0.1010	6-Hour	3.062	2.2343	-6.4936	1330
Intermediate	C353_1	Iona - 7 *	0.0000	0.4840	6-Hour	0.4840	N/A	N/A	434

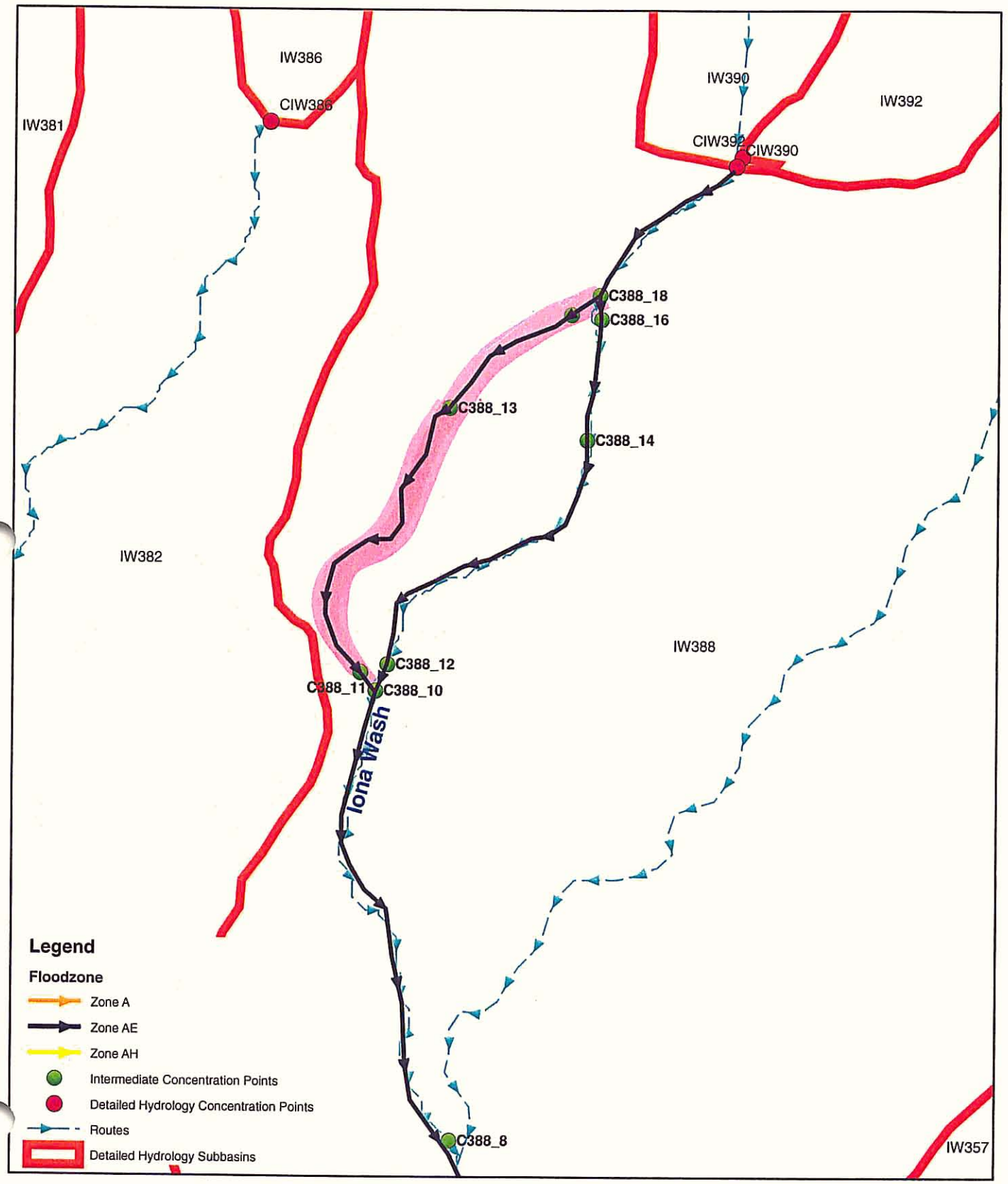
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi2 to Q=2512cfs, and A=2.8 mi2 (this is IW353).

The following percentages were used to hydraulically calculate the split flow at C388_18:

% to Iona (C388_16)	70.00%
% to T6N-R3W-S20 (C388_15)	30.00%

IONA NORTH WEST SPLIT-1



0 375 750 1,500 2,250 3,000 Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/14/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : ~~T6N-R3W-S20~~ IONA NORTH WEST SPLIT-1

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for ~~T6N-R3W-S20~~ IONA NORTH WEST SPLIT-1.

Wash Reach Summary

Reach ID (IONA NORTH WS-1)	Upstream Concentration Pt. ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	Downstream Concentration Pt. ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	log(Area) =C*log(Flow) + B: C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
~~T6N-R3W-S20~~ - 1	CIW390	6.5	3093	C388_1	6-Hour	7.72	3460	1.5341	-4.5416

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	CIW390	~~T6N-R3W-S20~~ - 1	6.5	0	6-Hour	6.5	1.5341	-4.5416	3093
Intermediate	C388_18	~~T6N-R3W-S20~~ - 1	6.5000	0.0140	6-Hour	6.514	1.5341	-4.5416	3097
Intermediate	C388_15	~~T6N-R3W-S20~~ - 1	6.5140	-4.5598	6-Hour	1.9542	1.5341	-4.5416	1413
Intermediate	C388_13	~~T6N-R3W-S20~~ - 1	1.9542	0.0260	6-Hour	1.9802	1.5341	-4.5416	1425
Intermediate	C388_11	~~T6N-R3W-S20~~ - 1	1.9802	0.2150	6-Hour	2.1952	1.5341	-4.5416	1524

IONA NORTH WS-1

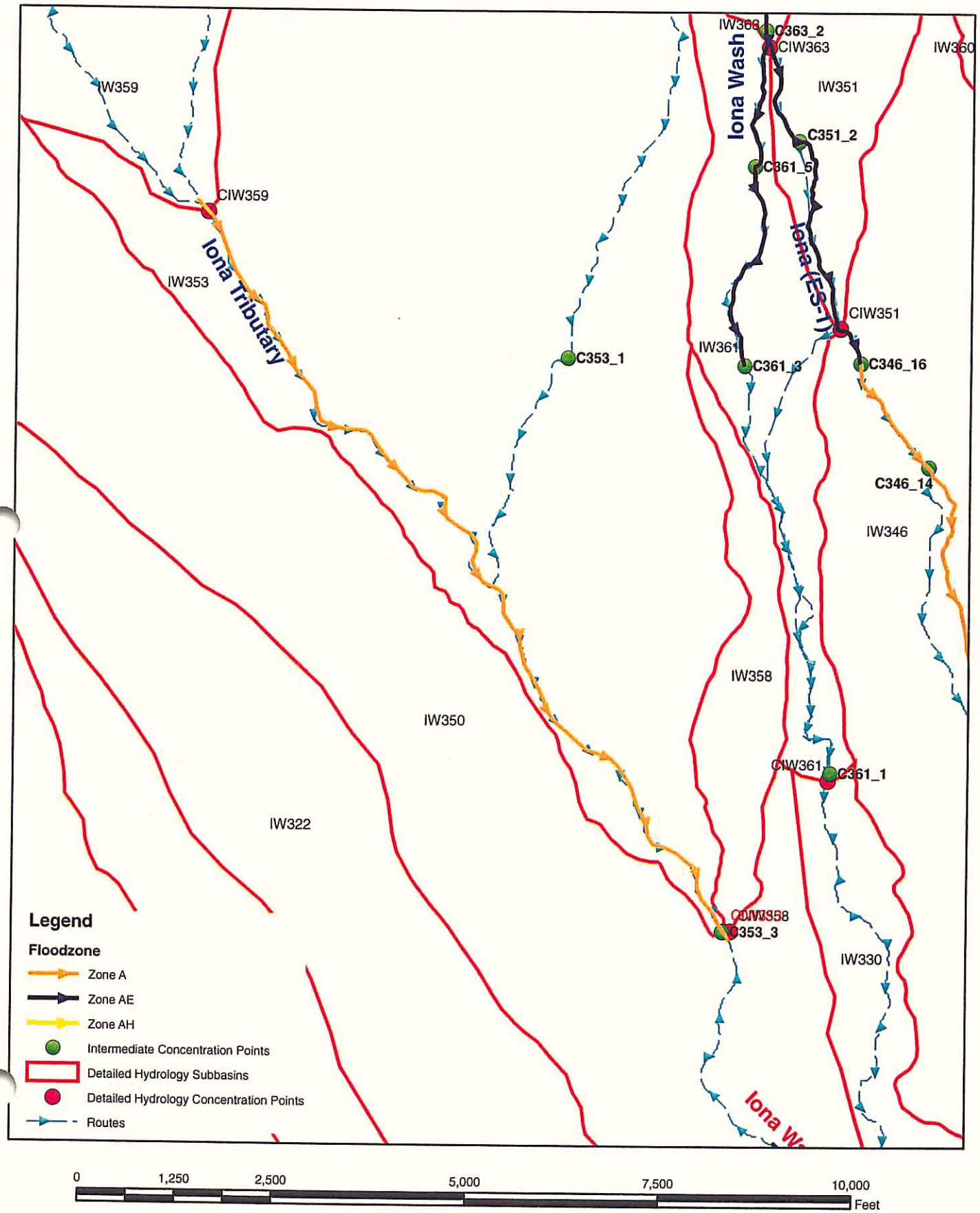
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

The following percentages were used to hydraulically calculate the split flow at C388_18:

% to Iona (C388_16)	70.00%
% to ~~T6N-R3W-S20~~ (C388_15)	30.00%

IONA NORTH WEST SPLIT-1

IONA TRIBUTARY



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : IONA TRIBUTARY

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R3W-S19N.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
IONA TRIB	CIW359	5.97	3105	C353_3	24-Hour	8.77	4453	1.0666	-2.9488

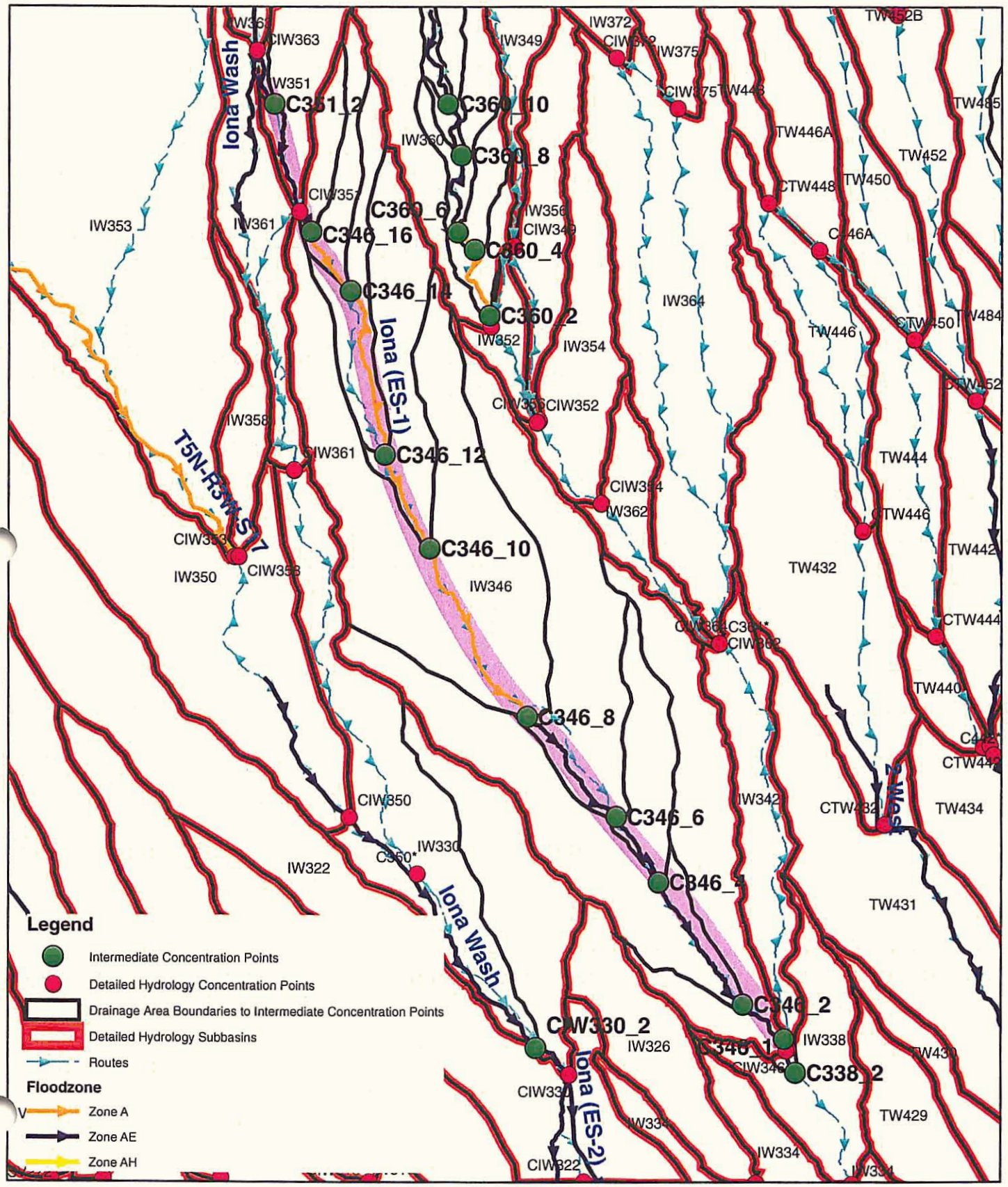
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	C353_3	IONA TRIB	0.0000	8.77	24-Hour	8.77	1.0666	-2.9488	4453

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

Iona ES-1


Iona Wash
Iona (ES-1)
Iona Wash
Iona (ES-2)
T5N-R3W-S17
C351_2
C360_10
C360_8
C360_6
C360_4
C360_2
C346_16
C346_14
C346_12
C346_10
C346_8
C346_6
C346_4
C346_2
C346_1
C338_2
CIW330_2
IW363
IW351
IW349
IW372
IW375
TW452B
TW448
TW485
TW446A
TW452
TW450
CTW448
IW360
IW353
IW361
IW356
IW364
TW446
CTW450
TW484
IW352
IW354
CTW452
IW358
CIW352
TW444
CIW361
CIW354
IW362
CTW446
CIW353
IW350
TW442
TW432
IW346
CTW444
TW440
CTW442
CIW350
IW342
TW434
IW330
IW322
TW431
IW326
IW338
TW430
TW429
IW334
CIW322
Legend
Intermediate Concentration Points
Detailed Hydrology Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Subbasins
Routes
Floodzone
Zone A
Zone AE
Zone AH
0
2,250
4,500
9,000
13,500
18,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/11/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : IONA ES-1

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for IONA ES-1.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Iona ES-1 - 1	DO363	1.35	603	CIW351	6-Hour	1.67	697	1.4684	-3.9522
Iona ES-1 - 2	D351	0.232	97	C346_1	6-Hour	3.68	2016	0.9109	-2.4443
Iona ES-1 - 3	CIW346	20.98	5297	CIW338	6-Hour	21.32	5248	-1.7298	7.7636

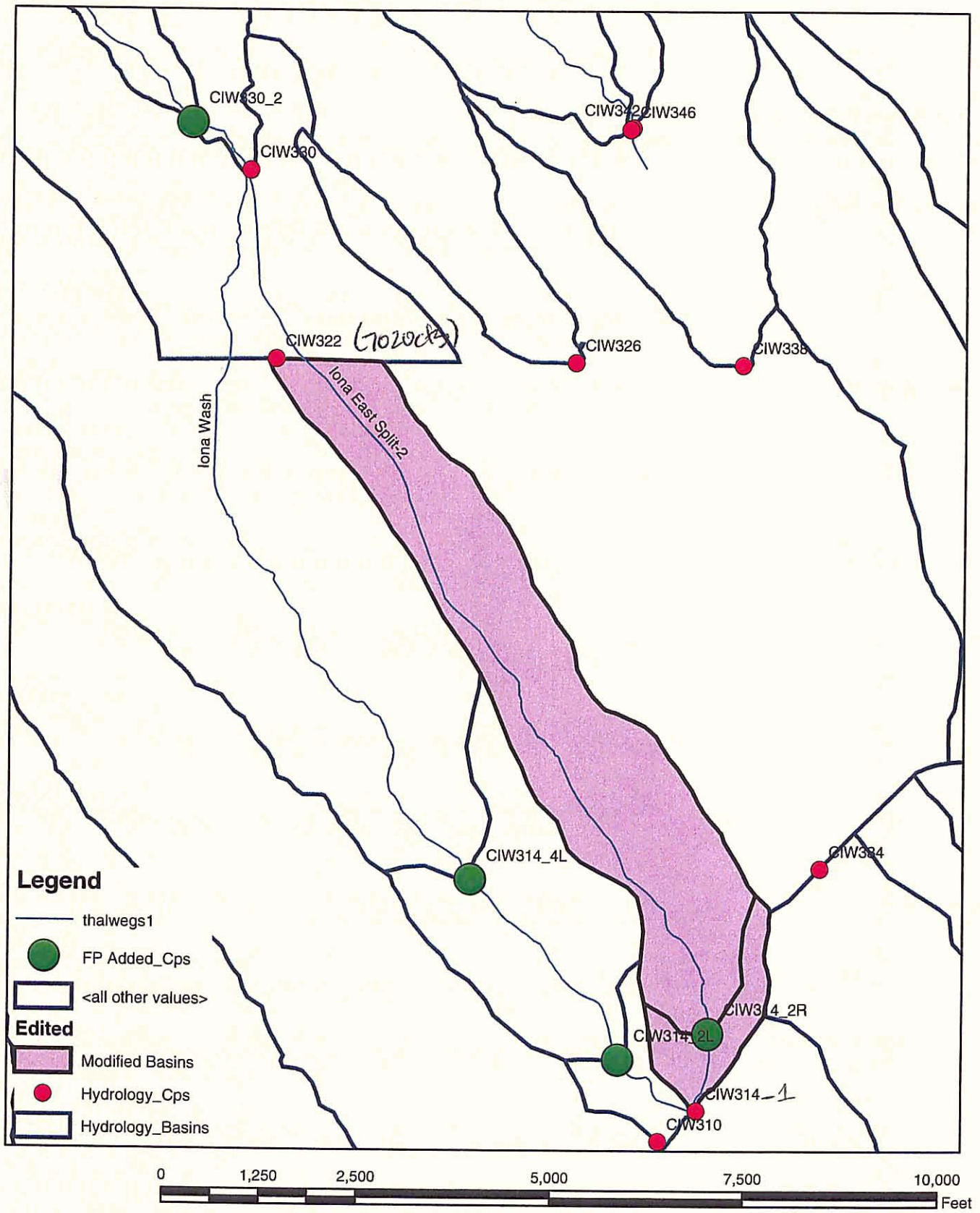
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

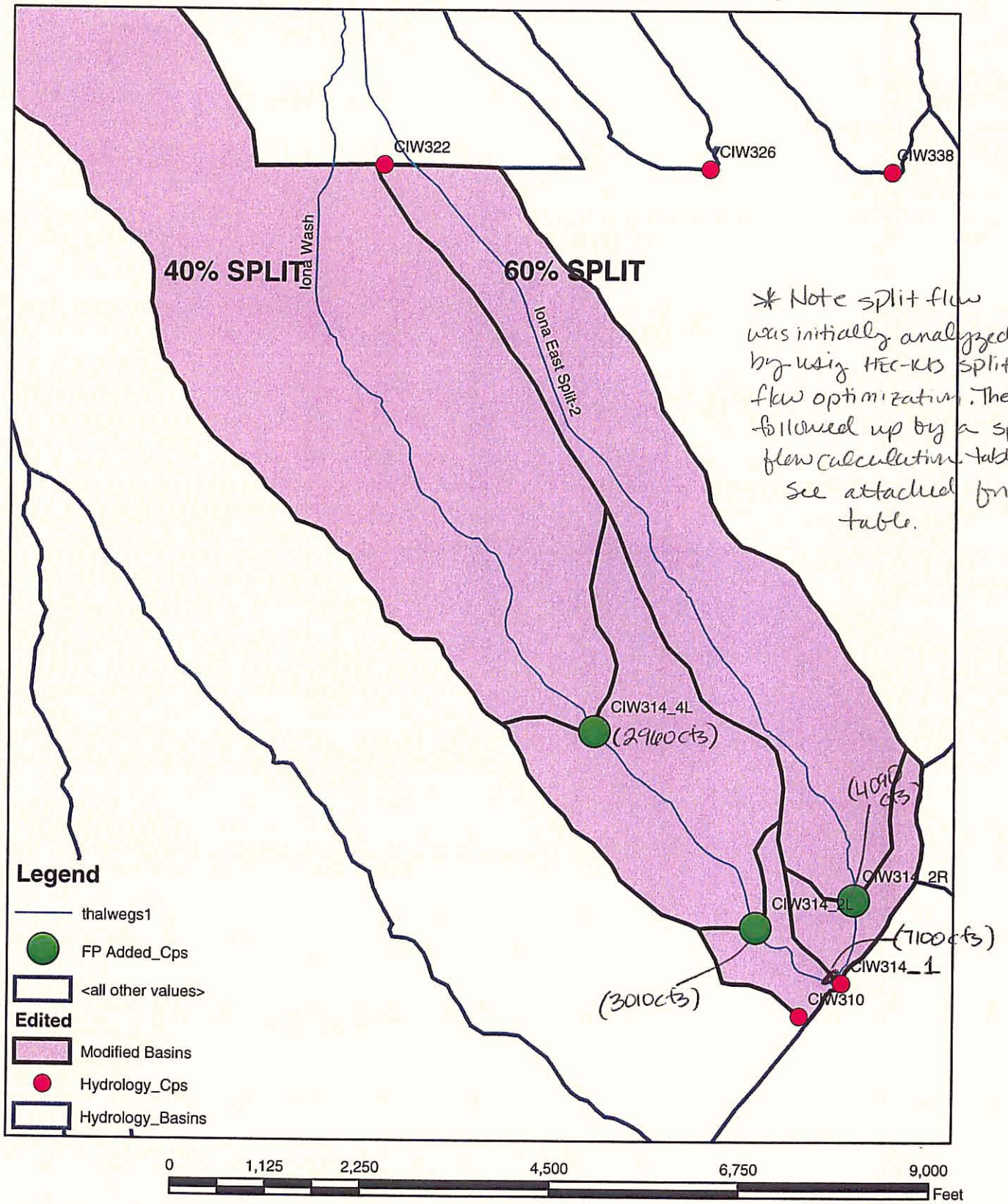
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	DO363	Iona ES-1 - 1	1.3500	0	6-Hour	1.35	1.4684	-3.9522	603
Intermediate	C351_2	Iona ES-1 - 1	1.3500	0.0120	6-Hour	1.362	1.4684	-3.9522	607
Detailed Hydrology	CIW351	Iona ES-1 - 1	1.3620	0.3080	6-Hour	1.67	1.4684	-3.9522	697
Detailed Hydrology	D351	Iona ES-1 - 2	1.6700	-1.4380	6-Hour	0.232	0.9109	-2.4443	97
Intermediate	C346_16	Iona ES-1 - 2	0.2320	0.0790	6-Hour	0.311	0.9109	-2.4443	134
Intermediate	C346_14	Iona ES-1 - 2	0.3110	0.1180	6-Hour	0.429	0.9109	-2.4443	190
Intermediate	C346_12	Iona ES-1 - 2	0.4290	0.1920	6-Hour	0.621	0.9109	-2.4443	286
Intermediate	C346_10	Iona ES-1 - 2	0.6210	0.3040	6-Hour	0.925	0.9109	-2.4443	443
Intermediate	C346_8	Iona ES-1 - 2	0.9250	1.0110	6-Hour	1.936	0.9109	-2.4443	996
Intermediate	C346_6	Iona ES-1 - 2	1.9360	0.5320	6-Hour	2.468	0.9109	-2.4443	1300
Intermediate	C346_4	Iona ES-1 - 2	2.4680	0.1860	6-Hour	2.654	0.9109	-2.4443	1408
Intermediate	C346_2	Iona ES-1 - 2	2.6540	0.5380	6-Hour	3.192	0.9109	-2.4443	1725
Detailed Hydrology	C346_1	Iona ES-1 - 2	3.1920	0.4880	6-Hour	3.68	0.9109	-2.4443	2016
Detailed Hydrology	CIW346	Iona ES-1 - 3	3.6800	17.3000	6-Hour	20.98	-1.7298	7.7636	5297
Intermediate	C338_2	Iona ES-1 - 3	20.9800	0.0080	6-Hour	20.988	-1.7298	7.7636	5296

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

IONA EAST SPLIT-2



IONA WASH (SPLIT LOCATION)



Entellus

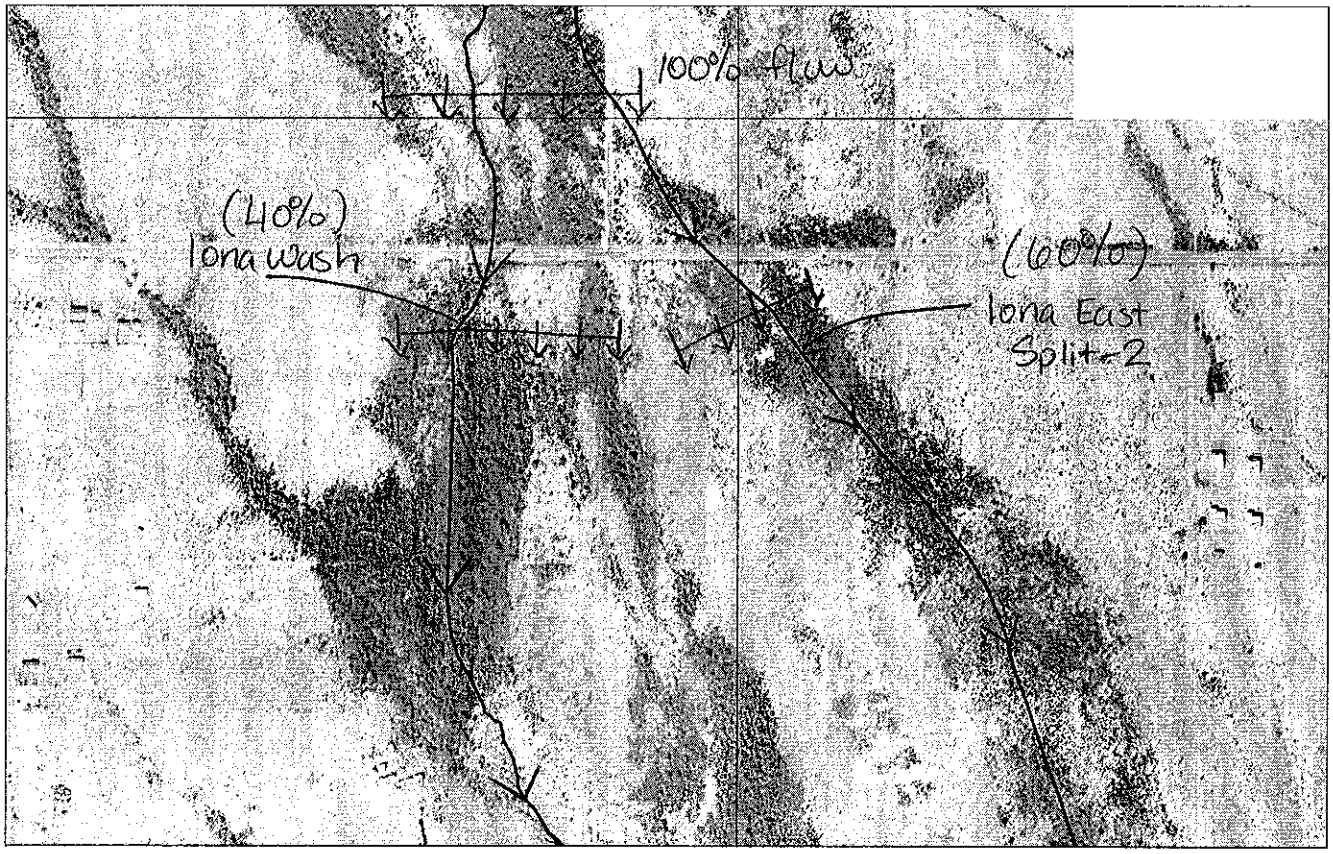
SHEET		OF	
BY	AMG	DATE	01/24/05
CHECK		DATE	

Client Flood Control District of Maricopa County (FCDMC)
Job Wittmann ADMSU

JOB NO. 310.032

Split Flow Calculations

Split Point Location: Iona Wash
Split Point ID: Approximately ~2500 feet south of CIW330
Split Description Main flow- Iona Wash
split flow Towards Iona Wash Split (southeasterly)



Diversion path 1
Description Iona Wash
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = 0.0050 ft/ft

Diversion Path 2
Description Towards Iona Wash Split (southeasterly)
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = 0.0060 ft/ft

Diversion Path 3
Description 0
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = ft/ft

Split Flow Table

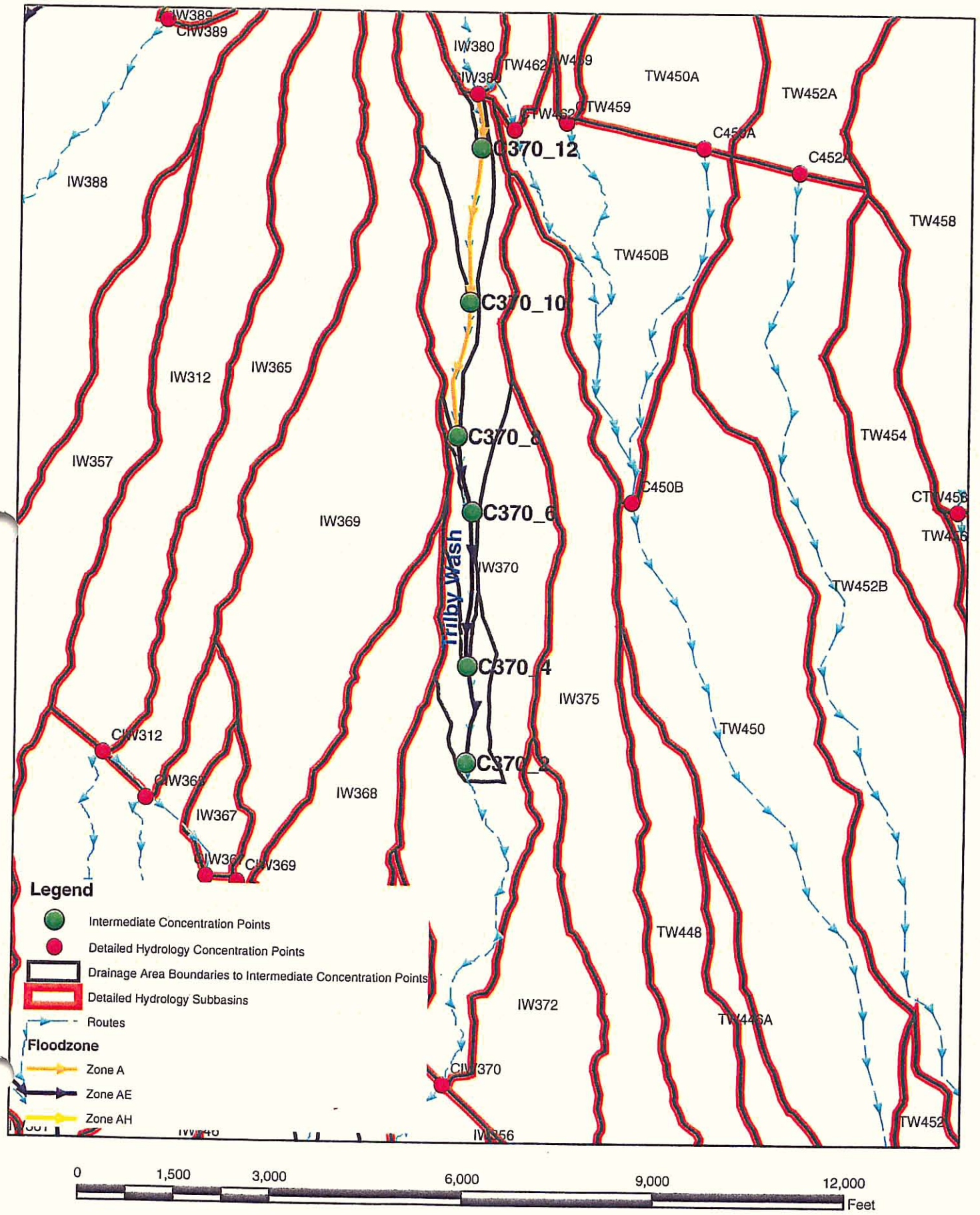
Split Point Location: Iona Wash
Split Point ID: Approximately ~2500 feet south of CIW330
Split Description

Main flow-	Iona Wash
split flow	Towards Iona Wash Split (southeasterly)

		S =	0.005			S=	0.006		
Inflow	Approx. Depth	**Main flowpath**				**Diverted flowpath 1**			
		width	n value	Flow	Fow %	width	n value	Flow	Fow %
0	0.0	1000	0.063	0.0		750	0.034	0.0	
682	0.7	1000	0.063	270.3	40%	750	0.034	411.5	60%
1364	1.0	1000	0.063	540.6	40%	750	0.034	823.0	60%
2045	1.3	1000	0.063	810.9	40%	750	0.034	1234.5	60%
2727	1.5	1000	0.063	1081.2	40%	750	0.034	1646.0	60%
3409	1.8	1000	0.063	1351.6	40%	750	0.034	2057.5	60%
4091	2.0	1000	0.063	1621.9	40%	750	0.034	2469.0	60%
4773	2.2	1000	0.063	1892.2	40%	750	0.034	2880.6	60%
5455	2.3	1000	0.063	2162.5	40%	750	0.034	3292.1	60%
6136	2.5	1000	0.063	2432.8	40%	750	0.034	3703.6	60%
6818	2.7	1000	0.063	2703.1	40%	750	0.034	4115.1	60%
7500	2.8	1000	0.063	2973.4	40%	750	0.034	4526.6	60%

Flow from upstream	7500	
Flow remaining after div.	**2973**	40%
Flow diverted at south div.	4527	
Total Div. flow	**4527**	60%

Trilby Wash


IW389
CIW389
IW380
TW462
TW459
TW450A
TW452A
CTW459
C370_12
C452A
IW388
TW458
TW450B
C370_10
IW312
IW365
C370_8
TW454
IW357
C450B
C370_6
IW369
Trilby Wash
IW370
TW452B
C370_4
IW375
TW450
CIW312
C370_2
IW368
IW367
CIW369
Legend
Intermediate Concentration Points
Detailed Hydrology Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Subbasins
Routes
Floodzone
Zone A
Zone AE
Zone AH
TW448
IW372
CIW370
IW356
0
1,500
3,000
6,000
9,000
12,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/10/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : Trilby Wash

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Trilby Wash.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Trilby Wash - 1	D380	11.137	5893	CIW370	6-Hour	12.02	5750	-3.1060	12.7573

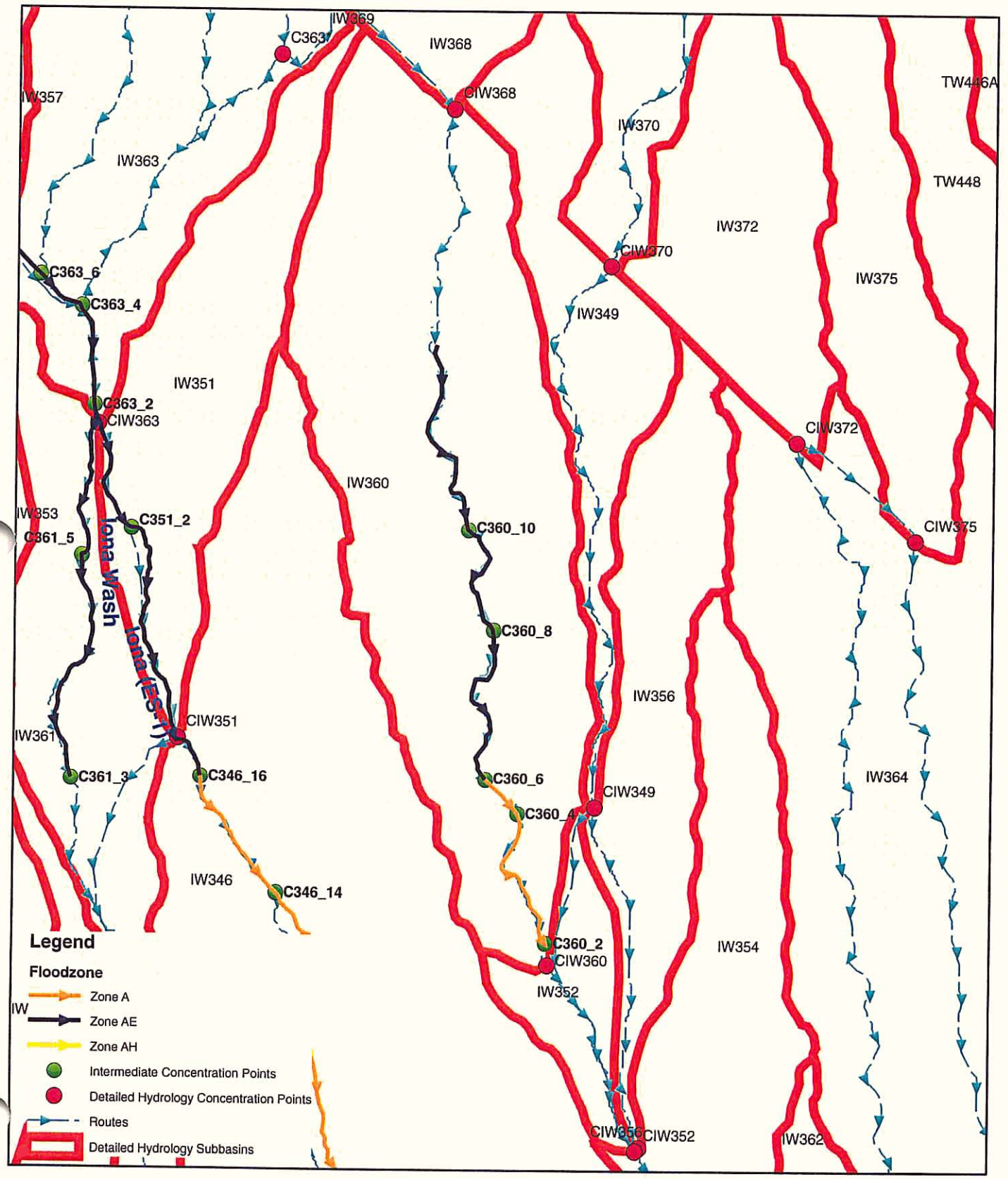
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	D380	Trilby Wash - 1	11.137	0	6-Hour	11.137	-3.1060	12.7573	5893
Intermediate	C370_12	Trilby Wash - 1	11.1370	0.0060	6-Hour	11.143	-3.1060	12.7573	5892
Intermediate	C370_10	Trilby Wash - 1	11.1430	0.1530	6-Hour	11.296	-3.1060	12.7573	5866
Intermediate	C370_8	Trilby Wash - 1	11.2960	0.0750	6-Hour	11.371	-3.1060	12.7573	5854
Intermediate	C370_6	Trilby Wash - 1	11.3710	0.0990	6-Hour	11.47	-3.1060	12.7573	5837
Intermediate	C370_4	Trilby Wash - 1	11.4700	0.0350	6-Hour	11.505	-3.1060	12.7573	5832
Intermediate	C370_2	Trilby Wash - 1	11.5050	0.0700	6-Hour	11.575	-3.1060	12.7573	5820

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was

CIRCLE CITY AREA WASH-1



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/10/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : ~~Trilby Tributary-1~~ Circle City Area Wash-1

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for ~~Trilby Tributary-1~~ CC Area Wash 1.

Wash Reach Summary

CC Area Wash 1	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
~~Trilby Tributary~~-1 - 1	CIW368	0.79	479	CIW360	6-Hour	1.62	771	1.5088	-4.1463

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

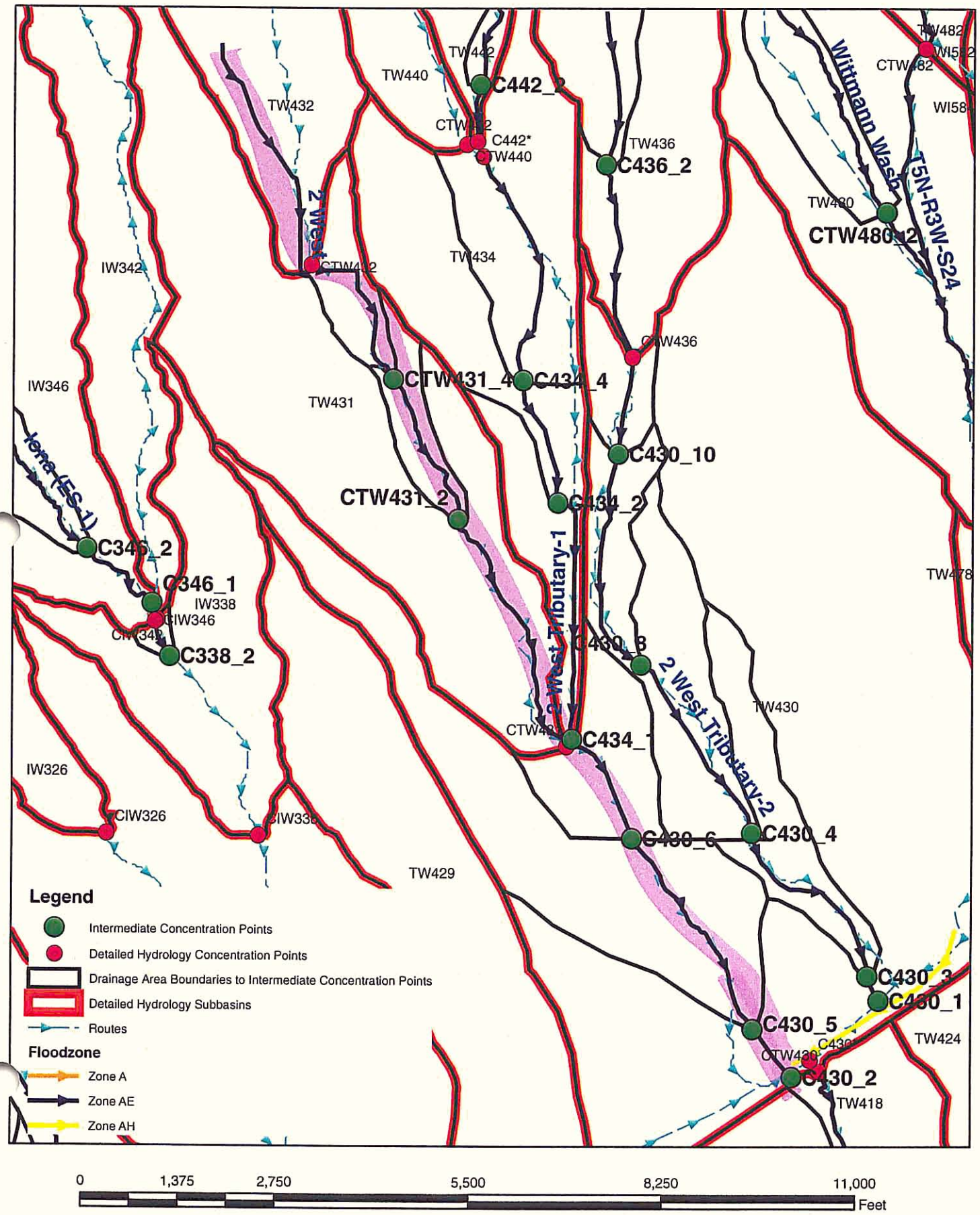
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C360_10	Trilby Tributary-1 - 1	0.7900	0.094	6-Hour	0.884	1.5088	-4.1463	516
Intermediate	C360_8	Trilby Tributary-1 - 1	0.8840	0.1080	6-Hour	0.992	1.5088	-4.1463	557
Intermediate	C360_6	Trilby Tributary-1 - 1	0.9920	0.1420	6-Hour	1.134	1.5088	-4.1463	609
Intermediate	C360_4	Trilby Tributary-1 - 1	1.1340	0.0690	6-Hour	1.203	1.5088	-4.1463	633
Intermediate	C360_2	Trilby Tributary-1 - 1	1.2030	0.0680	6-Hour	1.271	1.5088	-4.1463	656

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was

ccarea wash-1

2 West North of the CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/11/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : Wash 2 West (North of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 West (North of CAP).

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 West - 1	CTW446	1.01	634	CTW432	6-Hour	1.87	976	1.4278	-3.9966
Wash 2 West - 2	CTW432	1.87	976	CTW431	6-Hour	2.75	1408	1.0524	-2.8742
Wash 2 West - 3	CTW434	15.61	4103	C430_2	6-Hour	18.1	3981	-4.9030	18.9086

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	CTW432	Wash 2 West - 1	1.8700	0	6-Hour	1.87	1.4278	-3.9966	976
Intermediate	C431_4	Wash 2 West - 3	1.8700	0.0660	6-Hour	1.936	-4.9030	18.9086	6280
Intermediate	C431_2	Wash 2 West - 2	1.9360	0.0550	6-Hour	1.991	1.0524	-2.8742	1036
Detailed Hydrology	CTW431	Wash 2 West - 2	1.9910	0.7590	6-Hour	2.75	1.0524	-2.8742	1408
Detailed Hydrology	CTW434	Wash 2 West - 3	2.7500	12.8600	6-Hour	15.61	-4.9030	18.9086	4103
Intermediate	C430_6	Wash 2 West - 3	15.6100	0.1230	6-Hour	15.733	-4.9030	18.9086	4096
Intermediate	C430_4	Wash 2 West - 3	15.7330	0.4050	6-Hour	16.138	-4.9030	18.9086	4075
Detailed Hydrology	C430_2	Wash 2 West - 3	16.1380	1.9620	6-Hour	18.1	-4.9030	18.9086	3981

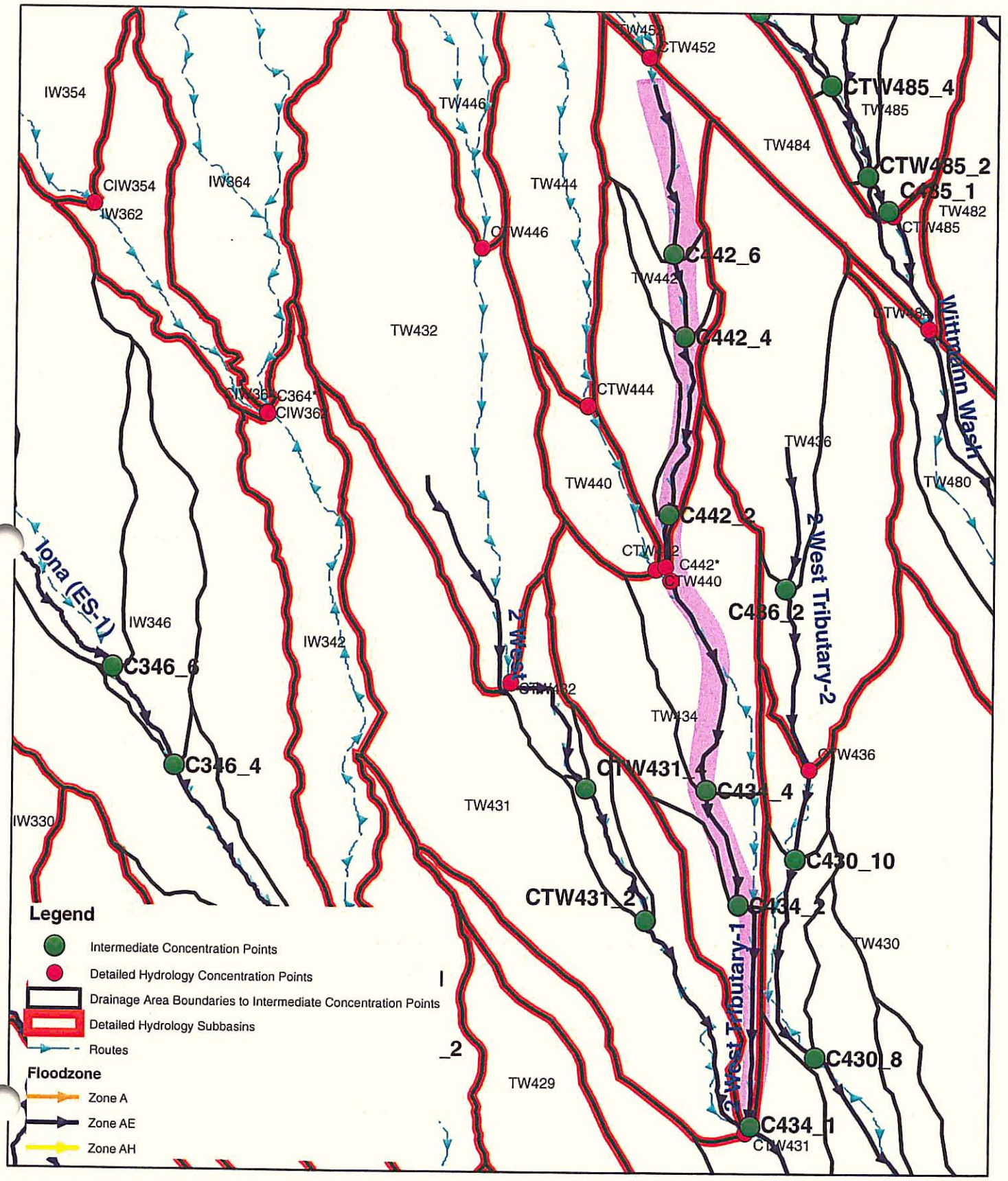
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

Downstream Ponding Stage Calc:

	Area [sq miles]	Stage [ft]
	16	1551.84
	90	1550.51
Interpolated Value	20.18	1551.76

Note: The above Downstream Ponding Stage Calc was performed based on the controlling storm (6-hour) for the HEC-1 stage-storage relarionship ***SCP040***.

2 West Tributary-1



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/11/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : Wash 2 West Tributary-1 (North of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 West Tributary-1 (North of CAP).

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 West Trib-1 - 1	CTW452	4.52	1841	CTW442	6-Hour	4.9	1793	-3.0555	10.6316
Wash 2 West Trib-1 - 2	C442*	12.29	4121	C434_1	6-Hour	12.86	3928	-0.9452	4.5064

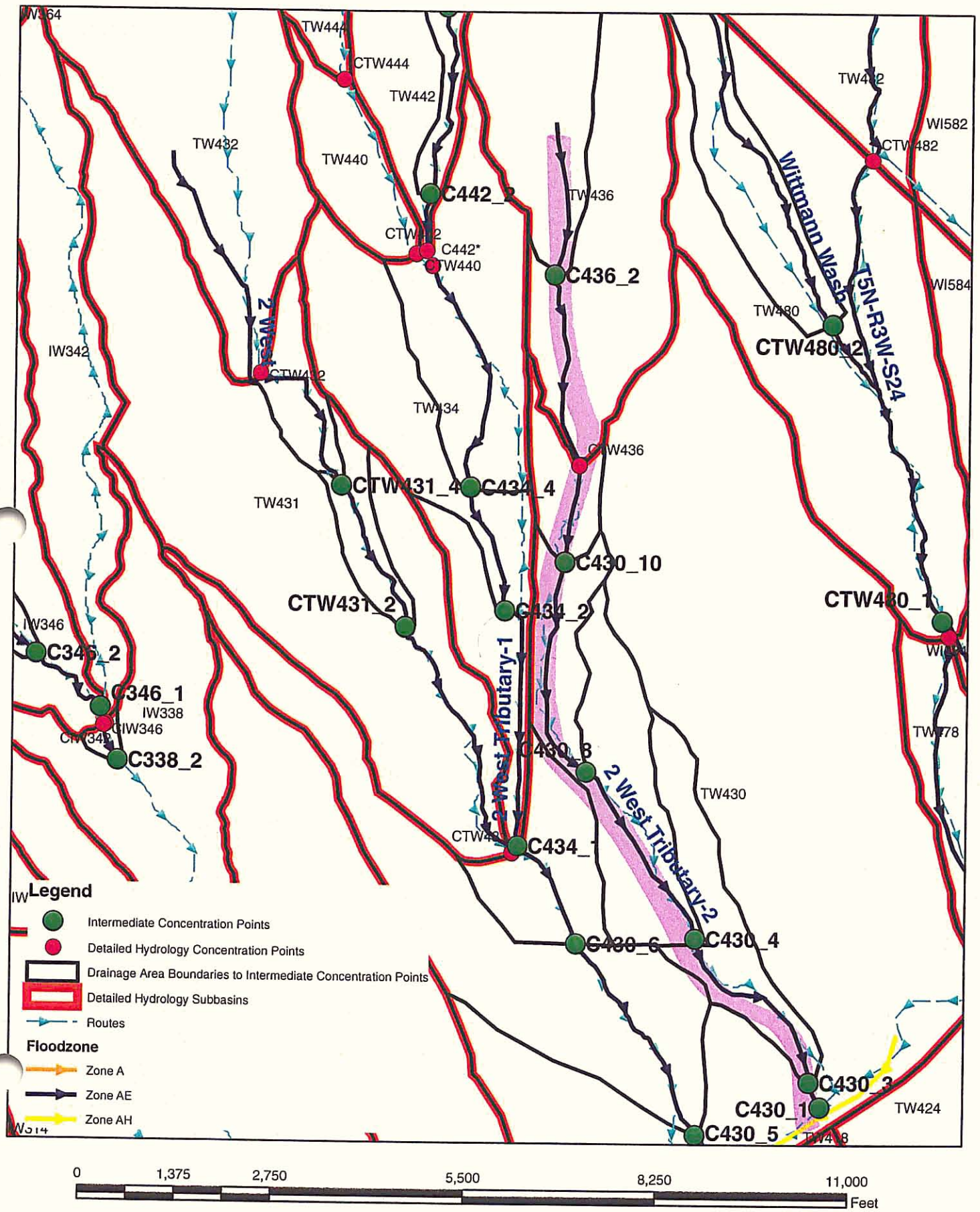
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	CTW452	Wash 2 West Trib-1 - 1	4.5200	0	6-Hour	4.52	-3.0555	10.6316	1841
Intermediate	C442_6	Wash 2 West Trib-1 - 1	4.5200	0.1390	6-Hour	4.659	-3.0555	10.6316	1823
Intermediate	C442_4	Wash 2 West Trib-1 - 1	4.6590	0.0520	6-Hour	4.711	-3.0555	10.6316	1816
Intermediate	C442_2	Wash 2 West Trib-1 - 1	4.7110	0.0460	6-Hour	4.757	-3.0555	10.6316	1810
Detailed Hydrology	CTW442	Wash 2 West Trib-1 - 1	4.7570	0.1430	6-Hour	4.9	-3.0555	10.6316	1793
Detailed Hydrology	C442*	Wash 2 West Trib-1 - 2	4.9000	7.3900	6-Hour	12.29	-0.9452	4.5064	4121
Intermediate	C434_4	Wash 2 West Trib-1 - 2	12.2900	0.2490	6-Hour	12.539	-0.9452	4.5064	4034
Intermediate	C434_2	Wash 2 West Trib-1 - 2	12.5390	0.2200	6-Hour	12.759	-0.9452	4.5064	3961
Detailed Hydrology	C434_1	Wash 2 West Trib-1 - 2	12.7590	0.1010	6-Hour	12.86	-0.9452	4.5064	3928

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was

2 West Tributary-2



Entellus

CLIENT: FCDMC	SHEET 1	OF	
	BY RAS	DATE	3/11/2005
	CHECK	DATE	
JOB: Wittmann Area Drainage Master Study Update	JOB NO. 310.032		

Table D.3: Flow Calculations : Wash 2 West Tributary-2 (North of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 West Tributary-2 (North of CAP).

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 West Trib-2 - 1 *	No Upstream Concentration Point	N/A	N/A	TW436	6-Hour	0.67	1001	N/A	N/A
Wash 2 West Trib-2 - 2	TW436	0.67	1001	C430_1	6-Hour	3.17	2867	1.4770	-4.6056

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

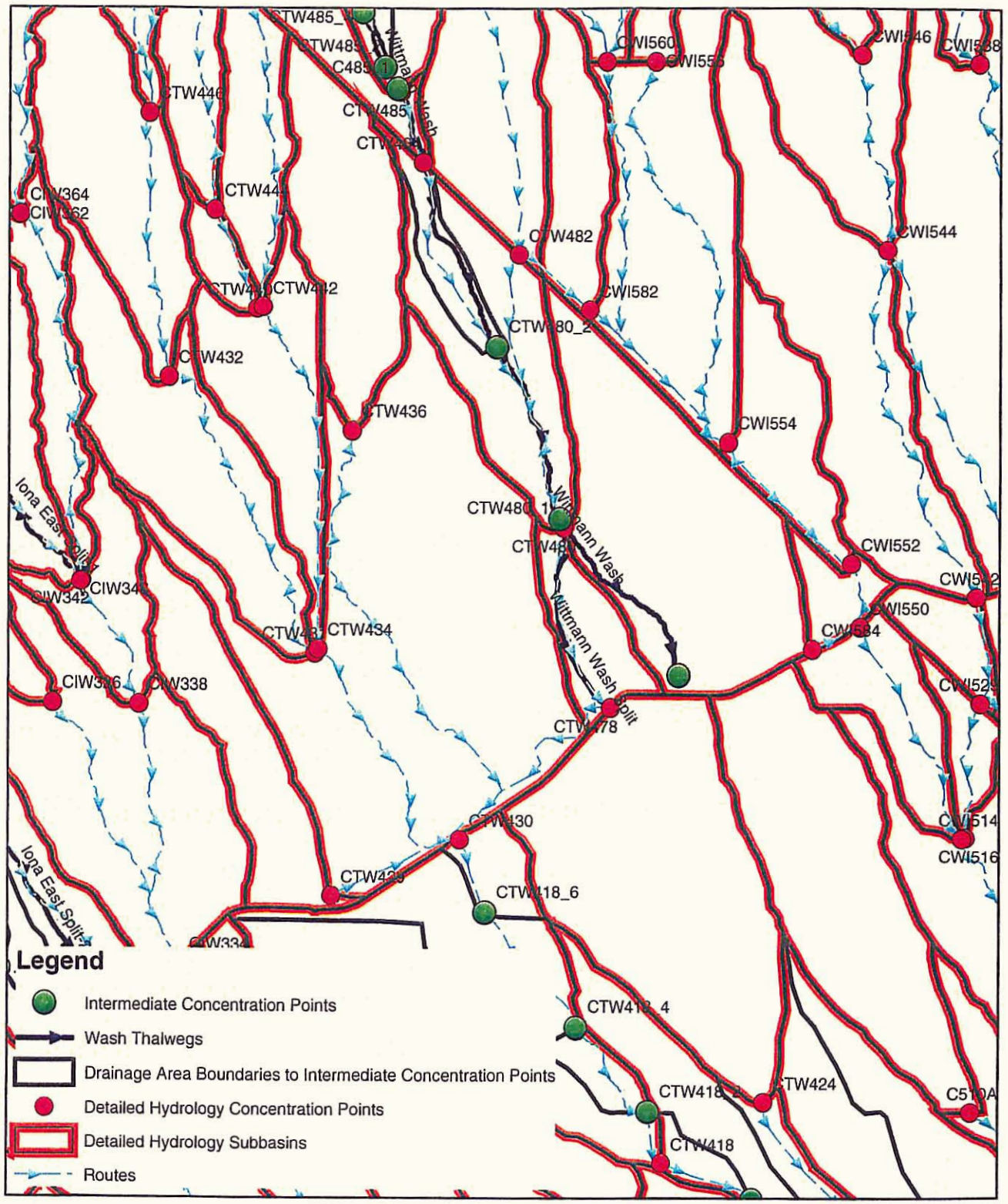
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C436_2	Wash 2 West Trib-2 - 1 *	0.0000	0.352	6-Hour	0.352	N/A	N/A	526
Detailed Hydrology	TW436	Wash 2 West Trib-2 - 2	0.3520	0.3180	6-Hour	0.67	1.4770	-4.6056	1001
Intermediate	C430_10	Wash 2 West Trib-2 - 2	0.6700	0.0610	6-Hour	0.731	1.4770	-4.6056	1062
Intermediate	C430_8	Wash 2 West Trib-2 - 2	0.7310	0.0880	6-Hour	0.819	1.4770	-4.6056	1147
Intermediate	C430_4	Wash 2 West Trib-2 - 2	0.8190	0.1690	6-Hour	0.988	1.4770	-4.6056	1302
Intermediate	C430_3	Wash 2 West Trib-2 - 2	0.9880	0.1270	6-Hour	1.115	1.4770	-4.6056	1413
Detailed Hydrology	C430_1	Wash 2 West Trib-2 - 2	1.1150	2.0550	6-Hour	3.17	1.4770	-4.6056	2867

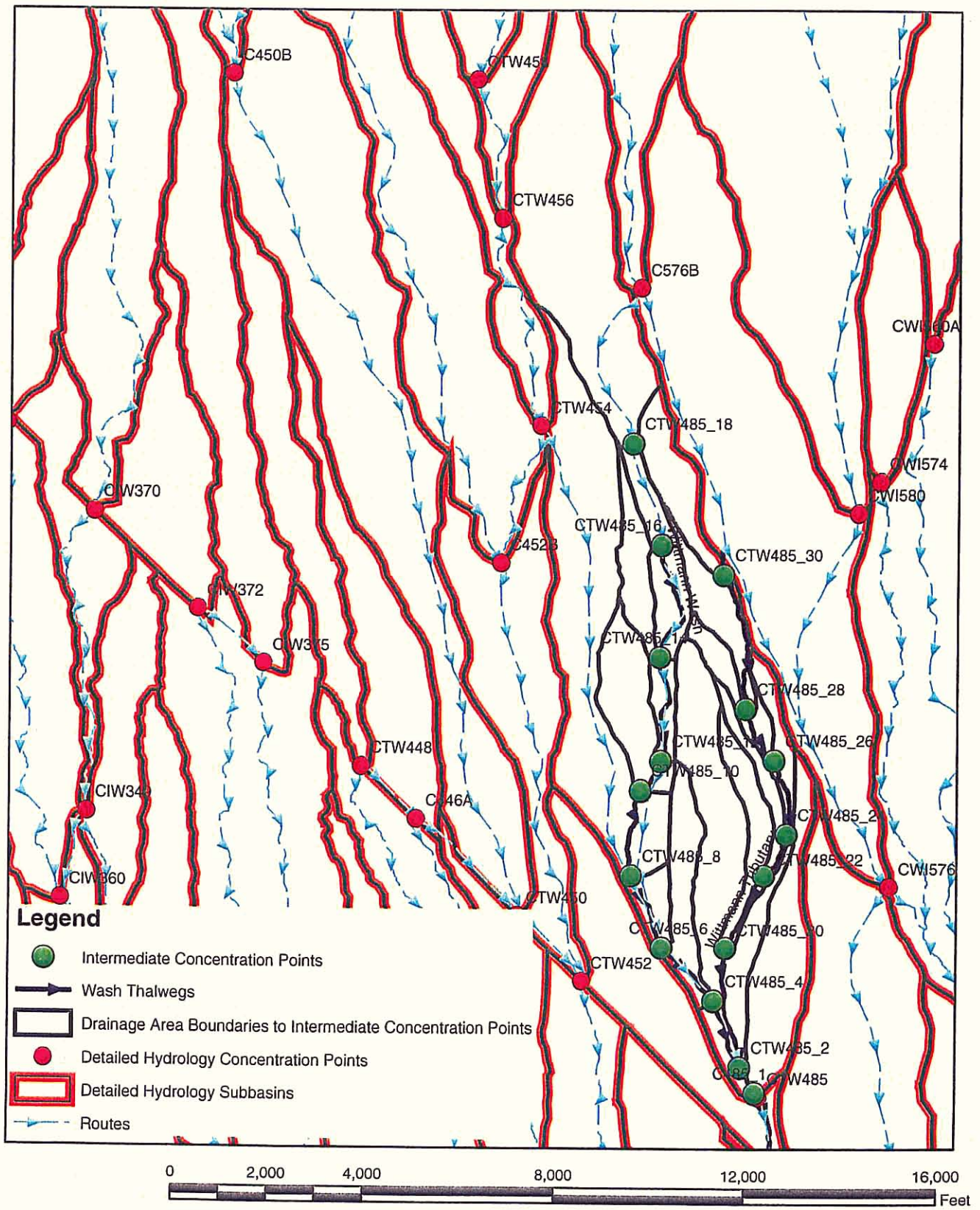
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was

* Because there is no upstrem concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi^2 to Q=1001cfs, and A=0.67 mi^2 (this is TW436).

WITTMANN WASH SOUTH OF US60, NORTH OF CAP



WITTMANN WASH NORTH OF US60



CLIENT: FCDMC	SHEET	1 OF	
	BY	JCS DATE	2/2/2005
	CHECK	RAS DATE	2-2-05
JOB: Wittmann Area Drainage Master Study Update	JOB NO.	310.032	

Table D.3: Flow Calculations : WASH WITTMANN (North of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wittmann Wash, north of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wittmann North - 1a	D576B	1.014	552	CTW485	6-Hour	5.64	2200	1.2411	-3.3969
Wittmann North - 1b*	D576B	1.014	552	C485_1	6-Hour	3.39	1746	1.0481	-2.8678
Wittmann North - 2	CTW485	5.64	2200	CTW484	6-Hour	5.99	2286	1.5701	-4.4967
Wittmann North - 3	CTW484	5.99	2286	C480_1	6-Hour	6.74	2276	-26.9086	91.1654
Wittmann North - 4	CTW484	5.99	2286	CTW480	6-Hour	11.78	3071	2.2910	-6.9183
Wittmann North - Split	D480	0.589	154	CTW478	6-Hour	0.85	422	0.3639	-1.0259
Wittmann North - 5	DO480	11.191	2918	CWI584	6-Hour	12.45	2798	-2.5387	9.8458

* Does not include RD454

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

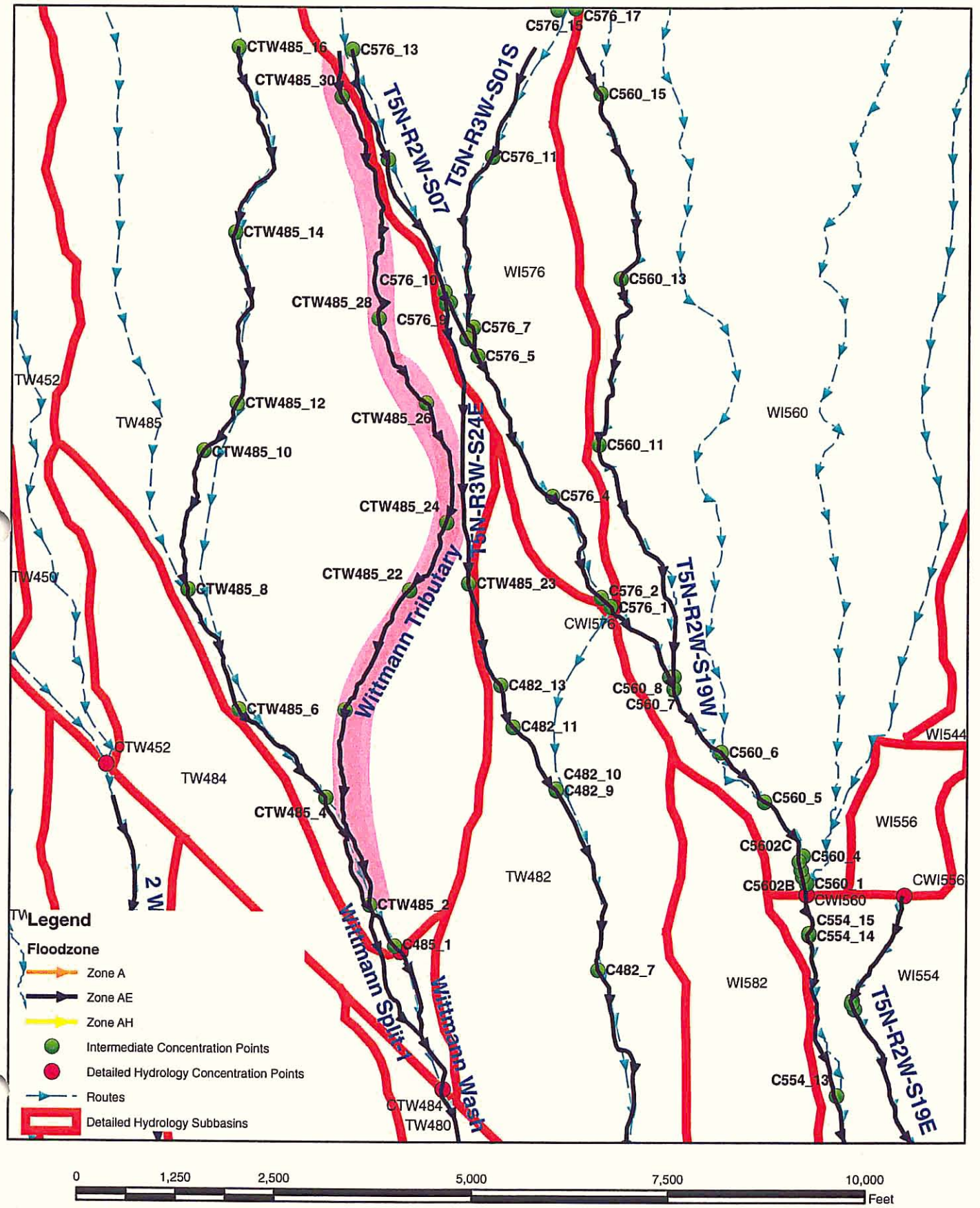
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	CTW485_18 (Pre Split)	Wittmann North - 1b*	1.014	0.537	6-Hour	1.551	1.0481	-2.8678	828
Intermediate	CTW485_18(Post Split)**	Wittmann North - 1b*	1.5510	-0.4653	6-Hour	1.0857	1.0481	-2.8678	589
Intermediate	CTW485_16	Wittmann North - 1b*	1.0857	0.0360	6-Hour	1.1217	1.0481	-2.8678	608
Intermediate	CTW485_14	Wittmann North - 1b*	1.1217	0.0560	6-Hour	1.1777	1.0481	-2.8678	637
Intermediate	CTW485_12	Wittmann North - 1b*	1.1777	0.1010	6-Hour	1.2787	1.0481	-2.8678	689
Intermediate	CTW485_10	Wittmann North - 1b*	1.2787	0.1170	6-Hour	1.3957	1.0481	-2.8678	749
Intermediate	CTW485_8 (Pre Confluence)	Wittmann North - 1b*	1.3957	0.4890	6-Hour	1.8847	1.0481	-2.8678	997
Intermediate	CTW485_8 (Post Confluence)	Wittmann North - 1a	1.8847	2.2530	6-Hour	4.1377	1.2411	-3.3969	1714
Intermediate	CTW485_6	Wittmann North - 1a	4.1377	0.0390	6-Hour	4.1767	1.2411	-3.3969	1727
Intermediate	CTW485_4 (Pre Confluence)	Wittmann North - 1a	4.1767	0.0960	6-Hour	4.2727	1.2411	-3.3969	1759
Intermediate	CTW485_4 (Post Confluence)	Wittmann North - 1a	4.2727	0.8443	6-Hour	5.1170	1.2411	-3.3969	2034
Intermediate	CTW485_2	Wittmann North - 1a	5.1170	0.2960	6-Hour	5.4130	1.2411	-3.3969	2128
Detailed Hydrology	CTW485	Wittmann North - 1a	5.4130	0.2270	6-Hour	5.6400	1.2411	-3.3969	2200
Detailed Hydrology	CTW484	Wittmann North - 2	5.6400	0.3500	6-Hour	5.9900	1.5701	-4.4967	2286
Intermediate	CTW480_2	Wittmann North - 3	5.9900	0.1620	6-Hour	6.1520	-26.9086	91.1654	2284
Detailed Hydrology	CTW480	Wittmann North - 4	6.1520	5.6280	6-Hour	11.7800	2.2910	-6.9183	3071
Detailed Hydrology	CWI584	Wittmann North - 5	11.1910	1.2590	6-Hour	12.4500	-2.5387	9.8458	2798
Detailed Hydrology	CTW478	Wittmann North - Split	0.5890	0.2610	6-Hour	0.8500	0.3639	-1.0259	422

**** Assumes 30% of the flow splits away from the wash and heads towards the Wittmann tributary(to be confirmed by HEC-RAS model).**

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

Wittmann Wash
(South Split)

WITTMANN TRIBUTARY



CLIENT: FCDMC	SHEET	1	OF
	BY	JCS	DATE 11/17/2004
	CHECK	RAS	DATE 2-2-05
JOB: Wittmann Area Drainage Master Study Update	JOB NO.	310.032	

Table D.3: Flow Calculations : WASH WITTMANN TRIBUTARY (North of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wittmann Wash Tributary, north of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wittmann North - 1a	D576B	1.014	552	CTW485	6-Hour	5.64	2200	1.2411	-3.3969
Wittmann North - 1b*	D576B	1.014	552	C485_1	6-Hour	3.39	1746	1.0481	-2.8678
Wittmann North - 2	CTW485	5.64	2200	CTW484	6-Hour	5.99	2286	1.5701	-4.4967

* Does not include RD454

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

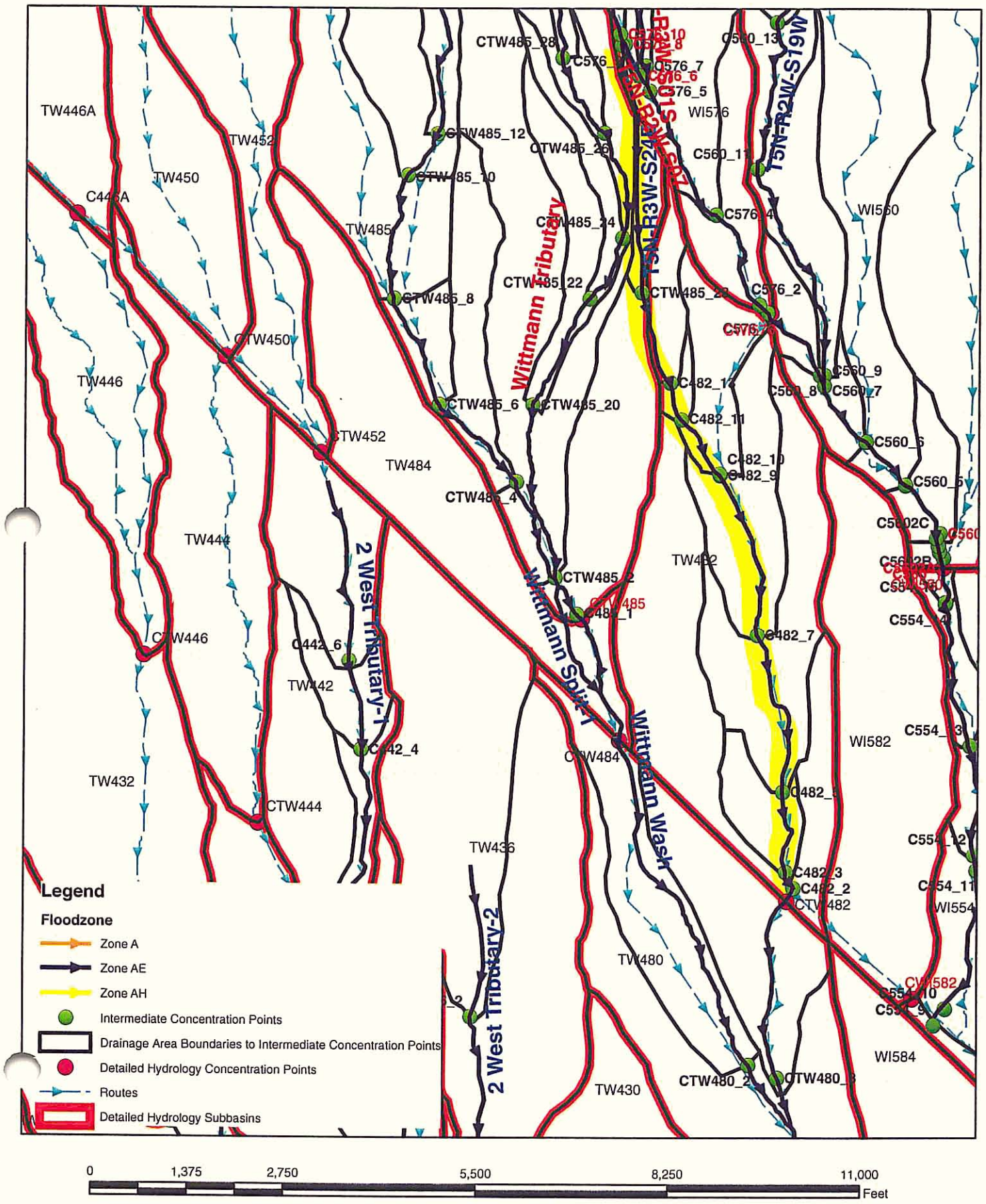
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	CTW485_30 (Pre Split)	Wittmann North - 1b*	0	0.091	6-Hour	0.091	1.0481	-2.8678	55
Intermediate	CTW485_30(Post Split)**	Wittmann North - 1b*	0.0910	0.4653	6-Hour	0.5563	1.0481	-2.8678	311
Intermediate	CTW485_28	Wittmann North - 1b*	0.5563	0.0750	6-Hour	0.6313	1.0481	-2.8678	351
Intermediate	CTW485_26	Wittmann North - 1b*	0.6313	0.0520	6-Hour	0.6833	1.0481	-2.8678	379
Intermediate	CTW485_24	Wittmann North - 1b*	0.6833	0.0460	6-Hour	0.7293	1.0481	-2.8678	403
Intermediate	CTW485_22	Wittmann North - 1b*	0.7293	0.0410	6-Hour	0.7703	1.0481	-2.8678	425
Intermediate	CTW485_20	Wittmann North - 1b*	0.7703	0.0740	6-Hour	0.8443	1.0481	-2.8678	463
Intermediate	CTW485_2	Wittmann North - 1a	0.8443	4.5687	6-Hour	5.4130	1.2411	-3.3969	2128
Detailed Hydrology	CTW485	Wittmann North - 1a	5.4130	0.2270	6-Hour	5.6400	1.2411	-3.3969	2200

** Assumes 30% of flow from the main Wittmann Wash splits and enters the tributary. (to be confirmed by HEC-RAS model)

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

✓ JCS 3/31/5

T5N-R3W-S24E



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/25/2005
CHECK	JCS	DATE	3/31/5
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R3W-S24E

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R3W-S24E.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R3W-S24E - 1	DO576B	0.677	368	C576_1	6-Hour	1.86	835	1.2335	-3.3344
T5N-R3W-S24E - 2 *	No Upstream Concentration Point	N/A	N/A	TW485	6-Hour	2.37	1746	N/A	N/A
T5N-R3W-S24E - 3 **	No Upstream Concentration Point	N/A	N/A	TW482	6-Hour	0.76	909	N/A	N/A
T5N-R3W-S24E - 4	D576	4.279	1631	CTW482	6-Hour	5.04	1655	11.2055	-35.3659
T5N-R3W-S24E - 5	D482	5.04	1655	C480_4	6-Hour	5.79	1574	-2.7645	9.6009

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C576_9 (Split In)	T5N-R3W-S24E - 1	0.0000	0.0000	6-Hour	0.595	1.2335	-3.3344	331
Intermediate	CTW485_23***	T5N-R3W-S24E - 2 *	0.5950	0.0300	6-Hour	0.6250	N/A	N/A	354
Intermediate	C482_13***	T5N-R3W-S24E - 3 **	0.6250	0.0420	6-Hour	0.6670	N/A	N/A	404
Intermediate	C482_11***	T5N-R3W-S24E - 3 **	0.0720	0.0120	6-Hour	0.0840	N/A	N/A	418
Intermediate	C482_10*** (Pre-Confluence)	T5N-R3W-S24E - 3 **	0.0840	0.0800	6-Hour	0.1640	N/A	N/A	514
Intermediate	C482_9 *** (Post Confluence)	T5N-R3W-S24E - 4	0.1640	4.2790	6-Hour	4.4430	11.2055	-35.3659	1636
Intermediate	C482_7 ***	T5N-R3W-S24E - 4	4.4430	0.1210	6-Hour	4.5640	11.2055	-35.3659	1640
Intermediate	C482_5 ***	T5N-R3W-S24E - 4	4.4000	0.1810	6-Hour	4.5810	11.2055	-35.3659	1641
Intermediate	C482_3 ***	T5N-R3W-S24E - 4	4.5810	0.0490	6-Hour	4.6300	11.2055	-35.3659	1643
Intermediate	C482_2 ***	T5N-R3W-S24E - 4	4.6300	0.4100	6-Hour	5.0400	11.2055	-35.3659	1655
Intermediate	C480_3 ***	T5N-R3W-S24E - 4	5.0400	0.1650	6-Hour	5.2050	11.2055	-35.3659	1660

Reach 4 Used Because Reach 5 Resulted in Lower Flow Downstream than Upstream

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

The following split flow was calculated at C576_10

	%	Q
% to T5N-R2W-S07 (C576_8)	50.00%	331
% to T5N-R3W-S24E (C576_9)	50.00%	331

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi^2 to Q=909cfs, and A=0.76 mi^2 (this is TW485).

** Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi^2 to Q=1746cfs, and A=2.37 mi^2 (this is TW482).

*** Flows for these concentration points were calculated using the standard method, plus the straight addition of flow from the split (C576_9) and portion of basin TW485 contributing. These can not be accounted for based on existing hydrology, so they were directly added to be conservative. The actual contributing area for these concentration points is the listed area plus the total contributing area for concentration point CTW485_23.

Entellus

SHEET		OF	
BY	RAS	DATE	03/18/05
CHECK	JS	DATE	3/31/5
JOB NO.	310.032		

Client Flood Control District of Maricopa County (FCDMC)
Job Wittmann ADMSU

Split Flow Calculations

Split Point Location: T5N-R3W-S24E
Split Point ID: Approximately ~9100 feet south of C576B C576-10
Split Description Main flow- T5N-R2W-S07
split flow Towards T5N-R3W-S24E

Main Flow

~~Diversion~~ path 1

Description T5N-R2W-S07
~~General Contour Slope~~ ~~ft~~
~~Angle between cont/split~~ ~~Degrees~~

Estimated Slope = 0.0092 ft/ft ✓

Diversion Path 2

Description Towards T5N-R3W-S24E
~~General Contour Slope~~ ~~ft~~
~~Angle between cont/split~~ ~~Degrees~~

Estimated Slope = 0.0109 ft/ft ✓

Diversion Path 3

Description 0
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = ft/ft

Split Flow Table

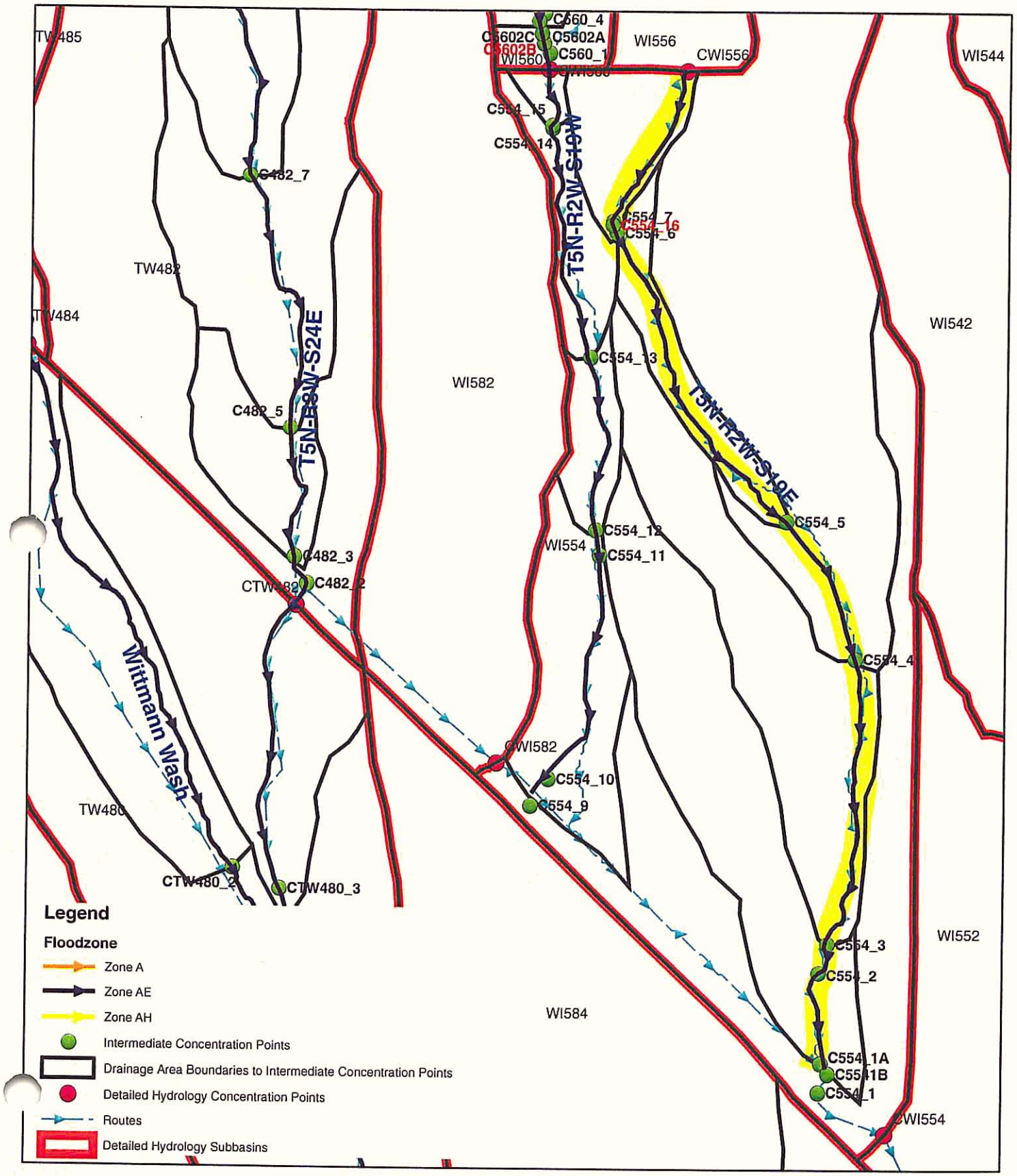
Split Point Location: T5N-R3W-S24E
Split Point ID: Approximately ~9100 feet south of C576B C576-10
Split Description
Main flow- T5N-R2W-S07
split flow Towards T5N-R3W-S24E

		S =	0.0092			S=	0.0109		
Inflow	Approx. Depth	**Main flowpath**				**Diverted flowpath 1**			
		width	n value	Flow	Fow %	width	n value	Flow	Fow %
0	0.0	65	0.05	0.0		42	0.04	0.0	
45	0.6	65	0.05	24.2	53%	42	0.04	21.3	47%
91	0.9	65	0.05	48.4	53%	42	0.04	42.5	47%
136	1.1	65	0.05	72.6	53%	42	0.04	63.8	47%
182	1.4	65	0.05	96.8	53%	42	0.04	85.1	47%
227	1.5	65	0.05	120.9	53%	42	0.04	106.3	47%
273	1.7	65	0.05	145.1	53%	42	0.04	127.6	47%
318	1.9	65	0.05	169.3	53%	42	0.04	148.9	47%
364	2.1	65	0.05	193.5	53%	42	0.04	170.1	47%
409	2.2	65	0.05	217.7	53%	42	0.04	191.4	47%
455	2.3	65	0.05	241.9	53%	42	0.04	212.7	47%
500	2.5	65	0.05	266.1	53%	42	0.04	233.9	47%

Flow from upstream	500	
Flow remaining after div.	**266**	53% ✓
Flow diverted at south div.	234	
Total Div. flow	**234**	47% ✓

V JCS 3/31/5

T5N-R2W-S19E



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/25/2005
CHECK	JCS	DATE	3/31/5
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R2W-S19E

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S19E.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S19E - 1	WI556	0.08	217	C554_1	6-Hour	1.12	1043	1.6810	-5.0244
T5N-R2W-S19E - 2	WI556	0.08	217	C5541B	6-Hour	16.82	5267	1.6769	-5.0150

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C554_7 (Pre-Split)	T5N-R2W-S19E - 1	0.0780	0.04	6-Hour	0.118	1.6810	-5.0244	273
Intermediate	C554_16 (Split In)	T5N-R2W-S19E - 2			6-Hour	1.772	1.6769	-5.0150	1376
Intermediate	C554_6 * (Post-Split)	T5N-R2W-S19E - 2	1.8500	0.0400	6-Hour	1.89	1.6769	-5.0150	1430
Intermediate	C554_5 *	T5N-R2W-S19E - 2	1.8900	0.0370	6-Hour	1.927	1.6769	-5.0150	1447
Intermediate	C554_4 *	T5N-R2W-S19E - 2	1.9270	0.3470	6-Hour	2.274	1.6769	-5.0150	1597
Intermediate	C554_3 * (Pre-Split)	T5N-R2W-S19E - 2	2.2740	0.1390	6-Hour	2.413	1.6769	-5.0150	1655
Intermediate	C554_2 * (Split In)	T5N-R2W-S19E - 2			6-Hour	2.017	1.6769	-5.0150	1487
Intermediate	C554_1A * (Post Split)	T5N-R2W-S19E - 2	4.2910	0.1490	6-Hour	4.44	1.6769	-5.0150	2380

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Flows for these concentration points were calculated using the standard method, plus the straight addition of flow from the split (C554_16). These cannot be accounted for based on existing hydrology, so they were directly added to be conservative. The actual contributing area for these concentration points is the listed area plus the total contributing area for concentration point C554_16.

The following percentages were used to hydraulically calculate the split flow from C554_15 (Wash 19W) to C554_6 (Wash 19E)
The percentages were not rounded because the flows were very sensitive to small percentage changes in the split flow ratio.

	%	Q
% to T5N-R2W-S19W (C554_14)	75.50%	4242
% to T5N-R2W-S19E (C554_16)	24.50%	1376

The following percentages were used to hydraulically calculate the split flow from C554_12 (Wash 19W) to C554_2 (Wash 19E)

	%	Q
% to T5N-R2W-S19W (C554_11)	65.00%	2761
% to T5N-R2W-S19E (C554_2)	35.00%	1487

Split Flow Table

Split Point Location: T5N-R2W-S19E
Split Point ID: 400' south of CWI560 CS54_15
Split Description Main flow- T5N-R2W-19W
split flow T5N0R2W-S19E

		S = 0.0073				S= 0.01				S= 0		
Inflow	Approx. Depth	Main flowpath				Diverted flowpath 1				Diverted flowpath 2		
		width	n value	Flow	Flow %	width	n value	Flow	Flow %	width	n value	Flow
0	0.0	100	0.045	0.0		25	0.035	0.0		0	0.000	0.0
273	1.6	100	0.045	198.2	73%	25	0.035	74.6	27%	0	0.000	0.0
545	2.4 2.0	100	0.045	396.3	73%	25	0.035	149.1	27%	0	0.000	0.0
818	3.1	100	0.045	594.5	73%	25	0.035	223.7	27%	0	0.000	0.0
1091	3.7	100	0.045	792.7	73%	25	0.035	298.2	27%	0	0.000	0.0
1364	4.2	100	0.045	990.9	73%	25	0.035	372.8	27%	0	0.000	0.0
1636	4.7	100	0.045	1189.0	73%	25	0.035	447.3	27%	0	0.000	0.0
1909	5.2	100	0.045	1387.2	73%	25	0.035	521.9	27%	0	0.000	0.0
2182	5.6	100	0.045	1585.4	73%	25	0.035	596.4	27%	0	0.000	0.0
2455	6.0	100	0.045	1783.6	73%	25	0.035	671.0	27%	0	0.000	0.0
2727	6.4	100	0.045	1981.7	73%	25	0.035	745.5	27%	0	0.000	0.0
3000	6.8	100	0.045	2179.9	73%	25	0.035	820.1	27%	0	0.000	0.0

Flow from upstream	3000	
Flow remaining after div.	**2180**	73%
Flow diverted at south div.	820	
Total Div. flow	**820**	27%

OK after lower portion of main wash has been filled (/// area below)

300cfs using interpolation

Q_{in} = Unknown @ this time

$$Q_{split} = (Q_{in} - 300) * .27 = .27 Q_{in} - 82$$

$$Q_{main} = Q_{in} - Q_{split} = Q_{in} - [(Q_{in} - 300) * .27]$$

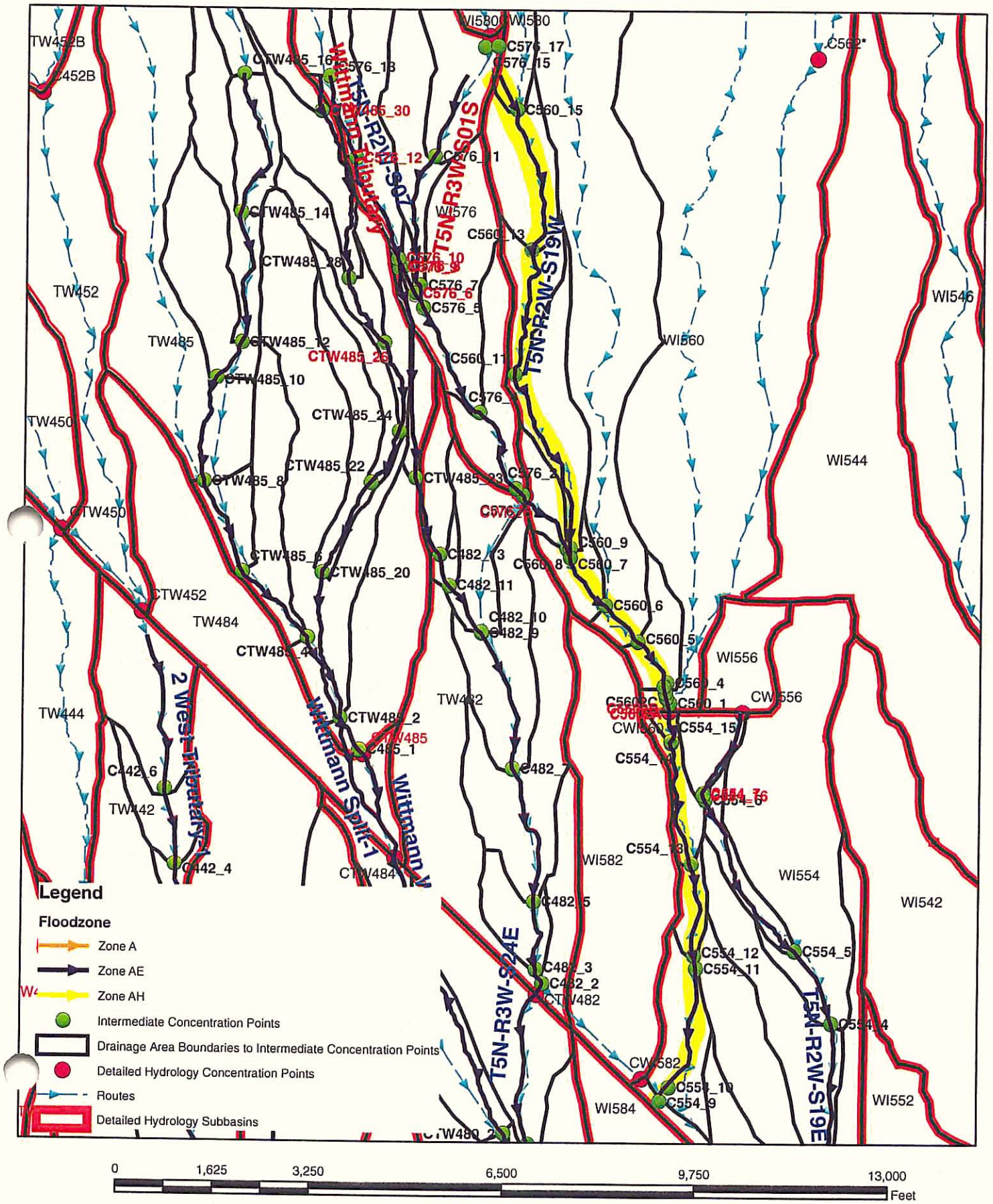
$$= .73 Q_{in} + 82$$

Table For various Q_{in}

Q_{in}	Q_{main}	% main	Q_{split}	% split
2000	1542	77.1	458	~~23~~ 22.9
2500	1907	76.3	593	~~24~~ 23.7
3000	2272	~~76~~ 75.7	728	~~24~~ 24.3
3500	2637	75.3	863	~~25~~ 24.7
4000	3002	75.1	998	~~25~~ 25.0

V dJ 3/31/5

T5N-R2W-S19W



Entellus	SHEET	1	OF		
	BY	RAS	DATE	3/25/2005	
CLIENT: FCDMC	CHECK	dCS	DATE	3/31/5	
JOB: Wittmann Area Drainage Master Study Update	JOB NO.	310.032			

Table D.3: Flow Calculations : T5N-R2W-S19W

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S19W.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration***	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S19W - 1	WI574	0.22	318	C5602A	6-Hour	3.78	2828	1.3014	-3.9142
T5N-R2W-S19W - 2	WI574	0.22	318	C5602B	6-Hour	6.57	2956	1.5235	-4.4700
T5N-R2W-S19W - 3	WI574	0.22	318	C5602C	6-Hour	8.61	2956	1.6448	-4.7735
T5N-R2W-S19W - 4	WI574	0.22	318	CWI560	6-Hour	15.7	5384	1.5085	-4.4325
T5N-R2W-S19W - 5	CWI560	15.7	5384	C554_9	6-Hour	16.74	5268	-2.9448	12.1833
T5N-R2W-S19W - 6	WI560	3.56	2829	C554_9	6-Hour	16.74	5268	2.4899	-8.0428

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C560_15 (Pre-Split)	T5N-R2W-S19W - 1	0.22	0.038	6-Hour	0.258	1.3014	-3.9142	359
Intermediate	C576_17 (Split In)	T5N-R2W-S19W - 1			6-Hour	0.229	1.3014	-3.9142	328
Intermediate	C560_15* (Post_Split)	T5N-R2W-S19W - 1	0.4490	0.0380	6-Hour	0.487	1.3014	-3.9142	586
Intermediate	C560_13 *	T5N-R2W-S19W - 1	0.4870	0.0890	6-Hour	0.576	1.3014	-3.9142	666
Intermediate	C560_11 *	T5N-R2W-S19W - 1	0.5760	0.0540	6-Hour	0.63	1.3014	-3.9142	714
Intermediate	C560_9 *	T5N-R2W-S19W - 1	0.6300	0.1020	6-Hour	0.732	1.3014	-3.9142	801
Intermediate	C560_7 *	T5N-R2W-S19W - 2	0.7320	3.9810	6-Hour	4.713	1.5235	-4.4700	2377
Intermediate	C560_6 *	T5N-R2W-S19W - 2	4.7130	0.0370	6-Hour	4.75	1.5235	-4.4700	2389
Intermediate	C560_5 * *	T5N-R2W-S19W - 3	4.7500	2.7850	6-Hour	7.535	1.6448	-4.7735	2726
Intermediate	C560_4 * *	T5N-R2W-S19W - 3	7.5350	0.0470	6-Hour	7.582	1.6448	-4.7735	2736
Detailed Hydrology	CWI560	T5N-R2W-S19W - 4	7.5820	9.1580	6-Hour	16.74	1.5085	-4.4325	5618
Intermediate	C554_15 (Pre-Split)	T5N-R2W-S19W - 5	16.7400	0.0060	6-Hour	16.746	-2.9448	12.1833	5618
Intermediate	C554_14 (Post-Split) **	T5N-R2W-S19W - 6	16.7460	-6.9860	6-Hour	9.7600	2.4899	-8.0428	4242
Intermediate	C554_13 **	T5N-R2W-S19W - 6	9.7600	0.0340	6-Hour	9.794	2.4899	-8.0428	4248
Intermediate	C554_12 (Pre-Split) **	T5N-R2W-S19W - 6	9.7940	0.0260	6-Hour	9.82	2.4899	-8.0428	4252
Intermediate	C554_11 (Post-Split) **	T5N-R2W-S19W - 6	9.8200	-6.4700	6-Hour	3.35	2.4899	-8.0428	2761
Intermediate	C554_10 **	T5N-R2W-S19W - 6	3.3500	0.0800	6-Hour	3.43	2.4899	-8.0428	2787

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

The following percentages were used to hydraulically calculate the split flow From CWI580 (Wash S01S) to C576_17 (Wash 19W):

		Q
% to T5N-R3W-S01S (C576_15)	87.00%	2192
% to T5N-R2W-S19W (C576_17)	13.00%	328

The following percentages were used to hydraulically calculate the split flow at C554_15:

	%	Q
% to T5N-R2W-S19W (C554_14)	75.50%	4242
% to T5N-R2W-S19E (C554_16)	24.50%	1376

The following percentages were used to hydraulically calculate the split flow at C554_12:

	%	Q
% to T5N-R2W-S19W (C554_11)	65.00%	2761
% to T5N-R2W-S19E (C554_2)	35.00%	1487

* Flows for these concentration points were calculated using the standard method, plus the straight addition of flow from the split (C576_17). These can not be accounted for based on existing hydrology, so they were directly added to be conservative. The actual contributing area for these concentration points is the listed area plus the total contributing area for concentration point C576_17.

** Because the removal of area drops these concentration points below the allowabel limits for the Q/A relationship for T5N-R2W-S19W - 6, the relationship was used from WI560 to C554_9. This is a conservative estimate.

*** 6-hour controlling storm was assumed for all reaches.

* Although these concentration points occur downstream of a confluence that would be attributed to T5N-R2W-S19W - 4 (C5062C), there is no additional flow as compared to CP C5062B, therefore using a new relationship would decrease the flow after the confluence. To be conservative T5N-R2W-S19W - 3 was utilized for these locations.

Entellus

SHEET		OF	
BY	RAS	DATE	03/25/05
CHECK	JS	DATE	3/31/5

Client Flood Control District of Maricopa County (FCDMC)
Job Wittmann ADMSU

JOB NO. 310.032

Split Flow Calculations

Split Point Location: T5N-R2W-S19W
Split Point ID: C554_12
Split Description Main flow- T5N-R2W-19W
split flow T5N-R2W-S19E

Main Flow
~~Diversion~~ path 1
Description T5N-R2W-19W
~~General Contour Slope~~ ~~ft~~
~~Angle between cont/split~~ ~~Degrees~~

Estimated Slope = 0.0089 ft/ft ✓

Diversion Path 2
Description T5N-R2W-S19E
~~General Contour Slope~~ ~~ft~~
~~Angle between cont/split~~ ~~Degrees~~

Estimated Slope = 0.0073 ft/ft ✓

Diversion Path 3
Description 0
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = ft/ft

Split Flow Table

Split Point Location: T5N-R2W-S19W
Split Point ID: C554_12
Split Description Main flow- T5N-R2W-19W
split flow T5N-R2W-S19E

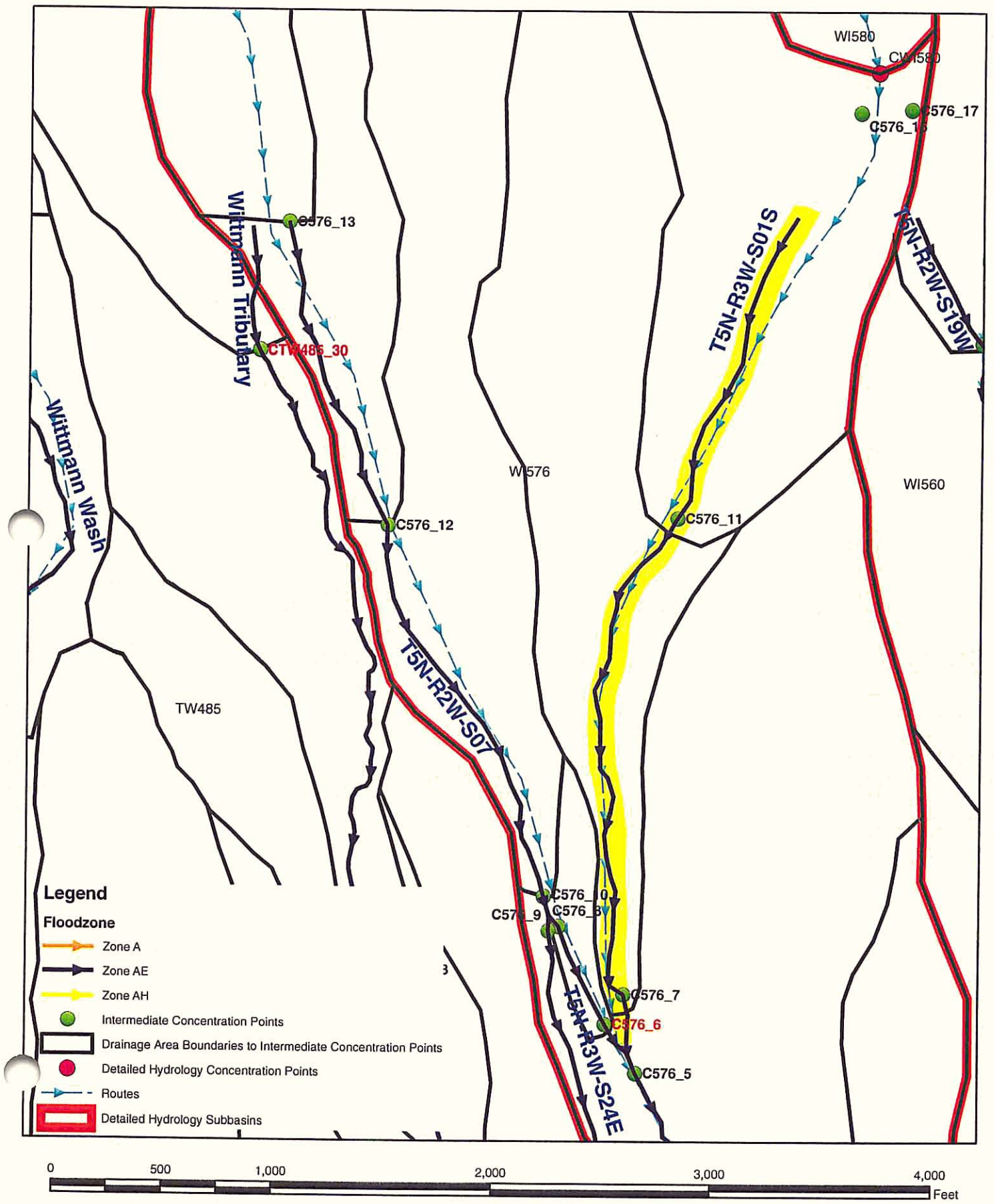
		S =	0.0089			S=	0.0073			S=	0		
Inflow	Approx.	**Main flowpath**				**Diverted flowpath 1**				**Diverted flowpath 2**			
	Depth	width	n value	Flow	Flow %	width	n value	Flow	Flow %	width	n value	Flow	Fow %
0	0.0	200	0.045	0.0		130	0.05	0.0		0	0.000	0.0	
455	1.3	200	0.045	297.1	65%	130	0.05	157.4	35%	0	0.000	0.0	0%
909	1.9	200	0.045	594.3	65%	130	0.05	314.8	35%	0	0.000	0.0	0%
1364	2.5	200	0.045	891.4	65%	130	0.05	472.3	35%	0	0.000	0.0	0%
1818	2.9	200	0.045	1188.5	65%	130	0.05	629.7	35%	0	0.000	0.0	0%
2273	3.4	200	0.045	1485.6	65%	130	0.05	787.1	35%	0	0.000	0.0	0%
2727	3.8	200	0.045	1782.8	65%	130	0.05	944.5	35%	0	0.000	0.0	0%
3182	4.1	200	0.045	2079.9	65%	130	0.05	1101.9	35%	0	0.000	0.0	0%
3636	4.5	200	0.045	2377.0	65%	130	0.05	1259.4	35%	0	0.000	0.0	0%
4091	4.8	200	0.045	2674.1	65%	130	0.05	1416.8	35%	0	0.000	0.0	0%
4545	5.1	200	0.045	2971.2	65%	130	0.05	1574.2	35%	0	0.000	0.0	0%
5000	5.4	200	0.045	3268.4	65%	130	0.05	1731.6	35%	0	0.000	0.0	0%

Flow from upstream	5000	
Flow remaining after div.	**3268**	65% ✓
Flow diverted at south div.	1732	
Total Div. flow	**1732**	35% ✓

Widths estimated @ 1654' contour

vJCS 3/31/5

T5N-R3W-S01S



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/20/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R3W-S01S

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R3W-S01S.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R3W-S01 - 1	WI576	1.18	915	C576_2	6-Hour	6.4	2474	1.6998	-4.9621
T5N-R3W-S01 - 2	C576_15	5.21	2192	CWI576	6-Hour	7.07	2695	1.4778	-4.2201

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	C576_15 (Split In)	T5N-R3W-S01 - 1			6-Hour	5.21	1.6998	-4.9621	2192
Detailed Hydrology	C576_11 (Post-Split)	T5N-R3W-S01 - 1	5.2100	0.097	6-Hour	5.307	1.6998	-4.9621	2216
Intermediate	C576_7 (Pre-Confluence)	T5N-R3W-S01 - 1	5.3070	0.1100	6-Hour	5.417	1.6998	-4.9621	2243
Intermediate	C576_5 (Post Confluence)	T5N-R3W-S01 - 2	5.4170	0.6000	6-Hour	6.017	1.4778	-4.2201	2416

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

The following percentages were used to hydraulically calculate the split flow From CWI580 (Wash S01S) to C576_17 (Wash 19W):

	%	Q	
% to T5N-R3W-S01S (C576_15)	87.00%	2192	2520
% to T5N-R2W-S19W (C576_17)	13.00%	328	

Entellus

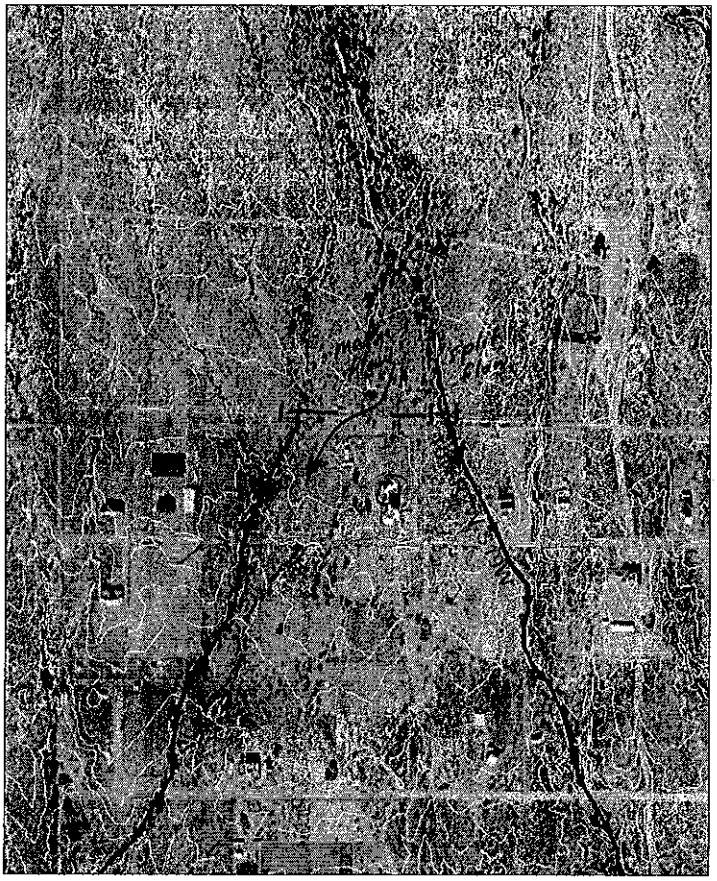
SHEET		OF	
BY	RAS	DATE	03/19/05
CHECK	dS	DATE	3/31/5

Client Flood Control District of Maricopa County (FCDMC)
Job Wittmann ADMSU

JOB NO. 310.032

Split Flow Calculations

Split Point Location: CWI580
Split Point ID: CWI580
Split Description Main flow- T5N-R3W-S01S
split flow T5N-R2W-S19W



Main Flow
~~Diversion path 1~~

Description T5N-R3W-S01S
~~General Contour Slope~~ ~~ft~~
~~Angle between cont/split~~ ~~Degrees~~

Estimated Slope = 0.0149 ft/ft ✓

Diversion Path 2

Description T5N-R2W-S19W
~~General Contour Slope~~ ~~ft~~
~~Angle between cont/split~~ ~~Degrees~~

Estimated Slope = 0.0125 ft/ft ✓

Diversion Path 3

Description 0
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = ft/ft

Split Flow Table

Split Point Location: CWI580
Split Point ID: CWI580
Split Description Main flow- T5N-R3W-S01S
split flow T5N-R2W-S19W

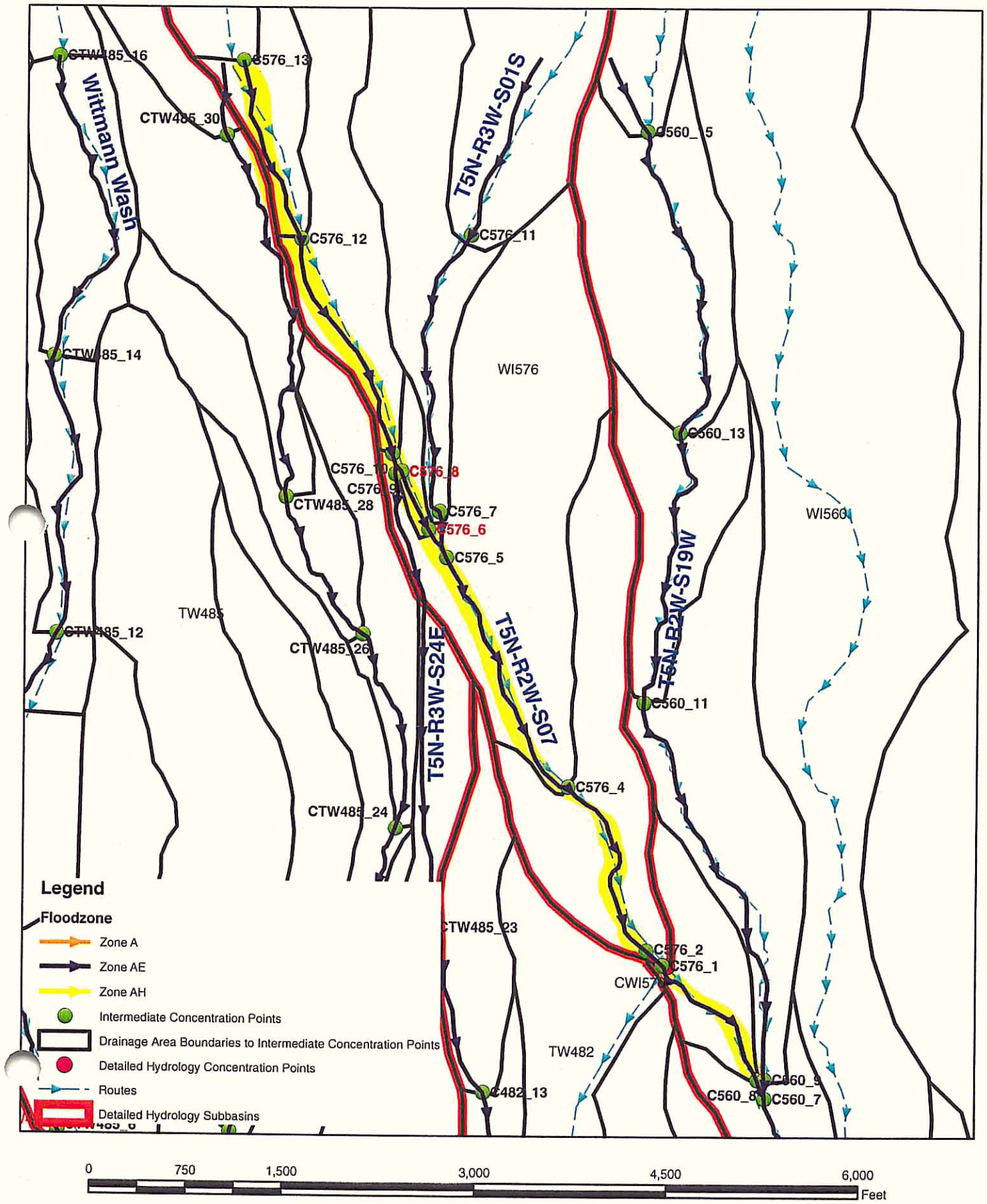
		S =	0.0149		Flow	S=	0.0125		Flow	S=	0	
Inflow	Approx. Depth	**Main flowpath**				**Diverted flowpath 1**				**Diverted flowpath 2**		
		width	n value	Flow	Fow %	width	n value	Flow	Fow %	width	n value	Flow
0	0.0	250	0.045	0.0		33	0.035	0.0		0	0.000	0.0
182	0.7	250	0.045	157.4	87%	33	0.035	24.5	13%	0	0.000	0.0
364	1.0	250	0.045	314.7	87%	33	0.035	48.9	13%	0	0.000	0.0
545	1.3	250	0.045	472.1	87%	33	0.035	73.4	13%	0	0.000	0.0
727	1.5	250	0.045	629.4	87%	33	0.035	97.8	13%	0	0.000	0.0
909	1.7	250	0.045	786.8	87%	33	0.035	122.3	13%	0	0.000	0.0
1091	1.9	250	0.045	944.1	87%	33	0.035	146.8	13%	0	0.000	0.0
1273	2.1	250	0.045	1101.5	87%	33	0.035	171.2	13%	0	0.000	0.0
1455	2.3	250	0.045	1258.9	87%	33	0.035	195.7	13%	0	0.000	0.0
1636	2.5	250	0.045	1416.2	87%	33	0.035	220.1	13%	0	0.000	0.0
1818	2.6	250	0.045	1573.6	87%	33	0.035	244.6	13%	0	0.000	0.0
2000	2.2	250	0.045	1730.9	87%	33	0.035	269.1	13%	0	0.000	0.0

Flow from upstream	2000	
Flow remaining after div.	**1731**	87% ✓

Flow diverted at south div.	269	
Total Div. flow	**269**	13% ✓

V dCS 3/31/5

T5N-R2W-S07



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/20/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R2W-S07

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S07.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S07 - 1	DO576B	0.677	368	C576_1	6-Hour	1.86	835	1.2335	-3.3344
T5N-R2W-S07 - 2	C576_15	5.21	2192	CWI576	6-Hour	7.07	2695	1.4778	-4.2201
T5N-R2W-S07 - 3	DO576	3.947	1375	C560_1	24-Hour	7.51	3040	0.8108	-1.9482

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	DO576B	T5N-R2W-S07 - 1	0.0000	0.677	6-Hour	0.677	1.2335	-3.3344	368
Intermediate	C576_13	T5N-R2W-S07 - 1	0.6770	0.3590	6-Hour	1.036	1.2335	-3.3344	520
Intermediate	C576_12	T5N-R2W-S07 - 1	1.0360	0.0550	6-Hour	1.091	1.2335	-3.3344	542
Intermediate	C576_10 (pre-split)	T5N-R2W-S07 - 1	1.0910	0.3070	6-Hour	1.398	1.2335	-3.3344	662
Intermediate	C576_8 (post-split)	T5N-R2W-S07 - 1	1.3980	-0.8050	6-Hour	0.593	1.2335	-3.3344	331
Intermediate	C576_6 (pre-confluence)	T5N-R2W-S07 - 1	0.5930	0.0070	6-Hour	0.6	1.2335	-3.3344	334
Intermediate	C576_5 (post-confluence)	T5N-R2W-S07 - 2	0.6000	5.4170	6-Hour	6.017	1.4778	-4.2201	2416
Intermediate	C576_4	T5N-R2W-S07 - 2	6.0170	0.1550	6-Hour	6.172	1.4778	-4.2201	2458
Detailed Hydrology	CWI576 *	T5N-R2W-S07 - 2	6.1720	0.8980	6-Hour	7.07	1.4778	-4.2201	2695
Detailed Hydrology	DO576	T5N-R2W-S07 - 3	7.0700	-3.1230	24-Hour	3.947	0.8108	-1.9482	1375
Intermediate	C560_8	T5N-R2W-S07 - 3	3.9470	0.0340	24-Hour	3.981	0.8108	-1.9482	1390

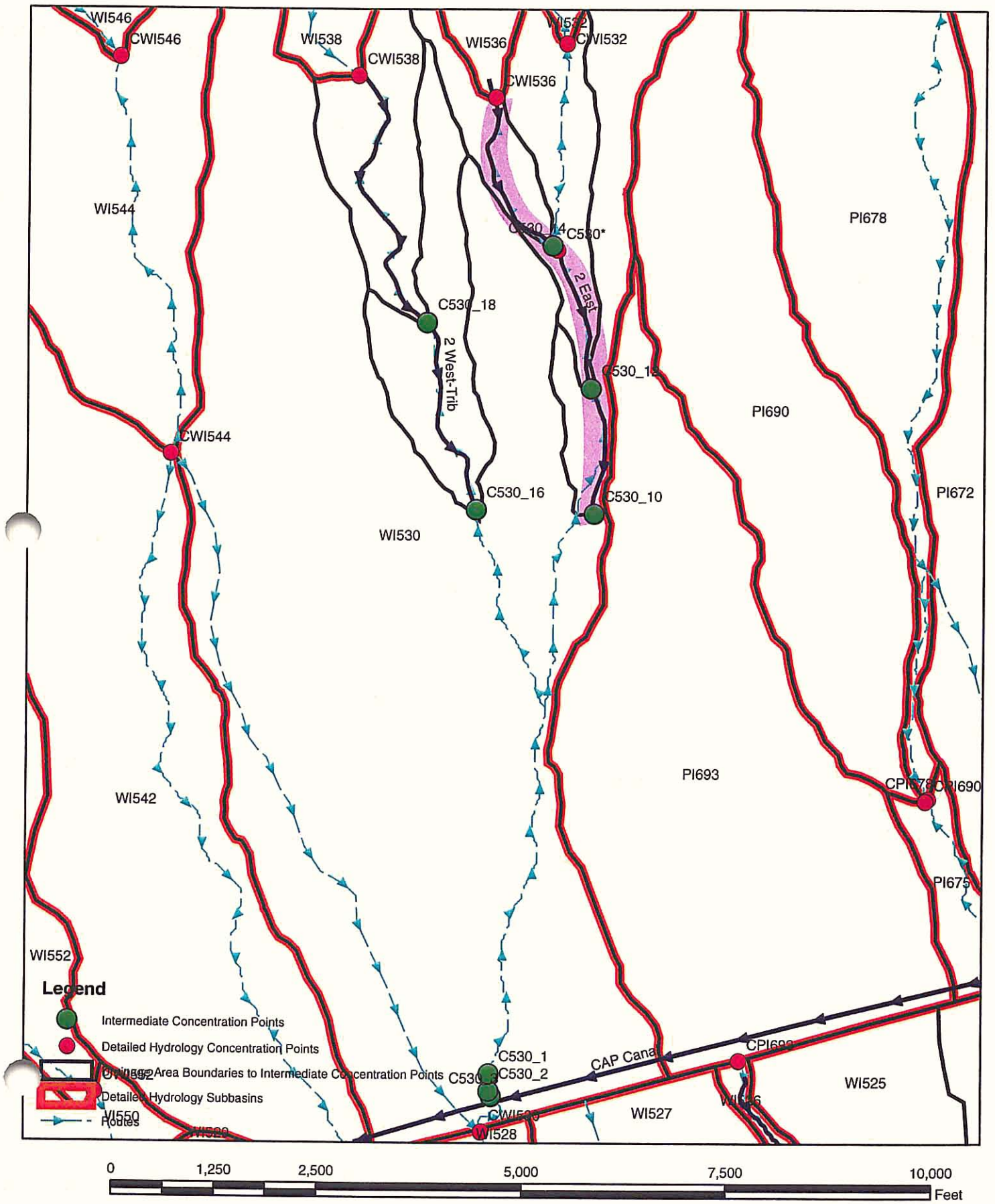
Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* The local contributing area for this point was calculated as the difference between the upstream concentration point and the area as used in the HEC-1 model. This is a conservative estimate due to the various split flows upstream.

The following split flow was calculated at C576_10. Note that the estimated split flow percentages were rounded to the nearest 5%. The split flow percentages were used to adjust the areas in the area-flow relationships above.

	%	Q
% to T5N-R2W-S07 (C576_8)	50.00%	331
% to T5N-R3W-S24E (C576_9)	50.00%	331

2 East (North of the CAP)



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/10/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 2 EAST (NORTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 East (North of the CAP)

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 East (NCAP) - 1	WI536	1.37	868	C530_1	6-Hour	4.5	1902	1.5160	-4.3181
Wash 2 East (NCAP) - 2	C530*	2.13	1333	C530_1	6-Hour	4.5	1902	2.1041	-6.2466

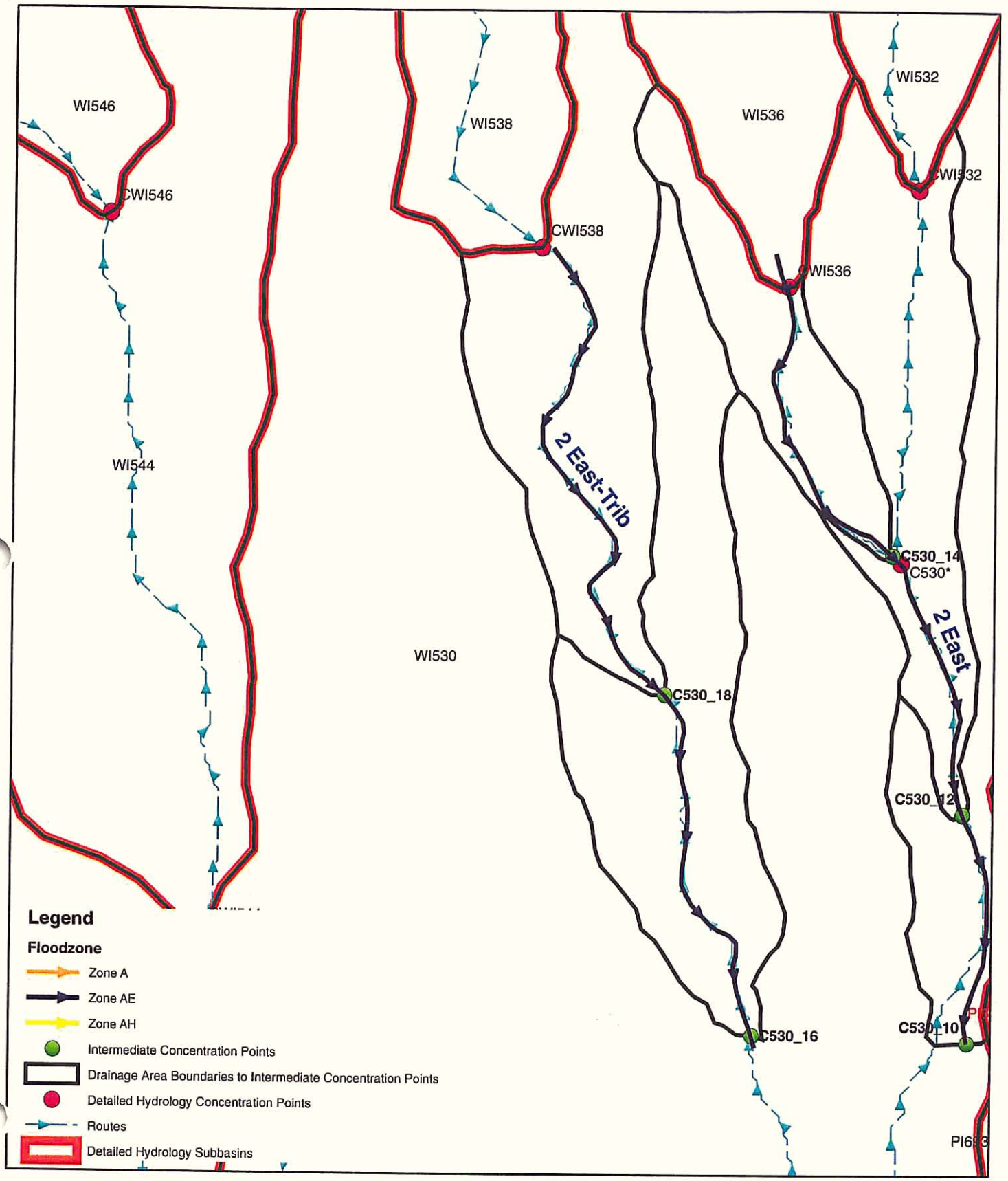
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	WI536	Wash 2 East (NCAP) - 1	1.37	0	6-Hour	1.37	1.5160	-4.3181	868
Intermediate	C530_14	Wash 2 East (NCAP) - 1	1.3700	0.0550	6-Hour	1.425	1.5160	-4.3181	891
Intermediate	C530_12	Wash 2 East (NCAP) - 2	1.4250	0.8680	6-Hour	2.293	2.1041	-6.2466	1381
Intermediate	C530_10	Wash 2 East (NCAP) - 2	2.2930	0.2330	6-Hour	2.526	2.1041	-6.2466	1446

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was

2 East Tributary (N of CAP)



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/10/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 2 EAST-TRIB

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 East-Trib.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 East-Trib - 1	CWI538	3.45	2143	C530_2	6-Hour	5.83	2188	25.2461	-83.5574

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

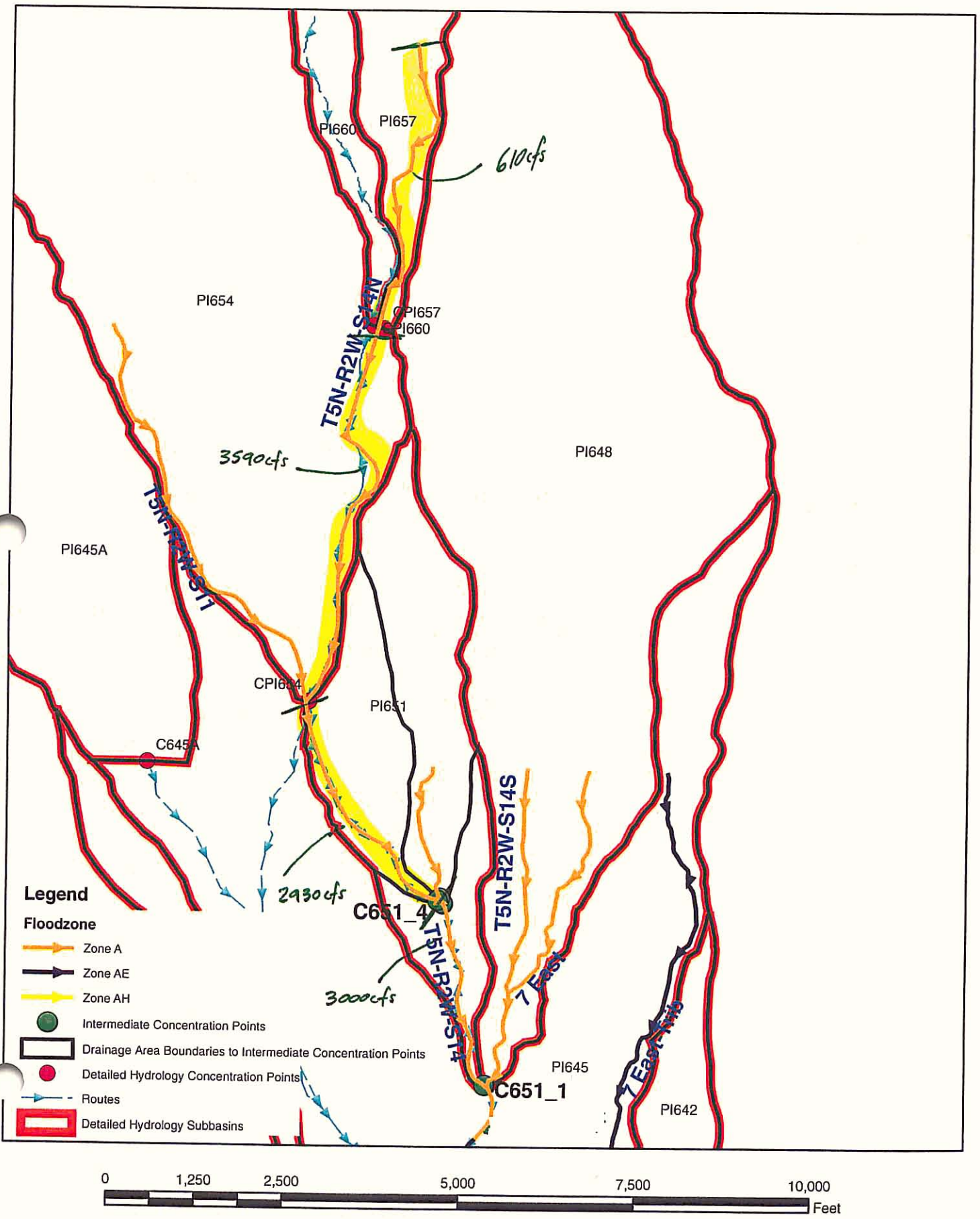
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	CWI538	Wash 2 East-Trib - 1	3.45	0	6-Hour	3.45	25.2461	-83.5574	2143
Intermediate	C530_18	Wash 2 East-Trib - 1	3.4500	0.1410	6-Hour	3.591	25.2461	-83.5574	2146
Intermediate	C530_16	Wash 2 East-Trib - 1	3.5910	0.1380	6-Hour	3.729	25.2461	-83.5574	2150

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

Vin model

T5N-R2W-S14N



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R2W-S14N

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S14N.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S14N - 1	PI657	N/A	N/A	PI657	6-Hour	0.87	607	N/A	N/A
T5N-R2W-S14N - 2	PI657	0.87	607	CPI654	6-Hour	6.34	3587	1.1180	-3.1720
T5N-R2W-S14N - 3	D654	5.073	2870	C651_1	6-Hour	5.53	3035	1.5430	-4.6304

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

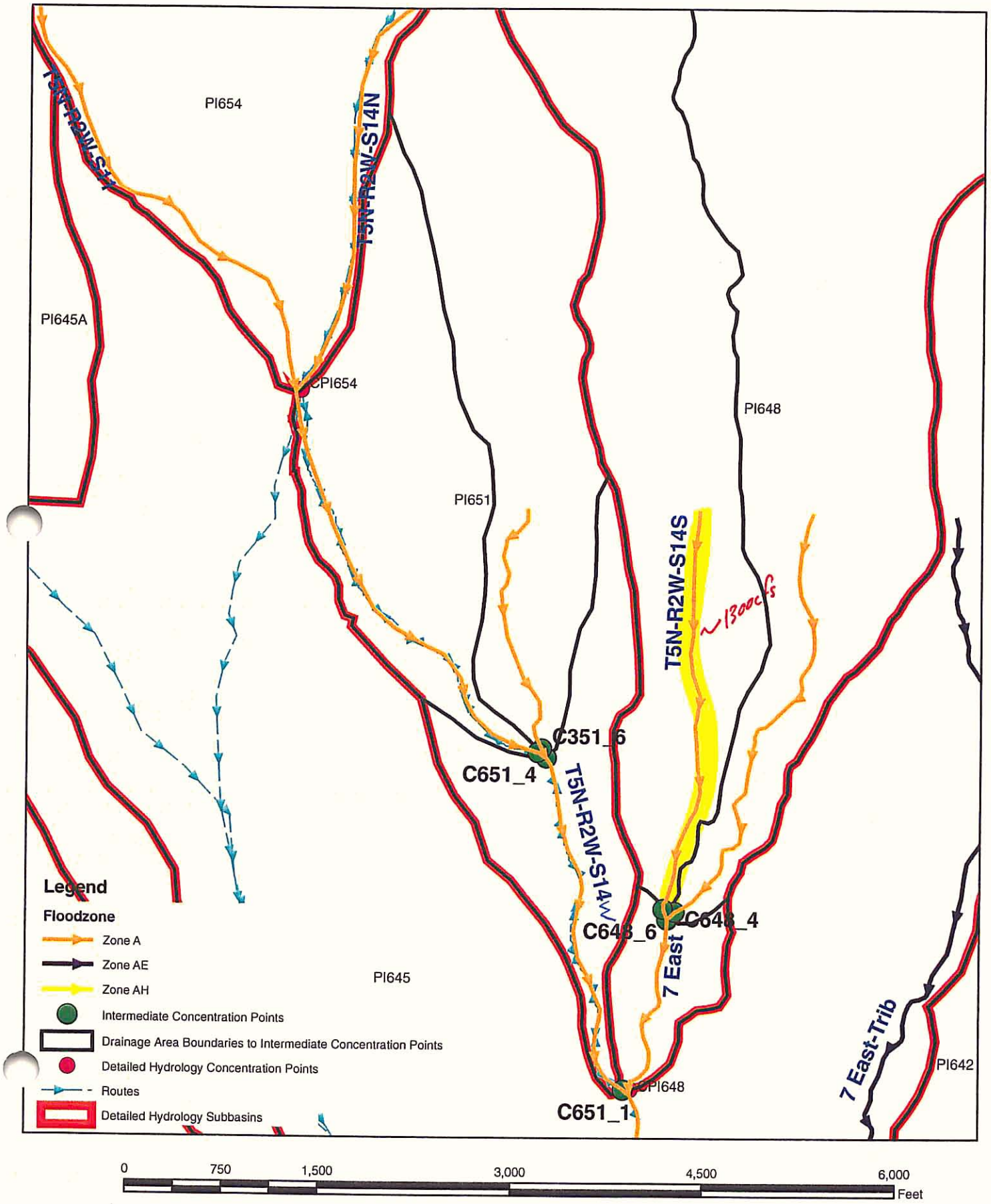
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	PI657	T5N-R2W-S14N - 1	0.87	0	6-Hour	0.87	N/A	N/A	607
Detailed Hydrology	CPI654	T5N-R2W-S14N - 2	0.8700	5.4700	6-Hour	6.34	1.1180	-3.1720	3587
Detailed Hydrology	D654	T5N-R2W-S14N - 3	6.3400	-1.2670	6-Hour	5.073	1.5430	-4.6304	2870
Intermediate	C651_4	T5N-R2W-S14N - 3	5.0730	0.1510	6-Hour	5.224	1.5430	-4.6304	2925
Intermediate	C651_2	T5N-R2W-S14N - 3	5.2240	0.2110	6-Hour	5.435	1.5430	-4.6304	3001

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

Vin mod 1

T5N-R2W-S14S



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R2W-S14S

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S14S.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S14S - 1 *	No Upstream Concentration Point	N/A	N/A	PI648	6-Hour	1.73	1286	N/A	N/A

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

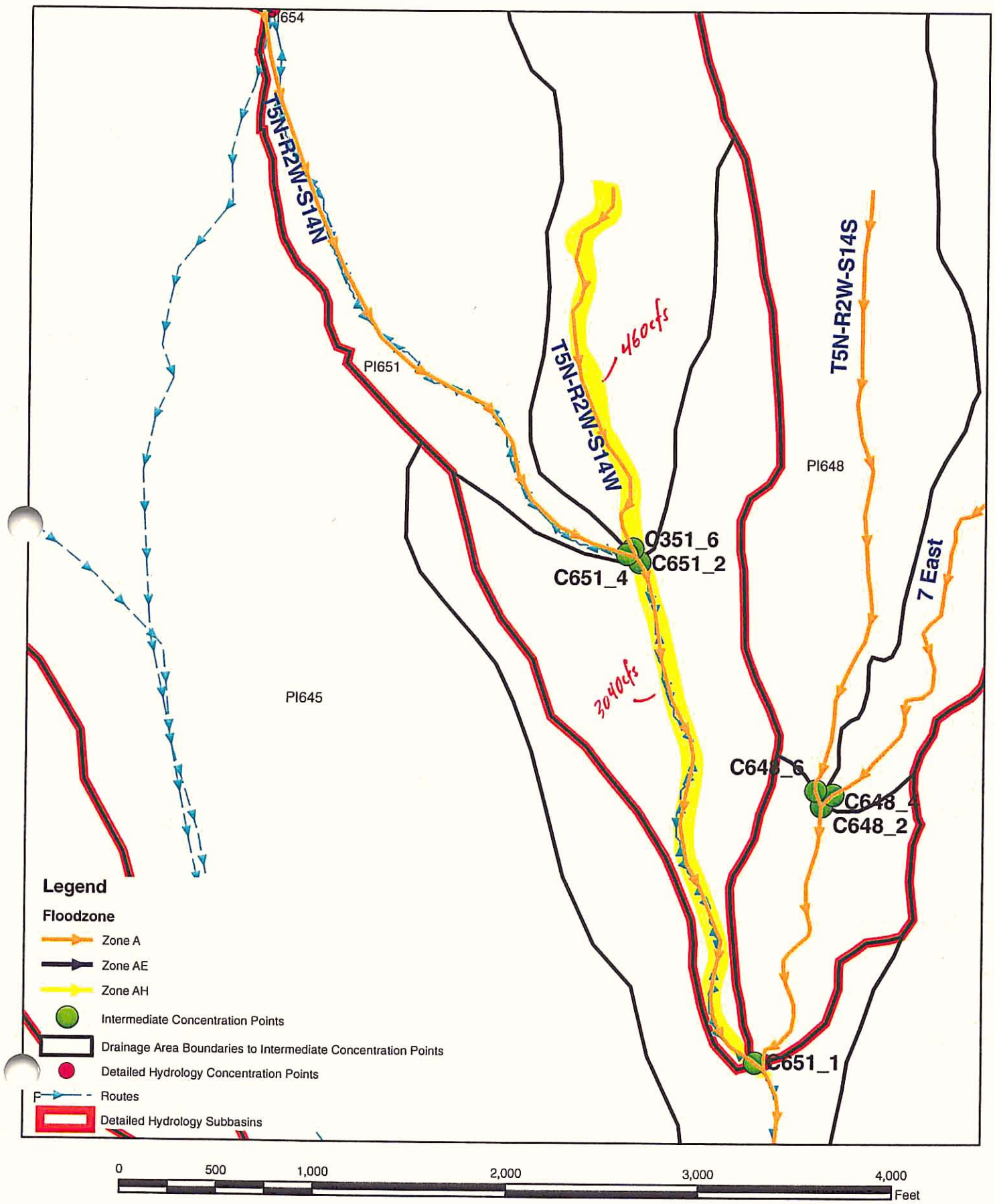
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C648_8	T5N-R2W-S14S - 1 *	0	0.211	6-Hour	0.211	N/A	N/A	157

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi2 to Q=1286cfs, and A=0.1.73 mi2 (this is PI648).

Vin model

T5N-R2W-S14W



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R2W-S14W

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S14W.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S14W - 1 *	No Upstream Concentration Point	N/A	N/A	PI651	6-Hour	0.46	459	N/A	N/A
T5N-R2W-S14W - 2	D654	5.073	2870	C651_1	6-Hour	5.53	3035	1.5430	-4.6304

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

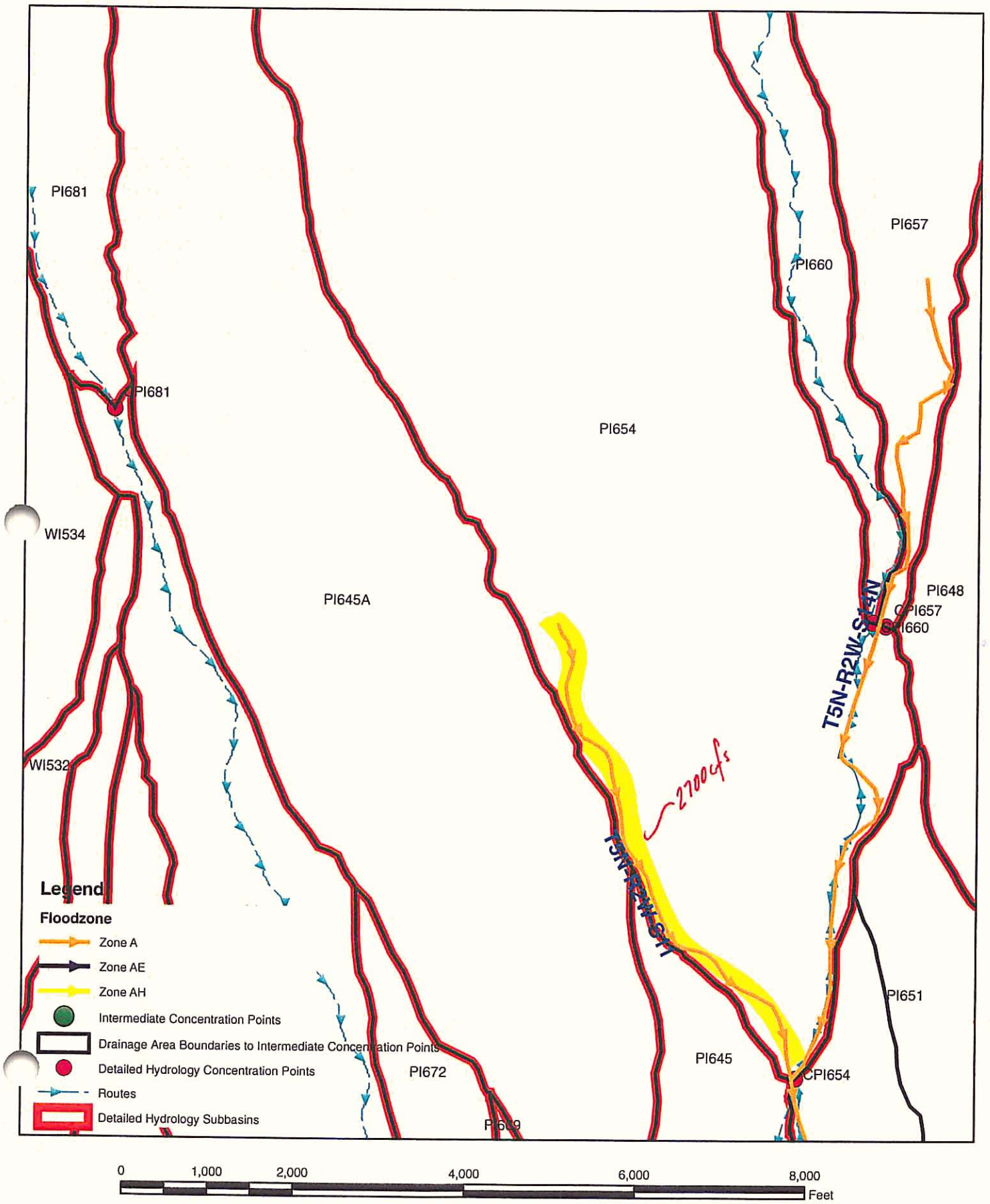
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C351_6	T5N-R2W-S14W - 1 *	0	0.211	6-Hour	0.211	N/A	N/A	211
Intermediate	C651_2	T5N-R2W-S14W - 2	0.2110	4.3590	6-Hour	4.57	1.5430	-4.6304	2682
Detailed Hydrology	C651_1	T5N-R2W-S14W - 2	4.5700	0.9600	6-Hour	5.53	1.5430	-4.6304	3035

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi2 to Q=459cfs, and A=0.46 mi2 (this is PI651).

Vin much!

T5N-R2W-S11



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : T5N-R2W-S11

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for T5N-R2W-S11.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
T5N-R2W-S11 - 1	PI654	N/A	N/A	PI654	6-Hour	4.03	2695	N/A	N/A

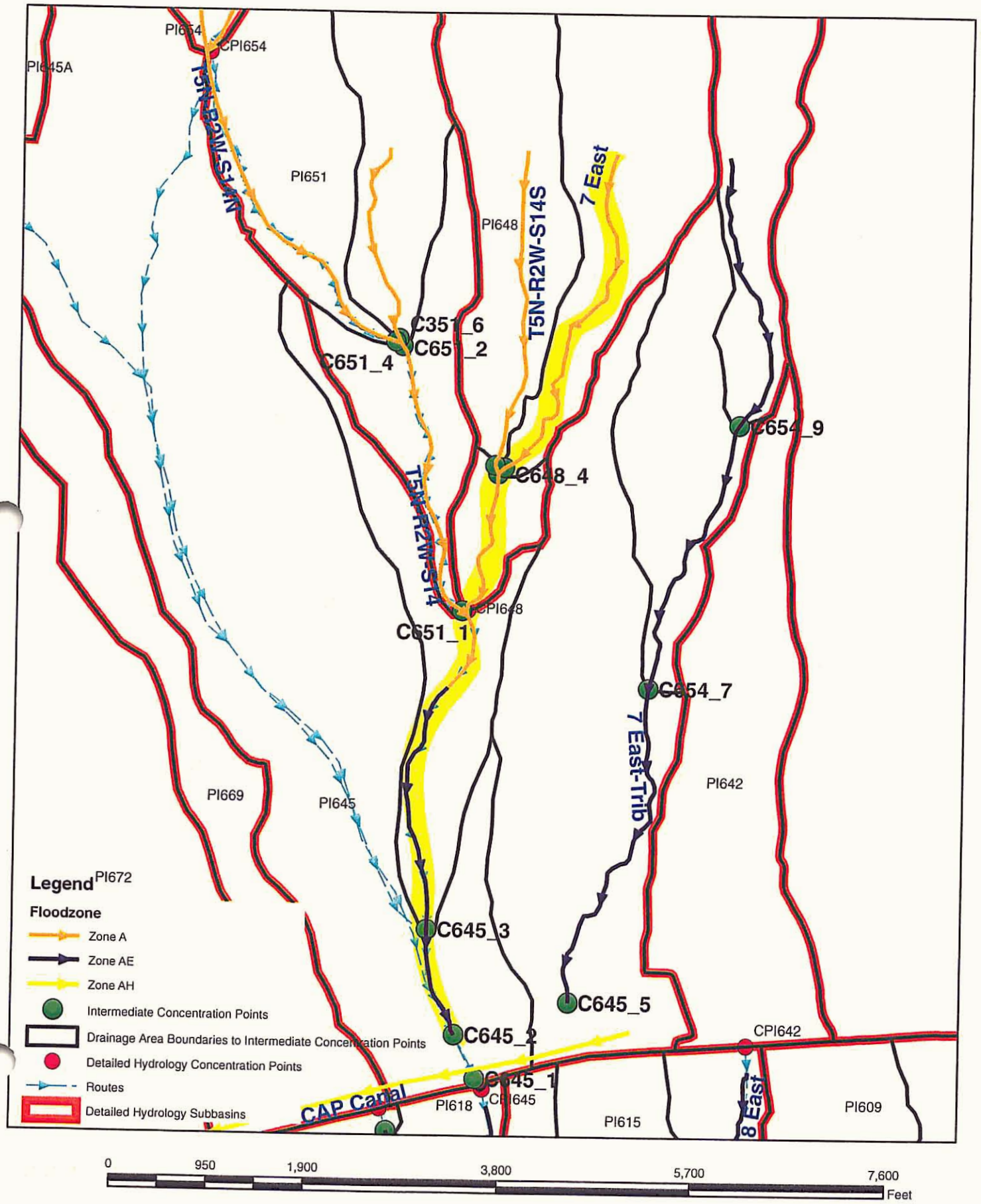
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	PI654	T5N-R2W-S11 - 1	4.03	0	6-Hour	4.03	N/A	N/A	2695

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

7 East


PI654
CPI654
PI645A
T5N-R2W-S14N
PI651
PI648
T5N-R2W-S14S
7 East
C651_6
C651_2
C651_4
C654_9
C648_4
T5N-R2W-S14
CPI648
C651_1
C654_7
7 East-Trib
PI642
PI669
PI645
PI672
C645_3
C645_5
C645_2
CPI642
C645_1
CPI645
CAP Canal
PI618
PI615
8 East
PI609
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
950
1,900
3,800
5,700
7,600
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : Wash 7 East

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 7 East.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 7 East - 1 *	No Upstream Concentration Point	N/A	N/A	PI648	6-Hour	1.73	1286	N/A	N/A
Wash 7 East - 2	CPI651	7.26	3894	C645_1	6-Hour	8.82	3928	22.3894	-79.5259

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C648_4	Wash 7 East - 1 *	0.0000	1.244	6-Hour	1.244	N/A	N/A	925
Intermediate	C648_2	Wash 7 East - 1 *	1.2440	0.4500	6-Hour	1.694	N/A	N/A	1259
Detailed Hydrology	PI648	Wash 7 East - 1 *	1.6940	0.0360	6-Hour	1.73	N/A	N/A	1286
Intermediate	CPI651	Wash 7 East - 2	1.7300	5.5300	6-Hour	7.26	22.3894	-79.5259	3894
Intermediate	C645_3	Wash 7 East - 2	7.2600	0.1180	6-Hour	7.378	22.3894	-79.5259	3897
Intermediate	C645_2	Wash 7 East - 2	7.3780	0.8270	6-Hour	8.205	22.3894	-79.5259	3915
Detailed Hydrology	C645_1	Wash 7 East - 2	8.2050	0.6150	6-Hour	8.82	22.3894	-79.5259	3928

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

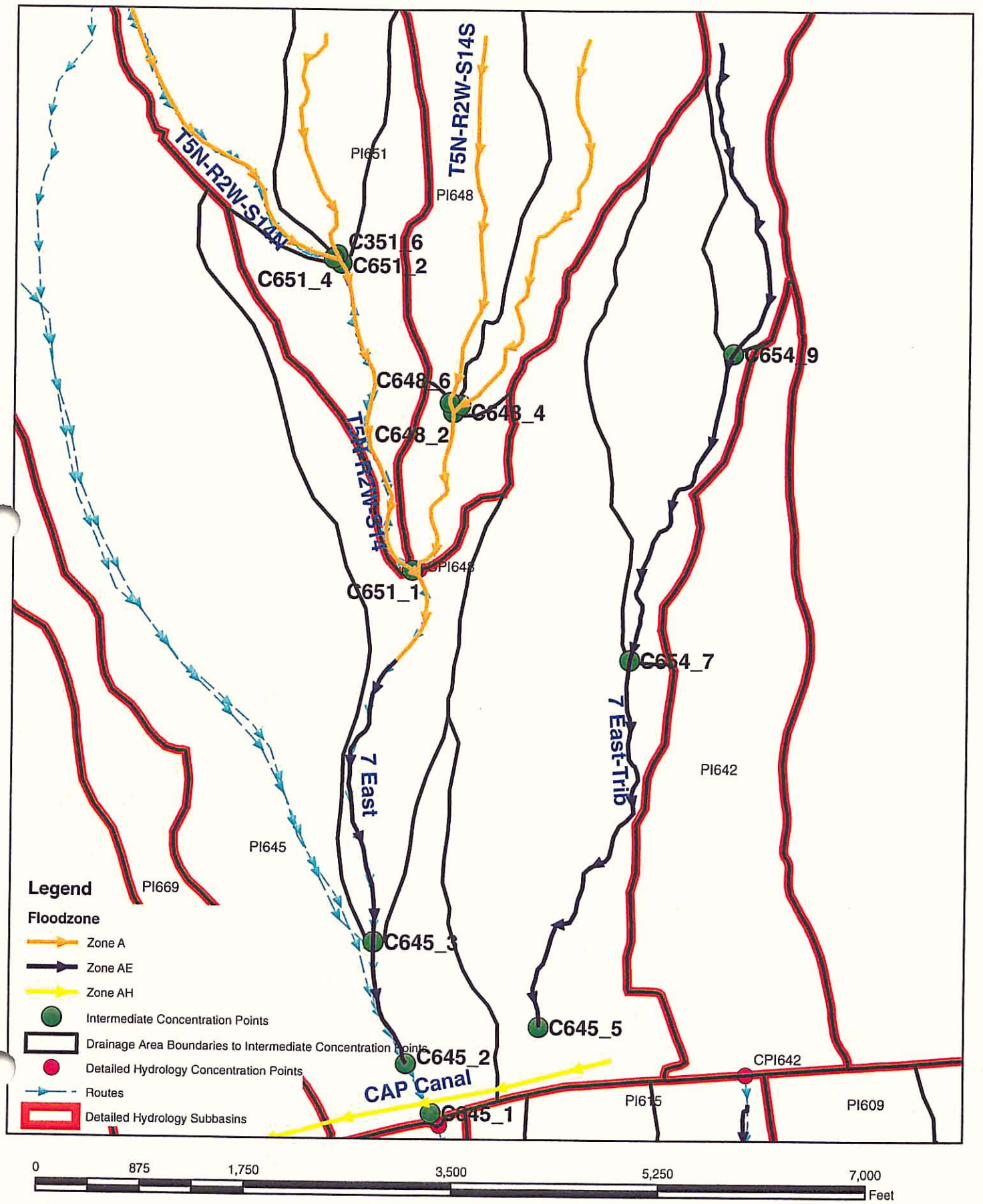
* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi^2 to Q=1286cfs, and A=1.73 mi^2 (this is PI648).

Downstream Ponding Stage Calc:

	Area [sq miles]	Stage [ft]
	40	1555.29
	80	1555.12
Interpolated Value	53.75	1555.23

*Note: The above Downstream Ponding Stage Calc was performed based on the controlling storm (24-hour) for the HEC-1 stage-storage relationship **STOR1**. Although the 6-hour storm controls throughout wash 7 East, the 24-hour storm controls at the CAP.*

7 East Trib


T5N-R2W-S14S
T5N-R2W-S14N
PI651
PI648
C351_6
C651_2
C651_4
C654_9
C648_6
C648_4
C648_2
T5N-R2W-S14
CPI648
C651_1
C654_7
7 East-Trib
7 East
PI642
PI645
PI669
C645_3
C645_5
C645_2
CAP Canal
C645_1
CPI642
PI615
PI609
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
875
1,750
3,500
5,250
7,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : Wash 7 East Trib

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 7 East Trib.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 7 East Trib - 1 *	No Upstream Concentration Point	N/A	N/A	P1645	6-Hour	1.56	1292	N/A	N/A

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C654_9	Wash 7 East Trib - 1 *	0.0000	0.172	6-Hour	0.172	N/A	N/A	142
Intermediate	C654_7	Wash 7 East Trib - 1 *	0.1720	0.1270	6-Hour	0.299	N/A	N/A	248
Intermediate	C654_5	Wash 7 East Trib - 1 *	0.2990	0.3180	6-Hour	0.617	N/A	N/A	511

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

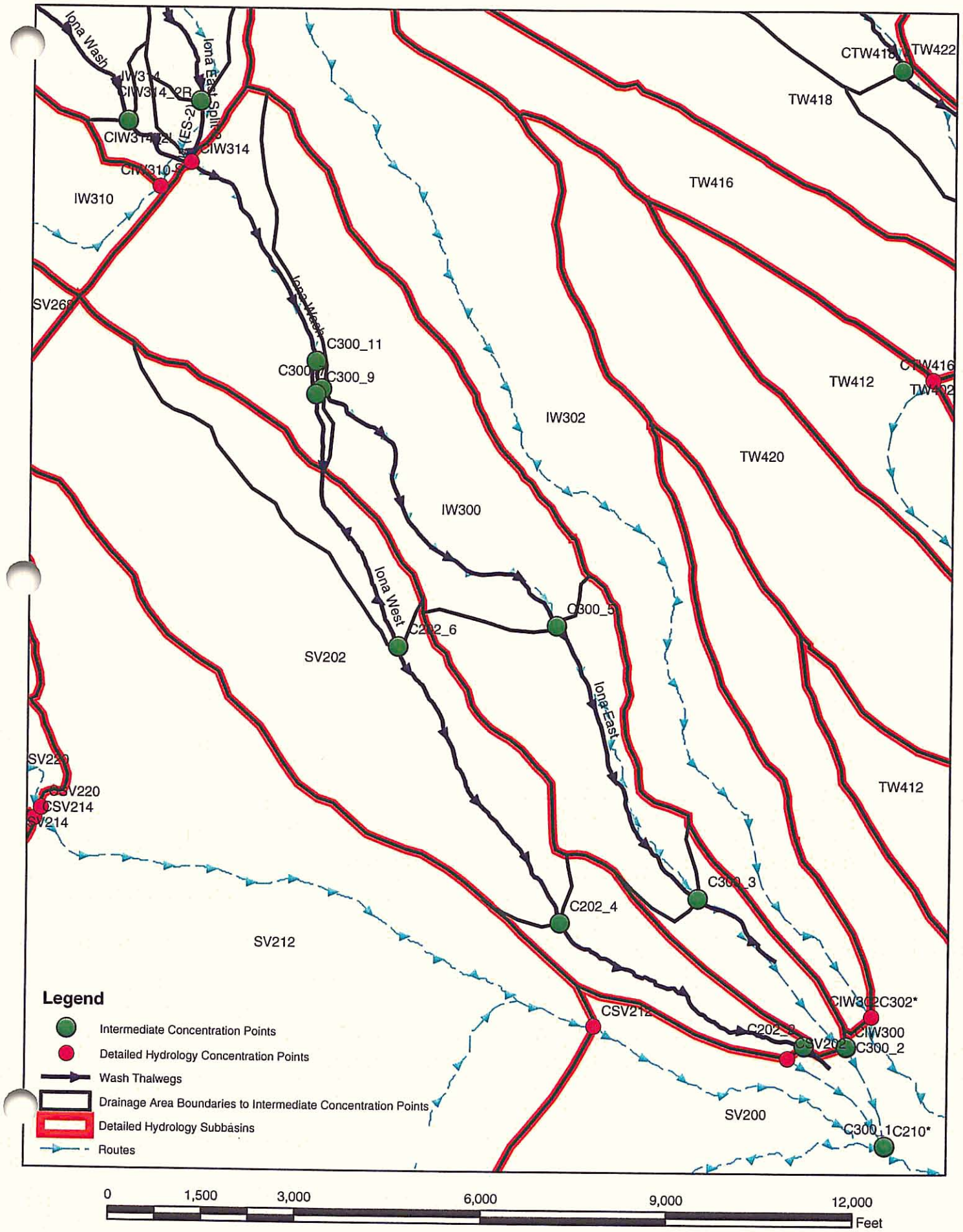
* Because there is no upstream concentration point no Q/A relationship could be determined. Instead a linear relationship was utilized from Q=0cfs & A=0 mi^2 to Q=1292cfs, and A=1.56 mi^2 (this is P1645).

Downstream Ponding Stage Calc:

	Area [sq miles]	Stage [ft]
	40	1555.29
	80	1555.12
Interpolated Value	53.75	1555.23

*Note: The above Downstream Ponding Stage Calc was performed based on the controlling storm (24-hour) for the HEC-1 stage-storage relarionship **STOR1**. Although the 6-hour storm controls throughout wash 7 East, the 24-hour storm controls at the CAP.*

IONA WASH EAST & IONA WASH WEST SOUTH OF CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/9/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : IONA WASH EAST & IONA WASH WEST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for IONA WASH EAST and IONA WASH WEST, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Iona East - 1	SCP020	29.09	7253	CIW300	24-Hour	30.57	6941	-1.1286	5.8208
Iona East - 2	C300_7	22.115	5375	C300_1	24-Hour	32.01	6764	1.6088	-4.6567
Iona West - 1	C300_9	7.372	1792	C300_1	24-Hour	32.01	6764	1.1055	-2.7288

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C300_11	Iona East - 1	29.09	0.396	24-Hour	29.486	-1.1286	5.8208	7167
Intermediate	C300_7	Iona East - 2	29.4860	-7.3710	24-Hour	22.115	1.6088	-4.6567	5375
Intermediate	C300_5	Iona East - 2	22.1150	0.5950	24-Hour	22.71	1.6088	-4.6567	5464
Intermediate	C300_3	Iona East - 2	22.7100	0.3520	24-Hour	23.062	1.6088	-4.6567	5517
Intermediate	C300_2	Iona East - 2	23.0620	0.1360	24-Hour	23.198	1.6088	-4.6567	5537
Intermediate	C300_9	Iona West - 1	29.4860	-22.1140	24-Hour	7.372	1.1055	-2.7288	1792
Intermediate	C202_6	Iona West - 1	7.3720	0.1850	24-Hour	7.557	1.1055	-2.7288	1833
Intermediate	C202_4	Iona West - 1	7.5570	1.0600	24-Hour	8.617	1.1055	-2.7288	2064
Intermediate	C202_2	Iona West - 1	8.6170	0.1910	24-Hour	8.808	1.1055	-2.7288	2105

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

There are three (3) flow segments for washes Iona East and Iona West:

1.) The first is from CAP12 to CIW300. This calcaultes the Q/A relationship for the portion of the route that does not split into basin SV202

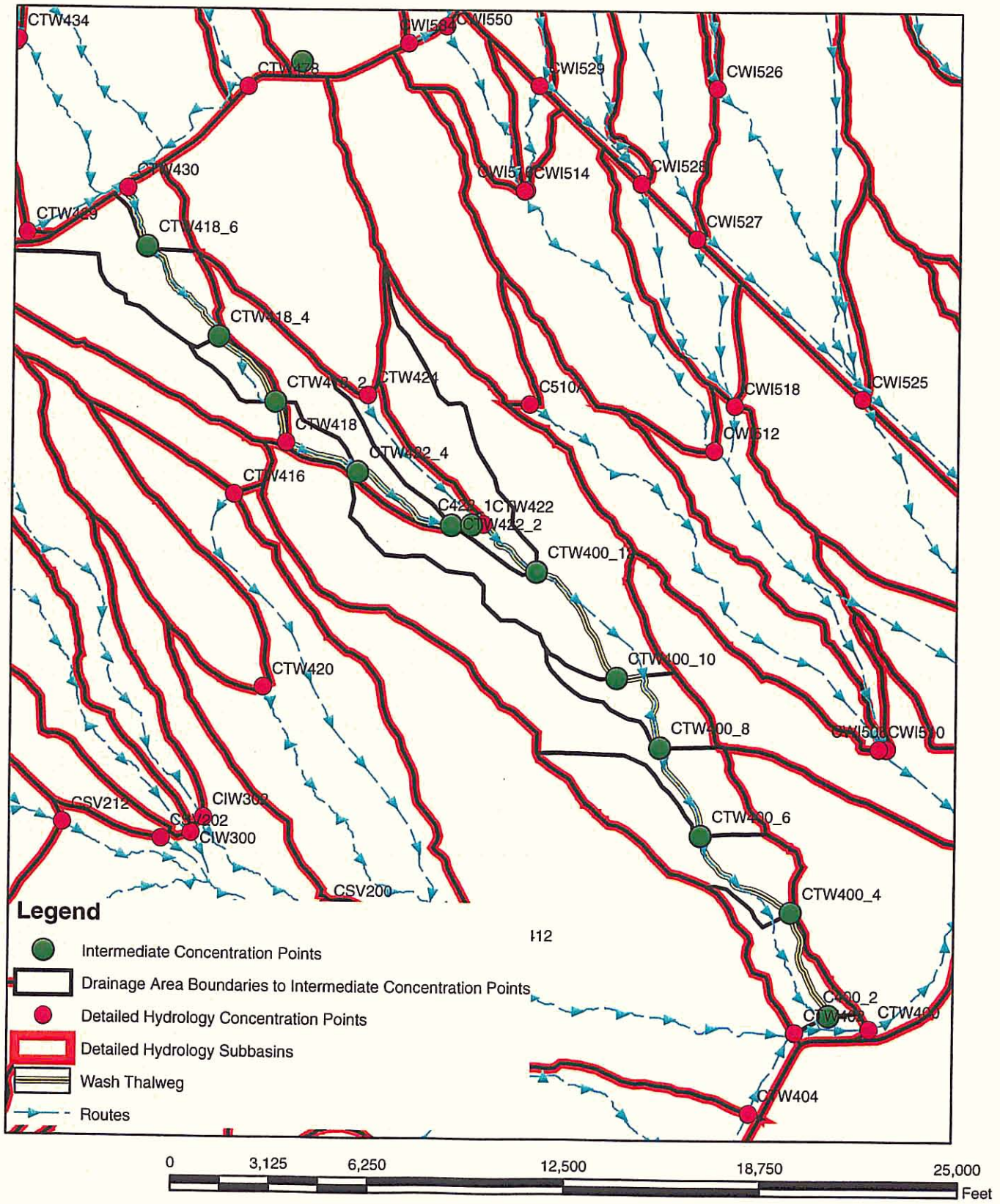
2.) The second reach is from just downstream of the split in Iona East (C300_7) to a concentration point (C300_1) which is the combination of RIW300 and RSV202. This was necessary to calculate the+A78 Q/A for this reach.

3.) The third reach is from just downstream of the split in Iona West (C300_9)to a concentration point (C300_1) which is the combination of RIW300 and RSV202. This was necessary to calculate the+A78 Q/A for this reach.

The following percentages were used to hydraulically calculate the split flow at C300_11:

% to Iona East (C300_7)	75.00%
% to Iona West (C300_9)	25.00%

WASH 2 WEST SOUTH OF CAP



CLIENT: FCDMC	SHEET	1 OF	
	BY	JCS DATE	2/2/2005
	CHECK	RAS DATE	02-07-05
JOB: Wittmann Area Drainage Master Study Update	JOB NO.	310.032	

Table D.3: Flow Calculations : WASH 2 WEST

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 West.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 West - 1	SCP040	20.12	2857	CTW418	24-Hour	21.49	2766	-2.0350	8.3365
Wash 2 West - 2	CTW418	21.49	2766	C422_1	24-Hour	22.19	2740	-3.3940	13.0139
Wash 2 West - 3	CTW422	23.69	2842	C400_2	24-Hour	27.96	3125	1.7458	-4.6548
Wash 2 West - 4	C400_2	27.96	3125	CTW400	24-Hour	163.05	17339	1.0290	-2.1498

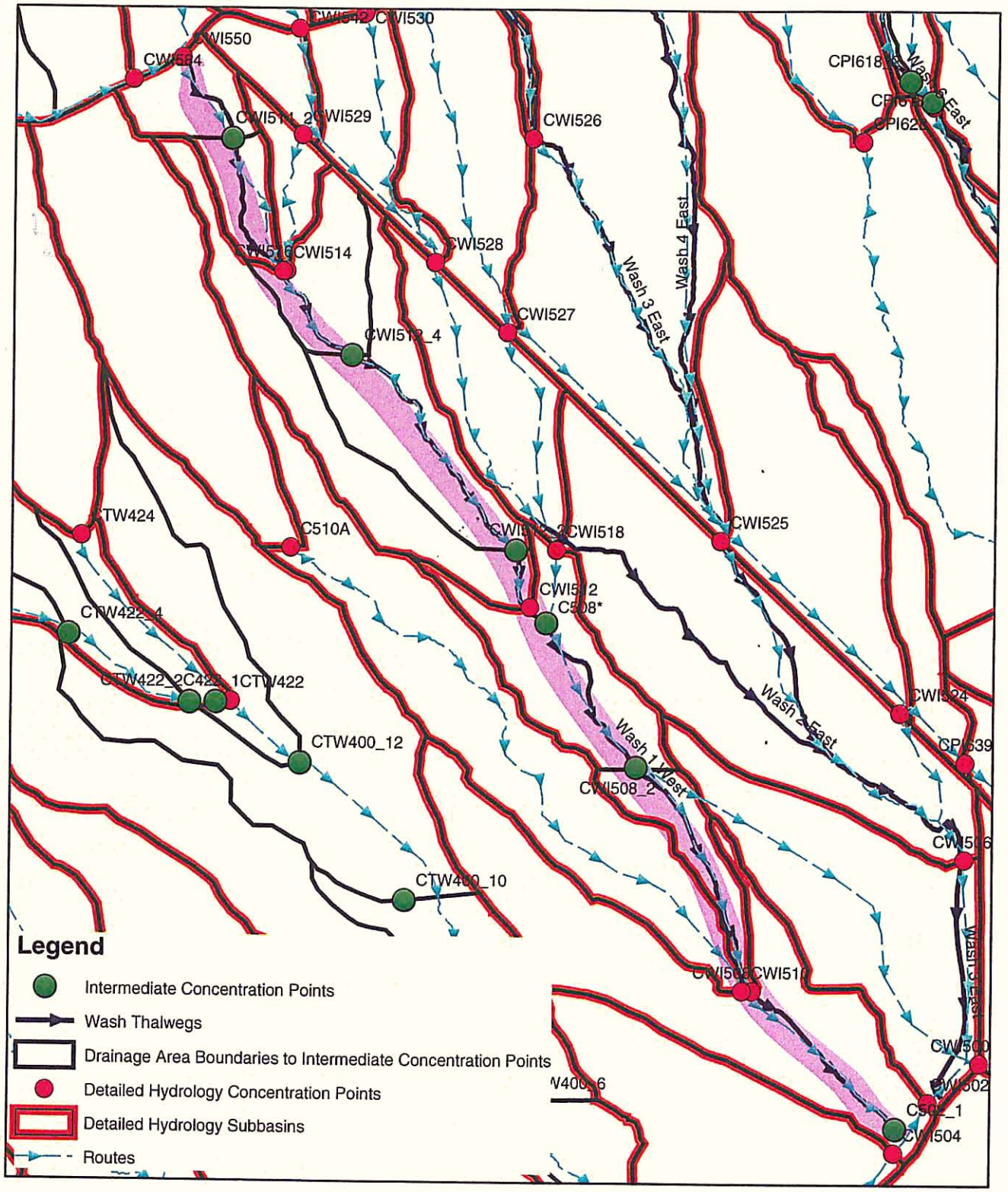
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm	Total Contributing Area (sq mi)	Reach "C"	Reach "B"	Base Flow (cfs)
Intermediate	CTW418_6	Wash 2 West - 1	20.12	0.1401	24-Hour	20.2601	-2.0350	8.3365	2847
Intermediate	CTW418_4	Wash 2 West - 1	20.2601	0.4362	24-Hour	20.6963	-2.0350	8.3365	2818
Intermediate	CTW418_2	Wash 2 West - 1	20.6963	0.1034	24-Hour	20.7997	-2.0350	8.3365	2811
Detailed Hydrology	CTW418	Wash 2 West - 2	20.7997	0.69	24-Hour	21.4900	-3.3940	13.0139	2766
Intermediate	CTW422_4	Wash 2 West - 2	21.4900	0.0806	24-Hour	21.5706	-3.3940	13.0139	2763
Intermediate	CTW422_2	Wash 2 West - 2	21.5706	0.4368	24-Hour	22.0074	-3.3940	13.0139	2747
Detailed Hydrology	C422_1	Wash 2 West - 2	22.0074	0.192	24-Hour	22.1900	-3.3940	13.0139	2740
Intermediate	CTW400_12	Wash 2 West - 3	22.1900	0.4476	24-Hour	22.6376	1.7458	-4.6548	2769
Intermediate	CTW400_10	Wash 2 West - 3	22.6376	1.3559	24-Hour	23.9935	1.7458	-4.6548	2863
Intermediate	CTW400_8	Wash 2 West - 3	23.9935	0.2467	24-Hour	24.2402	1.7458	-4.6548	2880
Intermediate	CTW400_6	Wash 2 West - 3	24.2402	1.3387	24-Hour	25.5789	1.7458	-4.6548	2970
Intermediate	CTW400_4	Wash 2 West - 3	25.5789	0.5642	24-Hour	26.1431	1.7458	-4.6548	3007
Detailed Hydrology	C400_2	Wash 2 West - 3	26.1431	0.3211	24-Hour	27.9600	1.7458	-4.6548	3125
Detailed Hydrology	CTW400	Wash 2 West - 4	27.9600	135.09	24-Hour	163.0500	1.0290	-2.1498	17339

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

WASH 1 WEST SOUTH OF CAP



0 2,600 5,200 10,400 15,600 20,800 Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/3/2005
CHECK	RAS	DATE	2-8-05
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 1 WEST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 1 West, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
1 West - 1	SCP050	30.26	7166	CWI514	24-Hour	30.62	7054	-0.7508	4.3753
1 West - 2	CWI516	34.29	7362	CWI512	24-Hour	35.64	7183	-1.5688	7.6016
1 West - 3	CWI512	35.64	7183	C508*	24-Hour	40.64	7489	3.1469	-10.5836
1 West - 4	C508*	40.64	7489	CWI508	24-Hour	41.34	7386	-1.2331	6.3867
1 West - 5	C508*	40.64	7489	D508	24-Hour	33.4854	5982	0.8619	-1.7303
1 West - 6	CWI510	35.84	6161	C502_1	24-Hour	37.05	6001	-1.2619	6.3364
		#N/A	#N/A		#N/A	#N/A	#N/A	#N/A	#N/A

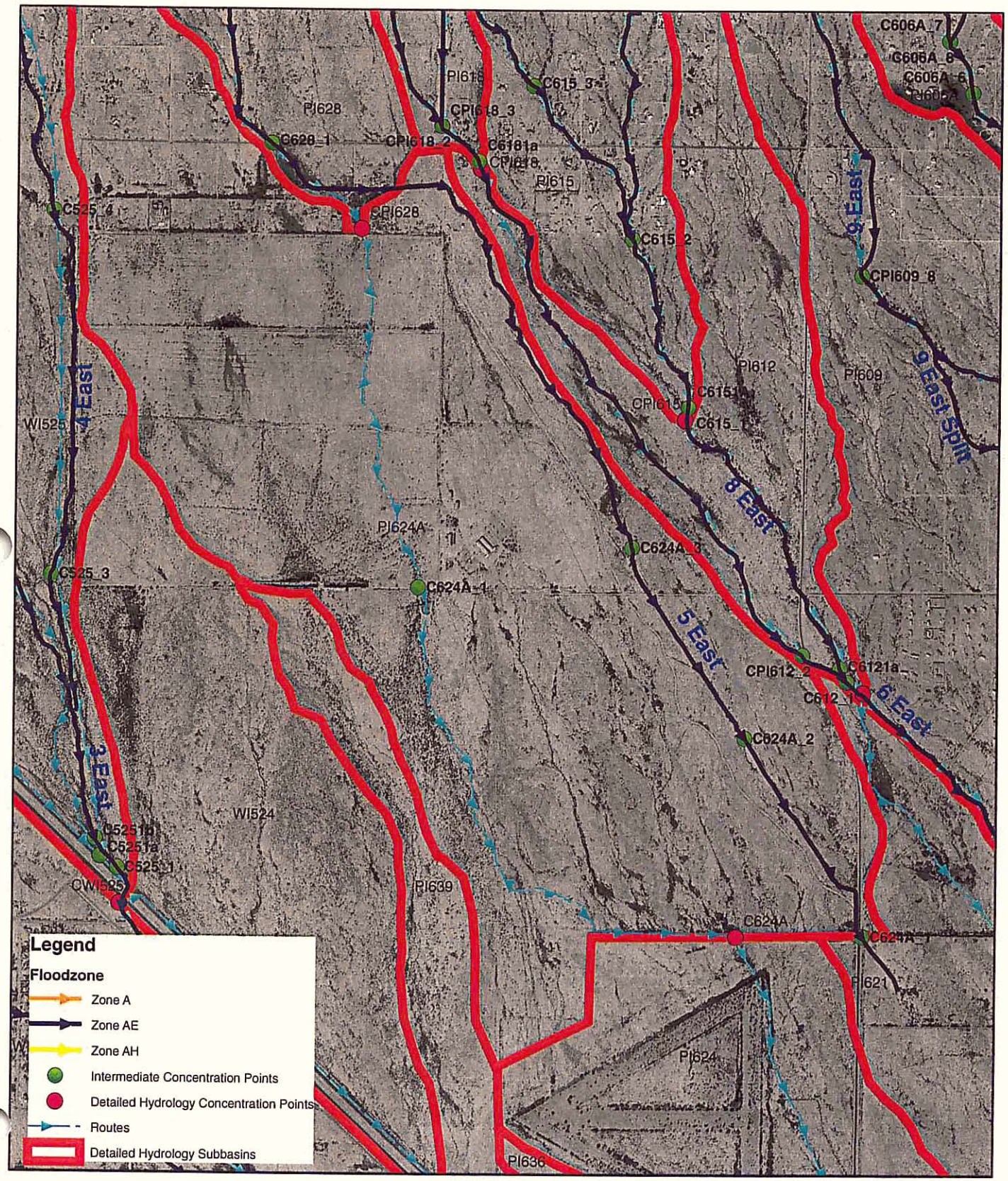
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	CWI514_2	1 West - 1	30.26	0.196	24-Hour	30.456	-0.7508	4.3753	7105
Detailed Hydrology	CWI514	1 West - 1	30.4560	0.1640	24-Hour	30.6200	-0.7508	4.3753	7054
Intermediate	CWI512_4	1 West - 2	34.2900	0.2790	24-Hour	34.5690	-1.5688	7.6016	7324
Intermediate	CWI512_6	1 West - 2	34.5690	0.5000	24-Hour	35.0690	-1.5688	7.6016	7257
Detailed Hydrology	CWI512	1 West - 2	35.0690	0.5710	24-Hour	35.6400	-1.5688	7.6016	7183
Detailed Hydrology	C508*	1 West - 3	35.6400	5.0000	24-Hour	40.6400	3.1469	-10.5836	7489
Intermediate	CWI508_2	1 West - 4	40.6400	0.4820	24-Hour	41.1220	-1.2331	6.3867	7418
Detailed Hydrology	D508	1 West - 5	33.2794	0.2060	24-Hour	33.4854	0.8619	-1.7303	5982
Detailed Hydrology	CWI510	1 West - 6	33.4854	2.3546	24-Hour	35.8400	-1.2619	6.3364	6161
Detailed Hydrology	C502_1	1 West - 6	35.8400	1.2100	24-Hour	37.0500	-1.2619	6.3364	6001

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

5 EAST (ZONE AO)



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/21/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 5 EAST FAILURE (ZONE AO FLOWS FOR FAILURE OF BERM)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 5 East, South of the CAP. These flows represent breakout flows assuming the berm approximately 3/4 mile south of the CAP fails.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 5E-Failure - 1	DCAP10	3.536	420	CPI628	24-Hour	4.11	750	0.2594	-0.1321
Wash 5E-Failure - 2	CPI628	4.11	750	C624A	24-Hour	6.92	2060	0.5156	-0.8686

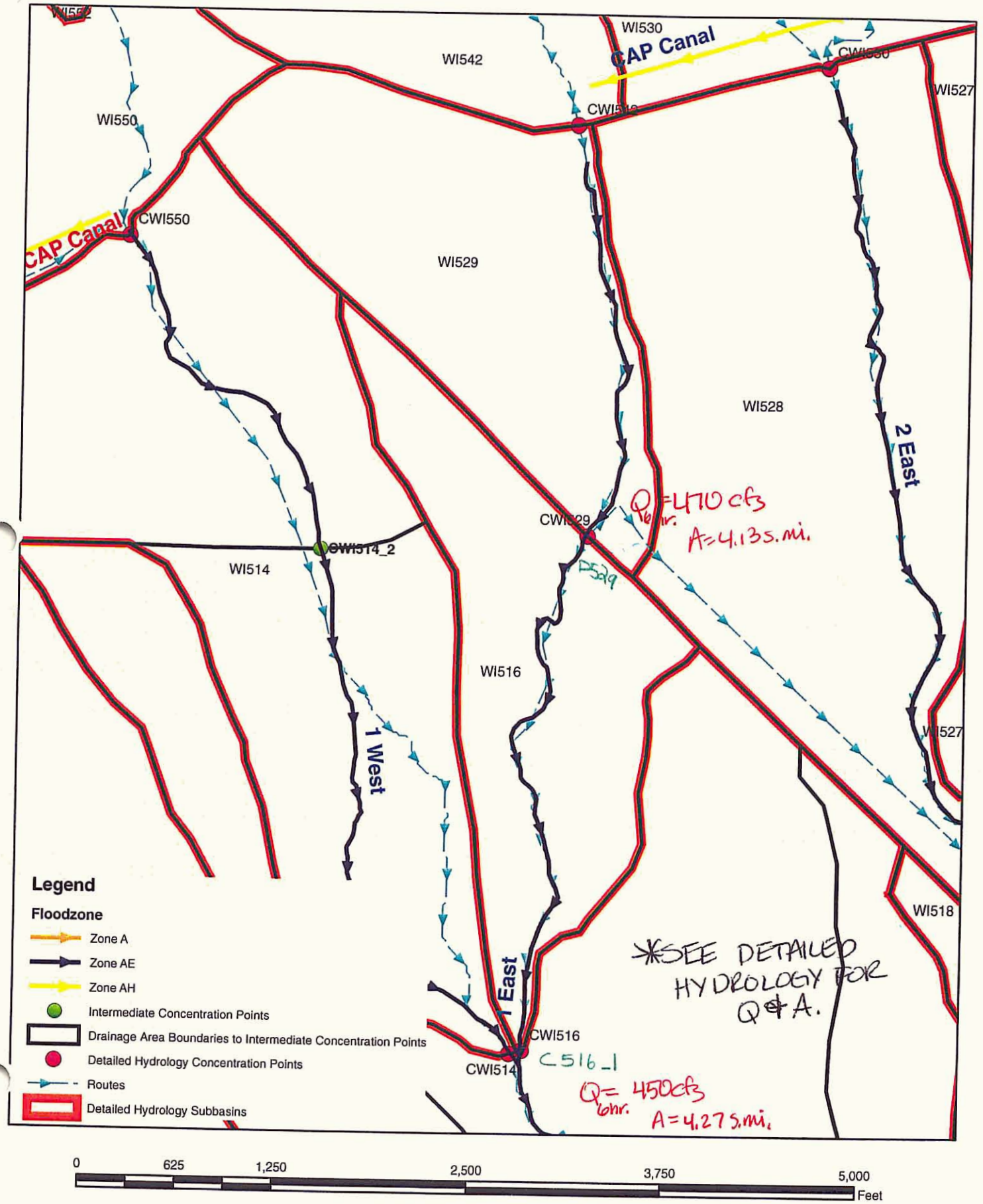
** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

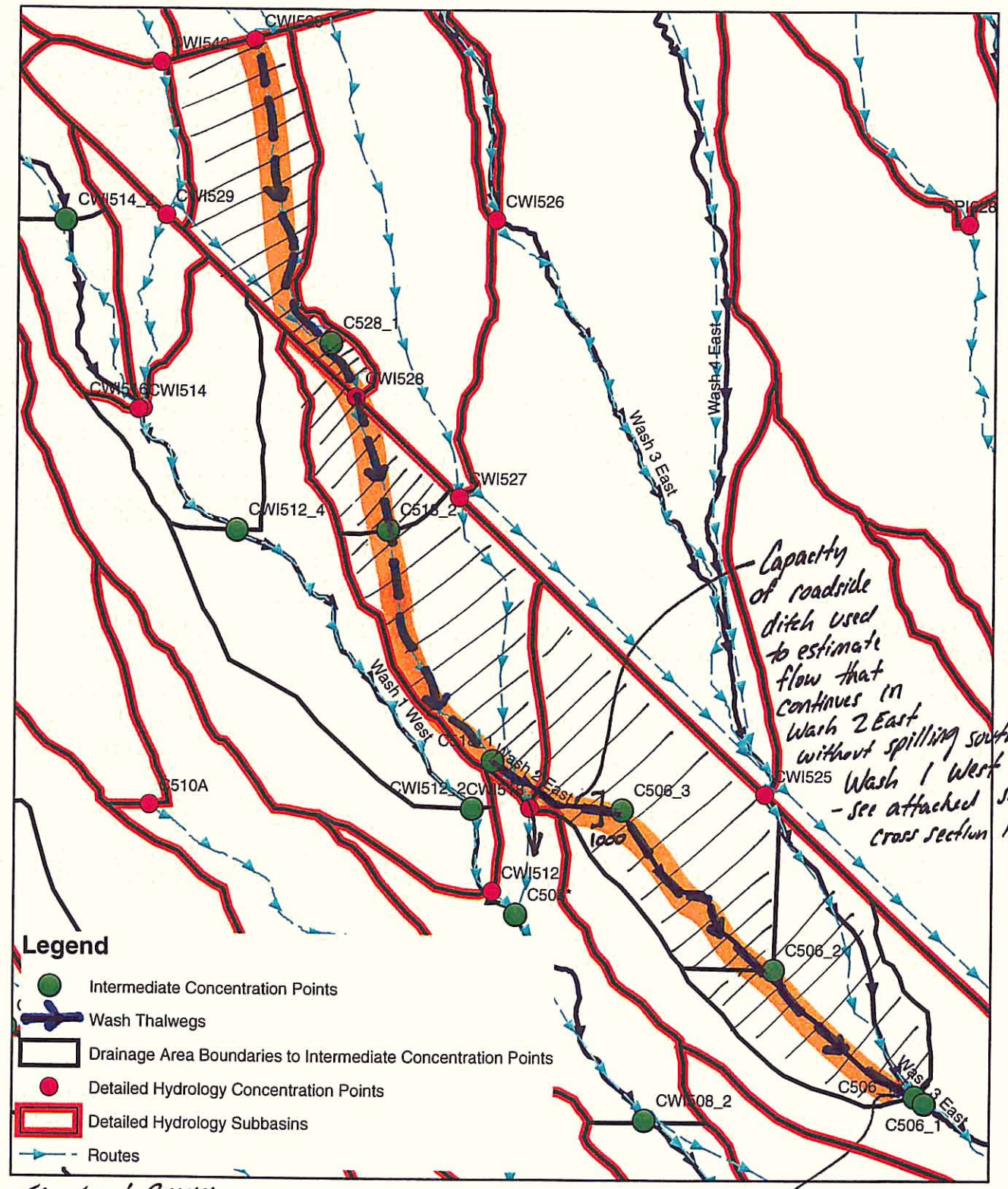
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C628_1	Wash 5E-Failure - 1	3.536	0.306	24-Hour	3.842	0.2594	-0.1321	578
Intermediate	C624A_1	Wash 5E-Failure - 2	3.8420	0.3600	24-Hour	4.2020	0.5156	-0.8686	783

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

1 East


WI542
WI530
CAP Canal
CWI530
WI527
WI550
CWI550
CAP Canal
WI529
WI528
2 East
CWI529
Q 6hr. =470 cfs
A=4.13 s.mi.
D529
CWI514_2
WI514
WI516
1 West
WI527
WI518
*SEE DETAILED HYDROLOGY FOR Q & A.
1 East
CWI516
C516_1
CWI514
Q 6hr. = 450 cfs
A=4.27 s.mi.
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
625
1,250
2,500
3,750
5,000
Feet

WASH 2 EAST SOUTH OF CAP

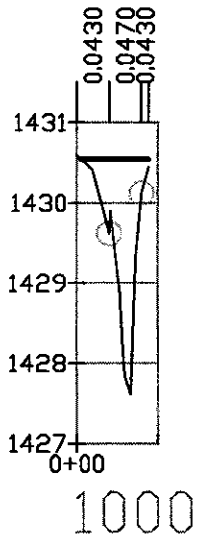


Capacity of roadside ditch used to estimate flow that continues in Wash 2 East without spilling south into Wash 1 West (250cfs) - see attached sheet showing cross section 1000.

Local Drainage areas

C506_2 (Includes flow from CWI525)
C506_2a (does not include flow from CWI525)

Wash 2 East
(Between CWI518 and C506_3)



Normal Depth Results

Cross-Section:	1000	
Elevation:	1430.550	ft MSL
Depth:	2.930	ft
Discharge:	250.000	cfs
Energy Gradient:	0.0059	ft/ft
Froude Number:	0.3159	
Flow Regime:	Subcritical	
Flow Area:	81.460	sq ft
Average Velocity:	3.040	ft/s
Maximum Velocity:	3.420	ft/s
Composite n:	0.0449	
Hydraulic Radius:	0.96	ft
Wetted Perimeter:	84.930	ft
Wetted Top Width:	84.460	ft
Critical Slope:	0.0906	ft/ft

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/17/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 2 EAST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 2 East, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID *	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 2 East - 1	DCAP07	4.05	388	C528_1	6-Hour	4.41	458	0.5134	-0.7217
Wash 2 East - 2	CWI528	3.8	420	C518_1	24-Hour	4.33	609	0.3514	-0.3420
Wash 2 East - 3	C518_1	4.94	588	CWI518	6-Hour	5.54	1019	0.2085	0.1164
Wash 2 East - 4	Split from CWI518	0.336	250	WI506	6-Hour	1.58	1175	Q/A Relationship: Q=743.67*A	
Wash 2 East - 5	CWI525	8.92	1614	C506_1	24-Hour	9.94	1701	2.0623	-5.6652

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	C528_1	Wash 2 East - 1	4.05	0.36	6-Hour	4.41	0.5134	-0.7217	458
Intermediate	C518_2	Wash 2 East - 2	3.8000	0.1520	24-Hour	3.9520	0.3514	-0.3420	470
Detailed Hydrology	C518_1	Wash 2 East - 2	3.9520	0.3780	24-Hour	4.3300	0.3514	-0.3420	609
Detailed Hydrology	CWI518	Wash 2 East - 3	4.3300	1.2100	6-Hour	5.5400	0.2085	0.1164	1019
Intermediate	C506_3	Wash 2 East - 4	0.3360	0.2730	6-Hour	0.6090	n/a	n/a	453
Intermediate	C506_2	Wash 2 East - 4	0.6090	0.2770	6-Hour	0.8860	n/a	n/a	659
Intermediate	C506_2a	Wash 2 East - 4	0.8860	0.3600	6-Hour	1.2460	n/a	n/a	927
Intermediate	C506_1a	Wash 2 East - 5	0.9100	8.9200	24-Hour	9.8300	2.0623	-5.6652	1942

250 cfs was added to these flows to account for the diversion from CWI518 that was not included in the hydrology models.

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* Flows for Concentration points in Reach **Wash 2 East - 4** were calculated in the following manner:

1.) It was assumed that 250cfs was diverted from CWI512. This value was determined as being the maximum capacity of the roadside ditch diverted towards basin WI506.
Any additional flow exceeding the 250cfs from basin WI518 will spill over the roadside ditch and continue to basin WI508 and not towards WI506.
The hydrograph timing of the basins WI518 and WI506 is very similar.

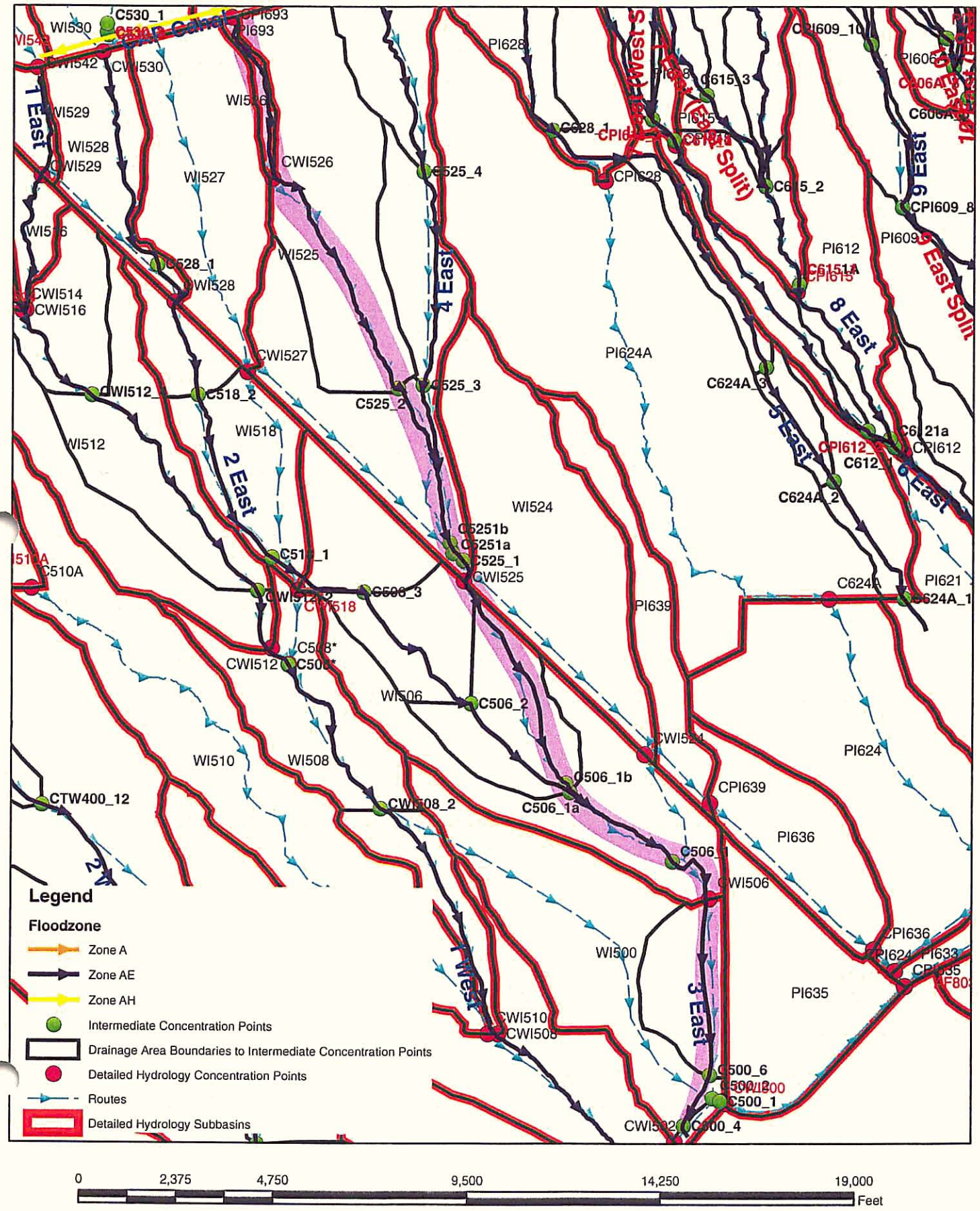
2.) Next a flow/area relationship was determined for basin WI506.
This was done by simply dividing the flow (1175cfs) for basin WI506 by the area (1.58 sq. miles) to get a Q/A value of 743.67 [$^{cfs}/_{sq.\ mile}$] for the basin

3.) A backwards calculation was then performed to determine the equivalent area for a 250cfs flow, the flow which is diverted into the basin
This value is calculated by dividing the flow (250cfs) by the Q/A value (743.67 [$^{cfs}/_{sq.\ mile}$]) to get an equivalent area of 0.336 sq. miles

4.) Basin WI506 was divided as necessary, and the individual divided basin areas are found in the column 'Local Contributing Area'

5.) In order to account for the 250cfs additional flow, the calculated equivalent area (0.336 sq miles) was added to the divided basins
This was done by adding 0.336 sq. miles to concentration point C506_3 in the column 'Contributing Area from Upstream Concentration'
This added 0.336 sq. miles is associated with all concentration points for **Wash 2 East - 4**

3 East


1 East
2 East
3 East
4 East
5 East
6 East
8 East
9 East
East Split
Legend
Floodzone
Zone A
Zone AE
Zone AH
Intermediate Concentration Points
Drainage Area Boundaries to Intermediate Concentration Points
Detailed Hydrology Concentration Points
Routes
Detailed Hydrology Subbasins
0
2,375
4,750
9,500
14,250
19,000
Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/15/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 3 EAST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 3 East, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 3 East - 1	DCAP08	4.052	397	CWI526	6-Hour	4.1	436	0.1257	0.2811
Wash 3 East - 2	CWI526	3.49	418	C525_1	24-Hour	5.43	1569	0.3342	-0.3331
Wash 3 East - 3	C525_1	5.43	1569	C5251A	24-Hour	8.87	1614	17.3545	-54.7237
Wash 3 East - 4	CWI525	8.92	1614	C506_1	24-Hour	9.94	1701	2.0623	-5.6652
Wash 3 East - 5	C506_1	9.94	1701	CWI506	24-Hour	11.42	2209	0.5311	-0.7186
Wash 3 East - 6	CWI506	11.42	2209	C500_1	24-Hour	12.47	2462	0.8112	-1.6551
Wash 3 East - 7	CWI506	11.42	2209	C500_2	24-Hour	20.32	2751	2.6261	-7.7247
Wash 3 East - 8	CWI506	11.42	2209	CWI500	24-Hour	222.82	23044	1.2670	-3.1795

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

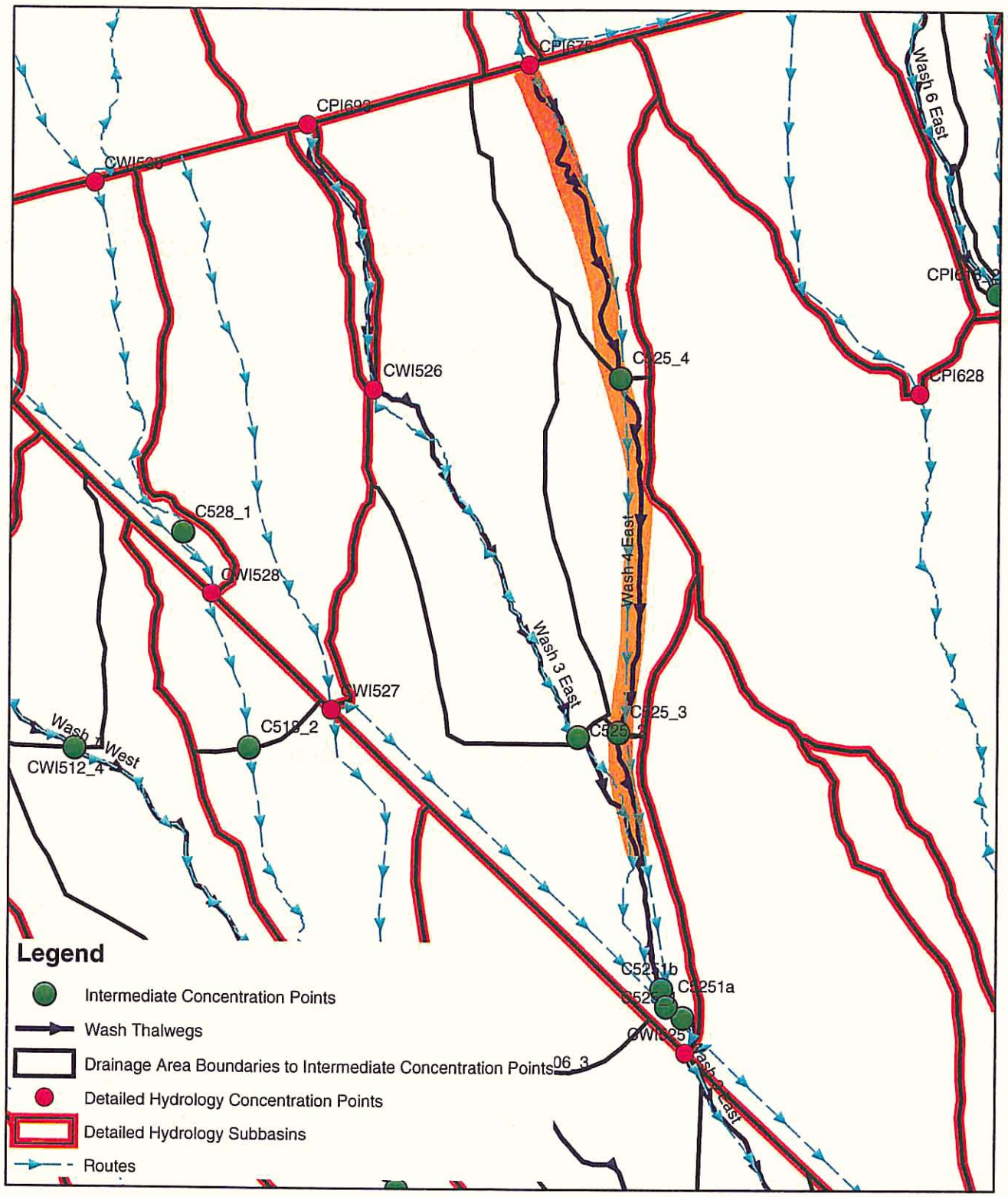
Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	CWI526	Wash 3 East - 1	4.052	0.048	6-Hour	4.1	0.1257	0.2811	436
Intermediate	C525_2	Wash 3 East - 2	3.4900	0.8020	24-Hour	4.2920	0.3342	-0.3331	776
Detailed Hydrology	CWI525	Wash 3 East - 3	4.2920	4.5780	24-Hour	8.8700	17.3545	-54.7237	1614
Intermediate	C506_1b	Wash 3 East - 4	8.9200	0.3600	24-Hour	9.2800	2.0623	-5.6652	1645
Intermediate	C506_1a	Wash 3 East - 4	9.2800	0.5500	24-Hour	9.8300	2.0623	-5.6652	1942
Detailed Hydrology	C506_1	Wash 3 East - 4	9.2800	0.6600	24-Hour	9.9400	2.0623	-5.6652	1951
Detailed Hydrology	CWI506	Wash 3 East - 5	9.9400	1.4800	24-Hour	11.4200	0.5311	-0.7186	2459
Intermediate	C500_6	Wash 3 East - 6	11.4200	0.2580	24-Hour	11.6780	0.8112	-1.6551	2521
Intermediate	C500_4	Wash 3 East - 7	11.6780	8.6190	24-Hour	20.2970	2.6261	-7.7247	3000
Detailed Hydrology	CWI500	Wash 3 East - 8	20.2970	202.5230	24-Hour	222.8200	1.2670	-3.1795	23294

*250 cfs was added to these flows to account for the diversion from CWI518 that was not included in the hydrology models.

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* See Flow Estimates for Wash 2 East for more explanation.

WASH 4 EAST SOUTH OF CAP



0 1,600 3,200 6,400 9,600 12,800 Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/17/2005
CHECK	RAS	DATE	3-2-05
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 4 EAST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 4 East, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 4 East - 1	DCAP09	4.0923	400	C5251b	6-Hour	6.01	1695	0.2662	-0.0806

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

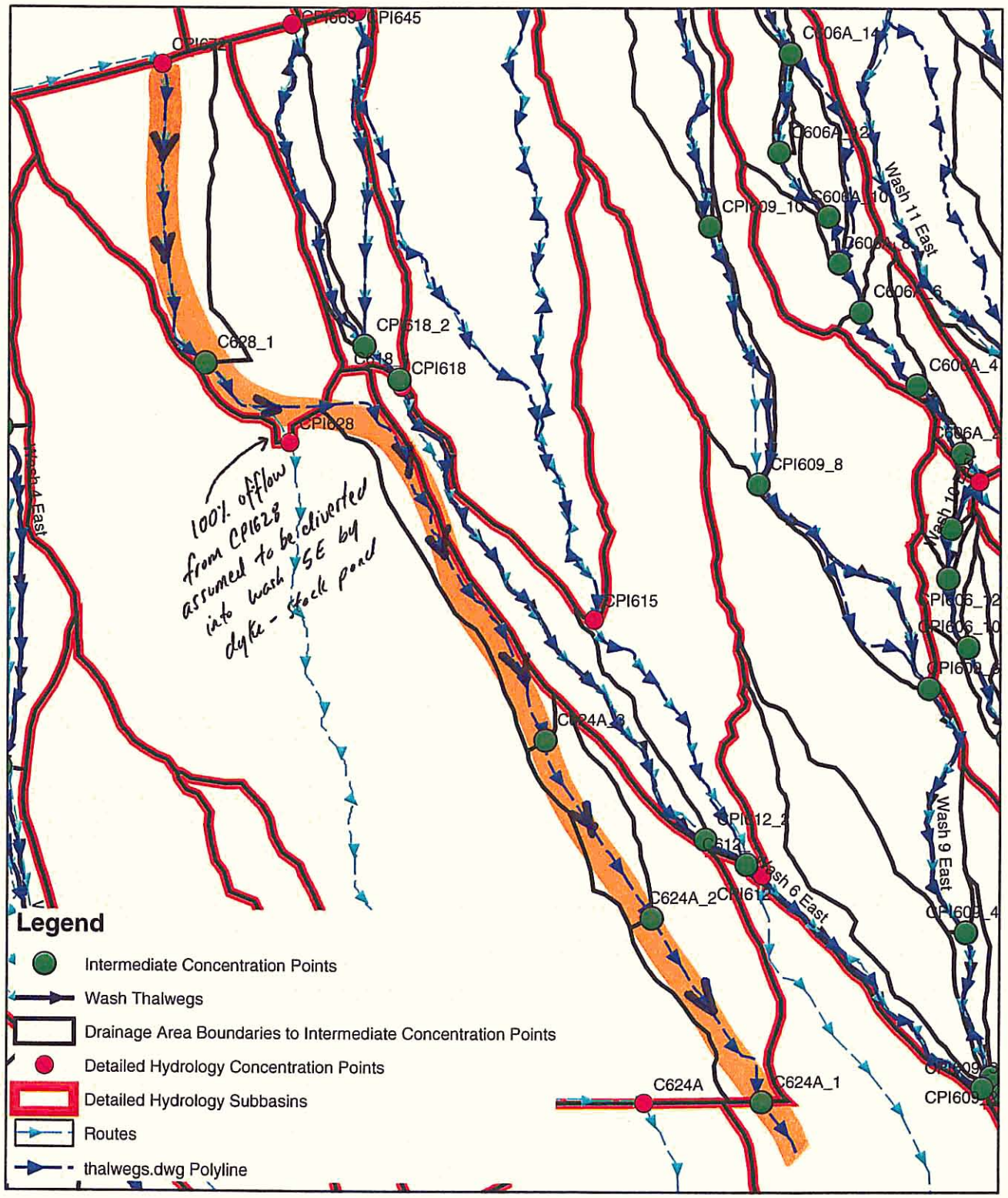
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C525_4	Wash 4 East - 1	4.0923	0.305	6-Hour	4.3973	0.2662	-0.0806	524
Intermediate	C525_3	Wash 4 East - 1	4.3973	0.2890	6-Hour	4.6863	0.2662	-0.0806	666

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* See Flow Estimates for Wash 2 East for more explanation.

WASH 5 EAST SOUTH OF CAP



Legend

- Intermediate Concentration Points
- Wash Thalwegs
- Drainage Area Boundaries to Intermediate Concentration Points
- Detailed Hydrology Concentration Points
- Detailed Hydrology Subbasins
- Routes
- thalwegs.dwg Polyline

0 1,700 3,400 6,800 10,200 13,600 Feet

Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/21/2005
CHECK	RAS	DATE	3-2-05
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 5 EAST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 5 East, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C* Log (Fd)
Wash 5E - 1	DCAP10	3.536	420	CPI628	24-Hour	4.11	750	0.2594	-0.1321
Wash 5E - 2	CPI628	4.11	750	C624A	24-Hour	6.92	2060	0.5156	-0.8686

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

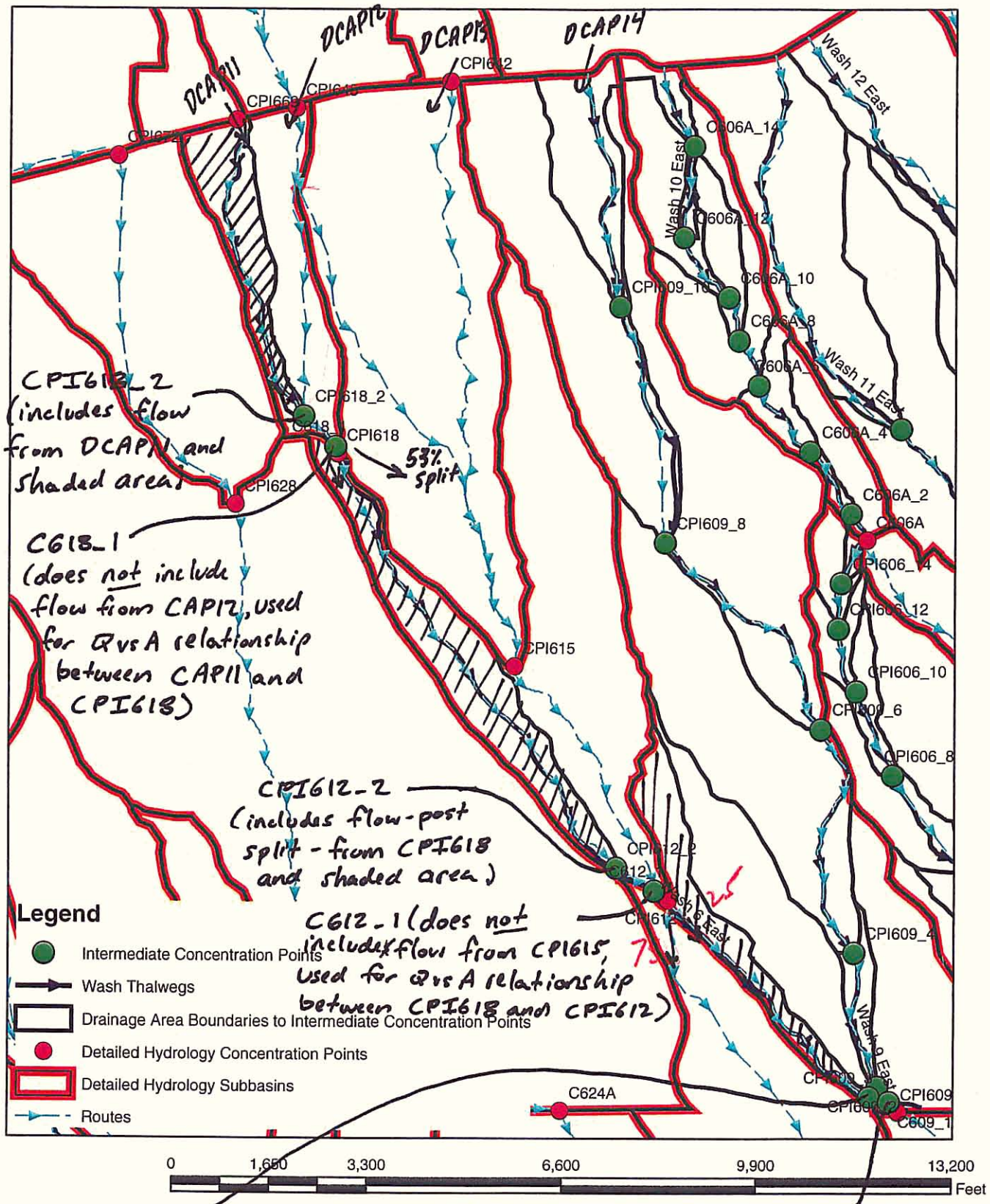
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C628_1	Wash 5E - 1	3.536	0.306	24-Hour	3.842	0.2594	-0.1321	578
Detailed Hydrology	CPI628	Wash 5E - 1	3.8428	0.2680	24-Hour	4.11	0.2594	-0.1321	750
Intermediate	C624A_3	Wash 5E - 2	4.1100	0.1260	24-Hour	4.2360	0.5156	-0.8686	795
Intermediate	C624A_2	Wash 5E - 2	4.2360	0.0930	24-Hour	4.3290	0.5156	-0.8686	829
Intermediate	C624A_1	Wash 5E - 2	4.3290	0.2170	24-Hour	4.5460	0.5156	-0.8686	912

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

* See Flow Estimates for Wash 2 East for more explanation.

WASH 6 EAST SOUTH OF CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET 1 OF

BY JCS DATE 11/17/2004

CHECK RAS DATE 2/7/2005

Revised by JCS 2/22/2005

JOB NO. 310.032

Table D.3: Flow Calculations : WASH 6 EAST (South of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 6 East.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 6 East - 1	DCAP11	4.2566	416	C618_1	6-Hour	4.55	464	0.6104	-0.9697
Wash 6 East - 2	CPI618	5.69	629	C612_1	24-Hour	6.22	799	0.3723	-0.2868
Wash 6 East - 3	D612	4.15	355	C609_1	24-Hour	5.06	1199	0.1629	0.2026
Wash 6 East - 4	CPI609	8.1	1199	C600A	24-Hour	8.62	1287	0.8785	-1.7963

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

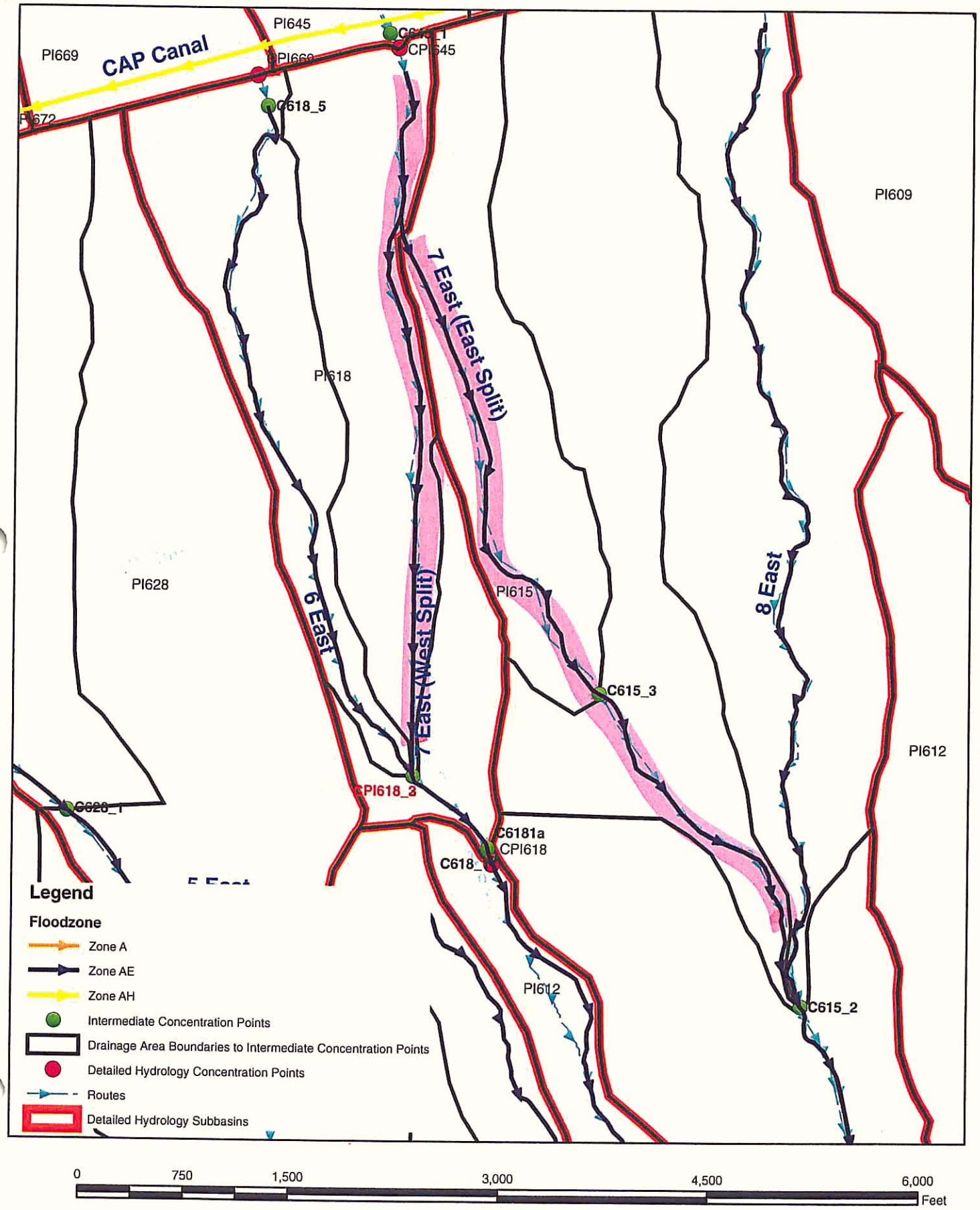
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	CPI618_2	Wash 6 East - 1	4.2566	0.1140	6-Hour	4.3706	0.6104	-0.9697	434
Detailed Hydrology	CPI618	Wash 6 East - 2	5.6900	0.0000	24-Hour	5.6900	0.3723	-0.2868	629
Intermediate	CPI612_2	Wash 6 East - 2	5.6900	0.2110	24-Hour	5.9010	0.3723	-0.2868	694
Detailed Hydrology	C612_1	Wash 6 East - 2	5.9010	0.3190	24-Hour	6.2200	0.3723	-0.2868	799
Intermediate	CPI609_3	Wash 6 East - 3	4.1500	0.1190	24-Hour	4.2690	0.1629	0.2026	422
Detailed Hydrology	CPI609	Wash 6 East - 4	4.2690	3.8310	24-Hour	8.1000	0.8785	-1.7963	1199

CPI612 used for 6E and 8E confluence before split = 1360 cfs (24 hour controlling)

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

WASH 7 EAST (SOUTH OF CAP)



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	JCS	DATE	2/22/2005
CHECK	RAS	DATE	3-3-05
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 7 EAST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 7 East, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 7E - 1	DCAP12	n/a	n/a	DCAP12	24-Hour	3.452	410	n/a	n/a
West Split 7E - 1	D618	1.92	188	C6181A	6-Hour	2.21	470	0.1535	-0.0658
East Split 7E - 1	DO618	2.169	212	C615_1	6-Hour	3.01	852	0.2356	-0.2117

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Detailed Hydrology	DCAP12	Wash 7E - 1	3.452	0	24-Hour	3.452	n/a	n/a	410
Intermediate	CPI618_3	West Split 7E - 1	1.92	0.124	6-Hour	2.044	0.1535	-0.0658	283
Intermediate	C615_3	East Split 7E - 1	2.1690	0.1210	6-Hour	2.2900	0.2356	-0.2117	267
Intermediate	C615_2	East Split 7E - 1	2.2900	0.2430	6-Hour	2.5330	0.2356	-0.2117	410

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

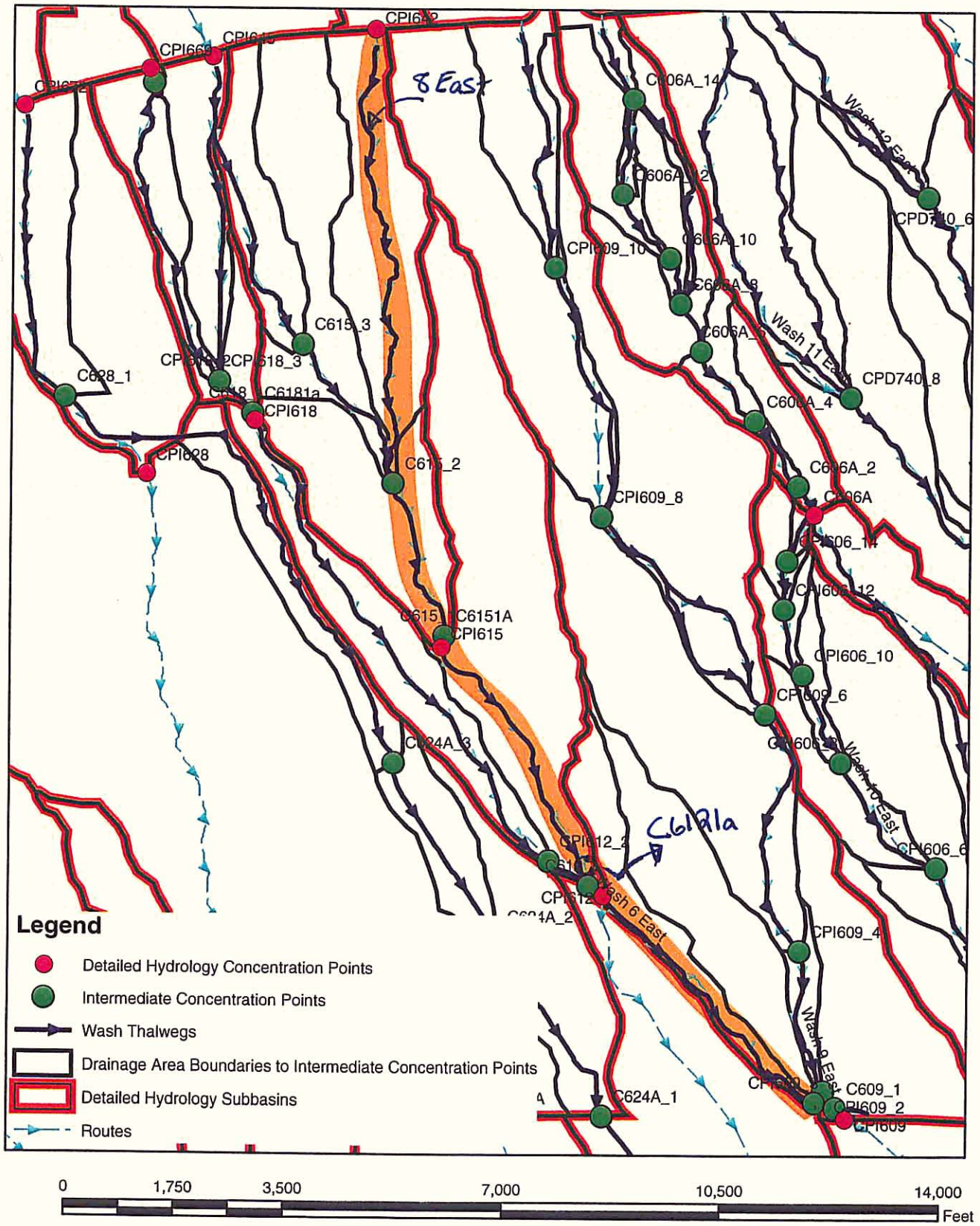
Wash 7 East is split into three (3) segments.

1.) The first is a small segment between the CAP and where diversion D618 occurs. The flow used here is that of DCAP12 (410 cfs)

2.) The second is the West Split portion of 7 East. To get these flows the diversion was taken (DO618) and a flow area relationship was developed from there to C615_1, which does not include flow from CAP11. This segment is only used from D618 to CPI618_3.

3.) The third segment is the East Split portion of 7 East. The flows from the split (DO618) to C615_1, which does not include flow from CAP13, were utilized. This segment extends from DO618 to C615_2.

WASH 8 EAST SOUTH OF CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET	1	OF	
BY	RAS	DATE	3/3/2005
CHECK		DATE	
JOB NO.	310.032		

Table D.3: Flow Calculations : WASH 8 EAST (SOUTH OF CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 8 East, South of the CAP.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm Duration**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
West 8 East - 1a	DOCP13	3.536	420	C6151A	24-Hour	4.38	672	0.4554	-0.6462
West 8 East - 1b	DOCP13	3.536	420	CPI615	24-Hour	6.2	709	1.0725	-2.2649
West 8 East - 2	CPI615	6.2	709	C6121a	24-Hour	6.94	1083	0.2662	0.0337
West 8 East - 3	D612	3.61	320	C609_1	6-Hour	5.55	1217	0.3220	-0.2491

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Controlling Storm Duration	Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C615_2	West 8 East - 1a	3.536	0.255	24-Hour	3.791	0.4554	-0.6462	489
Detailed Hydrology	CPI615	West 8 East - 1b	3.7910	2.4090	24-Hour	6.2	1.0725	-2.2649	709
Detailed Hydrology	C6121a	West 8 East - 2	6.2000	0.7400	24-Hour	6.94	0.2662	0.0337	1083
Intermediate	CPI609_3 (Post Diversion)	West 8 East - 3	3.6100	0.1200	6-Hour	3.73	0.3220	-0.2491	354

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

There are four (4) flow segments to Wash 8 East.

1.) The first is from CAP13 to CPI615. A new concentration point was added (C6151A) that does not include D618.

2.) The second reach is from CAP13 to CPI615, but does include D618.

3.) The third reach is from CPI615 to CPI612, but an additional concentration point was added (C6121a) that did not include RPI618.

4.) The final reach occurs after the diversion at CPI612, and goes from CPI612 to CPI609. An additional concentration point was added to not include flow from RCP13.

WASH 9 EAST

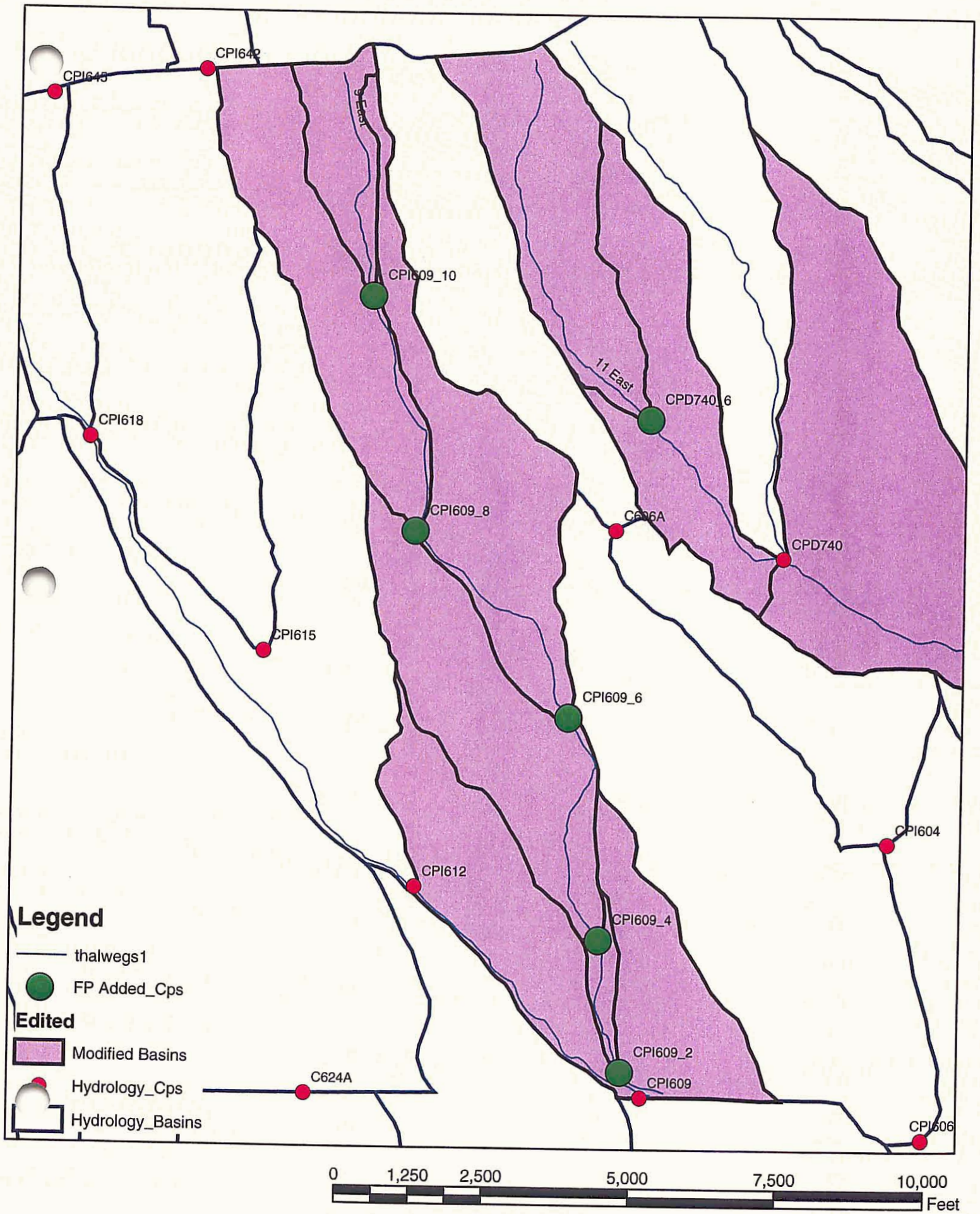

CPI642
CPI645
9 East
CPI609_10
11 East
CPD740_6
CPI618
CPI609_8
C606A
CPD740
CPI615
CPI609_6
CPI604
CPI612
CPI609_4
CPI609_2
CPI609
C624A
CPI606
Legend
thalwegs1
FP Added_Cps
Edited
Modified Basins
Hydrology_Cps
Hydrology_Basins
0
1,250
2,500
5,000
7,500
10,000
Feet

Table D.3: Flow Calculations

SHEET	1	OF	
BY	JCS	DATE	11/17/2004
CHECK		DATE	
JOB NO.	310.032		

Hus

FCDMC

Wittmann Area Drainage Master Study Update

preadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 9 East.

Wash Reach Summary

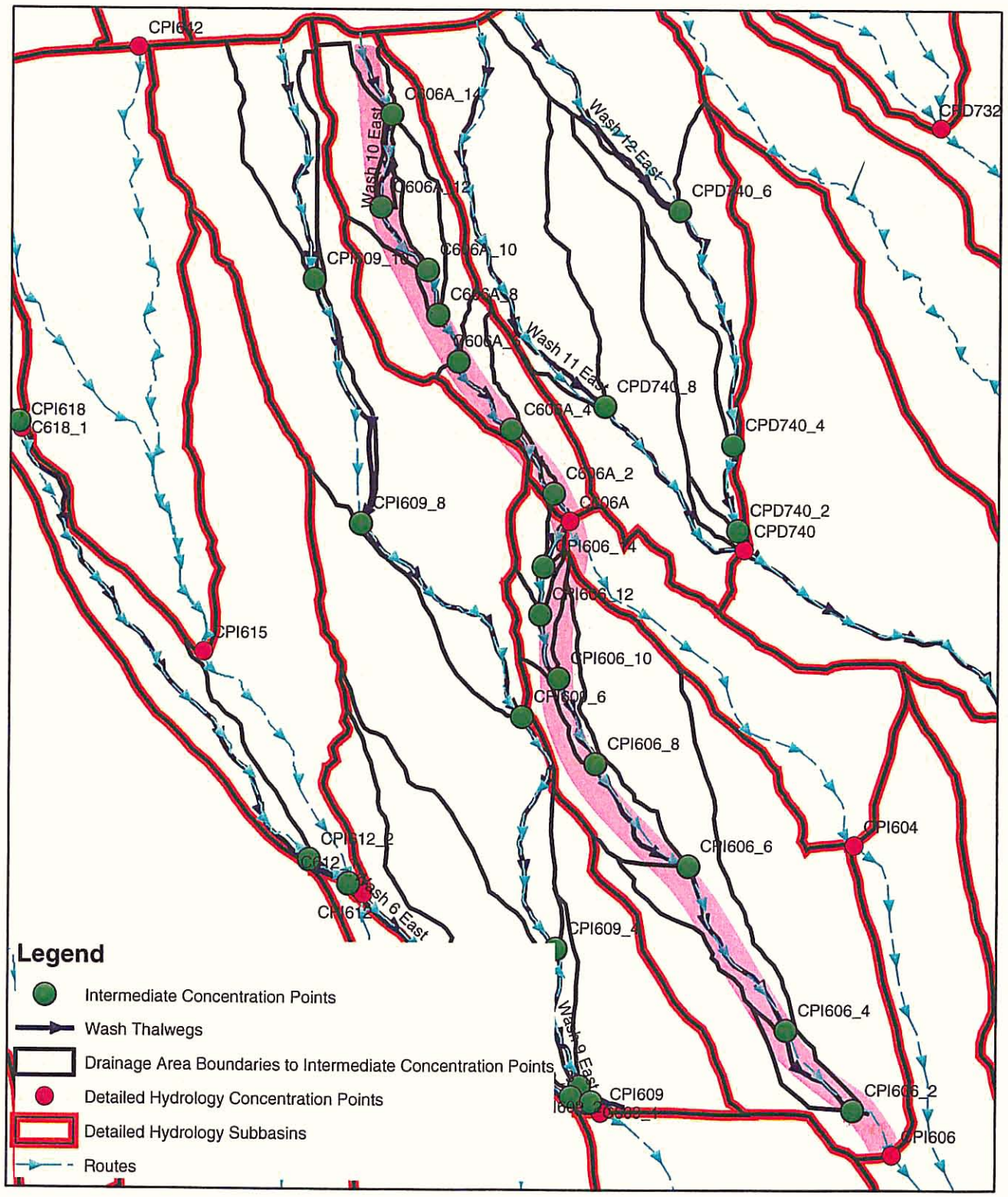
Reach ID	Upstream Concentration Pt. ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	Downstream Concentration Pt. ID	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	log(Area) =C*log(Flow) + B: C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 9 East - 1	DOCP14	3.05	362	CPI609	8.1	1187	0.8225	-2

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)	Total Contributing Area (sq mi)	Reach C	Reach B	Base Flow (cfs)
Intermediate	CPI609_10	Wash 9 East - 1	3.05	0.12	3.17	0.822	-2	379
Intermediate	CPI609_8	Wash 9 East - 1	3.17	0.35	3.52	0.822	-2	431
Intermediate	CPI609_6	Wash 9 East - 1	3.52	0.42	3.94	0.822	-2	494
Intermediate	CPI609_4	Wash 9 East - 1	3.94	0.4	4.34	0.822	-2	556
Intermediate	CPI609_2	Wash 9 East - 1	4.34	0.03	4.37	0.822	-2	561
Detailed Hydrology	CPI609	Wash 9 East - 1	4.37	3.73	8.1	0.822	-2	1187

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

WASH 10 EAST SOUTH OF CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET 1 OF

BY JCS DATE 11/17/2004

CHECK BAS DATE 2-8-05

JOB NO. 310.032

Table D.3: Flow Calculations : WASH 10 EAST (South of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 10 East.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 10 East - 1	DCAP16	2.959	215	C606A	6-Hour	3.55	368	0.3388	-0.3191
Wash 10 East - 2	D606A	2.0945	217	CPI606	6-Hour	3.17	753	0.3331	-0.4572
Wash 10 East - 3	CPI606	3.49	701	CPI603	24-Hour	15.46	2450	1.1894	-2.8419

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

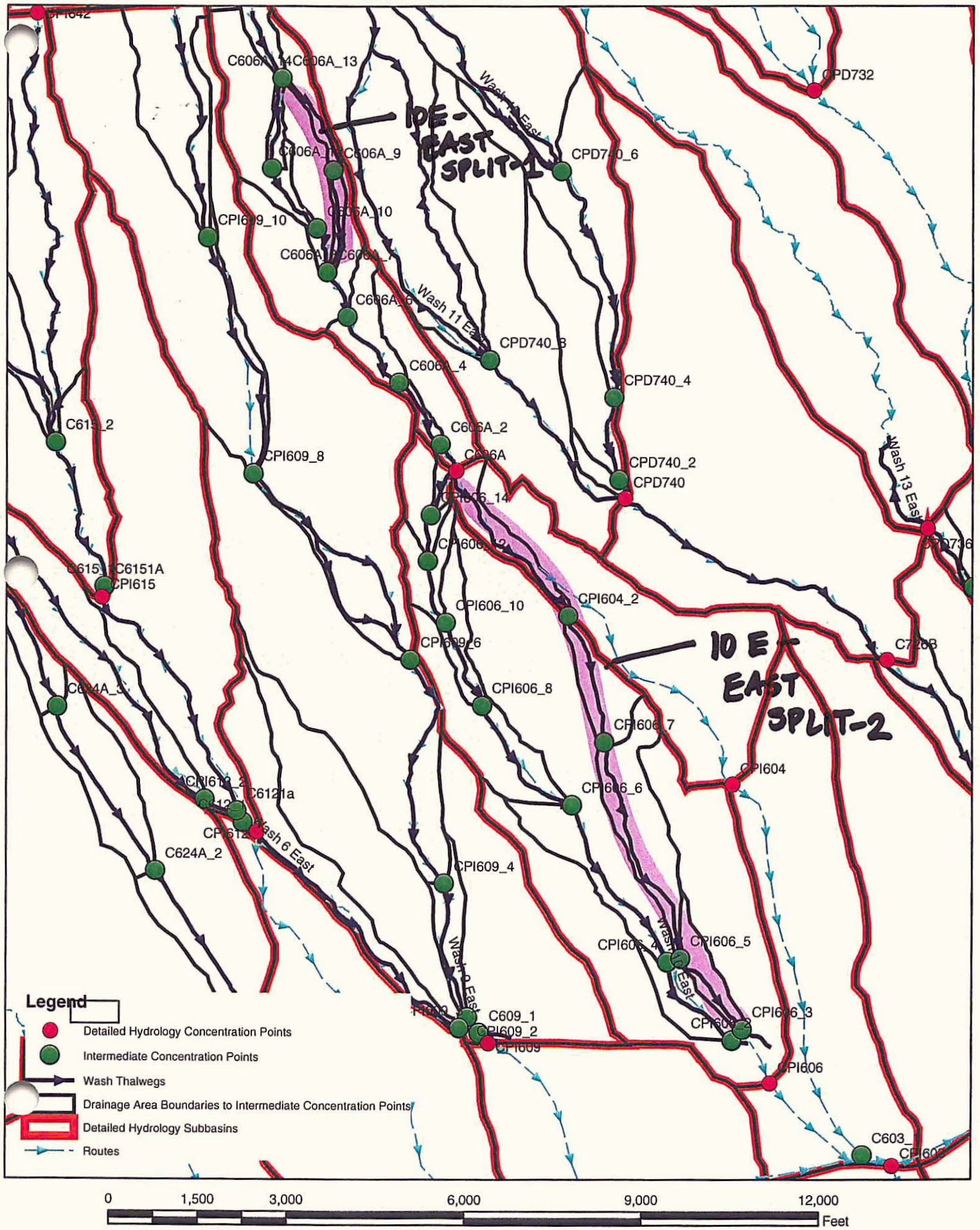
Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)		Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C606A_14 (Pre- 43% Split)	Wash 10 East - 1	2.9590	0.0270	6-Hour	2.9860	0.3388	-0.3191	221
Intermediate	C606A_14 (Post- 43% Split)	Wash 10 East - 1	2.9860	-0.5200	6-Hour	2.4660	0.3388	-0.3191	126
Intermediate	C606A_12	Wash 10 East - 1	2.4660	0.0110	6-Hour	2.4770	0.3388	-0.3191	127
Intermediate	C606A_10	Wash 10 East - 1	2.4770	0.0930	6-Hour	2.5700	0.3388	-0.3191	142
Intermediate	C606A_8 (Split Confluence)	Wash 10 East - 1	2.5700	0.5690	6-Hour	3.1390	0.3388	-0.3191	256
Intermediate	C606A_6	Wash 10 East - 1	3.1390	0.1440	6-Hour	3.2830	0.3388	-0.3191	292
Intermediate	C606A_4	Wash 10 East - 1	3.2830	0.0460	6-Hour	3.3290	0.3388	-0.3191	304
Intermediate	C606A_2	Wash 10 East - 1	3.3290	0.0110	6-Hour	3.3401	0.3388	-0.3191	307
Detailed Hydrology	C606A	Wash 10 East - 1	3.3401	0.2099	6-Hour	3.5500	0.3388	-0.3191	368
Detailed Hydrology	D606A (Post Split)	Wash 10 East - 2	3.5500	-1.4555	6-Hour	2.0945	0.3331	-0.4572	217
Intermediate	CPI606_14	Wash 10 East - 2	2.0945	0.0080	6-Hour	2.1025	0.3331	-0.4572	219
Intermediate	CPI606_12	Wash 10 East - 2	2.1025	0.0349	6-Hour	2.1374	0.3331	-0.4572	231
Intermediate	CPI606_10	Wash 10 East - 2	2.1374	0.0352	6-Hour	2.1726	0.3331	-0.4572	242
Intermediate	CPI606_8	Wash 10 East - 2	2.1726	0.0356	6-Hour	2.2082	0.3331	-0.4572	254
Intermediate	CPI606_6	Wash 10 East - 2	2.2082	0.0951	6-Hour	2.3033	0.3331	-0.4572	289
Intermediate	CPI606_4	Wash 10 East - 2	2.3033	0.3021	6-Hour	2.6054	0.3331	-0.4572	418
Intermediate***	CPI606_2	Wash 10 East - 2	2.6054	0.0385	6-Hour	2.6439	0.3331	-0.4572	437
Detailed Hydrology	CPI606	Wash 10 East - 2	2.6439	0.5271	6-Hour	3.1700	0.3331	-0.4572	753
Detailed Hydrology	CPI603	Wash 10 East - 3	3.1700	12.2900	24-Hour	15.4600	1.1894	-2.8419	2450

***** Note: Flows were estimated assuming the levee/berm will not fail.**

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

WASH 10 EAST (EAST SPLIT-1 &EAST SPLIT-2) SOUTH OF CAP



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

SHEET 1 OF

BY RAS DATE 3/9/2005

CHECK DATE

JOB NO. 310.032

Table D.3: Flow Calculations : WASH 10 EAST (East Split-1) & WASH 10 EAST (East Split-2), (South of CAP)

Description: This spreadsheet was used to estimate flows at intermediate locations between concentration points from the detailed hydrology for Wash 10 East.

Wash Reach Summary

	Upstream Concentration Pt.			Downstream Concentration Pt.				log(Area) =C*log(Flow) + B	
Reach ID	ID	Au = Contributing Area (sq mi)	Fu = Base Flow (cfs)	ID	Controlling Storm**	Ad = Contributing Area (sq mi)	Fd = Base Flow (cfs)	C = log(Fd/Fu)/log(Ad/Au)	B = Log (Ad) - C*Log (Fd)
Wash 10 East 1 - 1	DCAP16	2.959	215	C606A	6-Hour	3.55	368	0.3388	-0.3191
Wash 10 East 2 - 1	DO606A	1.457	151	CPI604	6-Hour	1.82	469	0.1963	-0.2642
Wash 10 East 2 - 2	CPI604_2	1.4980	174	C603_1	6-Hour	5.51	1297	0.6484	-1.2772

** The controlling storm duration at the downstream concentration point of each reach was used to develop the Q vs A relationship for the reach

Concentration Point Flow Estimates

Concentration Point Source	Concentration ID	Reach ID	Contributing Area from Upstream Concentration (sq mi)	LA = Local Contributing Area (sq mi)		Total Contributing Area (sq mi)	"C" for Reach	"B" for Reach	Base Flow (cfs)
Intermediate	C606A_13 (Pre- 57% Split)	Wash 10 East 1 - 1	2.9590	0.0270	6-Hour	2.9860	0.3388	-0.3191	221
Intermediate	C606A_13 (Post- 57% Split)	Wash 10 East 1 - 1	2.9860	-0.7424	6-Hour	2.2437	0.3388	-0.3191	95
Intermediate	C606A_9	Wash 10 East 1 - 1	2.2437	0.0300	6-Hour	2.2737	0.3388	-0.3191	99
Intermediate	C606A_7	Wash 10 East 1 - 1	2.2737	0.0110	6-Hour	2.2847	0.3388	-0.3191	100
Detailed Hydrology	DO606A	Wash 10 East 2 - 1	1.4570	0.0000	6-Hour	1.4570	0.1963	-0.2642	151
Intermediate	CPI604_2	Wash 10 East 2 - 1	1.4570	0.0410	6-Hour	1.4980	0.1963	-0.2642	174
Intermediate	CPI606_7	Wash 10 East 2 - 2	1.4980	0.0470	6-Hour	1.5450	0.6484	-1.2772	182
Intermediate	CPI606_5	Wash 10 East 2 - 2	1.5450	0.0940	6-Hour	1.6390	0.6484	-1.2772	200
Intermediate	CPI606_3	Wash 10 East 2 - 2	1.6390	0.0280	6-Hour	1.6670	0.6484	-1.2772	205

***** Note: Flows were estimated assuming the levee/berm will not fail.**

Note: In order to perform these estimates, each stream segment between concentration points from the detailed hydrology was assigned a reach ID. It was assumed that the area versus flow relationship (S) was constant and logarithmic for each reach, and was used to estimate the flow at points along the reach. The local contributing areas to each intermediate concentration point was estimated in ArcMap using the project mapping and aerial photography.

Flows for Wash 10 East (East Split-1) and (East Split-2) were calculated using three (3) reaches.

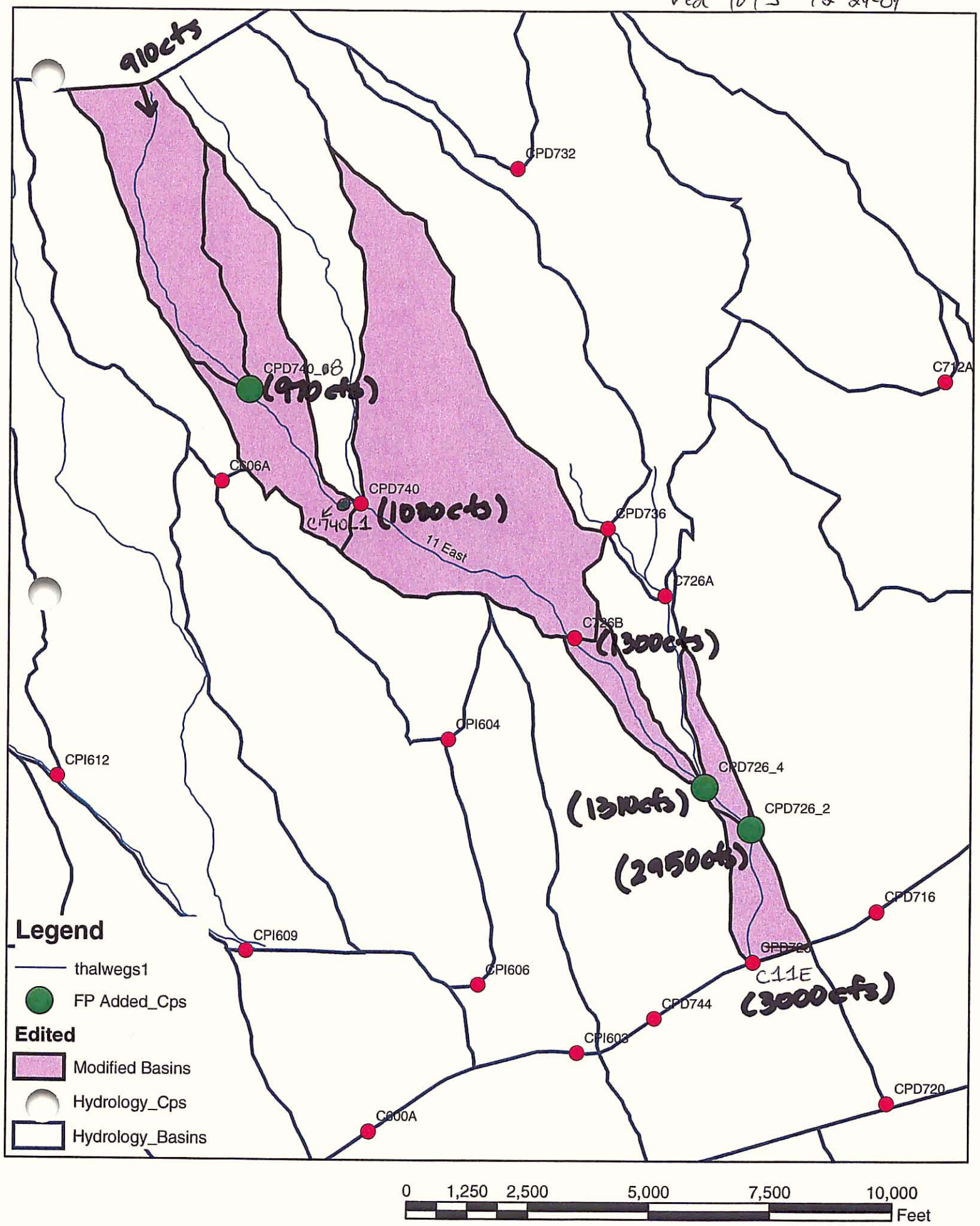
1.) The first reach (East Split-1) is inbasin PI606A and assumes that 57% of the flow leaves the reach, and returns at concentration point C606A (see spreadsheet for Wash 10 East).

2.) The next two segements are for reach East Split-2. The first is from teh split at concentration point C606A until the thalweg crosses the basin boundary of PI604.

3.) The last segment utilizes the thalweg flow leaving basin PI604 as the upstream boundary for the Q/A relationship, and concentration point C603_1.

WASH 11 EAST

Ved RAS 12-24-04



Entellus

Table D.3: Flow Calculations

SHEET 1 OF

BY AMG DATE 11/9/2004

CHECK RAK DATE 12-24-04

CLIENT: FCDMC

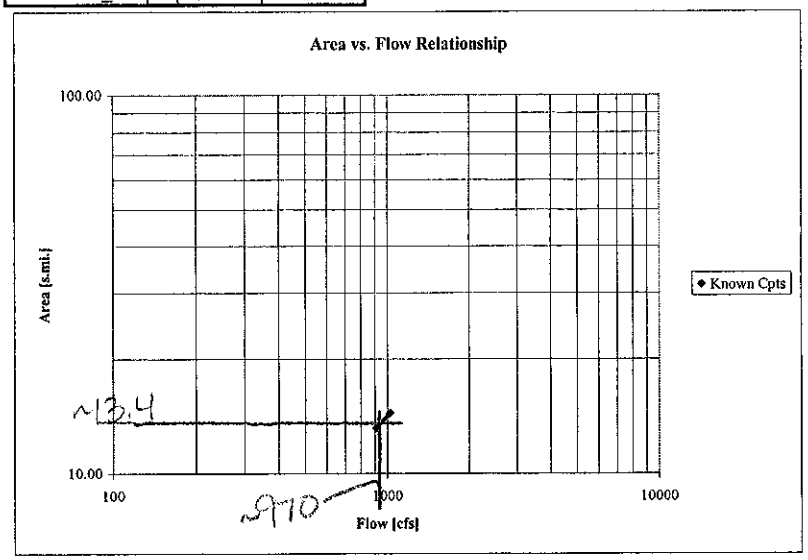
JOB: Wittmann Area Drainage Master Study Update

JOB NO. 310.032

Description: Flow is for wash 11 East that moves southwesterly, and meets Beardsley Canal downstream.

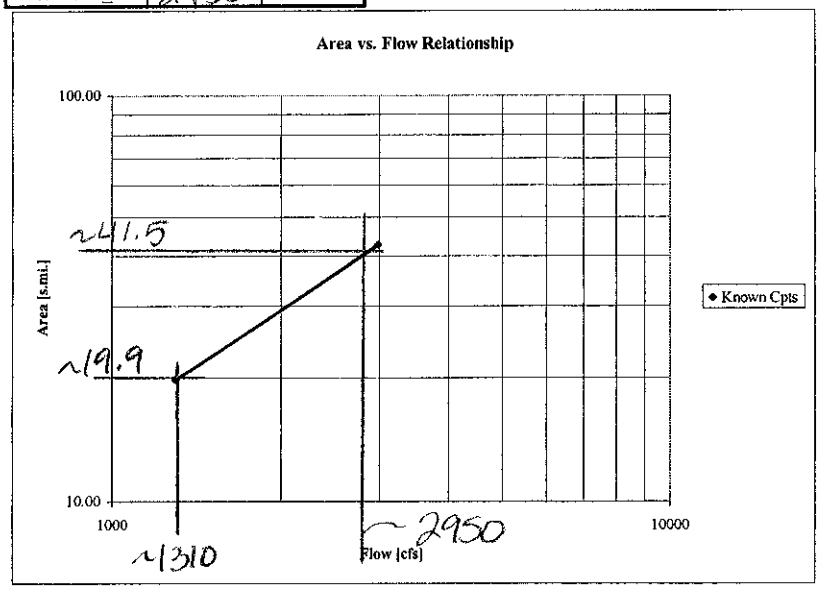
		Flow [cfs]	Area [s.mi]
Upstream Concentration Point	DOCP16	913	13.12
Downstream Concentration Point	C740_1	1024	14.40

		Flow [cfs]	Area [s.mi] (measured from ArcView, includes upstream area)
Unknown Concentration Point	CPD740_8	970	13.48

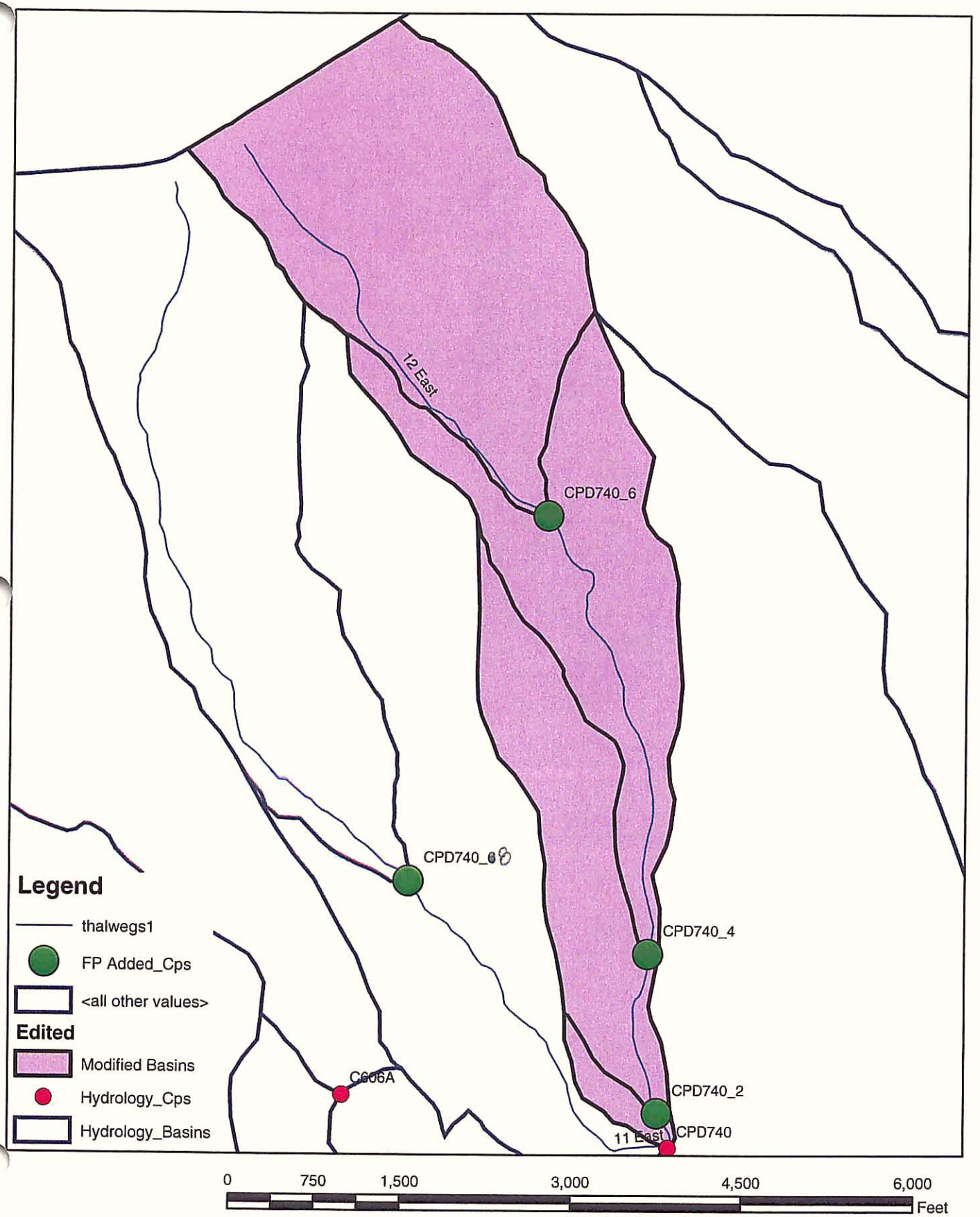


		Flow [cfs]	Area [s.mi]
Upstream Concentration Point	C726B	1298	19.77
Downstream Concentration Point	C11E	2989	42.53

		Flow [cfs]	Area [s.mi] (measured from ArcView, includes upstream area)
Unknown Concentration Point	CPD726_4	1310	19.85
	CPD726_2	2950	41.48



WASH 12 EAST


12 East
CPD740_6
CPD740_6
CPD740_4
CPD740_2
CPD740
11 East
C606A
Legend
thalwegs1
FP Added_Cps
<all other values>
Edited
Modified Basins
Hydrology_Cps
Hydrology_Basins
0
750
1,500
3,000
4,500
6,000
Feet

Entellus

Table D.3: Flow Calculations

SHEET 1 OF

BY AMG DATE 11/12/2004

CHECK RAS DATE 1-19-05

CLIENT: FCDMC

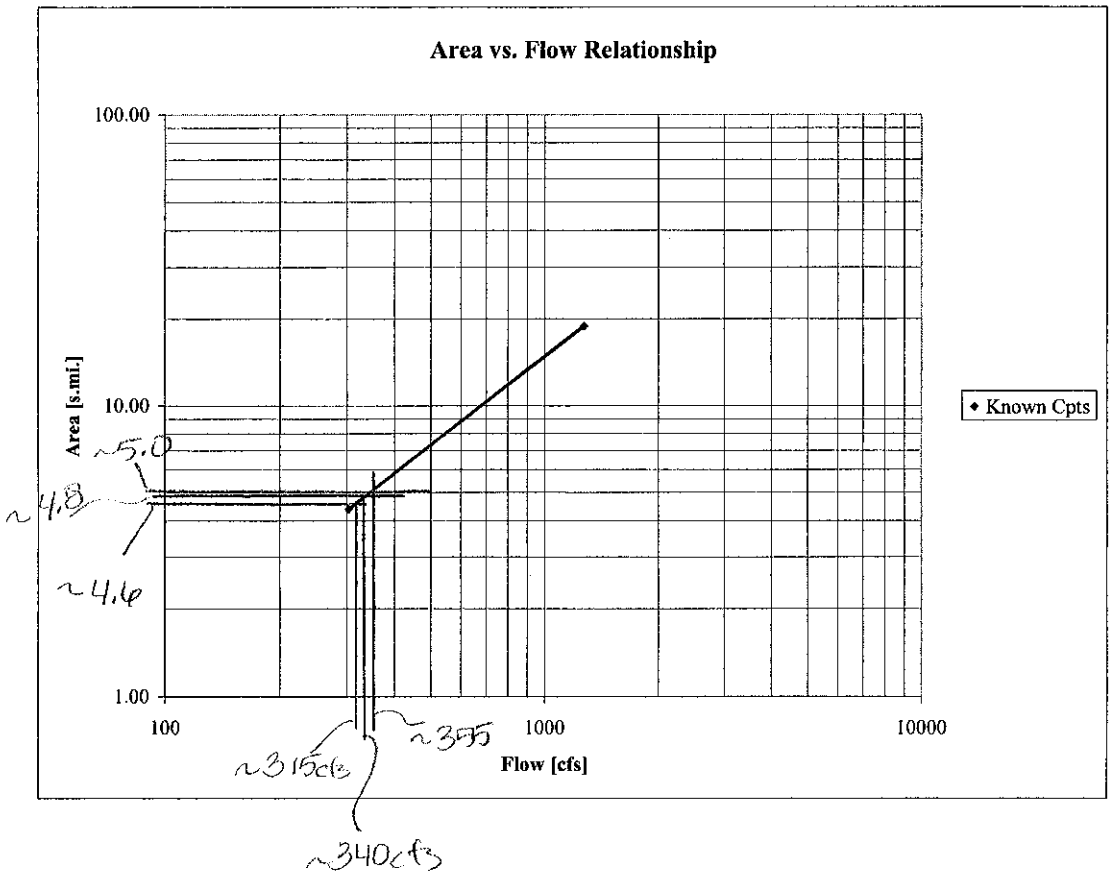
JOB: Wittmann Area Drainage Master Study Update

JOB NO. 310.032

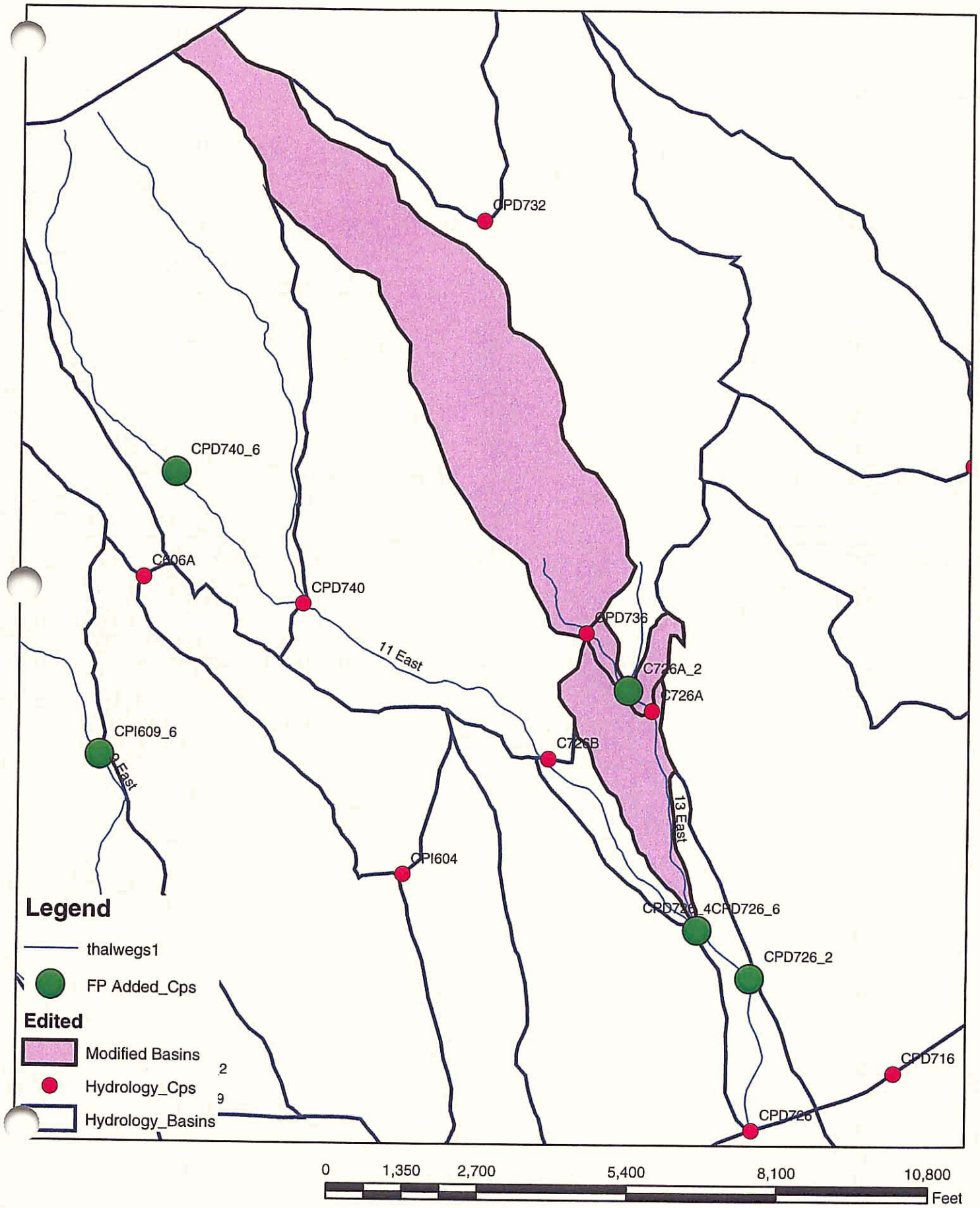
Description: Flow is for wash 12 East that moves southwesterly, which confluences with Wash 13 East.

		Flow [cfs]	Area [s.mi]
Upstream Concentration Point	DOCP17	304	4.37
Downstream Concentration Point	CPD740	1273	18.84

		Flow [cfs]	Area [s.mi] (measured from ArcView, includes upstream area)
Unknown Concentration Point	CPD740_2	355	4.93
	CPD740_4	340	4.82
	CPD740_6	315	4.64



WASH 13 EAST


CPD732
CPD740_6
C606A
CPD740
11 East
CPD736
C726A_2
C726A
C726B
CPI609_6
9 East
13 East
CPI604
CPD726_4
CPD726_6
CPD726_2
CPD716
CPD726
Legend
thalwegs1
FP Added_Cps
Edited
Modified Basins
Hydrology_Cps
Hydrology_Basins
0
1,350
2,700
5,400
8,100
10,800
Feet

Entellus

Table D.3: Flow Calculations

SHEET 1 OF

BY AMG DATE 11/9/2004

CHECK RTS DATE 1-19-05

JOB NO. 310.032

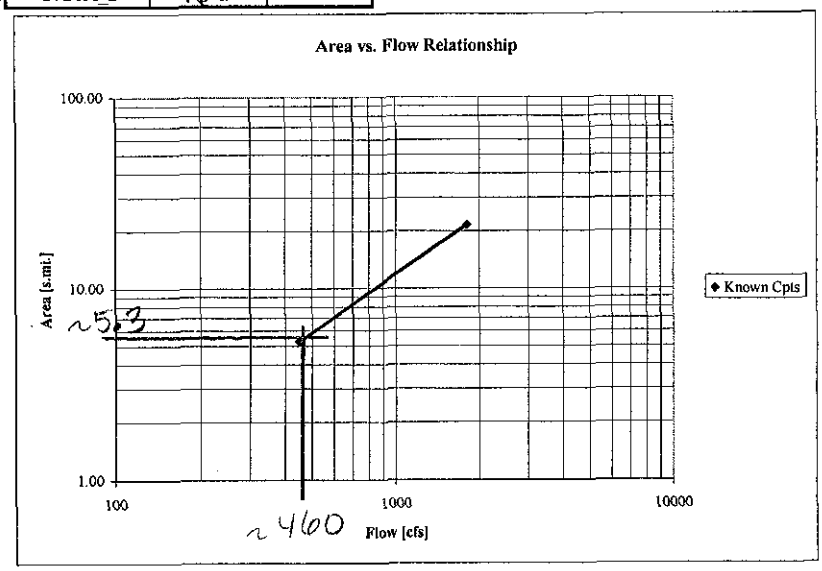
CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

Description: Flow is for wash 13 East that moves southwesterly, which confluences with Wash 11 East.

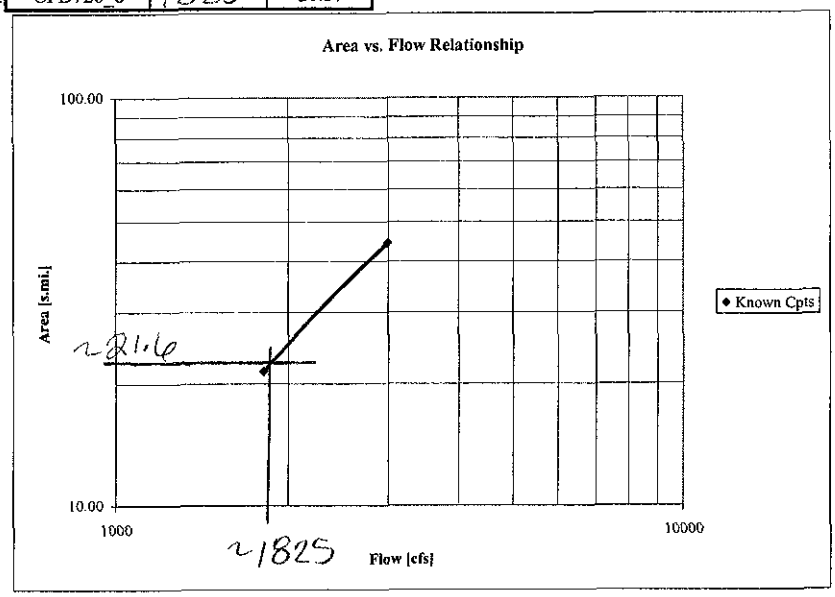
		Flow [cfs]	Area [s.mi]
Upstream Concentration Point	CPD736	451	5.27
Downstream Concentration Point	C726A	1812	21.41

		Flow [cfs]	Area [s.mi] (measured from ArcView, includes upstream area)
Unknown Concentration Point	C726A_2	4160	5.29



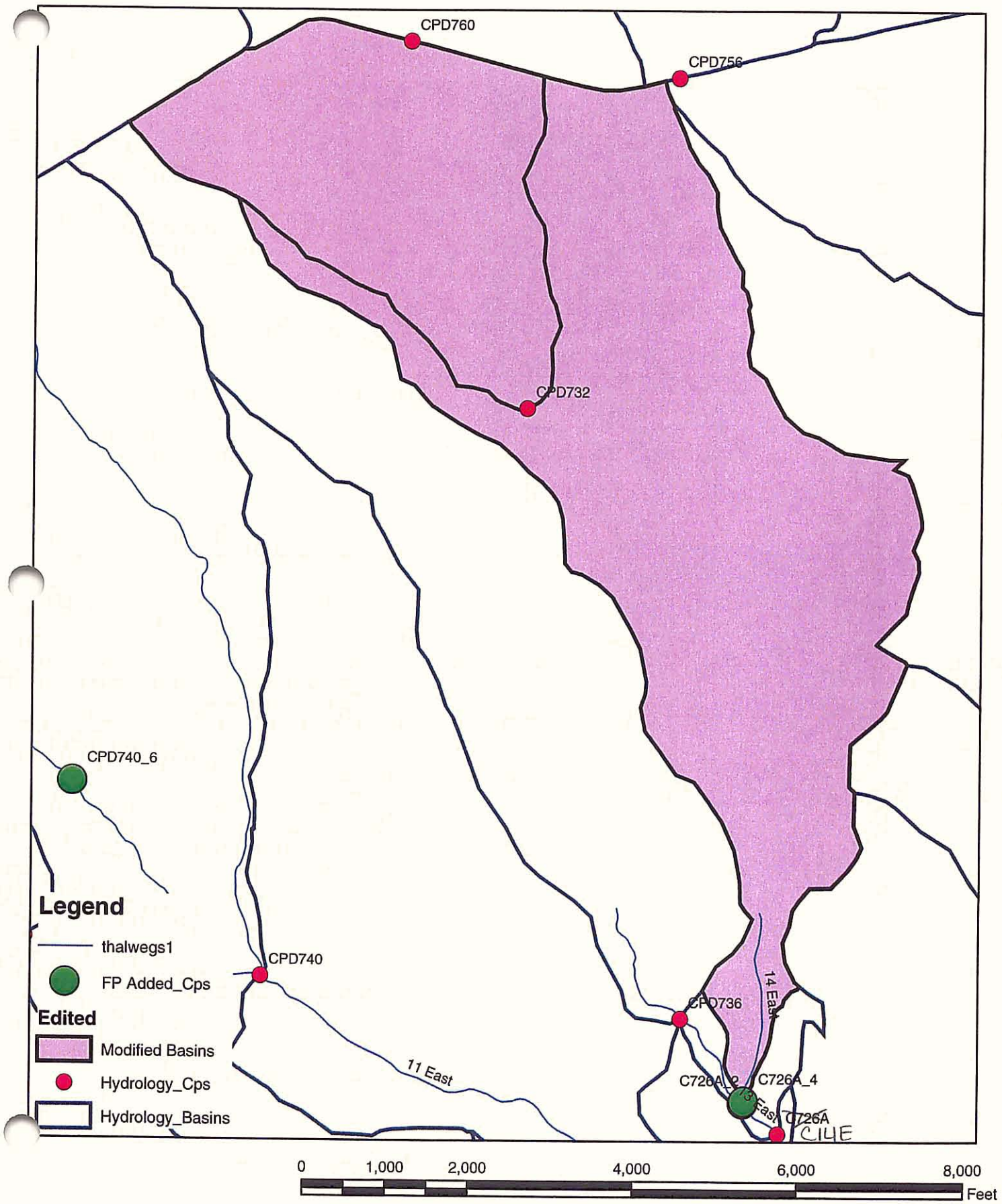
		Flow [cfs]	Area [s.mi]
Upstream Concentration Point	C726A	1812	21.41
Downstream Concentration Point	CPD726	2998	44.29

		Flow [cfs]	Area [s.mi] (measured from ArcView, includes upstream area)
Unknown Concentration Point	CPD726_6	1825	21.57



Done by: ag 11/15/04
checked by:

WASH 14 EAST



Entellus

CLIENT: FCDMC

JOB: Wittmann Area Drainage Master Study Update

Description: Flow is for wash 14 East that moves southwesterly, which confluences with Wash 13 East.

Table D.3: Flow Calculations

SHEET 1 OF

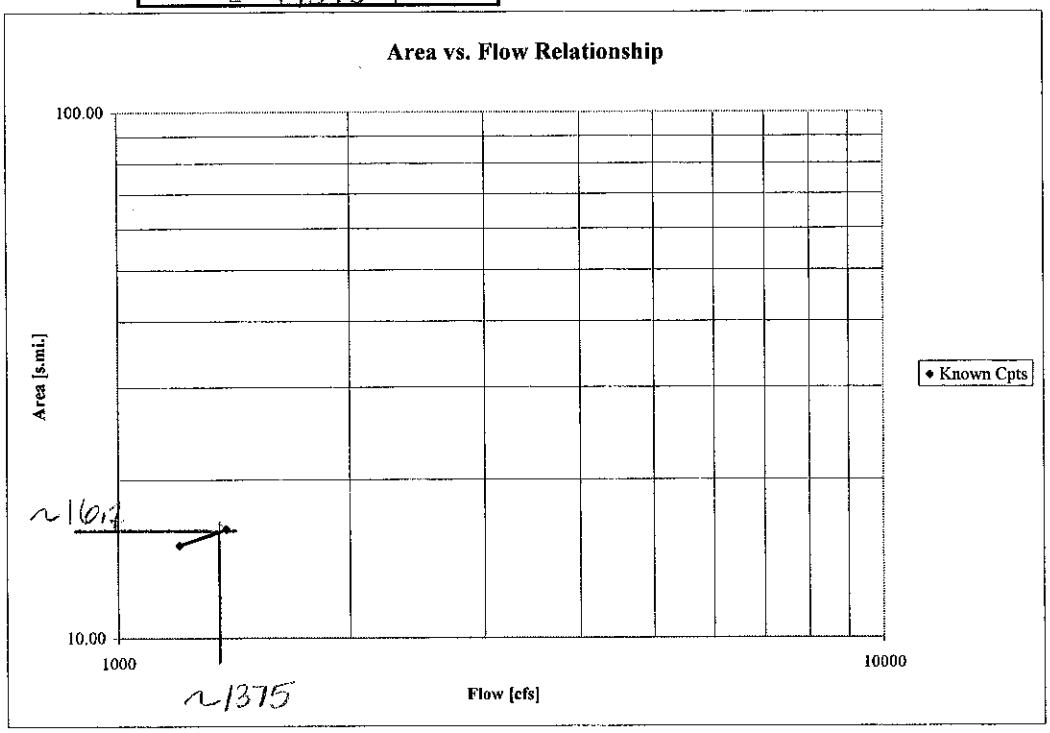
BY AMG DATE 11/15/2004

CHECK CAS DATE 1-19-05

JOB NO. 310.032

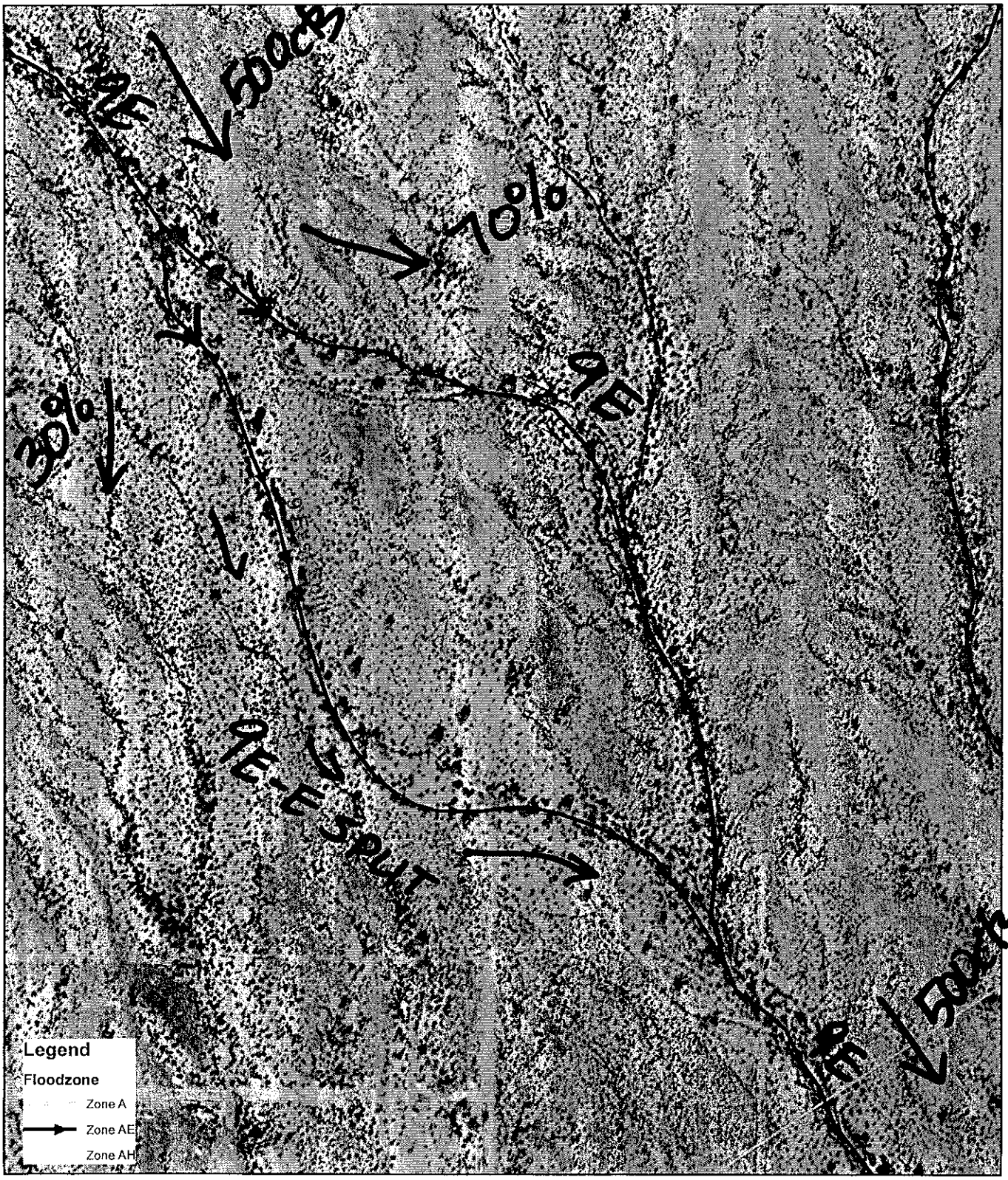
		Flow [cfs]	Area [s.mi]
Upstream Concentration Point	CPD732	1200	15.04
Downstream Concentration Point	C14B	1381	16.14

		Flow [cfs]	Area [s.mi] (measured from ArcView, includes upstream area)
Unknown Concentration Point	C726A_4	1375	16.10



D.4 Split Flow Calculation and Optimization

WASH 9 EAST AND 9 EAST-SPLIT



0 265 530 1,060 1,590 2,120 Feet

9E Split Optimization

HEC-RAS Plan: 310.032 Profile: Floodplain

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Wash 9 East	0.912	Floodplain	1190.00	1368.58	1372.74	1371.31	1372.95	0.005007	3.71	344.41	188.51	0.40
Wash 9 East	0.979	Floodplain	1190.00	1368.09	1374.34		1374.48	0.003808	3.05	392.48	182.95	0.34
Wash 9 East	1.051	Floodplain	1190.00	1374.47	1376.81	1376.50	1377.06	0.013608	4.18	296.90	252.76	0.59
Wash 9 East	1.147	Floodplain	590.00	1376.82	1380.63	1379.96	1380.67	0.003268	2.29	374.36	693.95	0.29
Wash 9 East	1.233	Floodplain	590.00	1380.75	1383.29	1383.05	1383.41	0.009196	3.59	218.58	270.71	0.49
Wash 9 East	1.309	Floodplain	590.00	1383.21	1386.31	1386.18	1386.48	0.009039	4.21	216.53	494.86	0.50
Wash 9 East	1.375	Floodplain	590.00	1386.23	1389.94	1389.61	1390.06	0.006215	3.57	247.16	315.82	0.42
Wash 9 East	1.466	Floodplain	590.00	1388.32	1392.19	1391.80	1392.27	0.004550	2.75	288.74	327.98	0.35
Wash 9 East	1.525	Floodplain	590.00	1390.46	1394.39		1394.69	0.013565	5.10	170.08	281.92	0.61
Wash 9 East	1.544	Floodplain	590.00	1391.80	1395.91		1396.05	0.005084	3.63	246.84	335.50	0.39
Wash 9 East	1.587	Floodplain	590.00	1392.68	1397.32	1397.32	1397.60	0.012375	4.98	175.49	275.84	0.59
Wash 9 East	1.641	Floodplain	590.00	1395.12	1399.30		1399.86	0.014760	6.22	108.03	82.12	0.66
Wash 9 East	1.681	Floodplain	590.00	1396.10	1401.20	1399.99	1401.54	0.007407	4.99	152.75	389.64	0.48
Wash 9 East	1.713	Floodplain	590.00	1397.92	1402.27	1400.32	1402.40	0.002507	3.08	240.34	281.27	0.29
Wash 9 East	1.734	Floodplain	590.00	1399.55	1403.10		1403.52	0.013862	5.25	112.59	54.72	0.63
Wash 9 East	1.824	Floodplain	590.00	1402.71	1406.67		1406.83	0.005645	3.55	203.48	192.64	0.41
Wash 9 East	1.861	Floodplain	590.00	1404.56	1407.91	1407.20	1408.03	0.006652	3.13	227.11	255.23	0.42
Wash 9 East	1.884	Floodplain	590.00	1405.05	1408.89	1408.07	1409.16	0.012498	4.60	152.30	139.86	0.58
Wash 9 East	1.947	Floodplain	590.00	1407.78	1411.55	1410.75	1411.65	0.004939	3.07	237.78	213.21	0.37
Wash 9 East	2.027	Floodplain	590.00	1410.49	1414.01	1413.82	1414.13	0.008693	3.35	222.72	343.80	0.47
Wash 9 East	2.093	Floodplain	590.00	1412.21	1415.91	1414.49	1415.99	0.003658	2.65	282.35	449.75	0.32
Wash 9 East	2.193	Floodplain	590.00	1417.70	1420.00	1419.93	1420.20	0.022081	4.26	167.76	527.51	0.71
Wash 9 East	2.236	Floodplain	590.00	1420.14	1422.77	1422.44	1422.85	0.006093	2.75	265.62	504.58	0.39
Wash 9 East	2.305	Floodplain	590.00	1421.40	1425.16	1424.84	1425.32	0.008453	3.95	196.90	204.45	0.48
Wash 9 East	2.366	Floodplain	500.00	1423.68	1427.53		1427.81	0.006912	4.43	138.40	157.42	0.55
east split	2.436	Floodplain	342.68	1427.04	1430.94	1430.56	1431.05	0.013031	2.77	129.42	176.88	0.41
east split	2.495	Floodplain	342.68	1428.99	1433.35		1433.42	0.004937	2.02	156.90	108.40	0.27
east split	2.561	Floodplain	342.68	1431.64	1435.71		1435.81	0.009987	2.78	141.13	157.17	0.37
east split	2.63	Floodplain	342.68	1435.68	1438.77	1438.09	1438.83	0.006868	2.10	173.86	175.99	0.30
east split	2.671	Floodplain	342.68	1437.64	1440.72		1440.85	0.012966	3.10	119.22	127.49	0.43
east split	2.7	Floodplain	342.68	1440.95	1443.72	1443.36	1443.78	0.008813	1.51	178.84	262.98	0.31
west split	2.42	Floodplain	157.32	1428.73	1429.94	1429.94	1430.15	0.069504	3.72	42.58	108.83	0.84
west split	2.463	Floodplain	157.32	1431.14	1432.44		1432.46	0.003761	0.69	153.94	330.44	0.18
west split	2.559	Floodplain	157.32	1435.74	1436.55	1436.54	1436.78	0.032587	1.90	46.54	98.19	0.54
west split	2.633	Floodplain	157.32	1439.13	1440.48	1440.00	1440.50	0.004449	1.16	121.82	199.57	0.22
west split	2.711	Floodplain	157.32	1442.17	1443.70	1443.52	1443.77	0.017468	2.28	76.09	169.18	0.44
Wash 9 East (Sou	2.81	Floodplain	500.00	1445.17	1447.42	1447.00	1447.50	0.009921	2.39	216.24	260.69	0.36
Wash 9 East (Sou	2.874	Floodplain	500.00	1448.56	1450.56	1450.11	1450.62	0.006021	1.59	270.56	392.80	0.27
Wash 9 East (Sou	2.969	Floodplain	500.00	1451.97	1454.12		1454.27	0.016187	3.17	158.09	146.64	0.47
Wash 9 East (Sou	3.047	Floodplain	500.00	1453.54	1456.40	1455.88	1456.50	0.008521	2.33	204.95	188.92	0.34
Wash 9 East (Sou	3.048	Floodplain	500.00	1456.37	1459.98	1459.34	1460.09	0.011078	2.77	191.17	187.74	0.39
Wash 9 East (Sou	3.157	Floodplain	440.00	1461.44	1464.38	1463.93	1464.42	0.005327	1.35	274.82	488.92	0.25
Wash 9 East (Sou	3.275	Floodplain	440.00	1465.98	1467.45	1467.28	1467.59	0.016254	2.08	150.15	243.75	0.42
Wash 9 East (Sou	3.327	Floodplain	440.00	1469.54	1471.38	1470.87	1471.44	0.006694	1.78	236.74	466.35	0.29
Wash 9 East (Sou	3.363	Floodplain	440.00	1472.71	1474.37	1474.16	1474.67	0.022861	2.78	107.90	155.90	0.52
Wash 9 East (Sou	3.437	Floodplain	440.00	1476.23	1478.29	1477.88	1478.34	0.005666	1.48	261.35	489.49	0.26
Wash 9 East (Sou	3.519	Floodplain	440.00	1480.90	1482.42	1482.20	1482.55	0.019782	2.92	157.48	339.40	0.49
Wash 9 East (Sou	3.599	Floodplain	440.00	1483.95	1486.53		1486.61	0.006605	2.48	202.31	225.16	0.31
Wash 9 East (Sou	3.66	Floodplain	440.00	1487.00	1490.26	1489.59	1490.37	0.017050	3.10	173.52	335.56	0.47
Wash 9 East (Sou	3.757	Floodplain	440.00	1490.34	1494.16	1492.63	1494.30	0.006849	3.16	154.24	98.15	0.34
Wash 9 East (Sou	3.822	Floodplain	440.00	1494.28	1497.53		1497.75	0.010492	3.76	117.84	50.85	0.41
Wash 9 East (Sou	3.911	Floodplain	390.00	1498.05	1501.61		1501.73	0.006633	2.85	157.72	148.41	0.32
Wash 9 East (Sou	3.982	Floodplain	390.00	1501.56	1504.93		1505.18	0.013204	4.18	98.70	52.95	0.46
Wash 9 East (Sou	4.036	Floodplain	390.00	1504.48	1507.71	1506.41	1507.82	0.006749	2.83	145.95	120.97	0.32
Wash 9 East (Sou	4.076	Floodplain	390.00	1506.99	1509.85		1510.15	0.019698	4.40	88.56	43.62	0.54
Wash 9 East (Sou	4.136	Floodplain	390.00	1509.96	1513.53		1513.66	0.006979	3.16	136.91	92.95	0.33
Wash 9 East (Sou	4.18	Floodplain	390.00	1513.32	1516.90		1517.32	0.028144	5.40	78.93	62.94	0.65
Wash 9 East (Sou	4.255	Floodplain	390.00	1516.67	1520.69		1520.77	0.005088	2.42	169.87	109.71	0.28
Wash 9 East (Sou	4.29	Floodplain	390.00	1521.04	1523.46	1522.91	1523.61	0.013565	3.23	127.31	130.58	0.43
Wash 9 East (Sou	4.35	Floodplain	390.00	1523.98	1526.69	1525.98	1526.77	0.011355	2.53	181.95	418.16	0.38
Wash 9 East (Sou	4.424	Floodplain	390.00	1526.37	1530.25	1529.43	1530.37	0.012921	2.95	150.32	363.82	0.42
Wash 9 East (Sou	4.451	Floodplain	390.00	1528.30	1531.49	1530.26	1531.56	0.005121	2.20	186.23	338.22	0.28
Wash 9 East (Sou	4.509	Floodplain	390.00	1530.01	1533.78	1532.76	1534.02	0.017198	4.15	103.44	87.70	0.50
Wash 9 East (Sou	4.521	Floodplain	390.00	1530.15	1534.62	1533.08	1534.85	0.010022	4.00	110.84	96.74	0.41
Wash 9 East (Sou	4.543	Floodplain	390.00	1530.44	1535.64	1533.54	1535.83	0.007020	3.60	112.69	49.81	0.34
Wash 9 East (Sou	4.581	Floodplain	390.00	1532.05	1537.28	1535.73	1537.55	0.010580	4.27	97.92	66.65	0.42
Wash 9 East (Sou	4.606	Floodplain	390.00	1532.91	1538.68	1537.16	1538.91	0.012669	3.90	101.91	57.45	0.44
Wash 9 East (Sou	4.637	Floodplain	360.00	1534.83	1540.40	1537.79	1540.52	0.006344	2.81	129.90	63.16	0.31
Wash 9 East (Sou	4.651	Floodplain	360.00	1537.12	1540.89		1541.03	0.007509	3.14	120.65	63.79	0.35

70%

30%

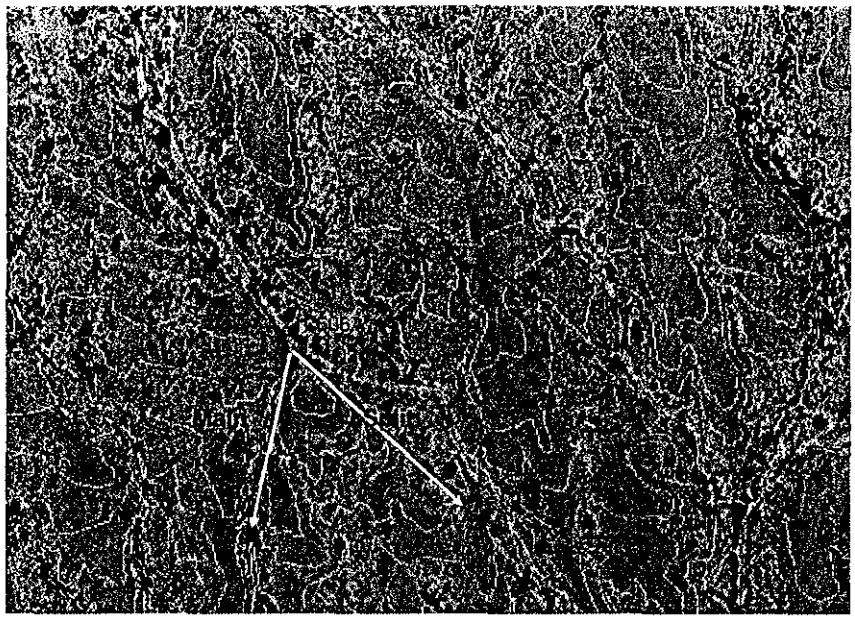
SHEET		OF	
BY	JCS	DATE	1/27/2005 0:00
CHECK		DATE	

Client Flood Control District of Maricopa County (FCDMC)
Job Wittmann ADMSU

JOB NO. 310.032

Split Flow Calculations

Split Point Location: Wash 10 East
Split Point ID: Wash 10 East, Approximately 800' North of Dixileta
Split Description Main flow: Wash 10 East
Split flow: Wash 10 East - Split (Returns to Wash at Downstream Location)



S = 0.010435 S= 0.01038

Inflow	Approx. Depth	10 East Main Flow Path				10 East Split at C606A_14				Diversion			
		width	n value	Flow	Fow %	width	n value	Flow	Fow %	width	n value	Flow	Fow %
0	0.0	70	0.053	0.0		50	0.05	0.0		NOT USED			
20	0.4	70	0.053	11.4	57%	50	0.05	8.6	43%				
40	0.5	70	0.053	22.9	57%	50	0.05	17.3	43%				
60	0.7	70	0.053	34.3	57%	50	0.05	25.9	43%				
80	0.8	70	0.053	45.8	57%	50	0.05	34.6	43%				
100	0.9	70	0.053	57.2	57%	50	0.05	43.2	43%				
121	1.1	70	0.053	68.7	57%	50	0.05	51.9	43%				
141	1.2	70	0.053	80.1	57%	50	0.05	60.5	43%				
161	1.2	70	0.053	91.6	57%	50	0.05	69.2	43%				
181	1.3	70	0.053	103.0	57%	50	0.05	77.8	43%				
201	1.4	70	0.053	114.5	57%	50	0.05	86.4	43%				
221	1.5	70	0.053	125.9	57%	50	0.05	95.1	43%				

Flow from upstream	221	
Flow remaining after div.	**126**	57%
Flow diverted	95	
Total Div. flow	**95**	43%

Entellus

SHEET	1	OF	2
BY	RAS	DATE	6/29/2005
CHECK		DATE	
JOB NO.	310.032		

CLIENT: FCDMC

JOB: Wittmann ADMSU

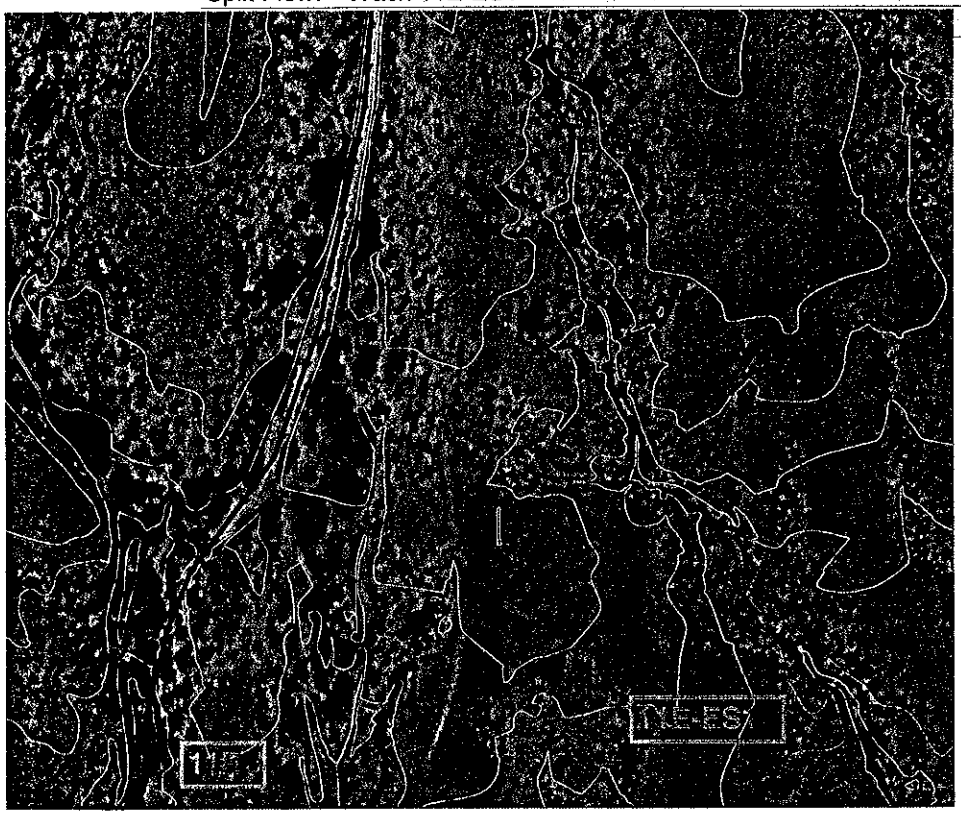
Split Flow Calculations

Split Flow Location: Wash 11E

Split Point ID: X-section 4.461

Split Description Main Flow: Wash 11E

Split Flow: Wash 11E-ES1



Main Flow Path

Description

Estimated Slope 0.014 ft/ft

Diversion Path 1

Description

Estimated Slope 0.009 ft/ft

Diversion Path 2

Description

Estimated Slope ft/ft

Entellus

SHEET	2	OF	2
BY	RAS	DATE	6/29/2005
CHECK		DATE	
JOB NO.	310.032		

CLIENT: FCDMC

JOB: Wittmann ADMSU

Split Flow Table

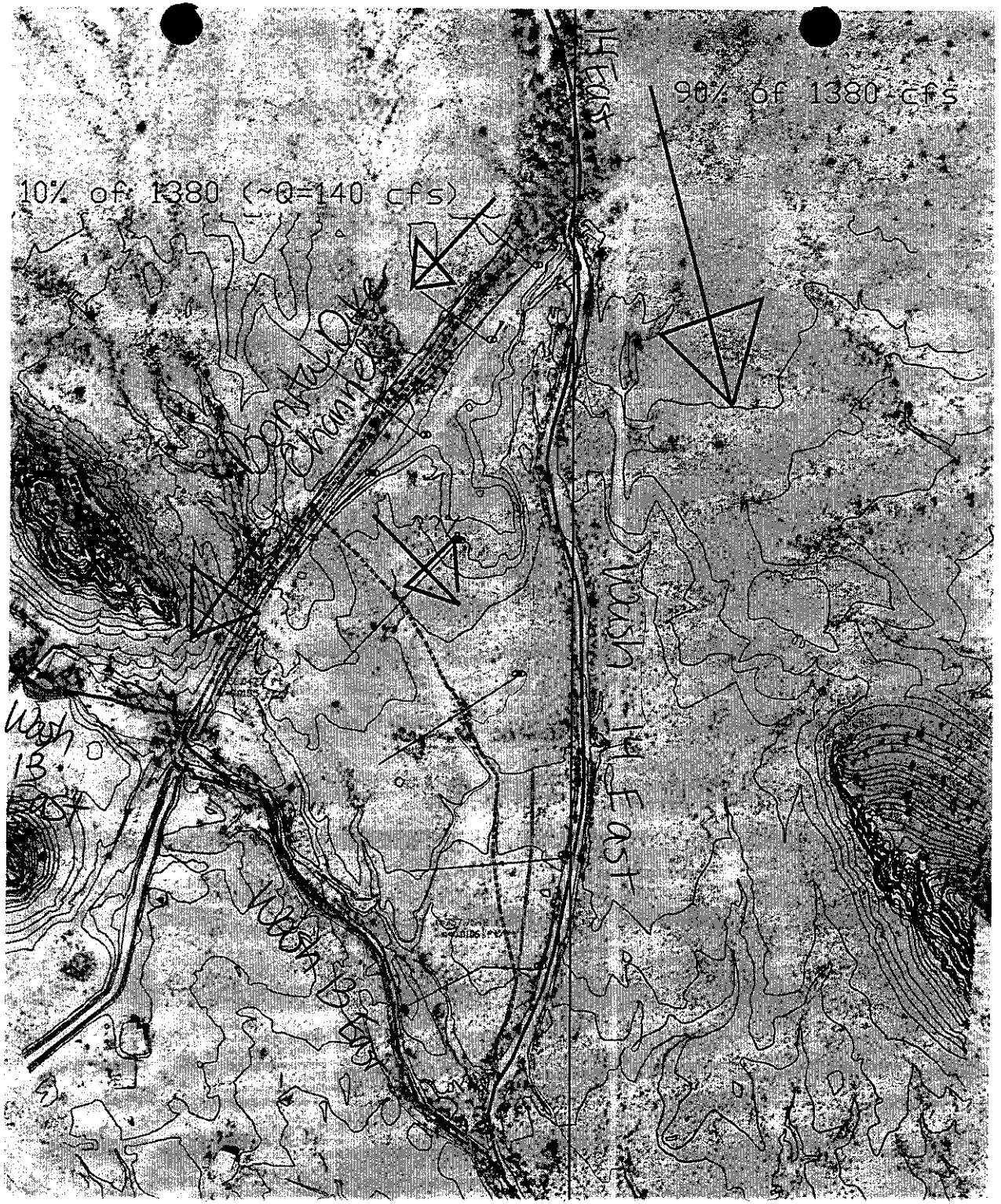
Split Flow Location: Wash 11E

Split Point ID: *X-section 4.461*

Split Description Main Flow: Wash 11E

Split Flow: Wash 11E-ES1

		Slope = 0.014 ft/ft				Slope = 0.009 ft/ft				Slope = ft/ft			
		Main Flow Path				Diverted Flow Path 1				Diverted Flow Path 2			
Inflow	Approx. Depth	Width	n Value	Flow	Flow%	Width	n Value	Flow	Flow%	Width	n Value	Flow	Flow%
0		165	0.038	0.0		140	0.035			1	1		
91	0.40	165	0.038	52.3	58%	140	0.035	38.6	42%	1	1	#DIV/0!	#DIV/0!
182	0.61	165	0.038	104.6	58%	140	0.035	77.2	42%	1	1	#DIV/0!	#DIV/0!
273	0.77	165	0.038	156.9	58%	140	0.035	115.9	42%	1	1	#DIV/0!	#DIV/0!
364	0.92	165	0.038	209.2	58%	140	0.035	154.5	42%	1	1	#DIV/0!	#DIV/0!
455	1.05	165	0.038	261.4	58%	140	0.035	193.1	42%	1	1	#DIV/0!	#DIV/0!
545	1.17	165	0.038	313.7	58%	140	0.035	231.7	42%	1	1	#DIV/0!	#DIV/0!
636	1.29	165	0.038	366.0	58%	140	0.035	270.3	42%	1	1	#DIV/0!	#DIV/0!
727	1.39	165	0.038	418.3	58%	140	0.035	309.0	42%	1	1	#DIV/0!	#DIV/0!
818	1.49	165	0.038	470.6	58%	140	0.035	347.6	42%	1	1	#DIV/0!	#DIV/0!
909	1.59	165	0.038	522.9	58%	140	0.035	386.2	42%	1	1	#DIV/0!	#DIV/0!
1000	1.69	165	0.038	575.2	58%	140	0.035	424.8	42%	1	1	#DIV/0!	#DIV/0!


10% of 1380 (~Q=140 cfs)
90% of 1380 cfs
Hubbard Creek
Hubbard Creek
HF East
HF East
West
13
257

N

(NTS)

Bonita Dike Channel

HEC-RAS Plan: 310.032 Profile: Floodplain

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #1	14E_atBreach	0	Floodplain	1792.62	1395.59	1400.91	1400.54	1401.62	0.011548	7.30	316.89	226.90	0.63
Reach #1	14E_atBreach	1.635	Floodplain	1792.62	1395.59	1402.80		1402.88	0.000998	2.74	846.59	296.44	0.20
Reach #1	14 East SofDike	1.772	Floodplain	1232.62	1401.16	1404.98	1404.98	1405.38	0.014024	6.05	293.26	320.14	0.64
Reach #1	14 East SofDike	1.831	Floodplain	1232.62	1402.70	1407.73	1407.50	1408.05	0.005713	5.24	355.95	315.55	0.44
Reach #1	14 East SofDike	1.893	Floodplain	1232.62	1404.68	1409.80		1410.15	0.007053	5.28	310.43	263.54	0.48
Reach #1	14 East SofDike	1.94	Floodplain	1232.62	1406.92	1411.53		1411.78	0.005846	4.64	356.15	257.90	0.44
Reach #1	14 East SofDike	2.025	Floodplain	1232.62	1409.62	1414.15		1414.47	0.006145	5.19	309.22	178.60	0.46
Reach #1	14 East SofDike	2.088	Floodplain	1232.62	1412.13	1416.36		1416.75	0.007651	5.14	260.23	120.16	0.50
Reach #1	14 East SofDike	2.111	Floodplain	1232.62	1412.82	1417.23		1418.11	0.014252	7.60	167.07	49.87	0.68
Reach #1	14 East	2.135	Floodplain	1380.00	1413.57	1418.73		1418.85	0.003050	2.76	500.84	193.92	0.30
Reach #1	14 East	2.168	Floodplain	1380.00	1415.13	1419.47		1419.79	0.010473	4.55	303.55	139.79	0.54
Reach #1	14 East	2.221	Floodplain	1380.00	1418.20	1422.56		1422.92	0.012047	4.80	290.23	152.48	0.58
BonitaDikeChanne	BonitaChannelDS	1	Floodplain	157.38	1408.71	1411.25	1410.85	1411.57	0.015505	4.67	35.44	25.68	0.62
BonitaDikeChanne	BonitaChannelDS	2	Floodplain	157.38	1409.67	1413.43		1413.54	0.003490	2.69	60.47	30.10	0.31
BonitaDikeChanne	Bonita Channel	3	Floodplain	147.38	1413.78	1415.56		1415.70	0.011942	2.92	50.53	49.94	0.51
BonitaDikeChanne	Bonita Channel	4	Floodplain	147.38	1415.17	1417.38		1417.44	0.003613	1.87	81.14	75.83	0.29
BonitaDikeChanne	Bonita Channel	5	Floodplain	147.38	1415.91	1418.07		1418.11	0.002530	1.58	96.69	87.88	0.24
BonitaDikeBreach	BonitaBreach	10	Floodplain	0.01	1404.07	1402.88	1401.30	1402.88	0.000000		17.80	31.07	0.00
BonitaDikeBreach	BonitaBreach	20	Floodplain	0.01	1404.69	1404.72	1404.72	1404.73	0.343835	0.88	0.01	0.84	1.34
BonitaDikeBreach	BonitaBreach	30	Floodplain	0.01	1408.25	1408.36	1408.32	1408.36	0.002662	0.19	0.05	1.02	0.15
BonitaDikeBreach	BonitaBreach	40	Floodplain	0.01	1411.51	1411.54	1411.54	1411.55	0.334366	0.97	0.01	0.65	1.35
BonitaDikeBreach	BonitaBreach	50	Floodplain	0.01	1416.38	1416.41		1416.41	0.000739	0.04	0.12	4.13	0.06

90%

10%

WASH 12 EAST AND 12 EAST-SPLIT

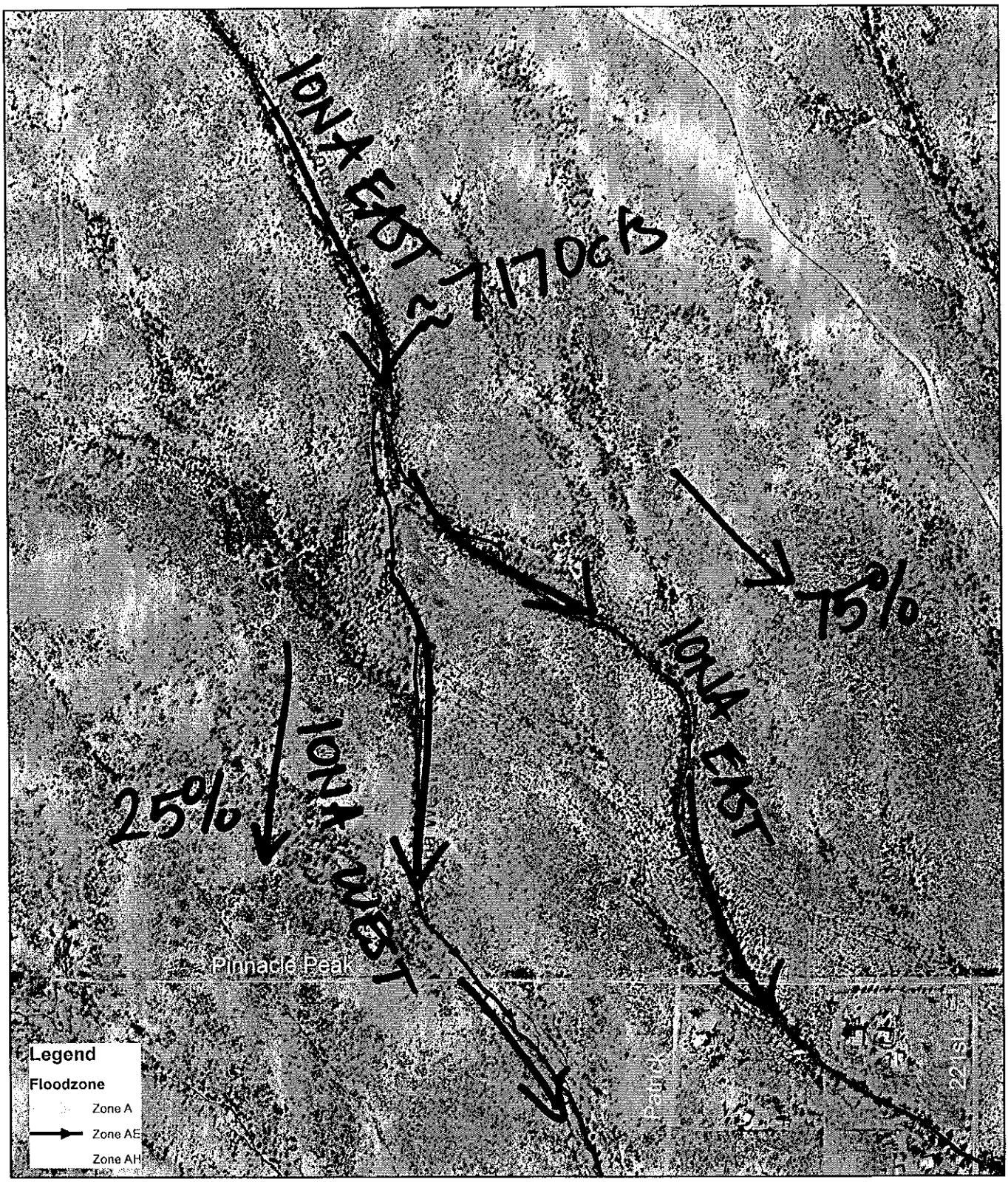
0 250 500 1,000 1,500 2,000 Feet

12E & 12E-SPLIT

HEC-RAS Plan: 310.032 Profile: Floodplain

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #1	12E_bottom	2.619	Floodplain	1270.00	1436.34	1439.79	1438.45	1439.96	0.004135	3.10	390.83	197.51	0.35
Reach #1	12E_bottom	2.636	Floodplain	360.00	1437.81	1440.27		1440.34	0.003678	2.16	172.53	146.58	0.30
Reach #1	12E_bottom	2.711	Floodplain	360.00	1441.08	1443.99	1443.99	1444.23	0.020750	4.50	105.48	239.75	0.69
Reach #1	12E_bottom	2.769	Floodplain	360.00	1443.26	1446.41		1446.46	0.003604	2.12	218.25	279.72	0.30
Reach #1	12E_bottom	2.813	Floodplain	360.00	1445.11	1448.51	1448.51	1448.86	0.019104	5.06	86.37	124.05	0.69
Reach #1	12E_bottom	2.861	Floodplain	360.00	1446.71	1450.59		1450.72	0.003797	2.99	125.18	60.78	0.33
Reach #1	12E_bottom	2.895	Floodplain	360.00	1449.12	1451.86	1451.86	1452.62	0.033952	7.10	53.10	39.02	0.93
Reach #1	12E_bottom	2.972	Floodplain	360.00	1452.39	1456.13		1456.27	0.003950	3.04	124.45	75.83	0.34
Reach #1	12E_bottom	2.992	Floodplain	360.00	1453.79	1456.76	1456.76	1457.55	0.030713	7.34	52.04	33.51	0.89
Reach #1	12E_bottom	3.047	Floodplain	360.00	1456.31	1460.09		1460.22	0.004164	3.06	138.86	121.45	0.35
Reach #1	12E_bottom	3.091	Floodplain	360.00	1458.41	1461.53		1461.78	0.012310	4.02	90.48	56.53	0.53
Reach #1	12E_bottom	3.13	Floodplain	360.00	1459.69	1463.27		1463.44	0.005473	3.40	111.12	55.66	0.37
Reach #1	12E_bottom	3.171	Floodplain	360.00	1461.91	1465.24		1465.67	0.024027	5.31	69.99	56.00	0.73
Reach #1	12E_bottom	3.217	Floodplain	360.00	1463.93	1467.83		1467.99	0.005064	3.36	121.10	124.38	0.36
Reach #1	12E_bottom	3.263	Floodplain	360.00	1464.67	1469.07		1469.24	0.005184	3.34	107.69	40.62	0.36
Reach #1	12E_bottom	3.284	Floodplain	360.00	1466.11	1469.91	1468.94	1470.25	0.016715	4.62	78.42	83.90	0.60
Reach #1	12E_bottom	3.302	Floodplain	360.00	1467.33	1471.04		1471.28	0.007870	3.90	92.40	37.60	0.44
Reach #1	12E_bottom	3.341	Floodplain	360.00	1469.19	1472.55		1472.68	0.005803	2.88	124.84	63.52	0.36
Reach #1	12E_bottom	3.409	Floodplain	360.00	1473.29	1475.62	1475.04	1475.84	0.014459	3.79	95.16	67.55	0.56
Reach #1	12E_bottom	3.459	Floodplain	360.00	1475.01	1478.48		1478.71	0.008618	4.03	98.44	68.87	0.46
Reach #1	12E_bottom	3.505	Floodplain	360.00	1477.40	1480.74		1481.00	0.010121	4.03	89.44	42.81	0.49
Reach #1	12E_bottom	3.581	Floodplain	360.00	1480.57	1484.28		1484.57	0.007910	4.35	83.76	31.43	0.45
Reach #1	12E_bottom	3.648	Floodplain	360.00	1484.66	1487.27	1486.62	1487.44	0.008136	3.46	108.07	73.31	0.44
Reach #1	12E_bottom	3.716	Floodplain	360.00	1487.58	1490.96	1490.16	1491.38	0.014924	5.16	69.77	30.20	0.60
Reach #1	12E_middle	3.804	Floodplain	294.53	1493.41	1496.28	1495.40	1496.41	0.007564	3.38	106.73	124.76	0.42
Reach #1	12E_middle	3.867	Floodplain	294.53	1496.20	1499.62		1499.86	0.015014	4.36	75.60	77.93	0.55
Reach #1	12E_middle	3.902	Floodplain	294.53	1499.97	1501.51	1501.04	1501.58	0.006193	2.06	137.03	159.98	0.35
Reach #1	12E_middle	3.951	Floodplain	294.53	1501.72	1504.55	1504.55	1504.89	0.023481	5.16	70.22	188.41	0.71
Reach #1	12E_middle	4.021	Floodplain	294.53	1505.89	1508.62	1507.97	1508.69	0.005661	2.63	148.27	254.61	0.35
Reach #1	12E_middle	4.088	Floodplain	294.53	1508.56	1511.59	1511.01	1511.93	0.015562	4.79	67.08	60.49	0.60
Reach #1	12 East (South o	4.127	Floodplain	360.00	1512.45	1514.34	1514.04	1514.46	0.010065	3.13	139.39	196.36	0.46
Reach #1	12 East (South o	4.166	Floodplain	360.00	1513.51	1516.32	1516.13	1516.46	0.009292	3.50	137.10	190.40	0.45
Reach #1	12 East (South o	4.239	Floodplain	360.00	1516.22	1519.34	1518.31	1519.53	0.006865	3.63	113.89	134.91	0.41
Reach #1	12 East (South o	4.299	Floodplain	360.00	1518.86	1522.53	1522.05	1522.90	0.017626	5.08	78.48	71.65	0.63
Reach #1	12 East (South o	4.332	Floodplain	360.00	1520.71	1524.58	1523.30	1524.82	0.007295	4.02	97.94	126.27	0.43
Reach #1	12 East (South o	4.365	Floodplain	360.00	1521.79	1525.94		1526.19	0.008258	4.02	93.45	54.71	0.44
Reach #1	12 East (South o	4.423	Floodplain	360.00	1523.19	1528.35		1528.62	0.007499	4.13	87.25	29.80	0.42
Reach #1	12 East (South o	4.494	Floodplain	360.00	1527.29	1531.56		1531.91	0.010208	4.72	77.63	32.99	0.50
Reach #1	12 East (South o	4.555	Floodplain	360.00	1527.62	1535.46		1536.02	0.015764	6.02	59.79	9.47	0.42
	12E_split	3.8	Floodplain	65.47	1493.56	1494.56	1494.56	1494.90	0.062057	4.65	14.08	21.28	1.01
	12E_split	3.9	Floodplain	65.47	1497.02	1498.67	1497.98	1498.73	0.005021	1.94	35.58	46.84	0.32
split	12E_split	4	Floodplain	65.47	1501.08	1502.35	1502.06	1502.54	0.021114	3.48	18.84	19.47	0.62
split	12E_split	4.1	Floodplain	65.47	1506.18	1507.36	1506.92	1507.45	0.010573	2.39	27.88	34.55	0.44
split	12E_split	4.2	Floodplain	65.47	1510.28	1511.85	1511.48	1511.93	0.012872	2.30	28.45	37.84	0.47

IONA EAST AND IONA WEST



0 375 750 1,500 2,250 3,000 Feet

SPLIT FLOW OPTIMIZATION FOR IONA EAST + IONA WEST.

HEC-RAS Plan: 310.032 Profile: PF 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #1	Iona West	.184	PF 1	1720.89	1447.51	1449.77	1449.32	1449.82	0.003923	1.93	935.63	1298.72	0.31
Reach #1	Iona West	.273	PF 1	1720.89	1448.26	1451.79	1451.28	1451.86	0.004752	2.54	859.13	1409.97	0.35
[illegible]h #1	Iona West	.342	PF 1	1720.89	1449.48	1453.34		1453.41	0.003763	2.73	866.52	1192.82	0.33
[illegible]h #1	Iona West	.416	PF 1	1720.89	1452.25	1455.43	1455.14	1455.58	0.008757	3.58	580.06	769.30	0.48
Reach #1	Iona West	.467	PF 1	1720.89	1451.25	1457.08		1457.16	0.004187	2.55	793.43	927.27	0.33
Reach #1	Iona West	.546	PF 1	1720.89	1453.92	1458.87	1458.30	1458.97	0.004385	1.64	714.21	700.15	0.25
Reach #1	Iona West	.607	PF 1	1720.89	1456.68	1460.58	1460.04	1460.63	0.006039	2.10	971.00	1123.57	0.30
Reach #1	Iona West	.715	PF 1	1720.89	1459.08	1462.19		1462.23	0.001617	1.16	1176.72	1341.31	0.16
Reach #1	Iona West	.772	PF 1	1720.89	1461.25	1463.40	1463.31	1463.62	0.038853	4.19	458.92	726.90	0.71
Reach #1	Iona West	.829	PF 1	1720.89	1462.60	1465.63	1464.71	1465.66	0.002667	1.37	1241.10	1224.64	0.20
Reach #1	Iona West	.873	PF 1	1720.89	1463.40	1466.30		1466.33	0.003143	1.58	1140.01	1080.81	0.22
Reach #1	Iona West	.915	PF 1	1720.89	1465.26	1467.11		1467.18	0.004744	1.82	859.62	971.63	0.26
Reach #1	Iona West	.969	PF 1	1720.89	1467.19	1469.23		1469.34	0.006396	1.76	740.32	842.54	0.29
Reach #1	Iona West	1.048	PF 1	1720.89	1467.43	1470.65		1470.73	0.003332	1.43	764.95	748.17	0.21
Reach #1	Iona West	1.129	PF 1	1720.89	1468.65	1471.96		1472.08	0.002890	3.35	623.99	568.27	0.39
Reach #1	Iona West	1.183	PF 1	1720.89	1469.70	1473.13		1473.45	0.008409	5.88	424.45	490.72	0.66
Reach #1	Iona West	1.24	PF 1	1720.89	1470.90	1474.97		1475.14	0.003979	3.77	544.43	464.59	0.44
Reach #1	Iona West	1.332	PF 1	1720.89	1472.50	1477.33	1477.01	1477.68	0.006844	5.86	415.74	420.81	0.61
Reach #1	Iona West	1.396	PF 1	1720.89	1473.58	1479.09		1479.30	0.003457	4.88	529.19	425.94	0.44
Reach #1	Iona West	1.441	PF 1	1720.89	1475.54	1479.89		1480.14	0.003522	4.35	452.41	258.00	0.44
Reach #1	Iona West	1.507	PF 1	1720.89	1481.62	1483.50	1483.50	1483.85	0.088078	5.18	368.08	542.62	1.02
Reach #1	Iona West	1.544	PF 1	1720.89	1482.99	1485.79		1485.84	0.003652	1.80	1020.15	800.66	0.24
Reach #1	Iona West	1.584	PF 1 25%	1720.89	1484.10	1486.55		1486.60	0.003564	1.83	986.37	728.89	0.24
Reach #1	Iona West	1.639	PF 1	1720.89	1485.42	1487.59		1487.64	0.003593	1.54	968.74	704.70	0.23
Reach #1	Iona West	1.678	PF 1	1720.89	1486.38	1488.60		1488.73	0.007904	2.33	622.73	477.78	0.34
Reach #1	Iona West	1.75	PF 1	1720.89	1487.97	1490.49		1490.62	0.003398	2.90	616.27	525.82	0.40
Reach #1	Iona West	1.817	PF 1	1720.89	1489.81	1492.13		1492.33	0.007180	3.75	490.97	527.71	0.57
Reach #1	Iona West	1.882	PF 1	1720.89	1492.14	1494.09		1494.21	0.004350	2.86	624.34	644.68	0.44
Reach #1	Iona West	1.926	PF 1	1720.89	1493.42	1495.43	1495.26	1495.67	0.009016	4.37	454.11	590.42	0.64
Reach #1	Iona West	2.018	PF 1	1720.89	1496.39	1498.46		1498.59	0.004276	3.19	606.73	605.26	0.45
Reach #1	Iona West	2.096	PF 1	1720.89	1497.75	1501.08	1501.05	1501.61	0.013787	6.78	313.61	268.70	0.83
Reach #1	Iona West	2.172	PF 1	1720.89	1499.78	1504.14		1504.43	0.004217	5.19	454.12	372.14	0.50
Reach #1	Iona West	2.256	PF 1	1720.89	1501.99	1506.65	1506.65	1507.09	0.008776	7.28	402.78	466.19	0.69
Reach #1	Iona West	2.344	PF 1	1720.89	1503.62	1509.79		1510.00	0.004669	4.75	559.18	519.46	0.44
Reach #1	Iona West	2.422	PF 1	1720.89	1506.91	1511.98	1511.57	1512.17	0.005999	3.86	504.30	430.79	0.46
Reach #1	Iona West	2.466	PF 1	1720.89	1510.61	1513.86	1513.77	1514.09	0.011656	5.26	480.98	647.85	0.64
Reach #1	Iona West	2.553	PF 1	1720.89	1514.02	1517.26	1516.97	1517.37	0.004761	3.54	670.78	748.82	0.42
Reach #1	Iona West	2.622	PF 1	1720.89	1515.06	1519.93	1519.93	1520.49	0.010688	7.56	339.16	268.04	0.68
Reach #1	Iona West	2.698	PF 1	1720.89	1516.97	1521.15		1521.19	0.000624	1.79	1079.71	470.95	0.17
[illegible]h #1	Iona East (South	2.612	PF 1	7170.00	1518.39	1523.12	1522.77	1523.35	0.006211	4.34	1929.08	1842.77	0.50
[illegible]h #1	Iona East (South	2.668	PF 1	7170.00	1520.45	1525.10		1525.42	0.007535	4.69	1645.31	1309.45	0.56
Reach #1	Iona East (South	2.719	PF 1	7170.00	1521.53	1526.86		1527.13	0.005424	4.94	1783.35	1250.24	0.50
Reach #1	Iona East (South	2.788	PF 1	7170.00	1524.59	1528.66		1528.91	0.004346	4.75	1834.85	1234.89	0.47
Reach #1	Iona East (South	2.849	PF 1	7170.00	1525.23	1530.16		1530.52	0.005483	5.93	1565.30	963.19	0.55
Reach #1	Iona East (South	2.922	PF 1	7170.00	1526.15	1532.49	1532.34	1532.97	0.007074	7.56	1398.45	923.79	0.63
Reach #1	Iona East (South	3	PF 1	7170.00	1527.72	1534.94		1535.32	0.004607	6.71	1517.85	798.23	0.52
Reach #1	Iona East (South	3.069	PF 1	7170.00	1528.59	1536.67		1537.25	0.005597	8.26	1340.44	735.05	0.58
Reach #1	Iona East (South	3.156	PF 1	7170.00	1530.73	1538.94		1539.86	0.005199	8.72	1032.82	350.23	0.58
Reach #1	Iona East (South	3.234	PF 1	7170.00	1531.94	1541.14		1541.59	0.003121	6.75	1409.61	489.74	0.45
Reach #1	Iona East (South	3.295	PF 1	7170.00	1533.38	1542.14		1542.41	0.001831	4.94	1839.29	643.71	0.34
Reach #1	Iona East (South	3.334	PF 1	7170.00	1534.45	1542.52		1542.81	0.002060	5.63	1882.56	785.48	0.37
Reach #2	Iona East (South	0	PF 1	5449.11	1449.45	1450.52	1449.88	1450.62	0.004611	1.07	2159.23	2052.76	0.26
Reach #2	Iona East (South	0.07	PF 1	5449.11	1451.40	1452.45	1451.98	1452.55	0.005827	0.52	2170.57	2454.01	0.24
Reach #2	Iona East (South	0.172	PF 1	5449.11	1451.13	1455.73		1455.92	0.006630	3.30	1605.18	1315.35	0.39
Reach #2	Iona East (South	0.25	PF 1	5449.11	1453.42	1458.24		1458.41	0.005601	2.63	1784.43	1514.73	0.34
Reach #2	Iona East (South	0.332	PF 1	5449.11	1457.39	1460.34	1459.63	1460.44	0.003906	2.38	2278.04	2034.09	0.30
Reach #2	Iona East (South	0.415	PF 1	5449.11	1459.10	1462.22		1462.35	0.004916	2.92	1897.47	1253.91	0.34
Reach #2	Iona East (South	0.48	PF 1	5449.11	1461.69	1464.08		1464.27	0.006248	3.65	1572.92	1132.52	0.47
Reach #2	Iona East (South	0.528	PF 1	5449.11	1463.34	1465.75		1465.98	0.007242	4.06	1424.85	1011.46	0.51
Reach #2	Iona East (South	0.579	PF 1	5449.11	1464.56	1467.54		1467.76	0.006073	4.22	1461.97	958.79	0.48
Reach #2	Iona East (South	0.646	PF 1	5449.11	1466.33	1469.51		1469.69	0.004902	3.48	1576.95	1011.53	0.42
Reach #2	Iona East (South	0.73	PF 1	5449.11	1468.51	1471.39		1471.61	0.003784	3.54	1509.49	1166.39	0.46
Reach #2	Iona East (South	0.817	PF 1	5449.11	1470.22	1473.43	1473.01	1473.66	0.005381	4.19	1433.14	1143.23	0.54
Reach #2	Iona East (South	0.866	PF 1	5449.11	1472.05	1475.53		1475.89	0.006747	5.31	1124.66	739.79	0.63
Reach #2	Iona East (South	0.965	PF 1	5449.11	1474.66	1477.85		1478.08	0.004149	3.84	1407.15	831.40	0.48
Reach #2	Iona East (South	1.042	PF 1	5449.11	1476.52	1479.65		1479.87	0.004686	4.31	1466.92	936.66	0.52
Reach #2	Iona East (South	1.109	PF 1 75%	5449.11	1478.64	1481.44		1481.71	0.005753	4.58	1308.13	810.60	0.57
Reach #2	Iona East (South	1.176	PF 1	5449.11	1481.01	1483.45		1483.69	0.005344	3.45	1389.27	962.48	0.51
Reach #2	Iona East (South	1.238	PF 1	5449.11	1482.65	1485.45		1485.77	0.007465	4.51	1208.34	670.64	0.54
Reach #2	Iona East (South	1.313	PF 1	5449.11	1484.39	1487.63		1487.82	0.003788	3.44	1597.05	849.42	0.39
Reach #2	Iona East (South	1.403	PF 1	5449.11	1486.09	1489.98		1490.31	0.007491	4.90	1179.26	613.44	0.55
Reach #2	Iona East (South	1.447	PF 1	5449.11	1487.68	1491.34		1491.53	0.003815	3.60	1568.85	837.99	0.39
Reach #2	Iona East (South	1.521	PF 1	5449.11	1489.65	1492.95		1493.14	0.004505	3.53	1557.65	846.61	0.42
Reach #2	Iona East (South	1.575	PF 1	5449.11	1491.35	1494.36		1494.58	0.005657	4.13	1468.92	923.83	0.47
Reach #2	Iona East (South	1.665	PF 1	5449.11	1493.37	1497.08		1497.28	0.005723	4.22	1520.71	1164.51	0.51
Reach #2	Iona East (South	1.724	PF 1	5449.11	1494.82	1498.80		1498.99	0.005240	4.60	1637.18	1398.66	0.51
[illegible]h #2	Iona East (South	1.785	PF 1	5449.11	1496.18	1500.03		1500.17	0.002713	2.91	1803.98	1122.25	0.35
[illegible]h #2	Iona East (South	1.868	PF 1	5449.11	1498.74	1502.05	1501.90	1502.47	0.011998	5.89	1065.79	885.29	0.74
Reach #2	Iona East (South	1.923	PF 1	5449.11	1500.38	1504.18		1504.35	0.003863	3.96	1681.01	1163.65	0.43
Reach #2	Iona East (South	1.996	PF 1	5449.11	1502.50	1506.02		1506.23	0.006239	4.29	1499.88	1252.23	0.51
Reach #2	Iona East (South	2.064	PF 1	5449.11	1504.50	1508.31		1508.52	0.006474	4.33	1504.04	1236.09	0.54
Reach #2	Iona East (South	2.154	PF 1	5449.11	1506.51	1510.95		1511.16	0.004758	4.34	1687.97	1561.25	0.46
Reach #2	Iona East (South	2.246	PF 1	5449.11	1508.90	1513.03		1513.24	0.003858	3.89	1533.28	1183.21	0.41
Reach #2	Iona East (South	2.305	PF 1	5449.11	1510.30	1514.25		1514.50	0.004176	4.34	1360.88	851.00	0.44

HEC-RAS Plan: 310.032 Profile: PF 1 (Continued)

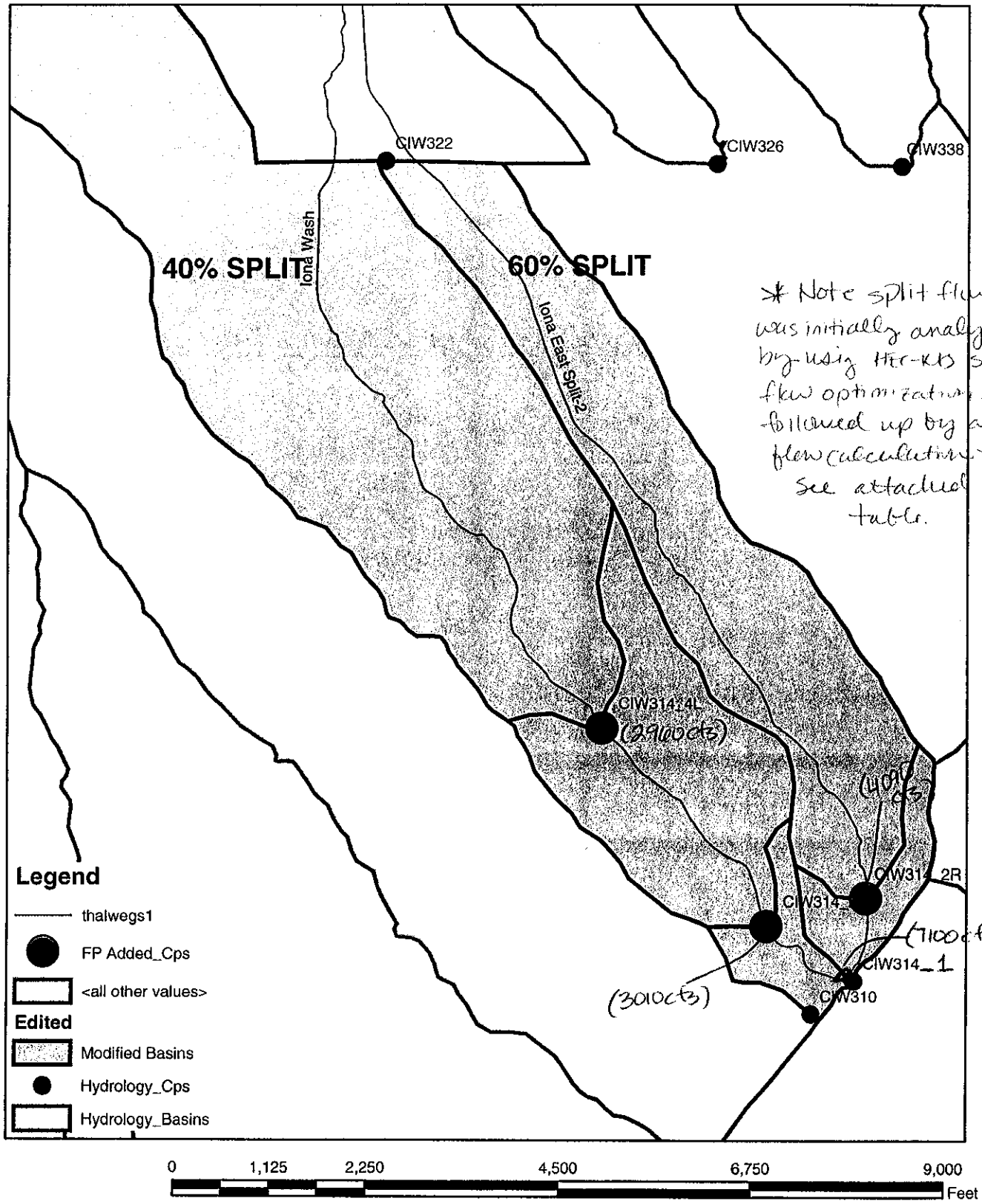
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #2	Iona East (South	2.379	PF 1	5449.11	1511.89	1515.98		1516.19	0.004519	4.20	1582.05	1141.28	0.45
Reach #2	Iona East (South	2.441	PF 1	5449.11	1513.52	1516.15	1518.15	1518.54	0.009686	6.67	1235.81	1270.22	0.67
ach #2	Iona East (South	2.494	PF 1	5449.11	1515.08	1519.97		1520.15	0.003646	5.10	1774.60	1389.08	0.44
ach #2	Iona East (South	2.54	PF 1	5449.11	1517.45	1520.99		1521.20	0.005018	4.83	1593.81	1436.50	0.48

75%

25% of 7170cfs goes towards Iona West

75% of 7170cfs goes towards Iona East

IONA WASH (SPLIT LOCATION)



* Note split flow was initially analyzed by using HEC-RAS split flow optimization. Then followed up by a split flow calculation table, see attached for table.

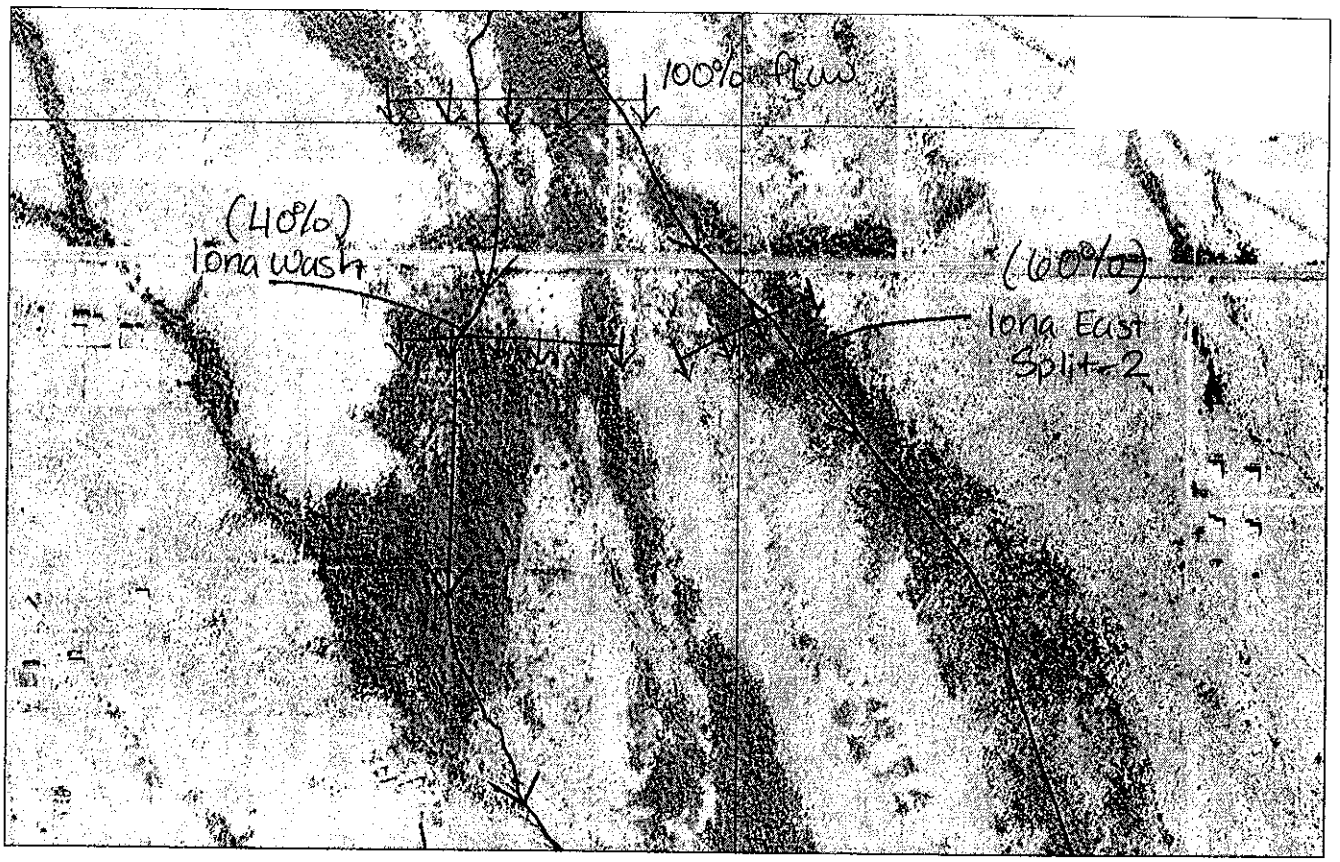
Entellus

SHEET		OF	
BY	AMG	DATE	01/24/05
CHECK		DATE	
JOB NO.	310.032		

Client Flood Control District of Maricopa County (FCDMC)
Job Wittmann ADMSU

Split Flow Calculations

Split Point Location: Iona Wash
Split Point ID: Approximately ~2500 feet south of CIW330
Split Description Main flow- Iona Wash
split flow Towards Iona Wash Split (southeasterly)



Diversion path 1
Description Iona Wash
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = 0.0050 ft/ft

Diversion Path 2
Description Towards Iona Wash Split (southeasterly)
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = 0.0060 ft/ft

Diversion Path 3
Description 0
General Contour Slope ft
Angle between cont/split Degrees

Estimated Slope = ft/ft

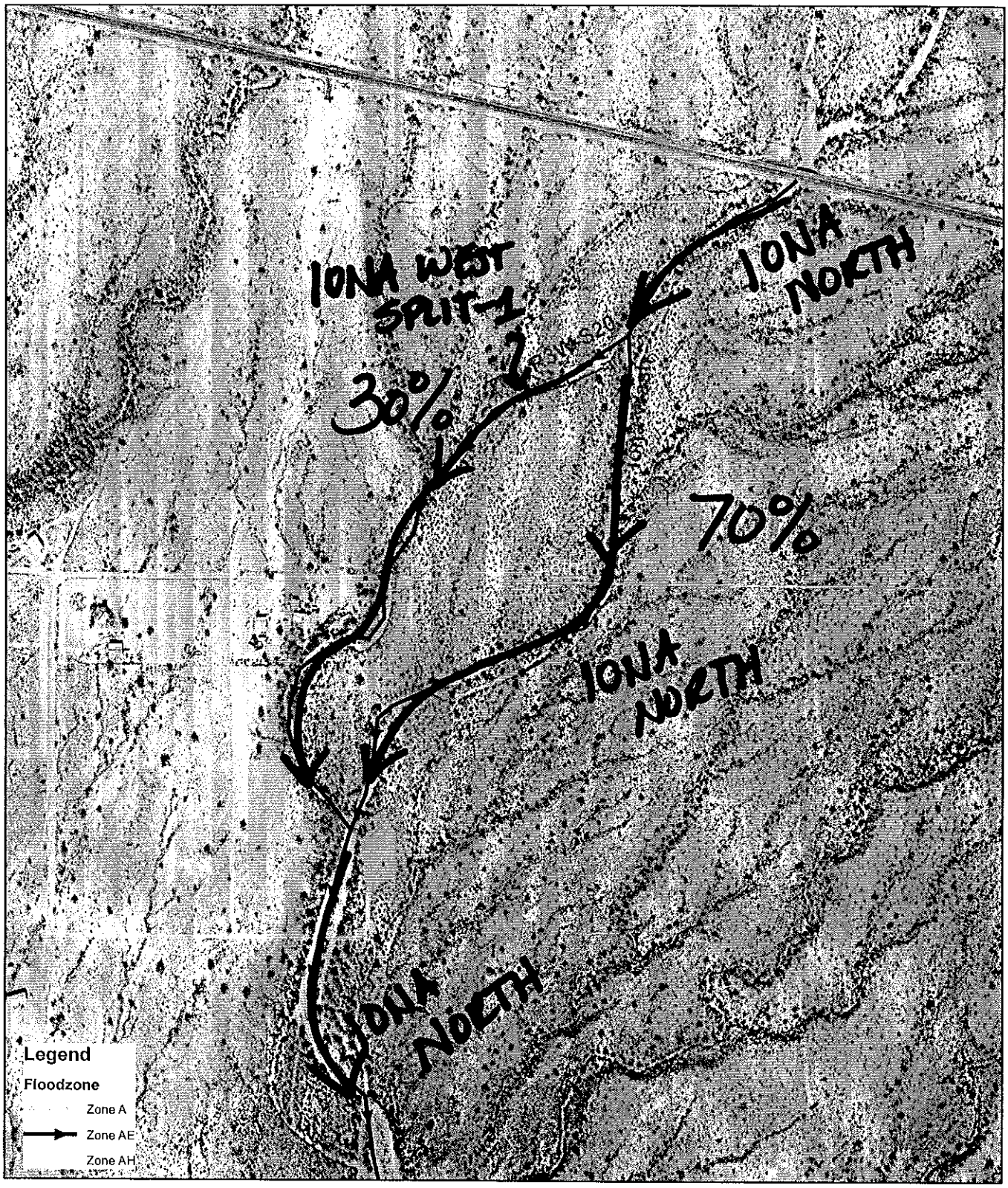
Split Flow Table

Split Point Location: Iona Wash
Split Point ID: Approximately ~2500 feet south of CIW330
Split Description Main flow- Iona Wash
split flow Towards Iona Wash Split (southeasterly)

		S =	0.005			S=	0.006		
Inflow	Approx. Depth	**Main flowpath**				**Diverted flowpath 1**			
		width	n value	Flow	Fow %	width	n value	Flow	Fow %
0	0.0	1000	0.063	0.0		750	0.034	0.0	
682	0.7	1000	0.063	270.3	40%	750	0.034	411.5	60%
1364	1.0	1000	0.063	540.6	40%	750	0.034	823.0	60%
2045	1.3	1000	0.063	810.9	40%	750	0.034	1234.5	60%
2727	1.5	1000	0.063	1081.2	40%	750	0.034	1646.0	60%
3409	1.8	1000	0.063	1351.6	40%	750	0.034	2057.5	60%
4091	2.0	1000	0.063	1621.9	40%	750	0.034	2469.0	60%
4773	2.2	1000	0.063	1892.2	40%	750	0.034	2880.6	60%
5455	2.3	1000	0.063	2162.5	40%	750	0.034	3292.1	60%
6136	2.5	1000	0.063	2432.8	40%	750	0.034	3703.6	60%
6818	2.7	1000	0.063	2703.1	40%	750	0.034	4115.1	60%
7500	2.8	1000	0.063	2973.4	40%	750	0.034	4526.6	60%

Flow from upstream	7500	
Flow remaining after div.	**2973**	40%
Flow diverted at south div.	4527	
Total Div. flow	**4527**	60%

IONA NORTH WASH SPLIT



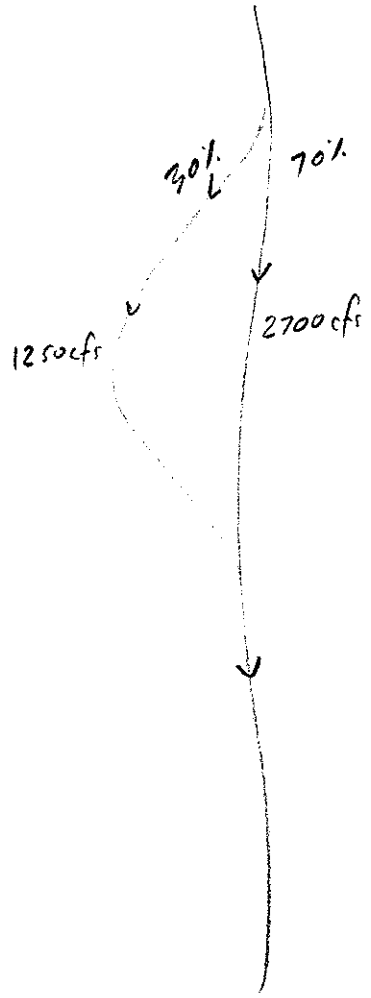
0 250 500 1,000 1,500 2,000 Feet

Split Flows_ Iona North

(SPLIT FLOW OPTIMIZATION)

HEC-RAS Plan: Profile: Floodplain

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #1	Reach #2	4.487	Floodplain	2702.19	2003.31	2006.91	2006.91	2007.59	0.010309	7.62	443.45	302.54	0.81
Reach #1	Reach #2	4.585	Floodplain	2702.19	2008.86	2012.75	2012.75	2013.45	0.011308	8.01	423.15	278.38	0.84
Reach #1	Reach #2	4.665	Floodplain	2702.19	2013.65	2017.59	2017.59	2018.27	0.011271	8.19	429.88	292.92	0.83
Reach #1	Reach #2	4.756	Floodplain	2702.19	2019.11	2022.49	2022.44	2023.11	0.009759	7.18	450.19	294.73	0.78
Reach #1	Reach #2	4.827	Floodplain	2702.19	2023.28	2026.28		2026.73	0.009628	6.00	507.23	307.38	0.74
Split	Split_1	.1	Floodplain	1247.81	2001.55	2005.92	2005.92	2006.77	0.012193	7.74	180.19	114.72	0.86
Split	Split_1	.156	Floodplain	1247.81	2005.11	2009.02	2008.51	2009.55	0.007519	6.41	219.31	117.14	0.68
Split	Split_1	.224	Floodplain	1247.81	2010.63	2013.32	2013.32	2013.84	0.013974	6.83	223.68	205.91	0.88
Split	Split_1	.318	Floodplain	1247.81	2014.87	2018.58	2018.40	2019.20	0.008530	6.53	217.22	197.40	0.72
Split	Split_1	.388	Floodplain	1247.81	2020.83	2023.47	2023.47	2023.99	0.012363	6.94	228.30	202.52	0.84
Split	Split_1	.45	Floodplain	1247.81	2023.96	2026.53	2026.20	2026.74	0.006037	3.97	338.26	300.67	0.56

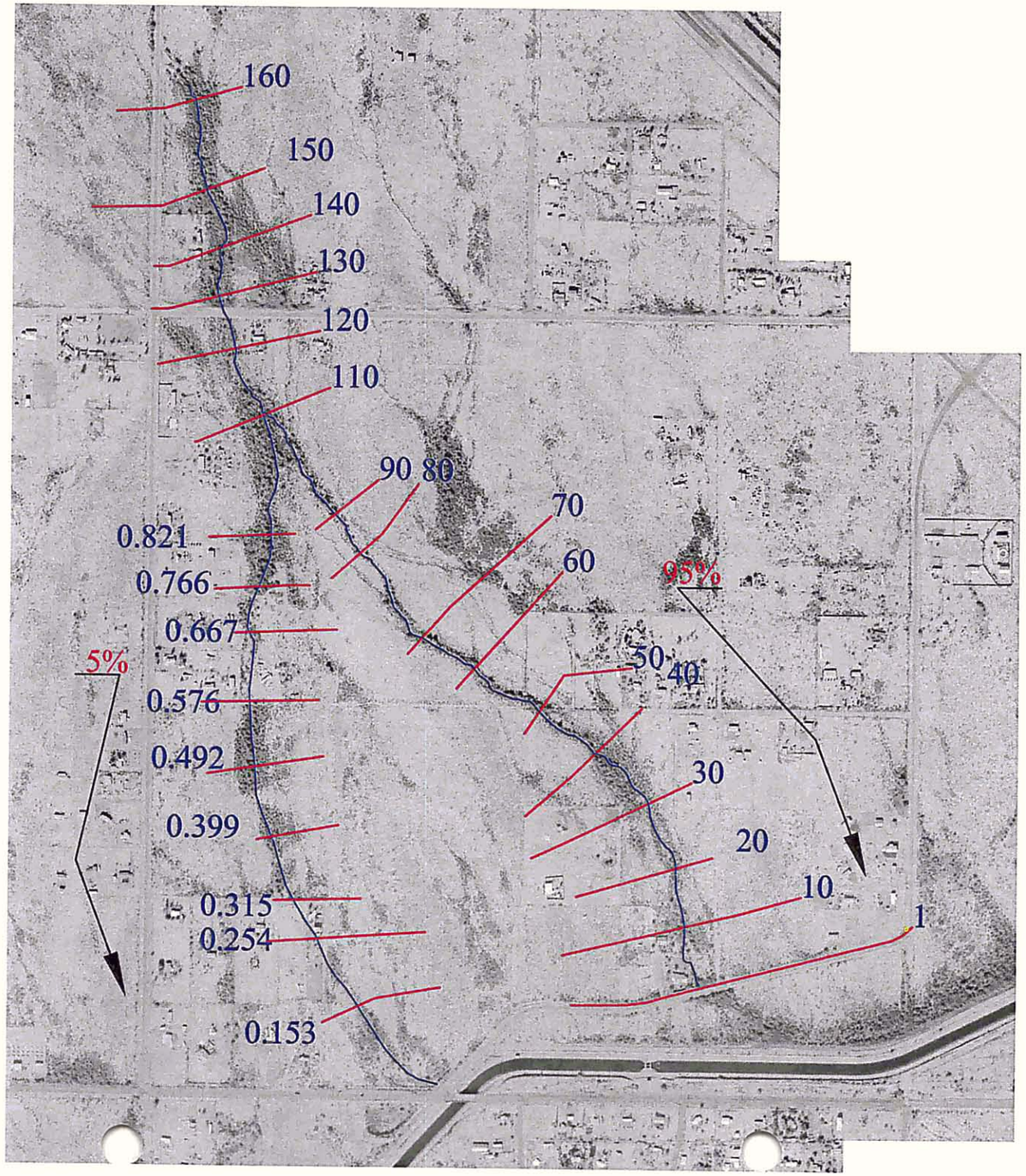


Split flows estimated using HEC-RAS optimization

HEC-RAS Plan: Wittmann_Opt Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East_Split	1	PF 1	3297.49	1552.36	1554.66	1554.66	1554.92	0.025778	3.48	837.07	1640.88	0.73
East_Split	10	PF 1	3297.49	1555.34	1558.57	1558.03	1558.69	0.004838	2.59	1218.50	1069.55	0.36
East_Split	20	PF 1	3297.49	1558.67	1561.59	1561.31	1561.83	0.009871	3.67	861.54	861.79	0.52
East_Split	30	PF 1	3297.49	1561.08	1565.28		1565.44	0.005702	3.01	1063.01	802.85	0.40
East_Split	40	PF 1	3297.49	1564.39	1568.23	1567.85	1568.38	0.005579	2.66	1080.26	977.20	0.38
East_Split	50	PF 1	3297.49	1568.65	1571.17	1570.88	1571.43	0.006905	2.25	832.08	723.95	0.37
East_Split	60	PF 1	3297.49	1572.23	1576.07	1575.95	1576.34	0.014161	3.59	799.88	901.62	0.54
East_Split	70	PF 1	3297.49	1575.61	1580.78	1580.34	1580.89	0.004606	2.79	1198.61	1162.56	0.33
East_Split	80	PF 1	3297.49	1579.07	1584.47	1584.40	1584.85	0.013939	6.39	717.26	881.04	0.60
East_Split	90	PF 1	3297.49	1581.15	1587.98	1587.55	1588.29	0.007324	3.61	752.74	559.42	0.41
West_Split	0.153	PF 1	182.51	1557.77	1558.66	1558.66	1558.81	0.027317	3.18	59.43	185.25	0.81
West_Split	0.254	PF 1	182.51	1562.87	1563.70	1563.57	1563.73	0.004558	0.80	137.90	569.59	0.29
West_Split	0.315	PF 1	182.51	1565.48	1566.05	1565.95	1566.10	0.013744	1.74	106.87	389.96	0.54
West_Split	0.399	PF 1	182.51	1569.38	1570.06		1570.08	0.006401	1.26	144.52	354.93	0.32
West_Split	0.492	PF 1	182.51	1573.27	1573.97	1573.76	1573.99	0.010125	1.29	142.83	439.72	0.38
West_Split	0.576	PF 1	182.51	1576.86	1577.49	1577.29	1577.53	0.006457	1.22	124.07	312.95	0.32
West_Split	0.667	PF 1	182.51	1581.01	1581.64	1581.52	1581.70	0.012306	1.26	95.58	326.60	0.41
West_Split	0.766	PF 1	182.51	1585.59	1586.23	1586.03	1586.26	0.006495	1.27	148.83	463.95	0.32
West_Split	0.821	PF 1	182.51	1586.97	1588.22	1588.09	1588.29	0.007561	1.59	93.97	256.15	0.36

SPLIT FLW AT CTW480


160
150
140
130
120
110
90
80
70
60
50
40
30
20
10
1
0.821
0.766
0.667
0.576
0.492
0.399
0.315
0.254
0.153
5%
95%

Entellus

SHEET	1	OF	2
BY	RAS	DATE	6/30/2005
CHECK		DATE	
JOB NO.	310.032		

CLIENT: FCDMC

JOB: Wittmann ADMSU

Split Flow Calculations

Split Flow Location: T5N-R2W-S07

Split Point ID: x-section 1.124

Split Description
Main Flow: T5N-R2W-S07
Split Flow: T5N-R3W-S24E

Main Flow Path
Description
Estimated Slope 0.0104 ft/ft

Diversion Path 1
Description
Estimated Slope 0.0108 ft/ft

Diversion Path 2
Description
Estimated Slope ft/ft

Entellus

SHEET	2	OF	2
BY	RAS	DATE	6/30/2005
CHECK		DATE	
JOB NO.	310.032		

CLIENT: FCDMC

JOB: Wittmann ADMSU

Split Flow Table

Split Flow Location: T5N-R2W-S07

Split Point ID: x-section 1.124

Split Description Main Flow: T5N-R2W-S07

Split Flow: T5N-R3W-S24E

		Slope = 0.0104 ft/ft				Slope = 0.0108 ft/ft				Slope = ft/ft			
		Main Flow Path				Diverted Flow Path 1				Diverted Flow Path 2			
Inflow	Approx. Depth	Width	n Value	Flow	Flow%	Width	n Value	Flow	Flow%	Width	n Value	Flow	Flow%
0		165	0.04	0.0		150	0.035			1	1		
91	0.41	165	0.04	44.2	49%	150	0.035	46.8	51%	1	1	#DIV/0!	#DIV/0!
182	0.62	165	0.04	88.3	49%	150	0.035	93.5	51%	1	1	#DIV/0!	#DIV/0!
273	0.79	165	0.04	132.5	49%	150	0.035	140.3	51%	1	1	#DIV/0!	#DIV/0!
364	0.94	165	0.04	176.6	49%	150	0.035	187.0	51%	1	1	#DIV/0!	#DIV/0!
455	1.07	165	0.04	220.8	49%	150	0.035	233.8	51%	1	1	#DIV/0!	#DIV/0!
545	1.19	165	0.04	264.9	49%	150	0.035	280.5	51%	1	1	#DIV/0!	#DIV/0!
636	1.31	165	0.04	309.1	49%	150	0.035	327.3	51%	1	1	#DIV/0!	#DIV/0!
727	1.42	165	0.04	353.3	49%	150	0.035	374.0	51%	1	1	#DIV/0!	#DIV/0!
818	1.52	165	0.04	397.4	49%	150	0.035	420.8	51%	1	1	#DIV/0!	#DIV/0!
909	1.62	165	0.04	441.6	49%	150	0.035	467.5	51%	1	1	#DIV/0!	#DIV/0!
1000	1.72	165	0.04	485.7	49%	150	0.035	514.3	51%	1	1	#DIV/0!	#DIV/0!