TECHNICAL DATA NOTEBOOK

Volume II of III
Appendices E-G

CAREFREE DRAINAGE MASTER PLAN FLOODPLAIN DELINEATION STUDY

Carefree, Arizona

Prepared for
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, AZ 85009

CONTRACT NO: FCD 2000C037

in Cooperation with
Town of Carefree
100 Easy Street
Carefree, AZ 85377

Prepared by
CH2MHILL
2625 South Plaza Drive, Suite 300
Tempe, Arizona 85282-3397

September 2003

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Please Return to
2801 W. Durango
Phoenix, AZ 85009

Final Report

Volume II of III
Carefree Drainage Master Plan Floodplain Delineation Study Technical Data Notebook

Appendices E-G

Prepared for

Flood Control District of Maricopa County

2801 West Durango Street
Phoenix, AZ 85009

In Cooperation with

The Town of Carefree

May 2004

Registered Professional Engineer (Civil)
CERTIFICATE NO.
24971
TONY A.
BOKICH
Date Signed 5-11-04
ARIZONA, U.S.A.

Prepared in partnership with
JE Fuller Hydrology and Geomorphology
HDR, Inc.
Logan Simpson Design

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Final Report

Volume II of III
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Appendices E-G

Submitted to

Flood Control District of Maricopa County

May 2004

Registered Professional Engineer (Civil)
CERTIFICATE NO.
24971
TONY A.
BOKICH
Date Signed 5-11-04
ARIZONA, U.S.A.

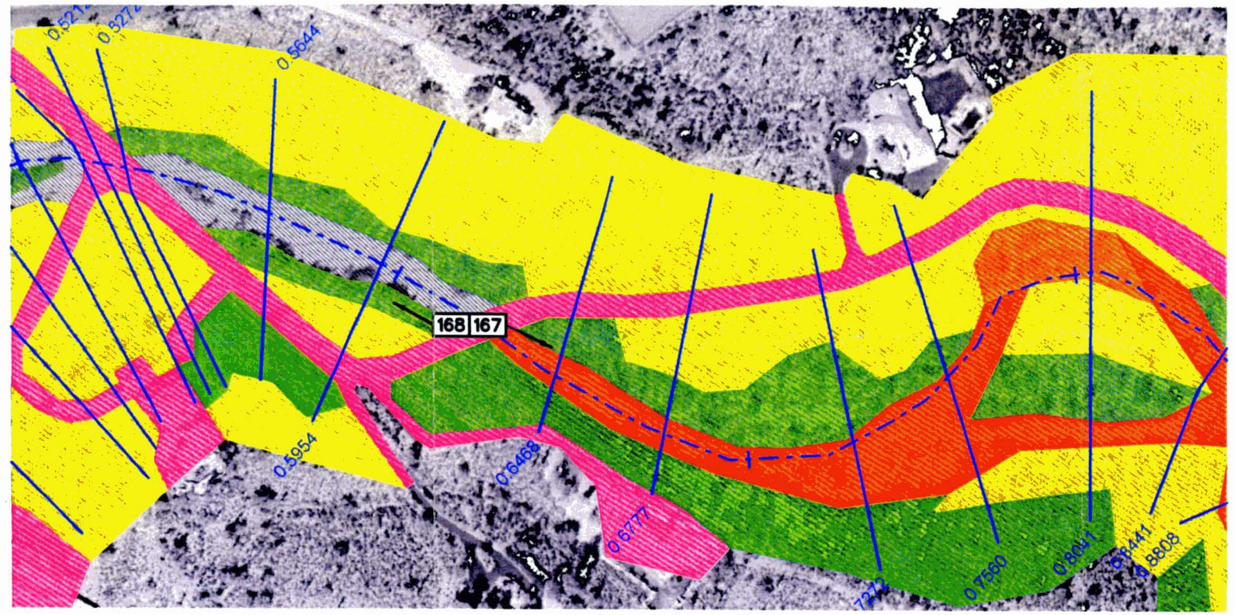
CH2MHILL

Picture 167: Galloway Wash Middle Branch, Looking Upstream (east)

N Value Distribution for Galloway Wash Middle Branch

Value		Smooth Channel	Normal Channel	Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.000	0.003	0.010	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.025	0.028	0.035	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

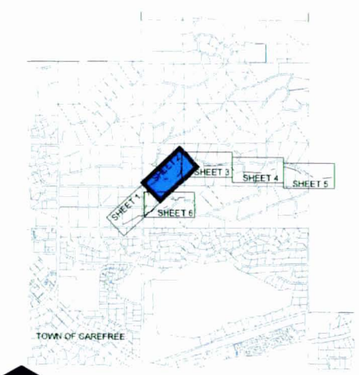


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GALLOWAY WASH MIDDLE BRANCH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 02 OF 23

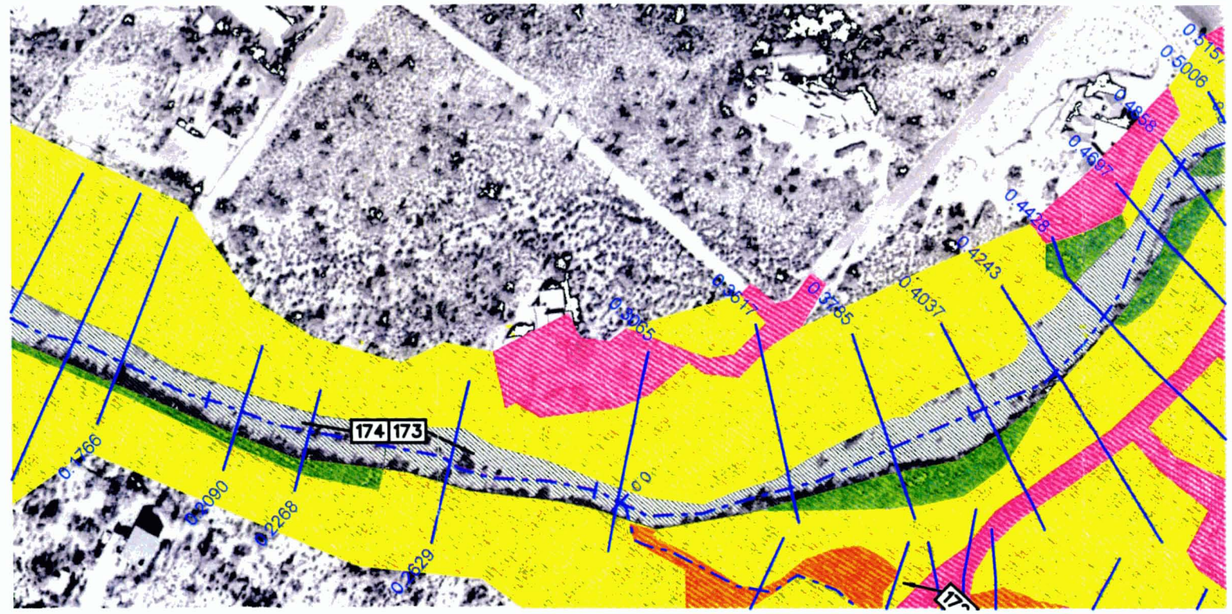
2944np02.dgn 04-JUN-2003

Picture 173: Galloway Wash Middle Branch, Looking Upstream (north)

N Value Distribution for Galloway Wash Middle Branch

Value		Smooth Channel	Normal Channel	Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.000	0.003	0.010	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.025	0.028	0.035	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

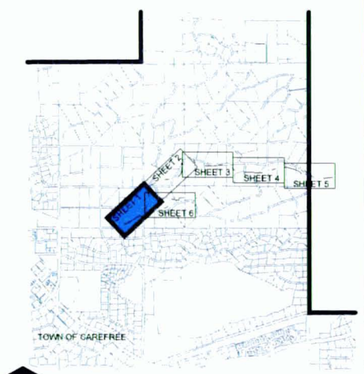


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GALLOWAY WASH MIDDLE BRANCH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 01 OF 23

04-JUN-2003

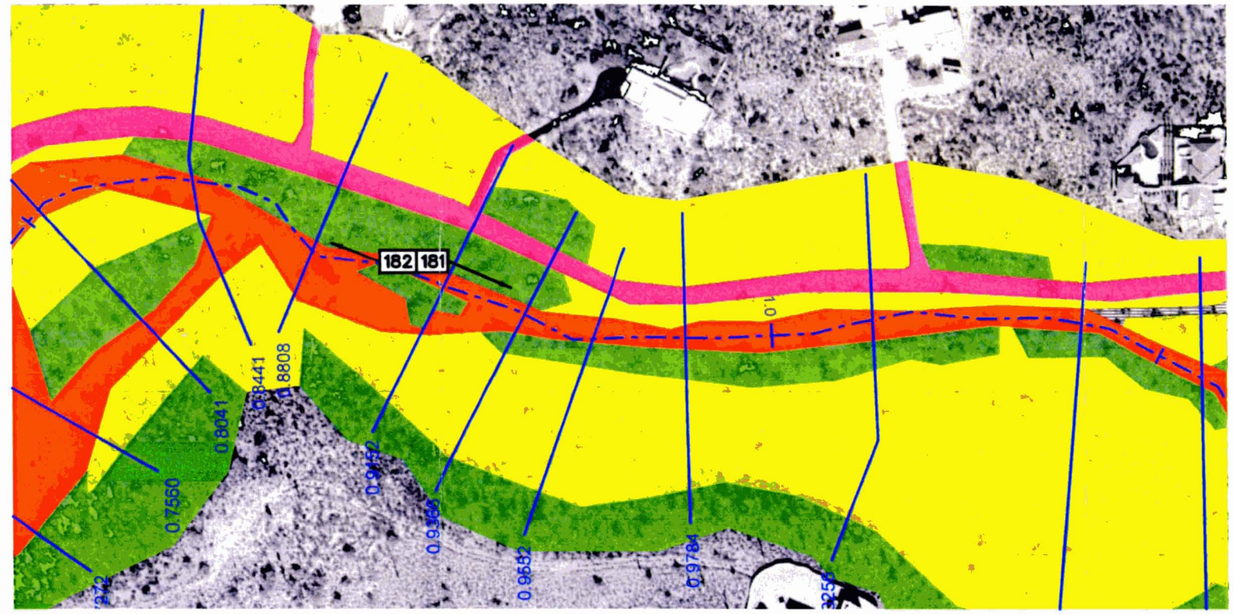
2944np01.dgn

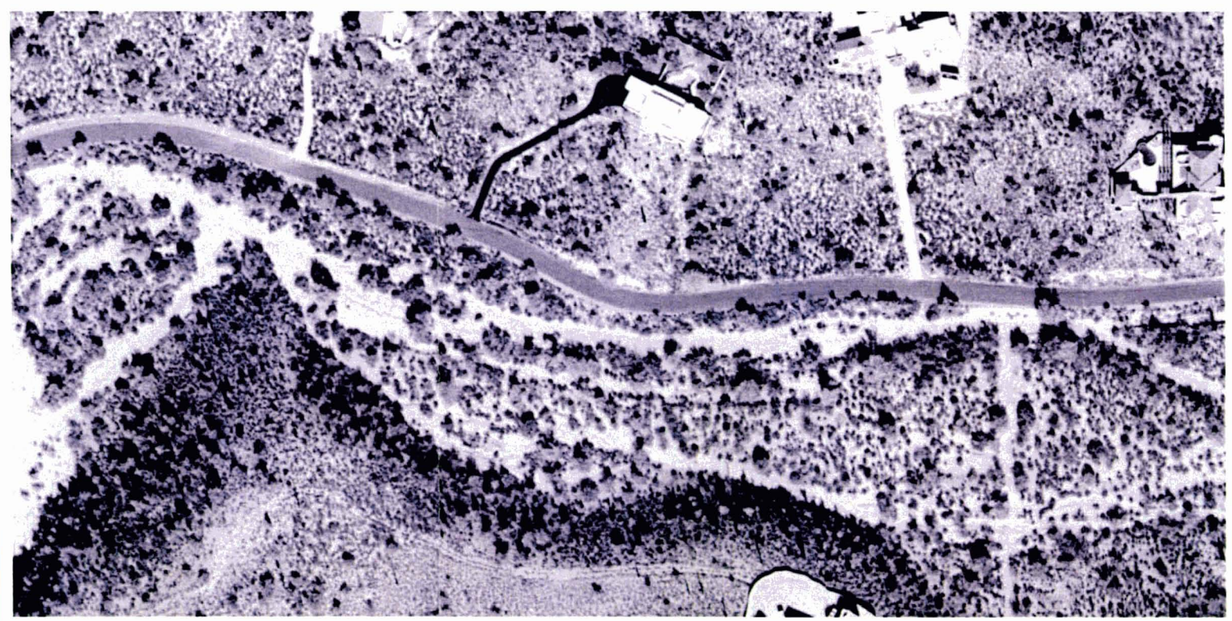
Picture 181: Galloway Wash Middle Branch, Looking Upstream (east)

N Value Distribution for Galloway Wash Middle Branch

Value		Smooth Channel	Normal Channel	Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.000	0.003	0.010	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.025	0.028	0.035	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL



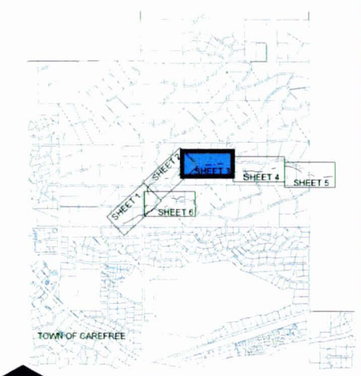


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

GALLOWAY WASH MIDDLE BRANCH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 03 OF 23

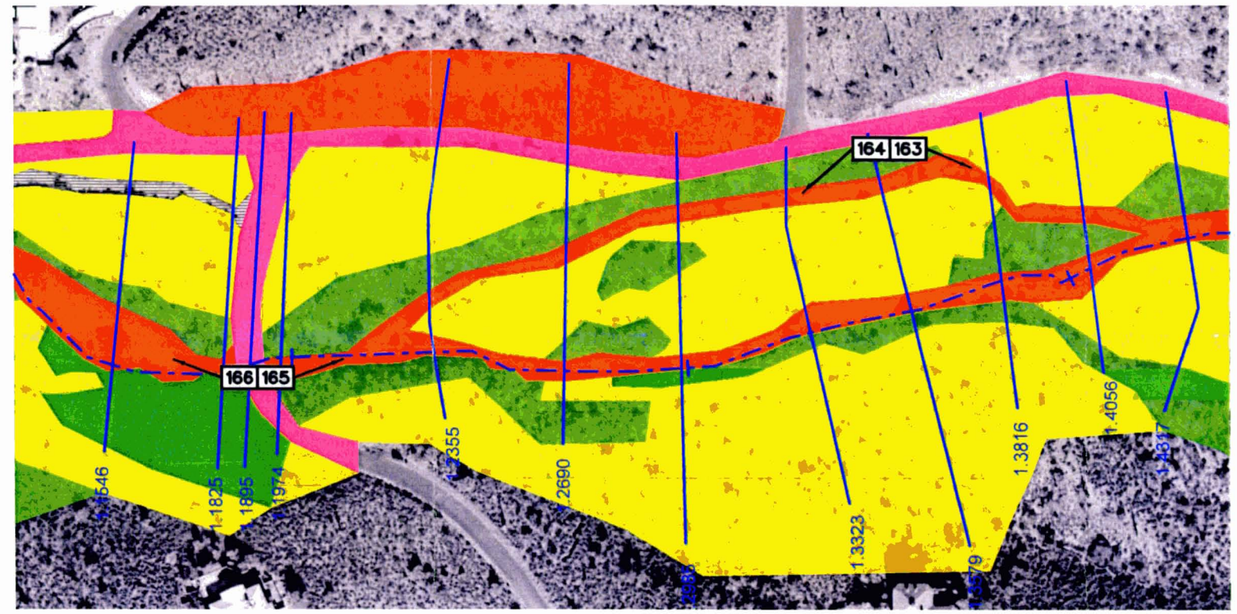
2944np03.dgn 04-JUN-2003

Picture 165: Galloway Wash Middle Branch, Looking Upstream (east)

N Value Distribution for Galloway Wash Middle Branch

Value		Smooth Channel	Normal Channel	Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.000	0.003	0.010	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.025	0.028	0.035	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

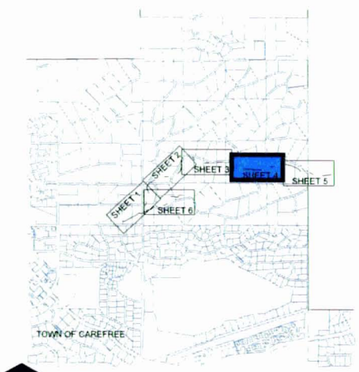


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GALLOWAY WASH MIDDLE BRANCH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 04 OF 23

04-JUN-2003

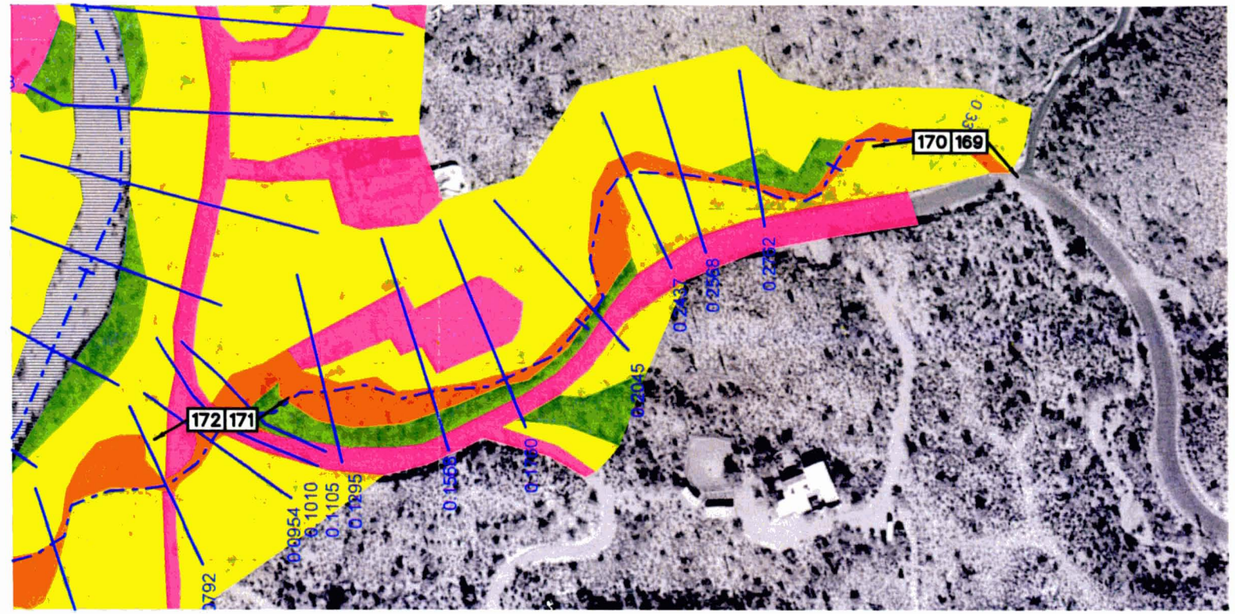
29944np04.dgn

Picture 171: Galloway Wash Middle Branch Tributary, Looking Upstream (east)

N Value Distribution for Galloway Wash Middle Branch

Value		Smooth Channel	Normal Channel	Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.000	0.003	0.010	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.025	0.028	0.035	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

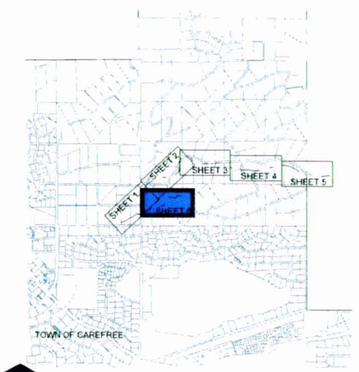


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GALLOWAY WASH MIDDLE BRANCH
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 06 OF 23

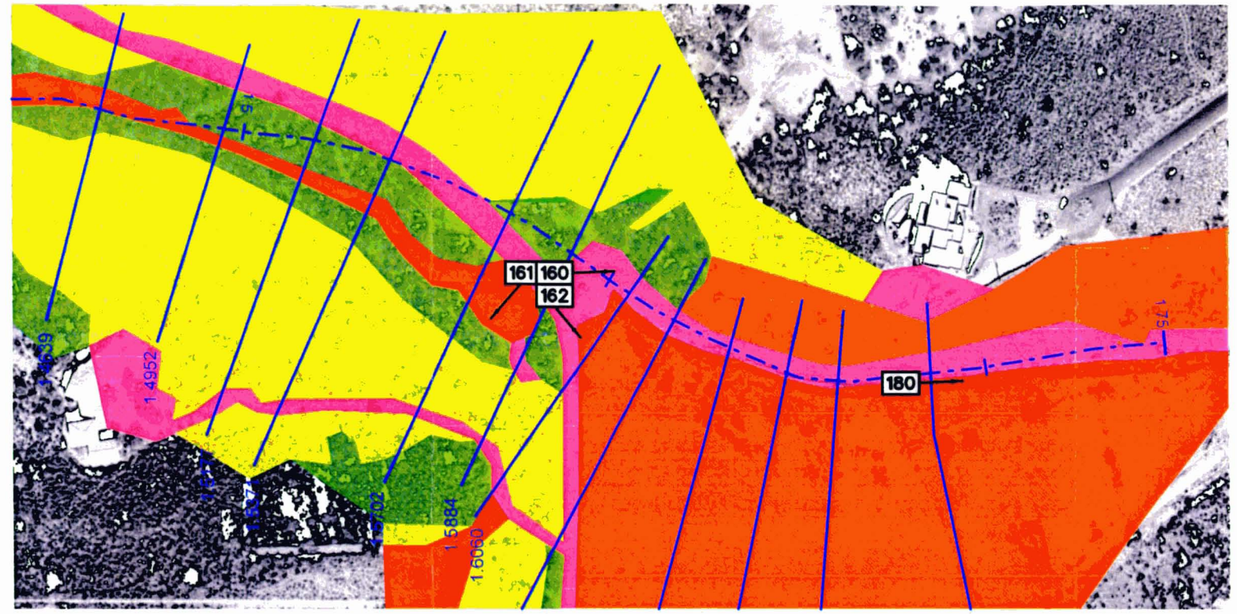
04-JUN-2003
2944np06.dgn

Picture 160: Galloway Wash Middle Branch, Looking Upstream (east)

N Value Distribution for Galloway Wash Middle Branch

Value		Smooth Channel	Normal Channel	Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.000	0.003	0.010	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.025	0.028	0.035	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

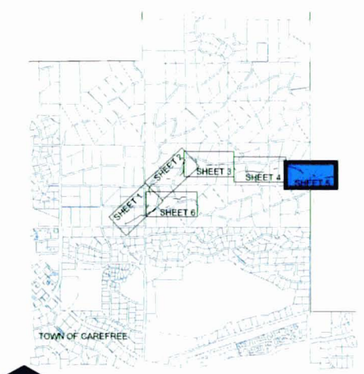


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GALLOWAY WASH MIDDLE BRANCH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 05 OF 23

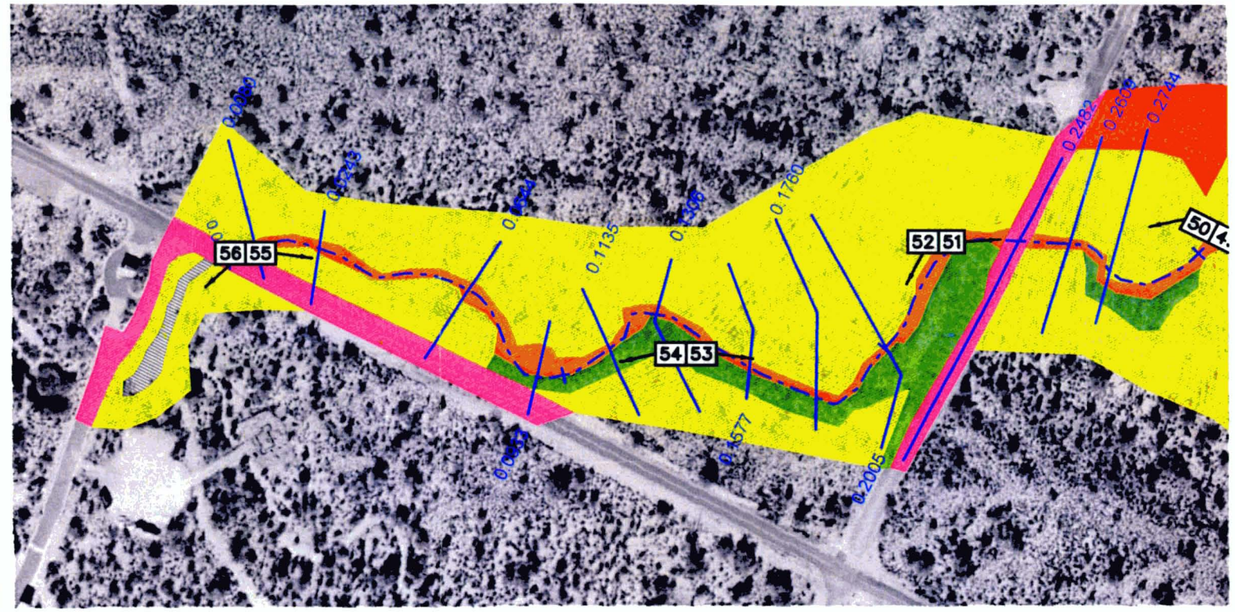
2944mp05.dgn 04-JUN-2003

Picture 53: Windmill Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

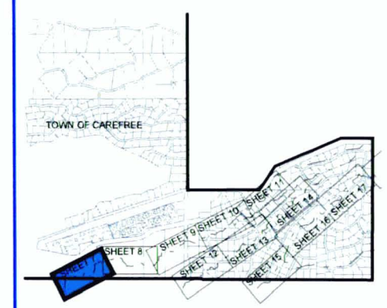


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

WINDMILL WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 07 OF 23

04-JUN-2003

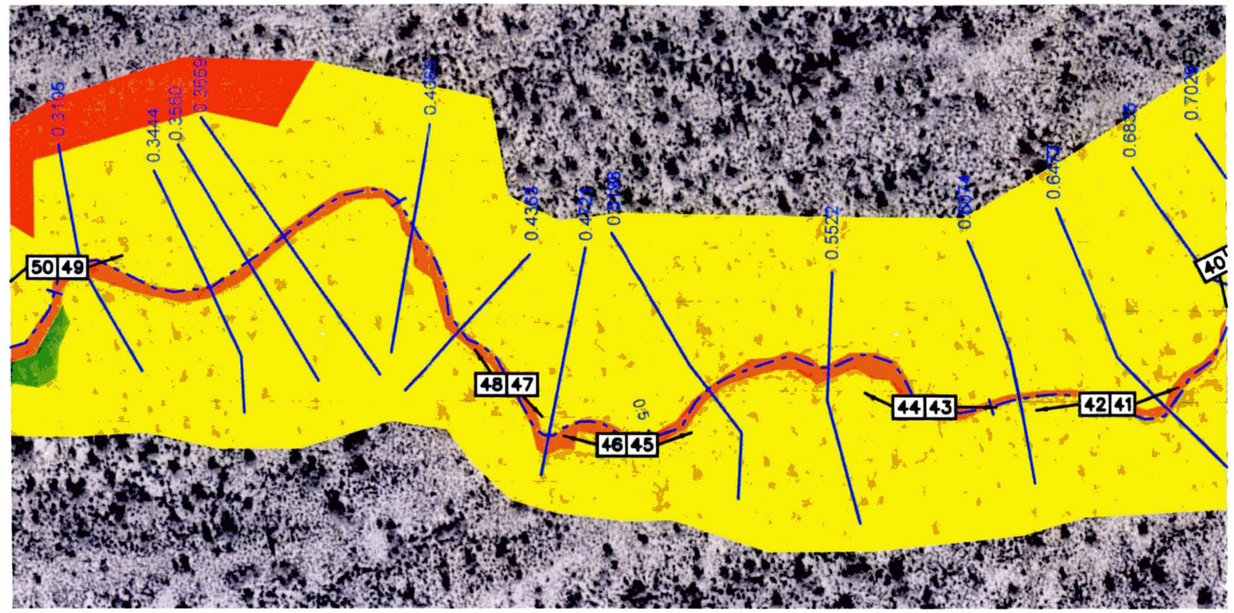
2944np07.dgn

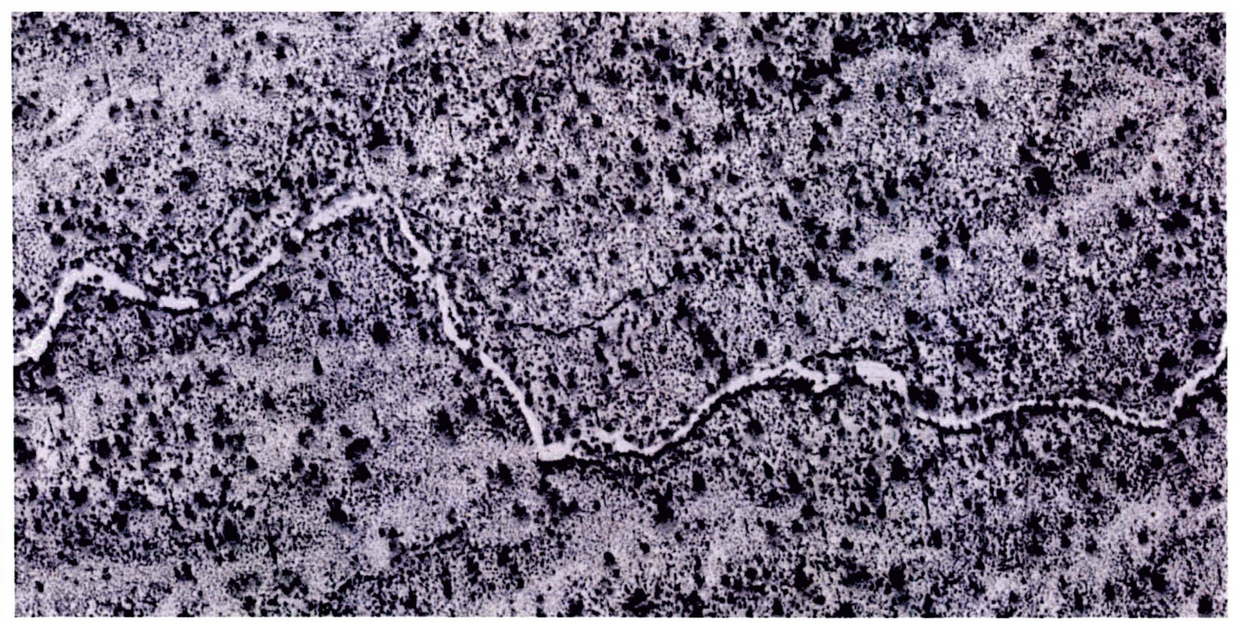
Picture 45: Windmill Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL





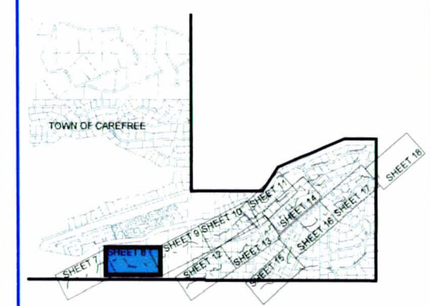
N

200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



N

SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

WINDMILL WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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04-JUN-2003

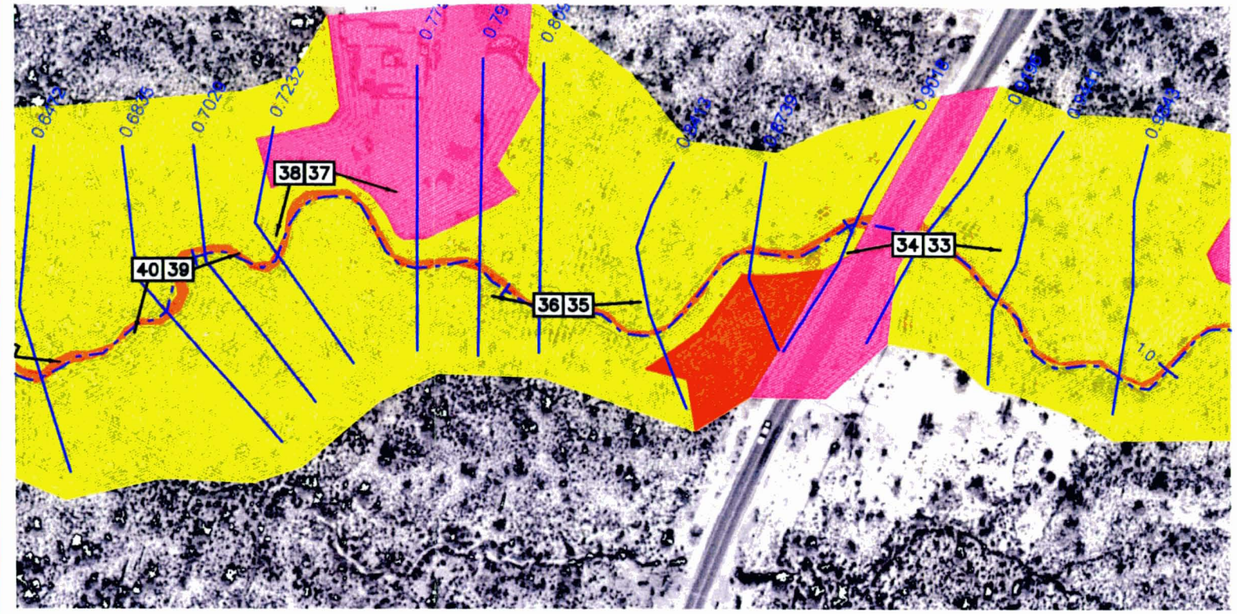
2944np08.dgn

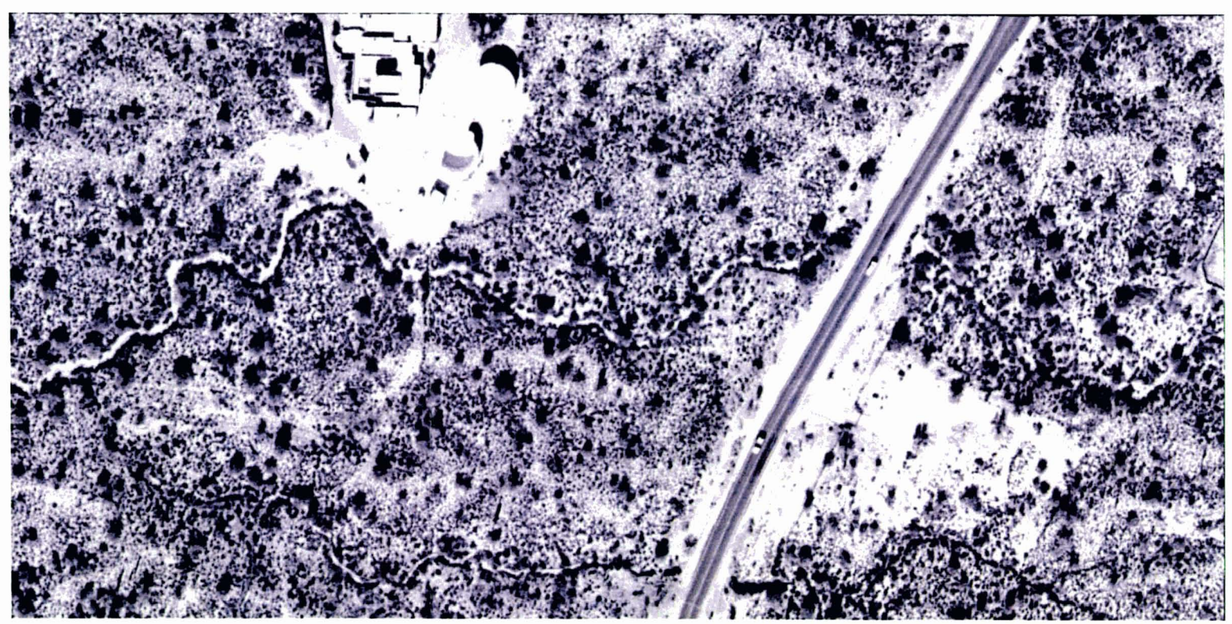
Picture 35: Windmill Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL



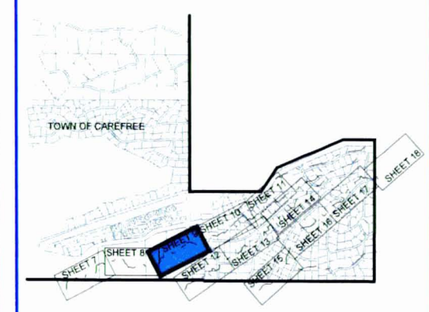


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

WINDMILL WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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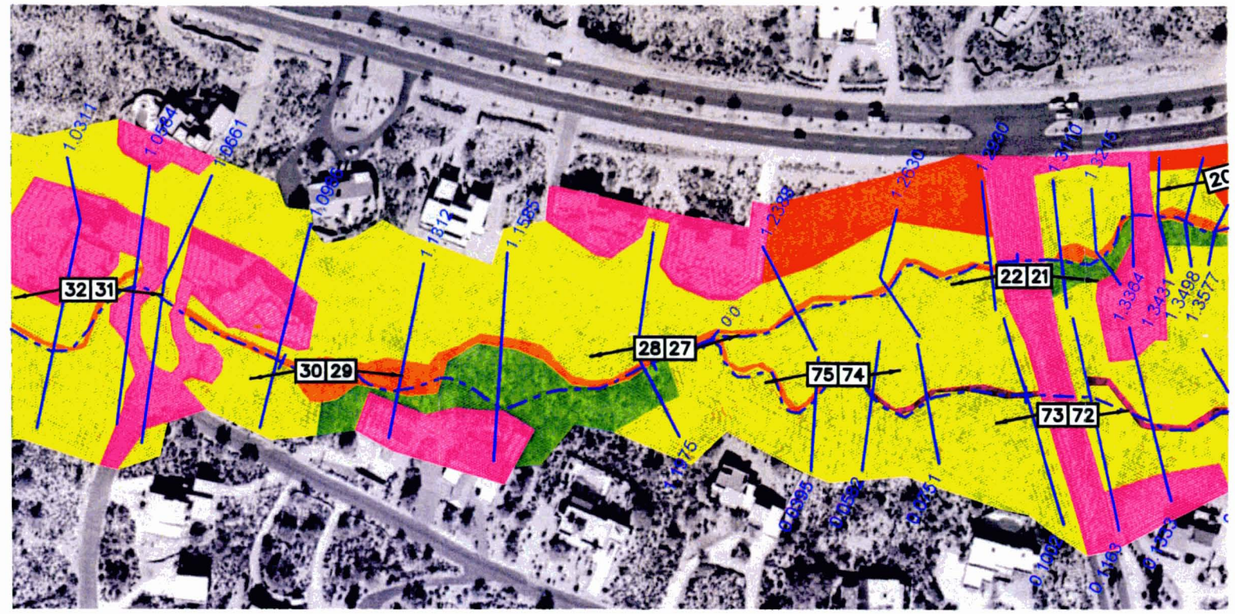
2944np09.dgn 04-JUN-2003

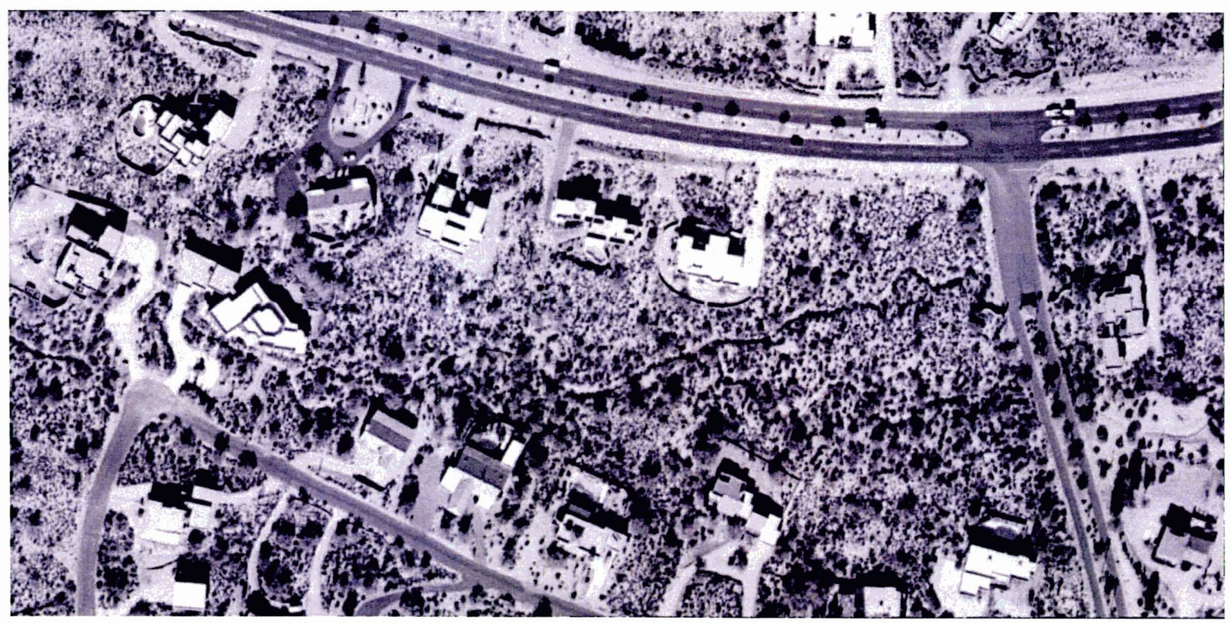
Picture 27: Windmill Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL



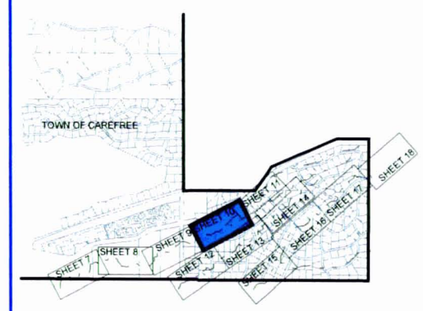


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

WINDMILL WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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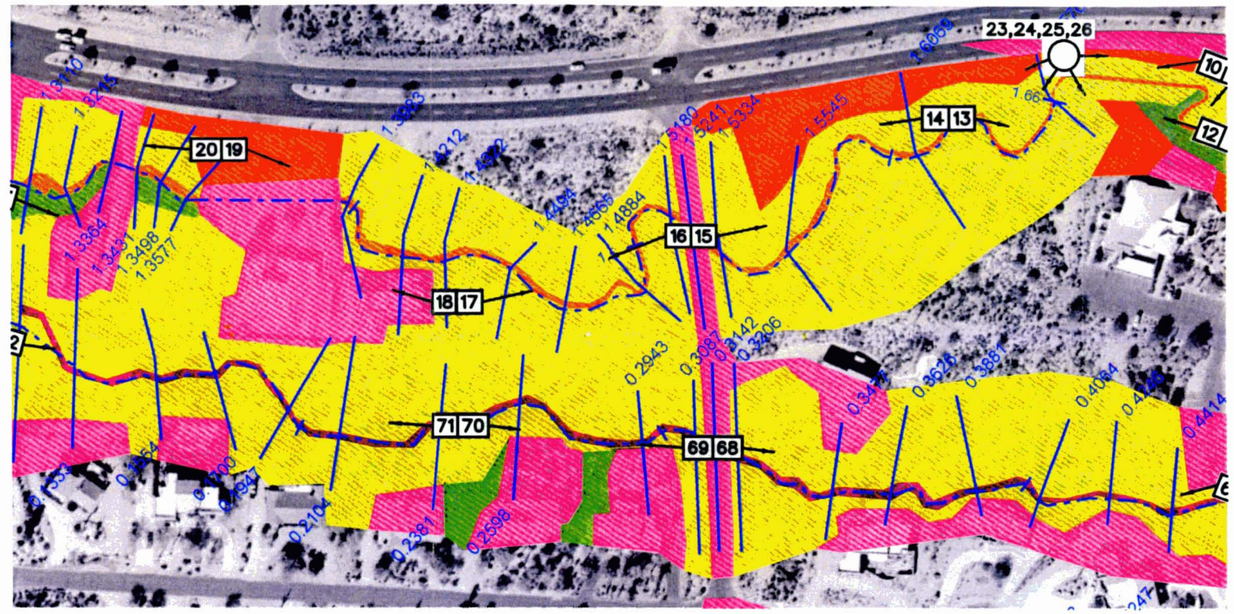
2944np10.dgn

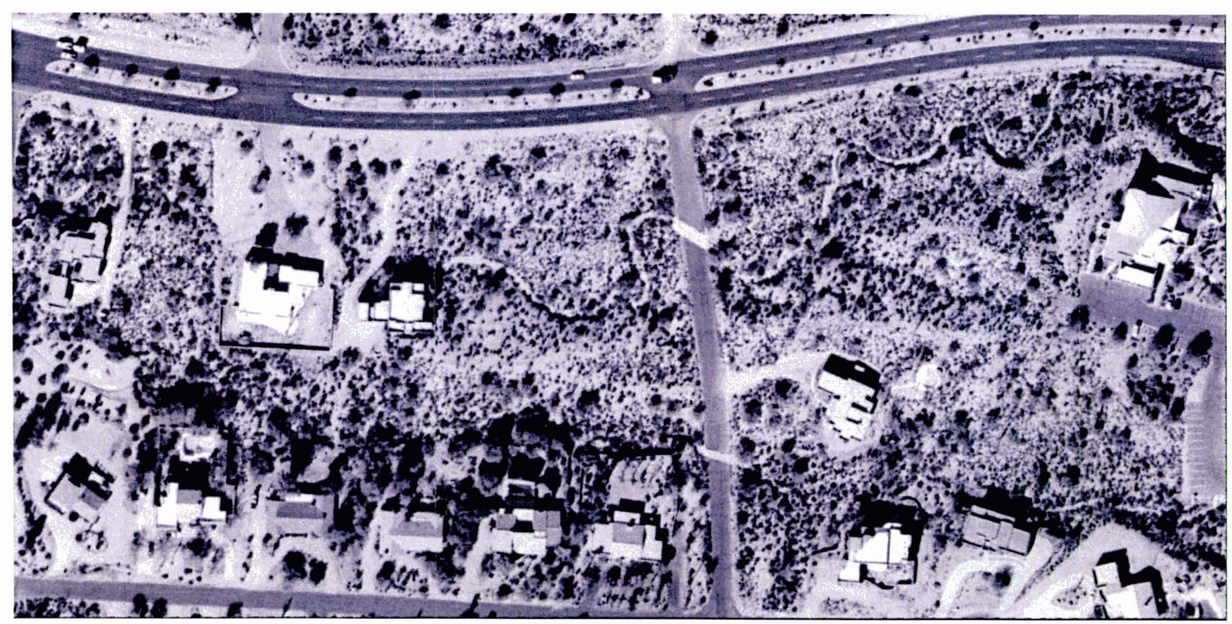
Picture 14: Windmill Wash, Looking Downstream (southwest)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL



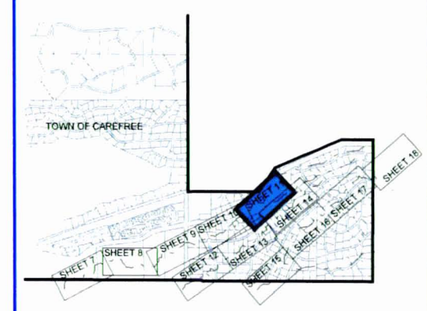


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

WINDMILL WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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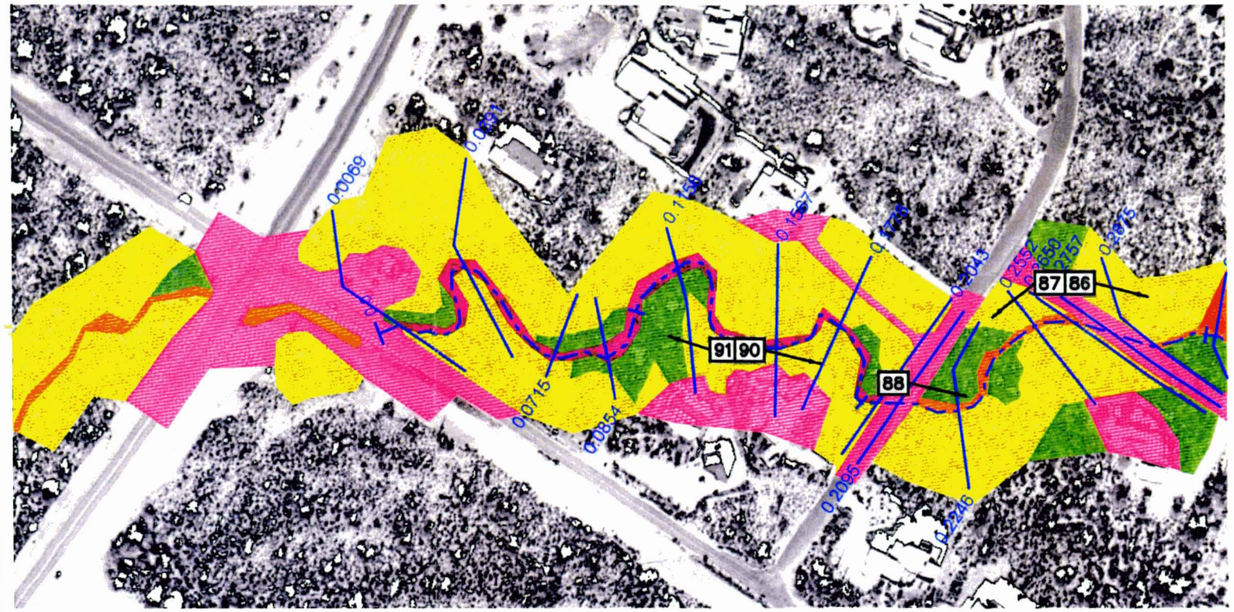
2944np11.dgn 04-JUN-2003

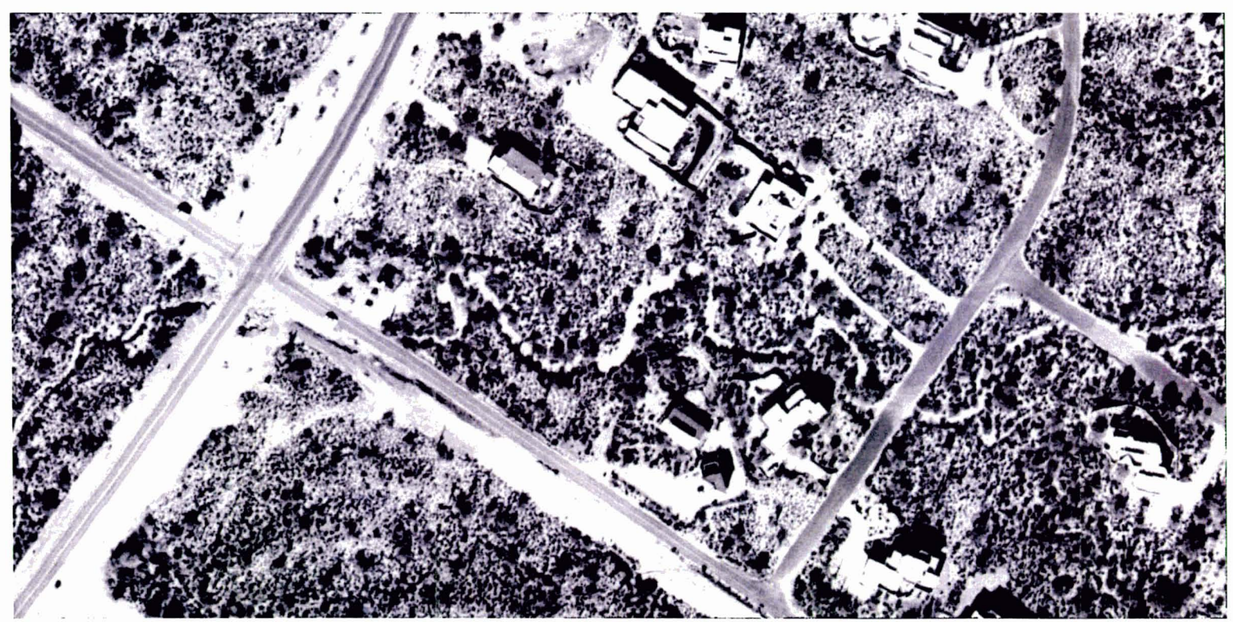
Picture 90: Eastern Pima Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL



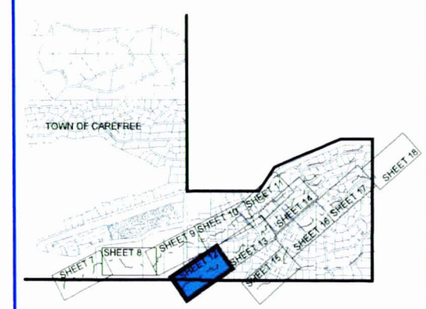


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

MANNINGS "N" VALUE = 0.028
MANNINGS "N" VALUE = 0.040
MANNINGS "N" VALUE = 0.025
MANNINGS "N" VALUE = 0.058
MANNINGS "N" VALUE = 0.035
MANNINGS "N" VALUE = 0.032
MANNINGS "N" VALUE = 0.053
MANNINGS "N" VALUE = 0.045
182 PHOTO DIRECTION AND PICTURE NUMBER
WASH REACH
HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

EASTERN PIMA WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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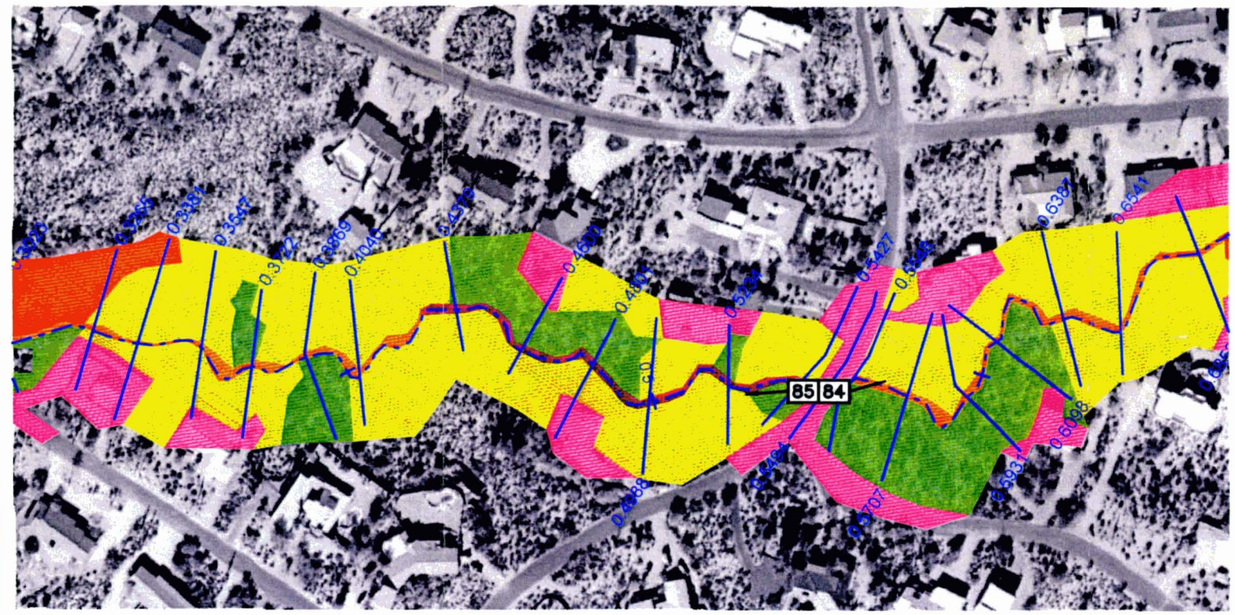
2944np12.dgn

Picture 85: Eastern Pima Wash, Looking Downstream (southwest)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

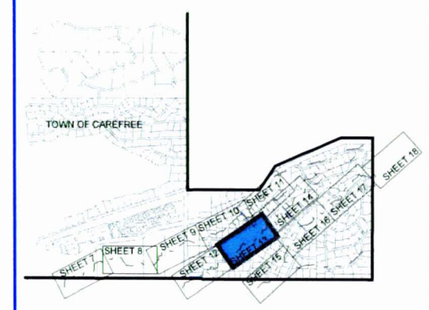


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

EASTERN PIMA WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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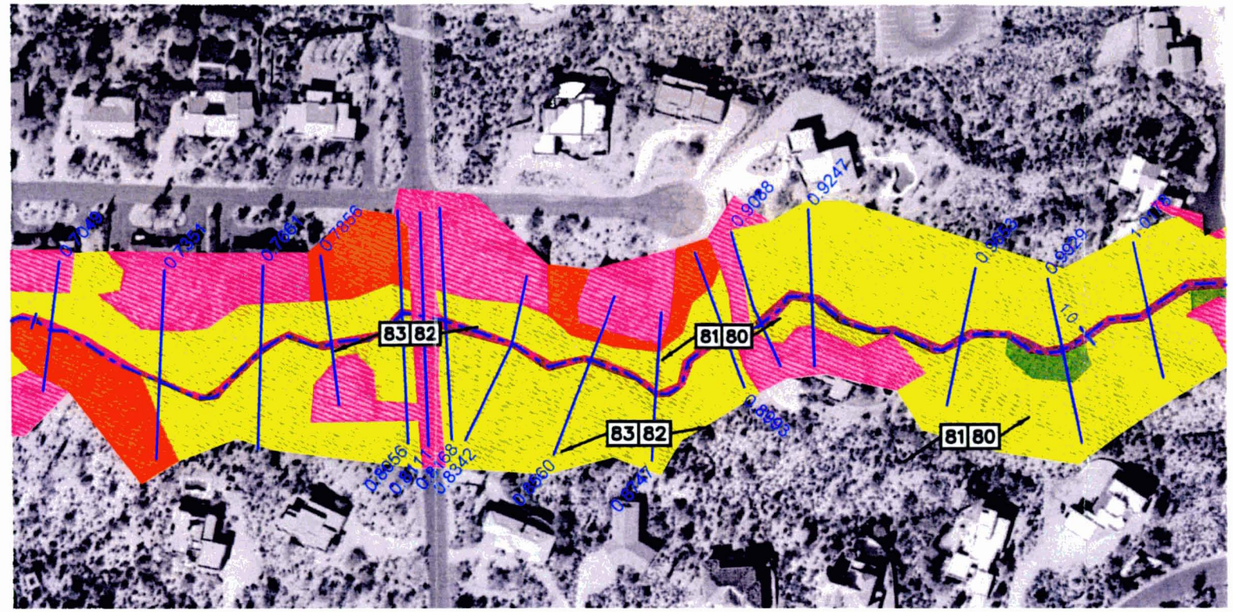
2944np13.dgn

Picture 81: Eastern Pima Wash, Looking Downstream (southwest)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

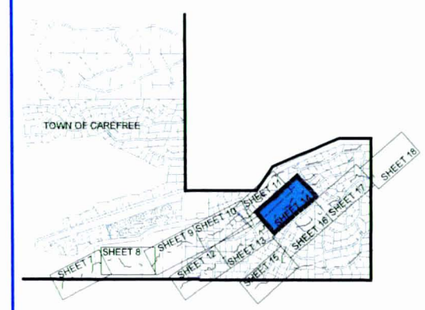


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

EASTERN PIMA WASH

CAREFREE FLOODPLAIN DELINEATION

F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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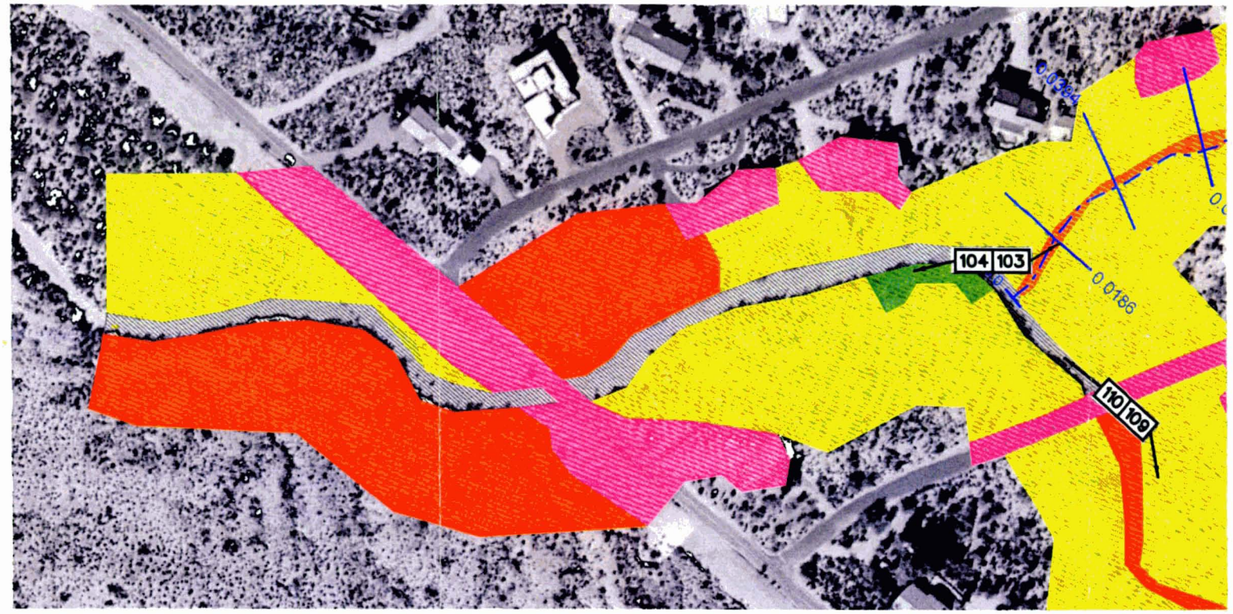
2944np14.dgn

Picture 104: Un-named Tributary to Stagecoach Pass Wash, Looking Downstream (southwest)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

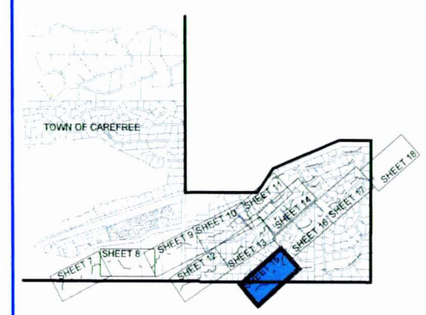


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED TRIBUTARY TO
STAGECOACH PASS WASH
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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05-JUN-2003

2944np15.dgn

Picture 99: Unnamed Tributary to Stagecoach Pass Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

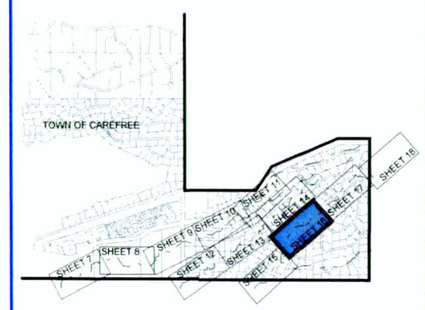
Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED TRIBUTARY TO
STAGECOACH PASS WASH
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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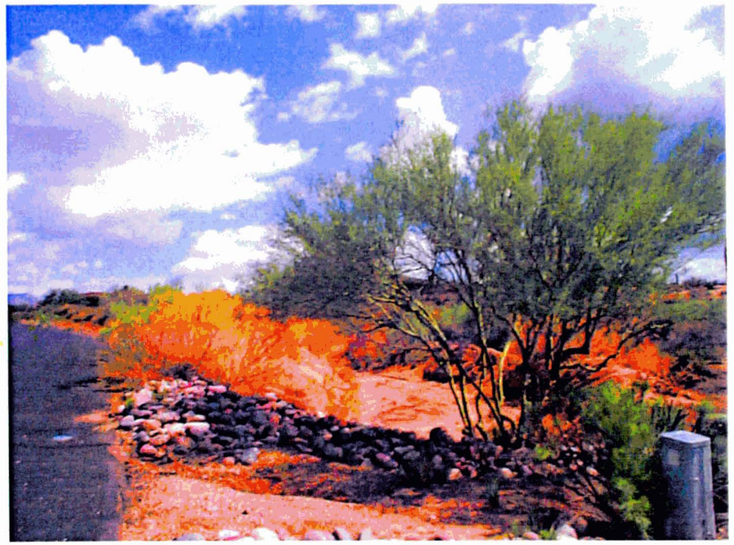
2944np16.dgn

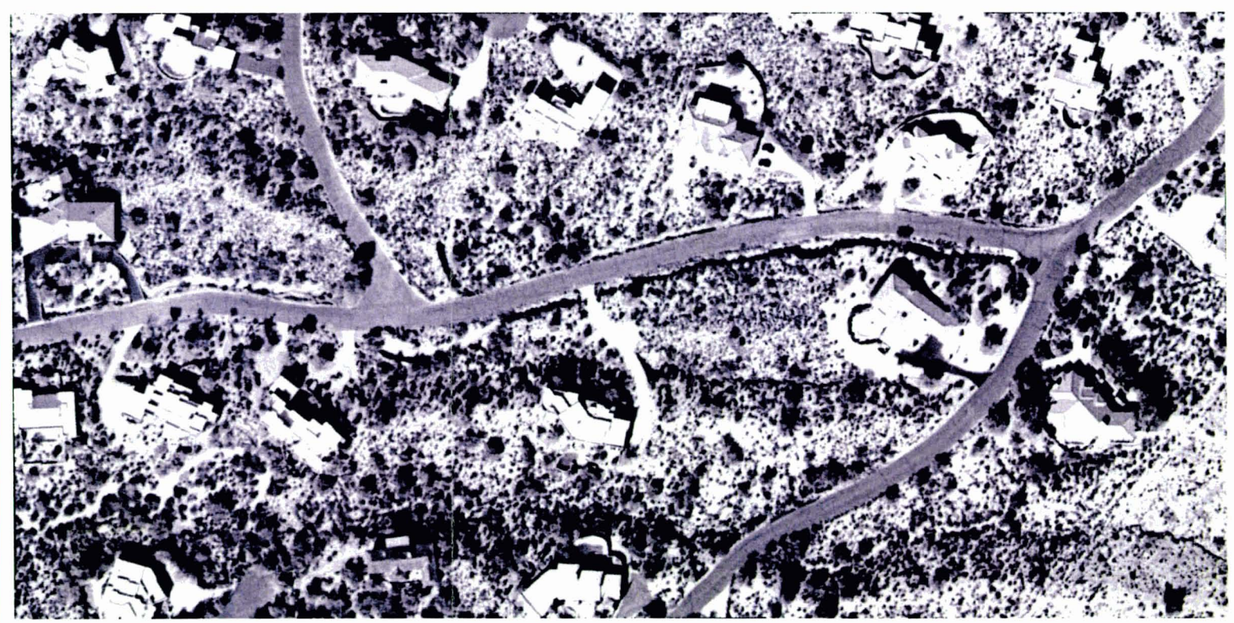


Picture 95: Unnamed Tributary to Stagecoach Pass Wash, Looking Upstream (northeast)

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

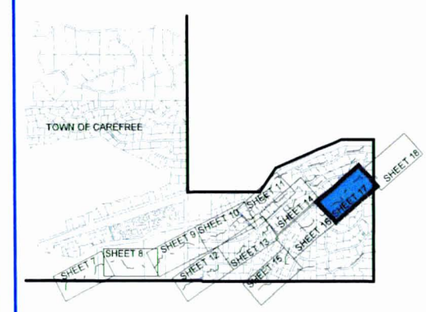


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED TRIBUTARY TO
STAGECOACH PASS WASH
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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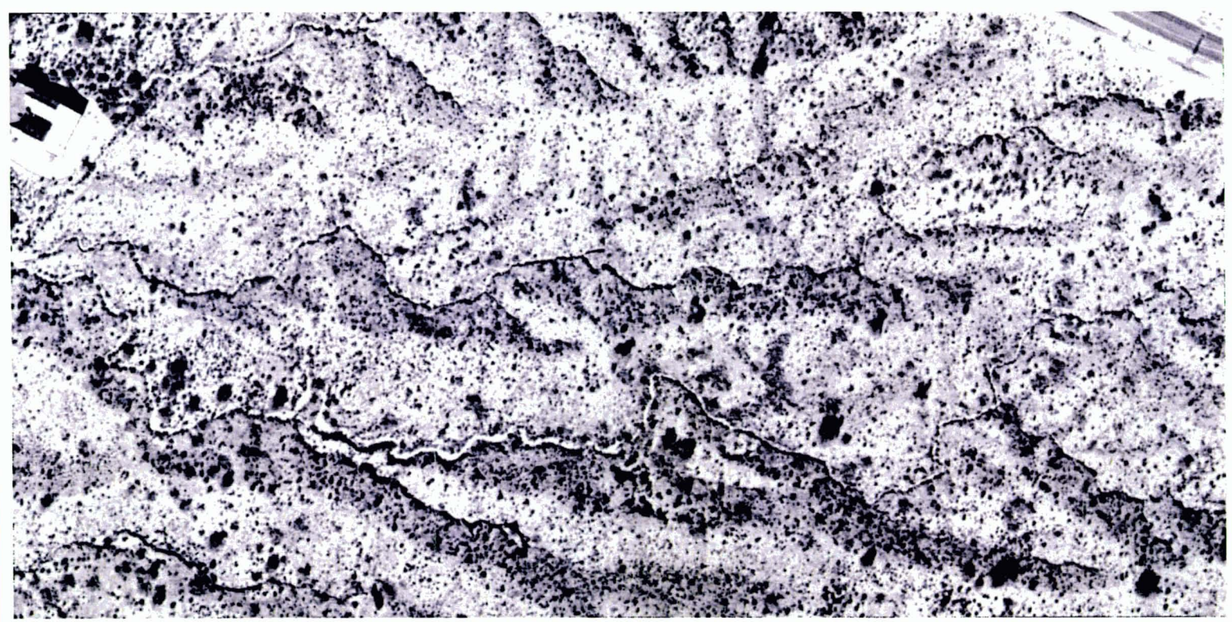
2944np17.dgn 05-JUN-2003

N Value Distribution for Eastern Washes

Value		Normal Channel	Vegetated Channel	Densely Vegetated Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.020	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.045	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

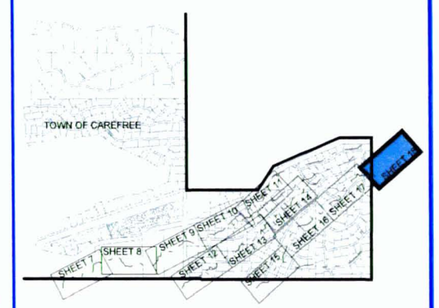


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED TRIBUTARY TO
STAGECOACH PASS WASH
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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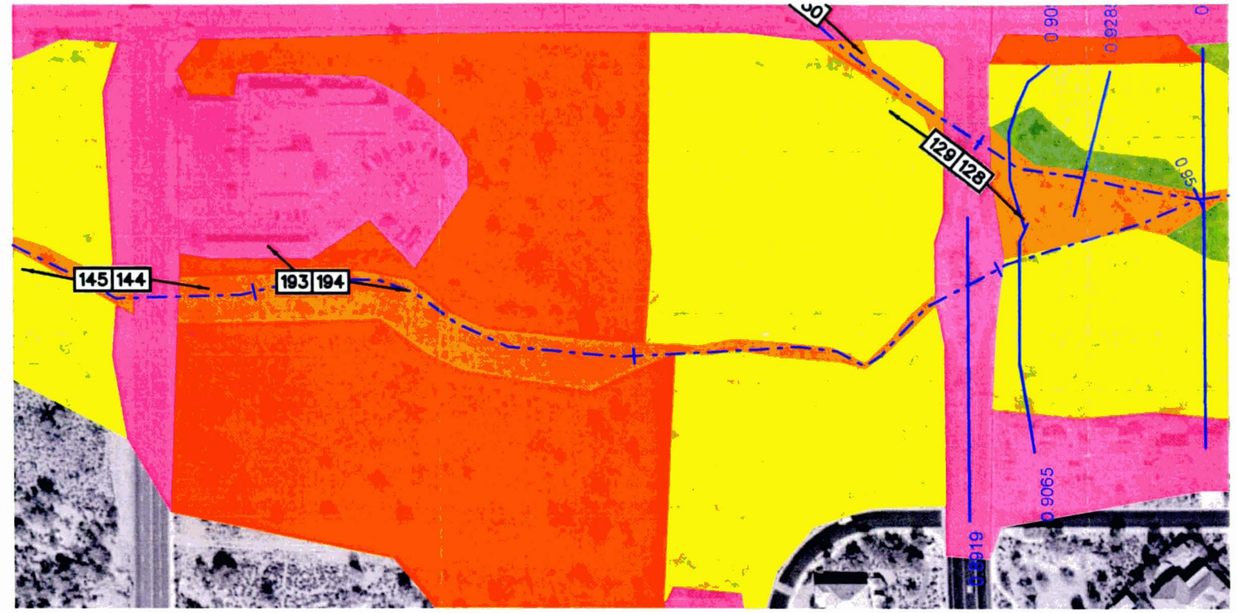
2944np18.dgn

Picture 129: Unnamed Central Tributary to Cave Creek, Looking Downstream (northwest)

N Value Distribution for Unnamed Central

Value		Normal Channel	Vegetated Channel	High Standing Vegetation Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.028	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.053	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

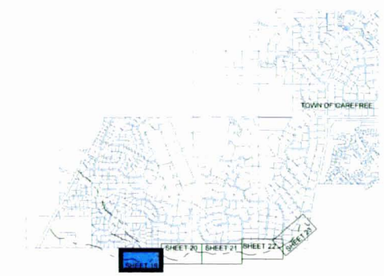


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED CENTRAL TRIBUTARY
TO CAVE CREEK
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 19 OF 23

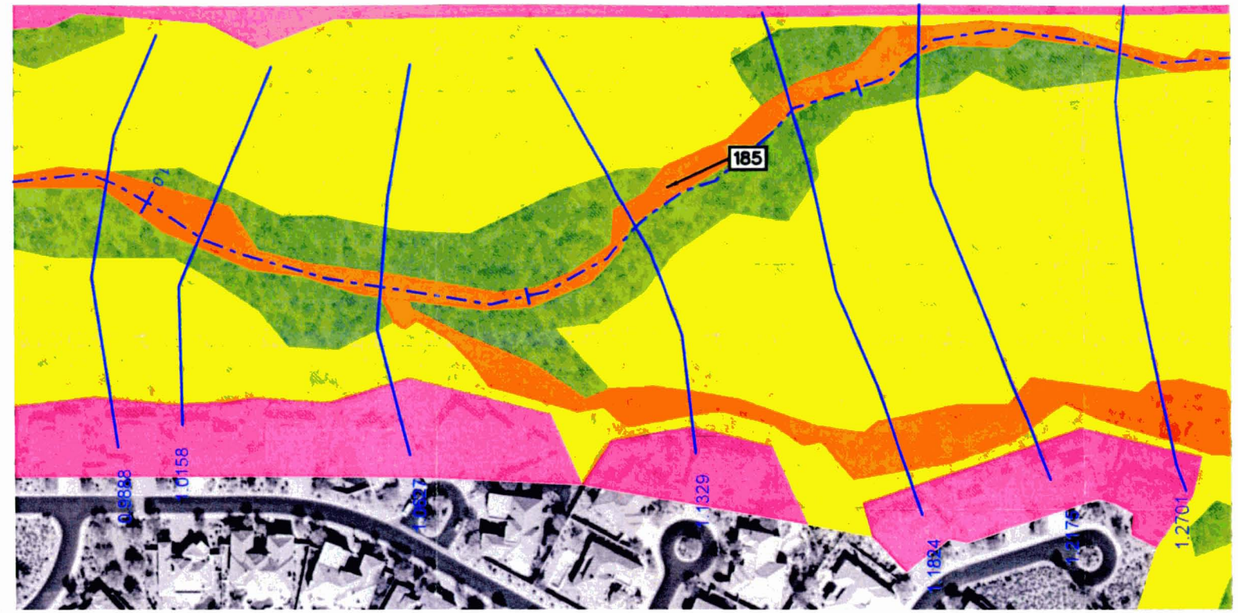
2944np19.dgn 05-JUN-2003

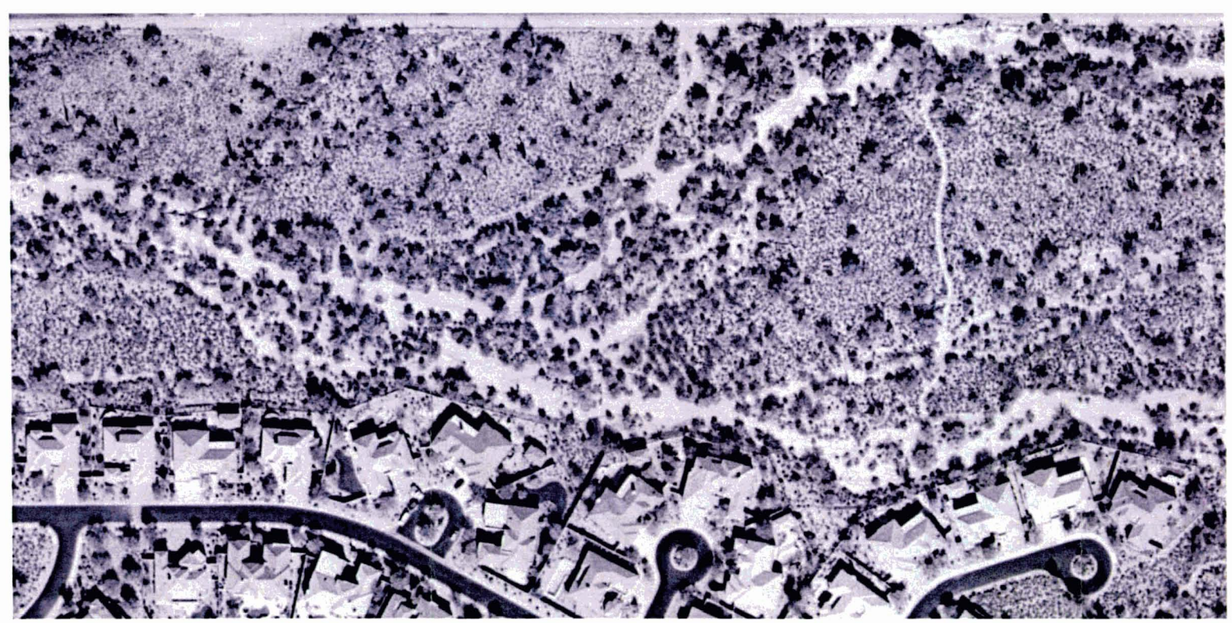
Picture 185: Unnamed Central Tributary to Cave Creek, Looking Downstream (southwest)

N Value Distribution for Unnamed Central

Value		Normal Channel	Vegetated Channel	High Standing Vegetation Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.028	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.053	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL



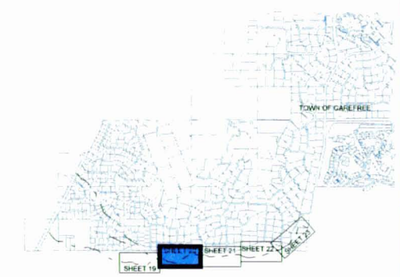


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED CENTRAL TRIBUTARY
TO CAVE CREEK
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

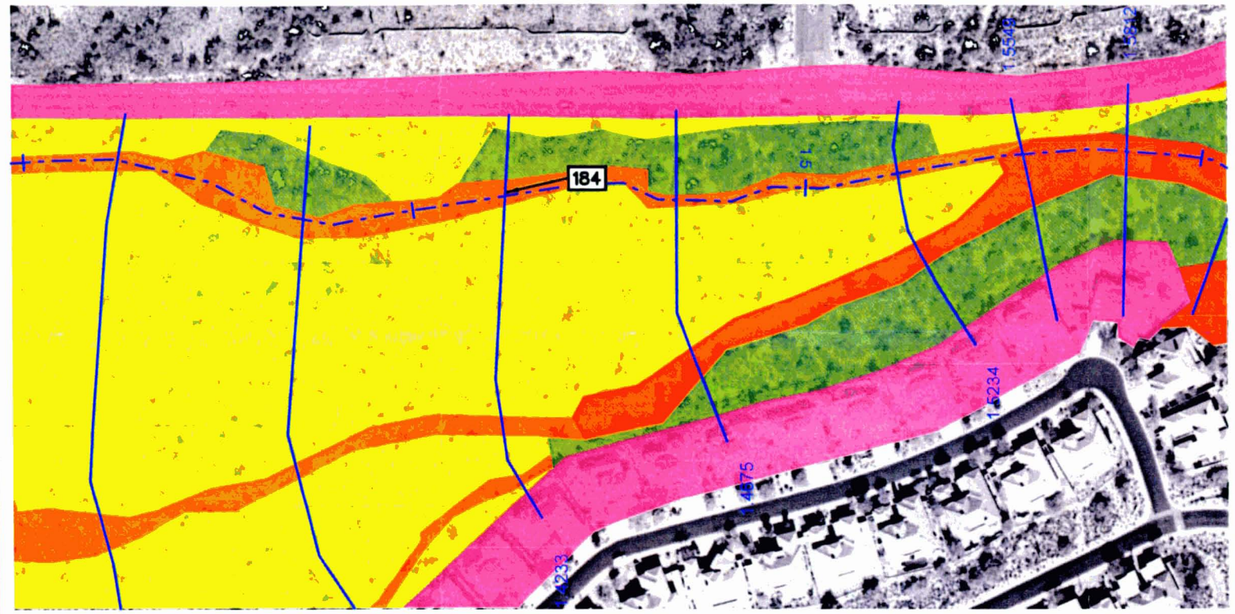
05-JUN-2003
2944np20.dgn

Picture 184: Unnamed Central Tributary to Cave Creek, Looking Downstream (west)

N Value Distribution for Unnamed Central

Value		Normal Channel	Vegetated Channel	High Standing Vegetation Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.028	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.053	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

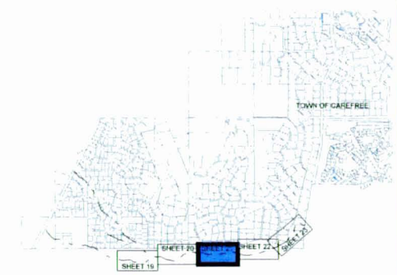


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

UNNAMED CENTRAL TRIBUTARY
TO CAVE CREEK
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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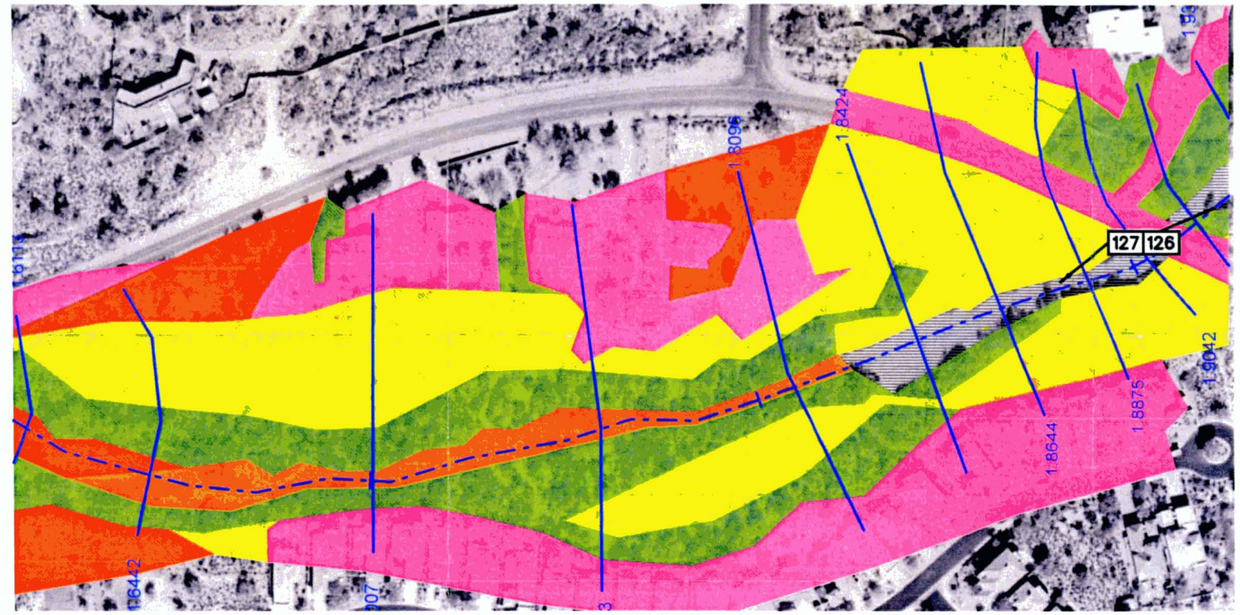
2944np21.dgn

Picture 127: Unnamed Central Tributary to Cave Creek, Looking Downstream (west)

N Value Distribution for Unnamed Central

Value		Normal Channel	Vegetated Channel	High Standing Vegetation Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.028	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.053	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

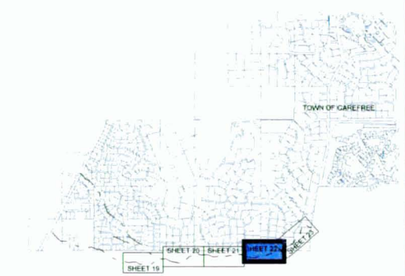


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

UNNAMED CENTRAL TRIBUTARY
TO CAVE CREEK
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

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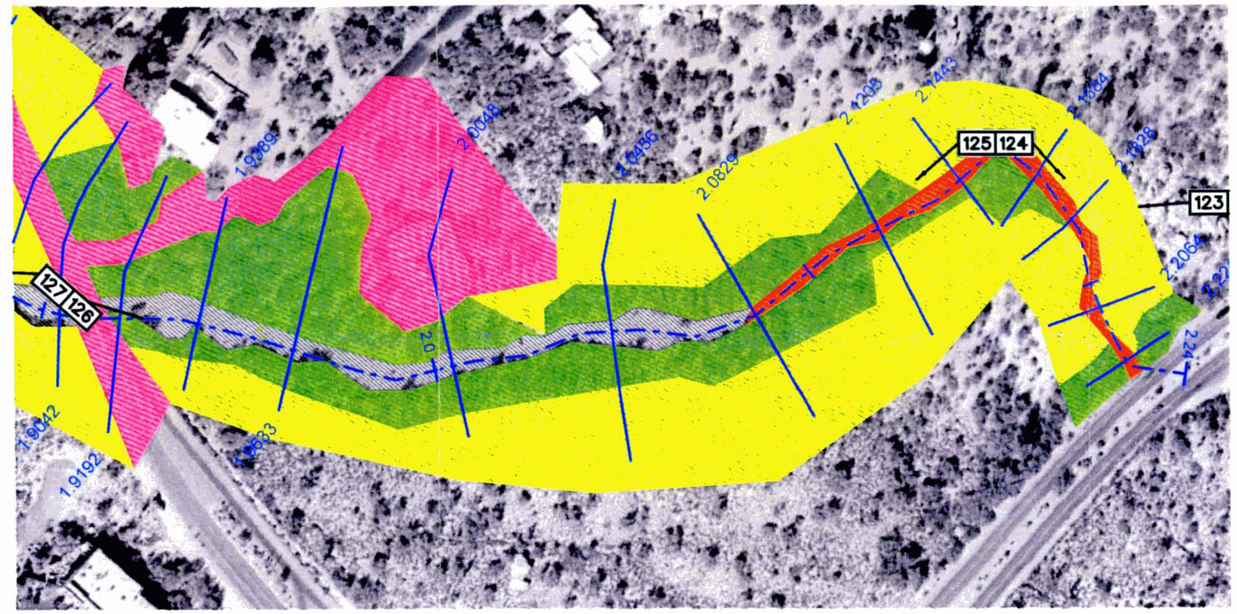
05-JUN-2003
2944np22.dgn

Picture 125: Unnamed Central Tributary to Cave Creek, Looking Downstream (southwest)

N Value Distribution for Unnamed Central

Value		Normal Channel	Vegetated Channel	High Standing Vegetation Channel	Minimally Vegetated Overbanks	Vegetated Overbanks	High Standing Vegetation Overbanks
Material	N 0	0.020	0.020	0.020	0.020	0.020	0.020
Degree of Irregularities	N 1	0.005	0.005	0.005	0.005	0.005	0.005
Variation in Cross Section	N 2	0.000	0.000	0.000	0.000	0.000	0.005
Obstructions	N 3	0.000	0.000	0.000	0.002	0.000	0.000
Vegetation	N 4	0.003	0.010	0.028	0.005	0.015	0.028
Meandering	M 5	1.000	1.000	1.000	1.000	1.000	1.000
	N-Value	0.028	0.035	0.053	0.032	0.040	0.058

COWEN ROUGHNESS COEFFICIENT EQUATION:
N = (N0 + N1 + N2 + N3 + N4)*M5
N0 = BASIS VALUE FOR STRAIGHT, UNIFORM, SMOOTH CHANNEL
N1 = VALUE TO CORRECT FOR SURFACE IRREGULARITIES
N2 = VALUE FOR VARIATIONS IN SHAPE AND SIZE OF CHANNEL
N3 = VALUE FOR OBSTRUCTIONS
N4 = VALUE FOR VEGETATION AND FLOW CONDITION
M5 = CORRECTION FACTOR FOR MEANDERING CHANNEL

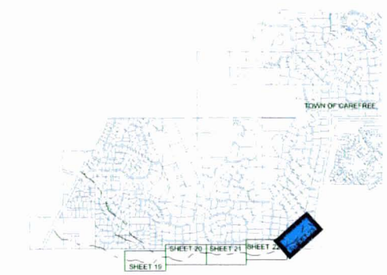


200' 0' 200' 400'
SCALE: 1"= 200 FEET
FLIGHT DATES: JUNE 2000

LEGEND

- MANNINGS "N" VALUE = 0.028
- MANNINGS "N" VALUE = 0.040
- MANNINGS "N" VALUE = 0.025
- MANNINGS "N" VALUE = 0.058
- MANNINGS "N" VALUE = 0.035
- MANNINGS "N" VALUE = 0.032
- MANNINGS "N" VALUE = 0.053
- MANNINGS "N" VALUE = 0.045
- 182 PHOTO DIRECTION AND PICTURE NUMBER
- WASH REACH
- HEC-RAS CROSS SECTION LINES

NOTES



SHEET INDEX MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

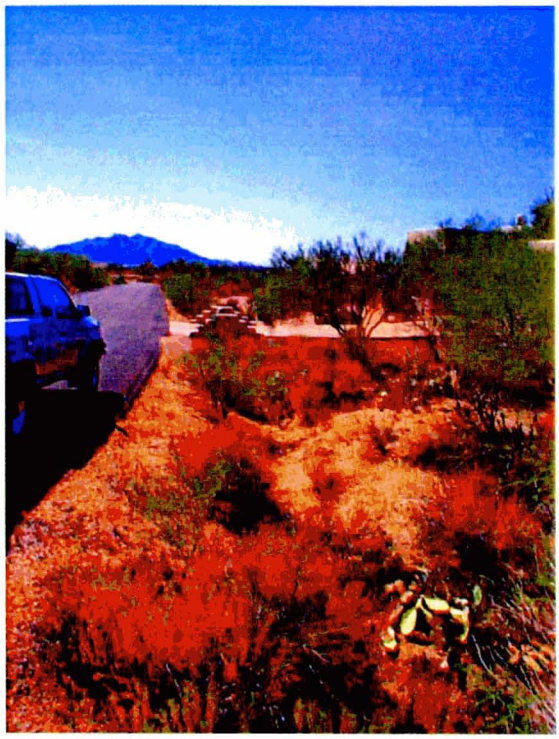
UNNAMED CENTRAL TRIBUTARY
TO CAVE CREEK
CAREFREE FLOODPLAIN DELINEATION
F.C.D. CONTRACT NO. 2000 C037

CH2MHILL

SHEET 23 OF 23

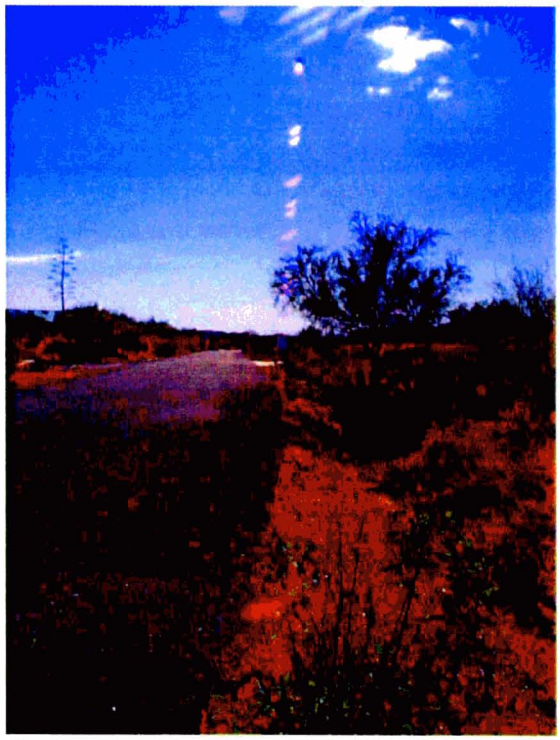
05-JUN-2003
2944np23.dgn

Picture 1



Picture 2

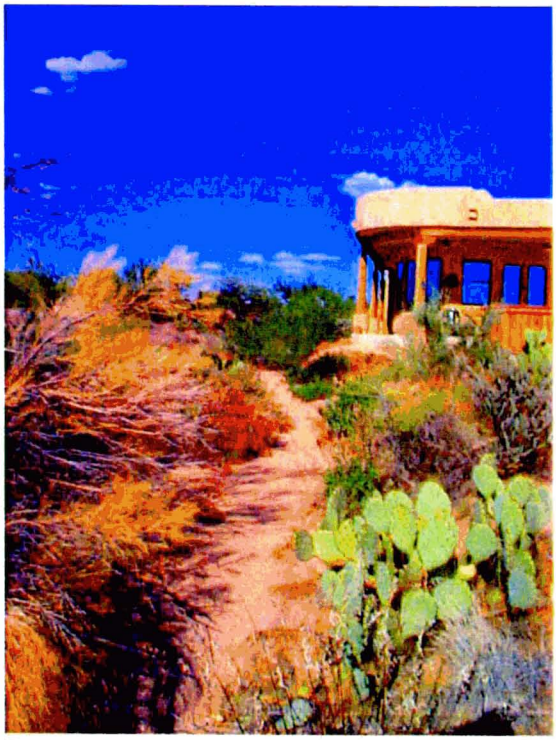
Picture 3



Picture 4

Picture 5

Picture 6



Picture 7

Picture 8

Picture 9

Picture 10

Picture 11

Picture 12

Picture 13

Picture 14

Picture 15

Picture 16

Picture 17

Picture 18

Picture 19

Picture 20

Picture 21

Picture 22

Picture 23

Picture 24

Picture 25

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Picture 30

Picture 31

Picture 32

Picture 33

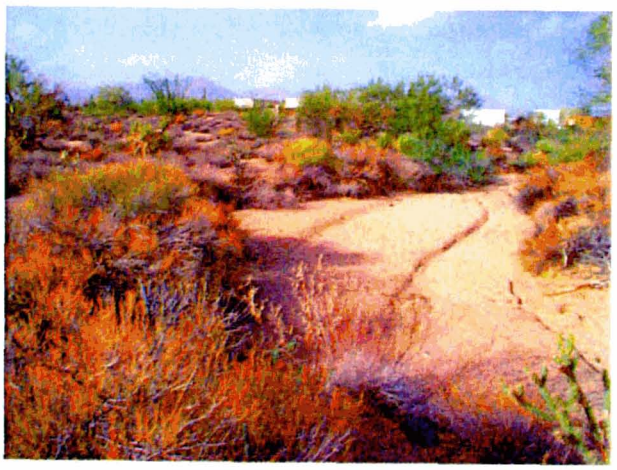
Picture 34

Picture 35

Picture 36

Picture 37

Picture 38



Picture 39

Picture 40

Picture 41

Picture 42

Picture 43

Picture 44

Picture 45

Picture 46

Picture 47

Picture 48

Picture 49

Picture 50

Picture 51

Picture 52

Picture 53

Picture 54

Picture 55

Picture 56

Picture 57

Picture 58

Picture 59

Picture 60

Picture 61

Picture 62

Picture 63

Picture 64

Picture 65

No picture

Picture 66

Picture 67

Picture 68

Picture 69

Picture 70

Picture 71

Picture 72

Picture 73

Picture 74

Picture 75

Picture 76

Picture 77

Picture 78

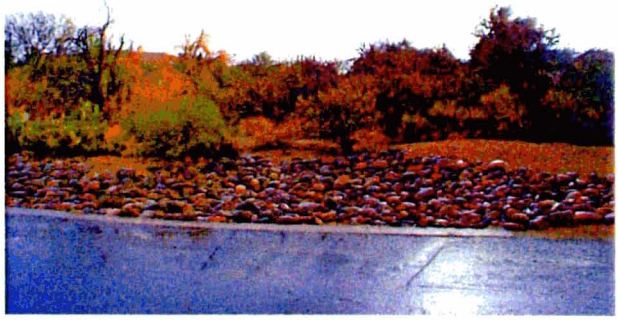
Picture 79

Picture 80

Picture 81

Picture 82

Picture 83



Picture 84

Picture 85

Picture 86

Picture 87

Picture 88

No picture.

Picture 89

Picture 90

Picture 91

Picture 92

Picture 93

Picture 94

Picture 95

Picture 96

Picture 97

Picture 98

Picture 99

Picture 100

Picture 101

Picture 102

Picture 103

Picture 104

Picture 105

Picture 106

Picture 107

Picture 108

Picture 109

Picture 110

No Pictures

111-119

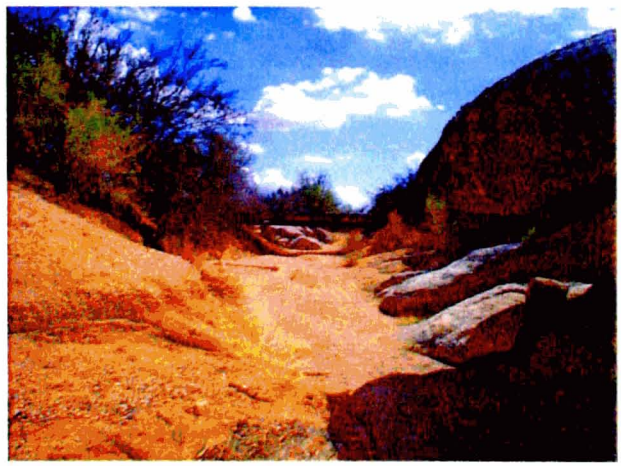
Picture 120

Picture 121

Picture 122

Picture 123

Picture 124



Picture 125

Picture 126

Picture 127

Picture 128

Picture 129

Picture 130

Picture 131

Picture 132

Picture 133

Picture 134

Picture 135

Picture 136

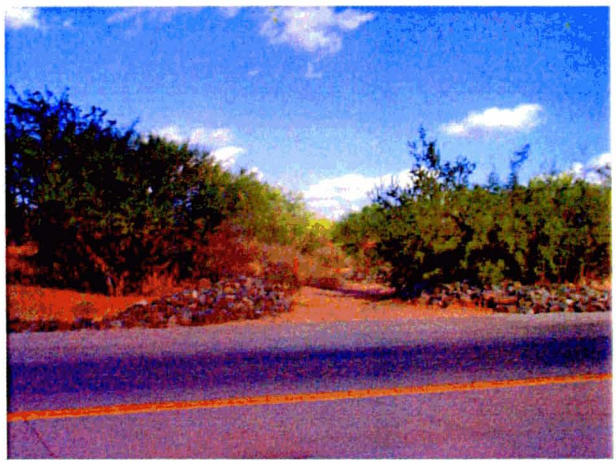
Picture 137

Picture 138

Picture 139

Picture 140

Picture 141



Picture 142

Picture 143

Picture 144

Picture 145

Picture 146

Picture 147

Picture 148

No Pictures

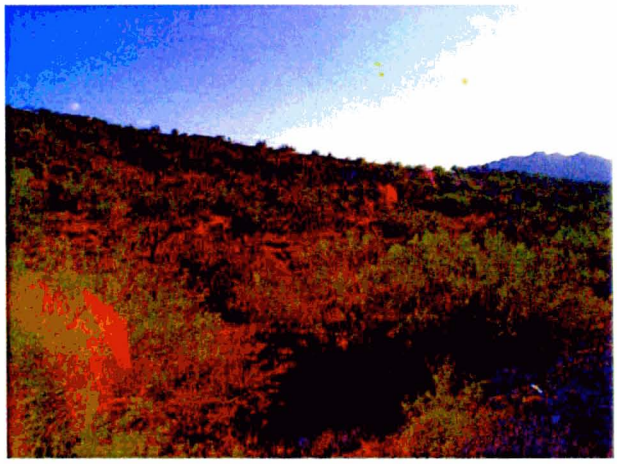
149-159

Picture 160

Picture 161

Picture 162

Picture 163



Picture 164

Picture 165

Picture 166

Picture 167

Picture 168

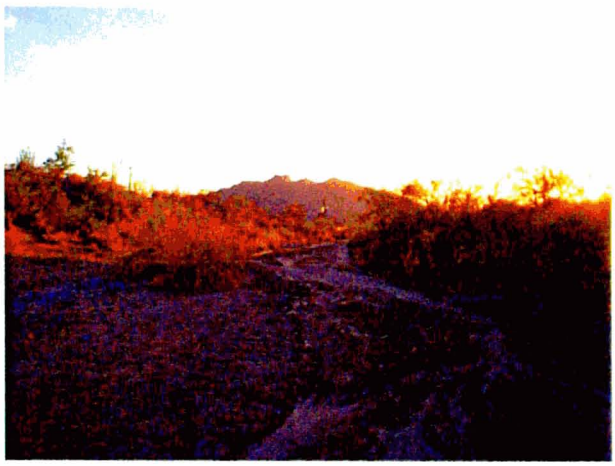
Picture 169

Picture 170

Picture 171

Picture 172

Picture 173



Picture 174

No Pictures

175-179

Picture 180

Picture 181

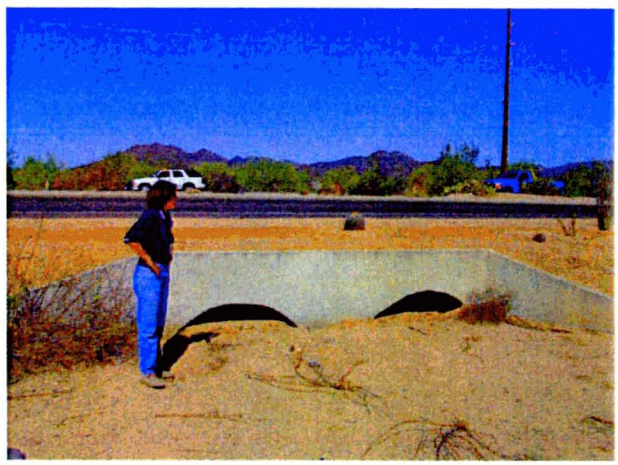
Picture 182

Picture 183

Picture 184

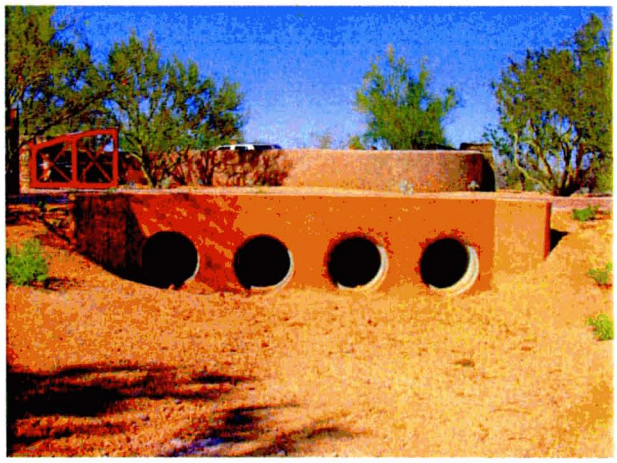
Picture 185

Picture 186



Picture 187

Picture 188

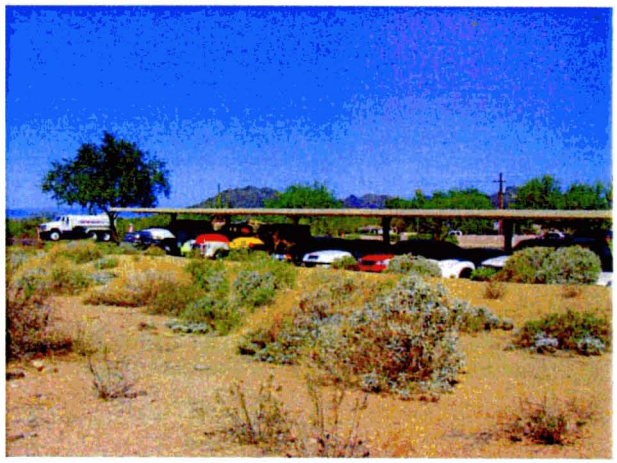


Picture 189

Picture 190

Picture 191

Picture 192

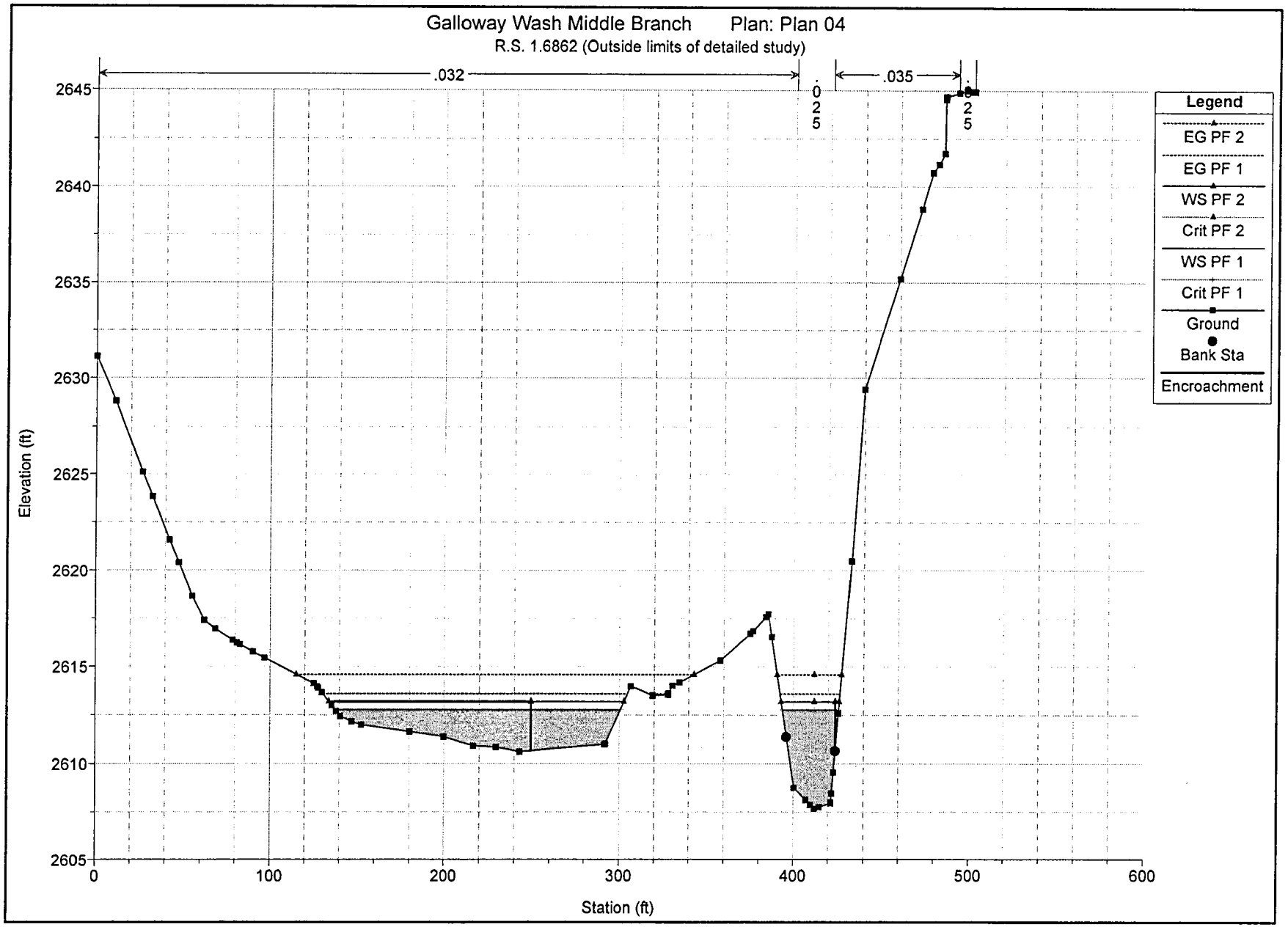


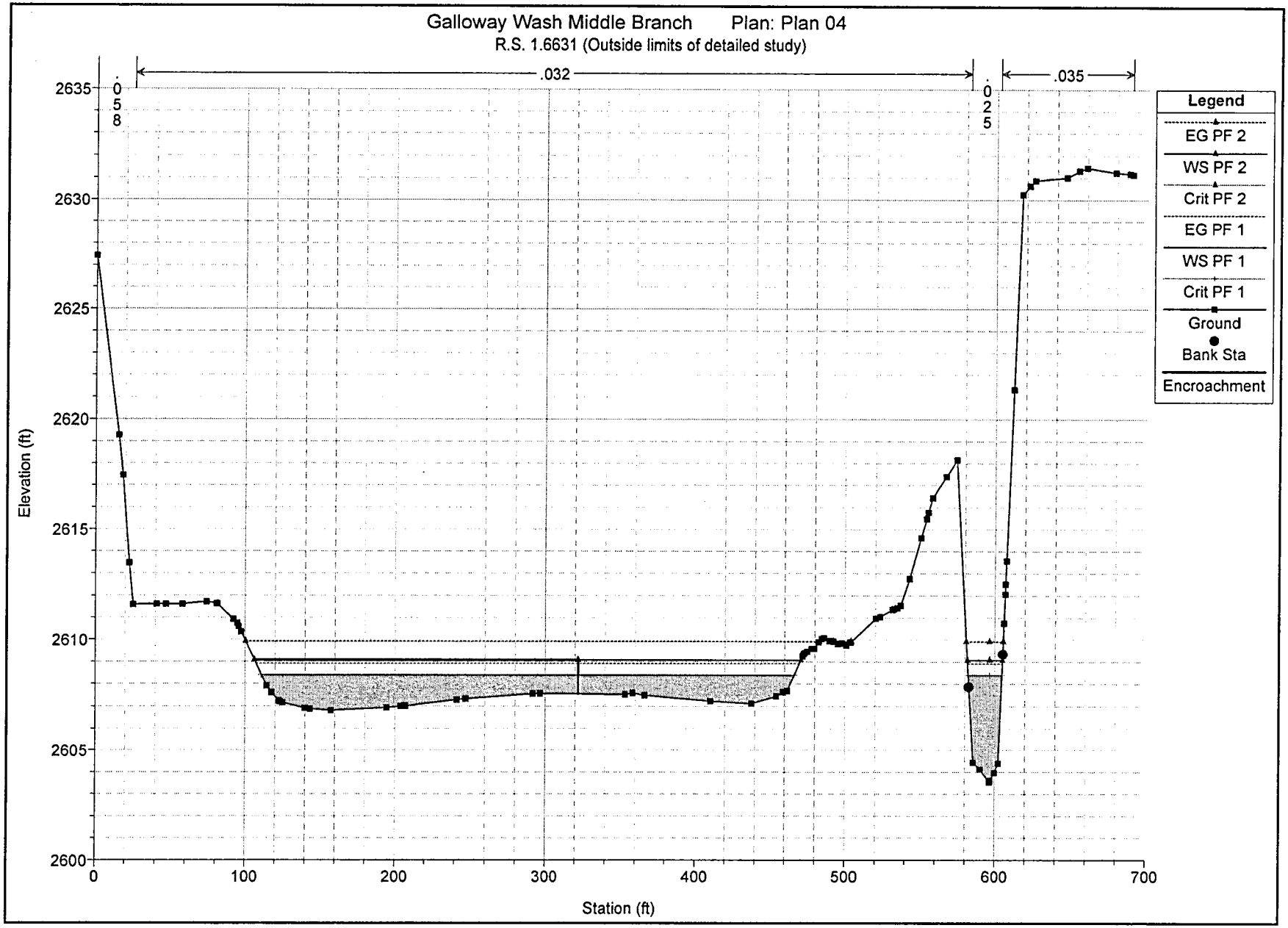
Picture 193

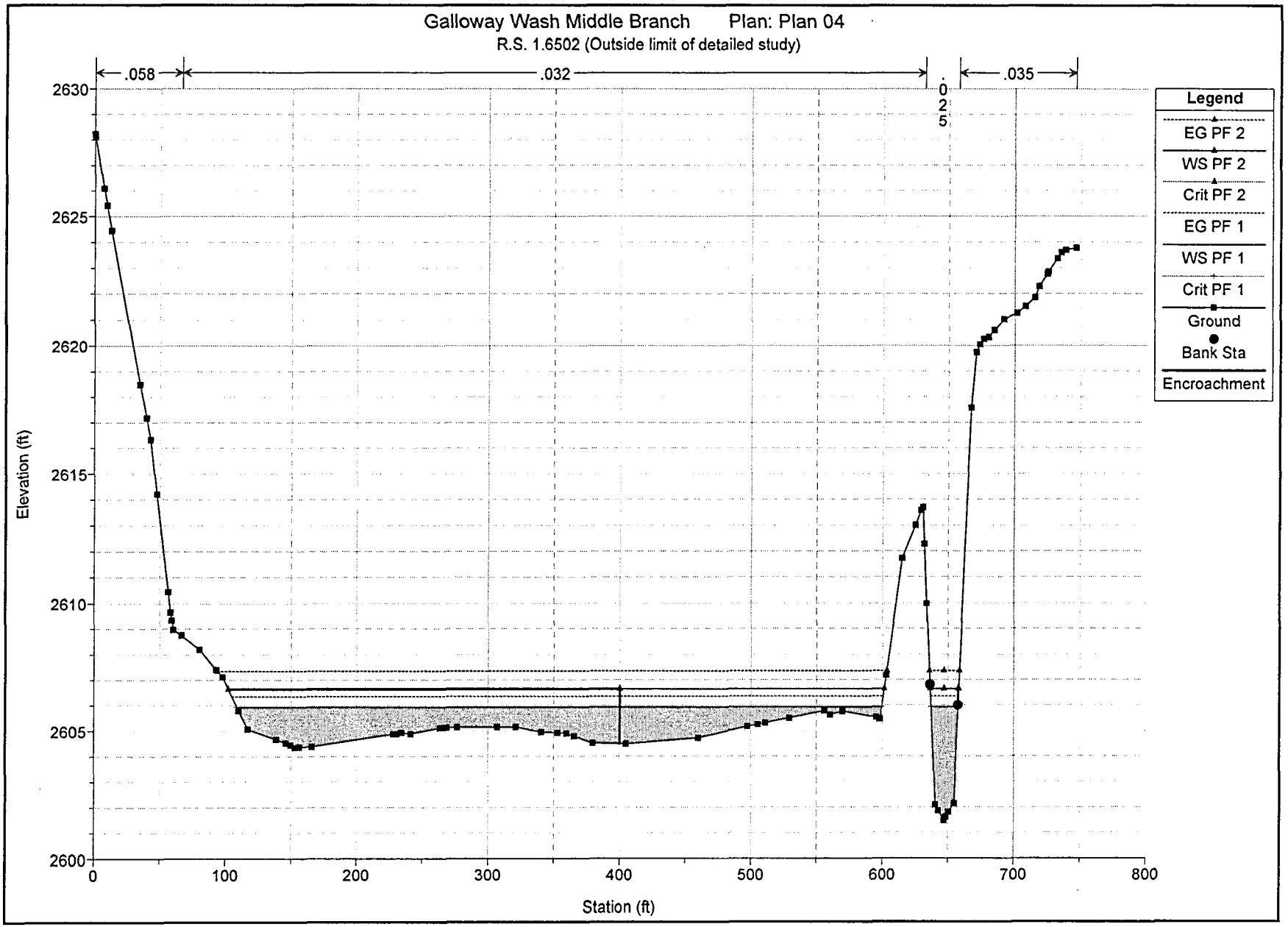
Picture 194

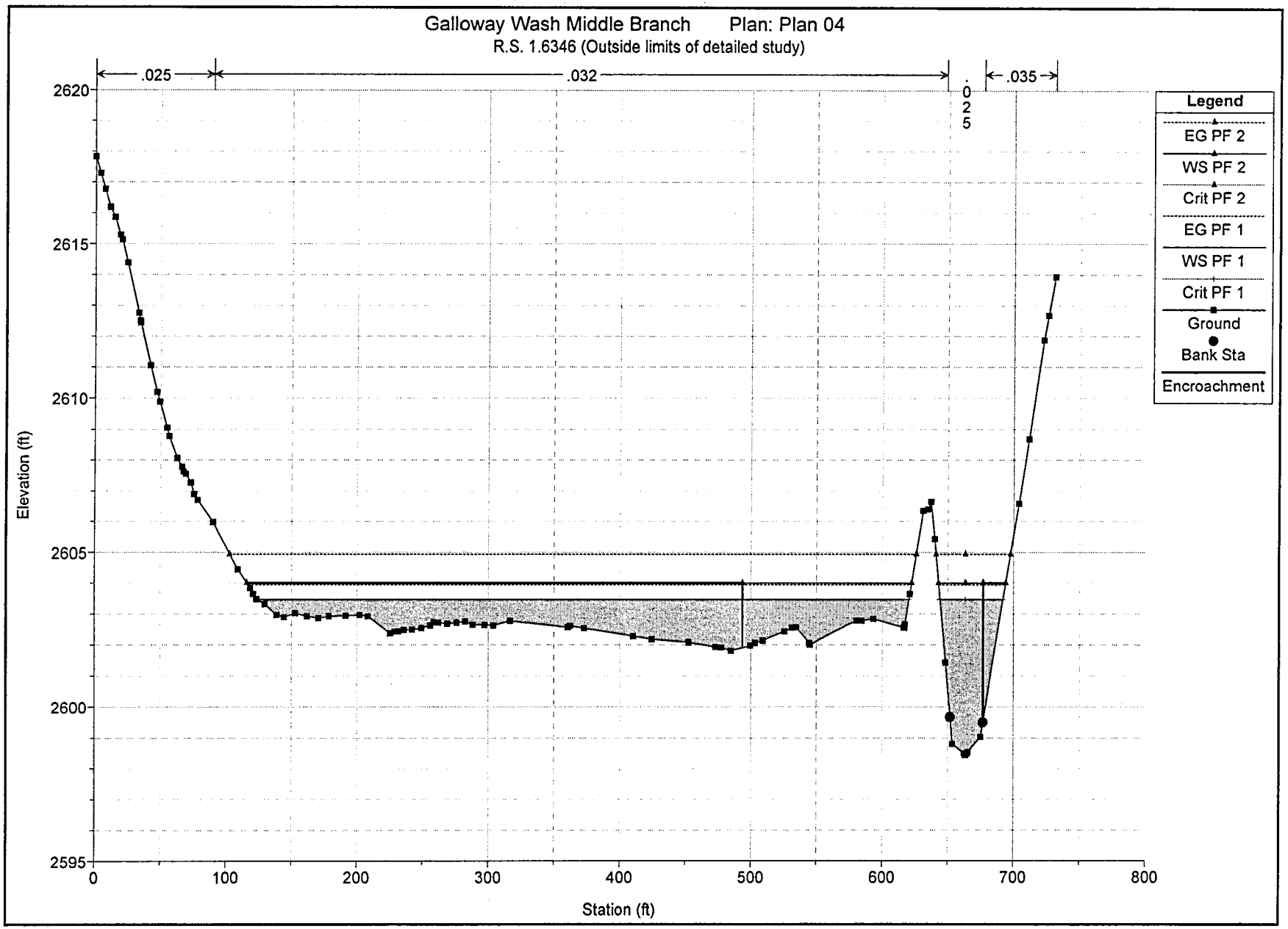
Galloway Wash Middle Branch

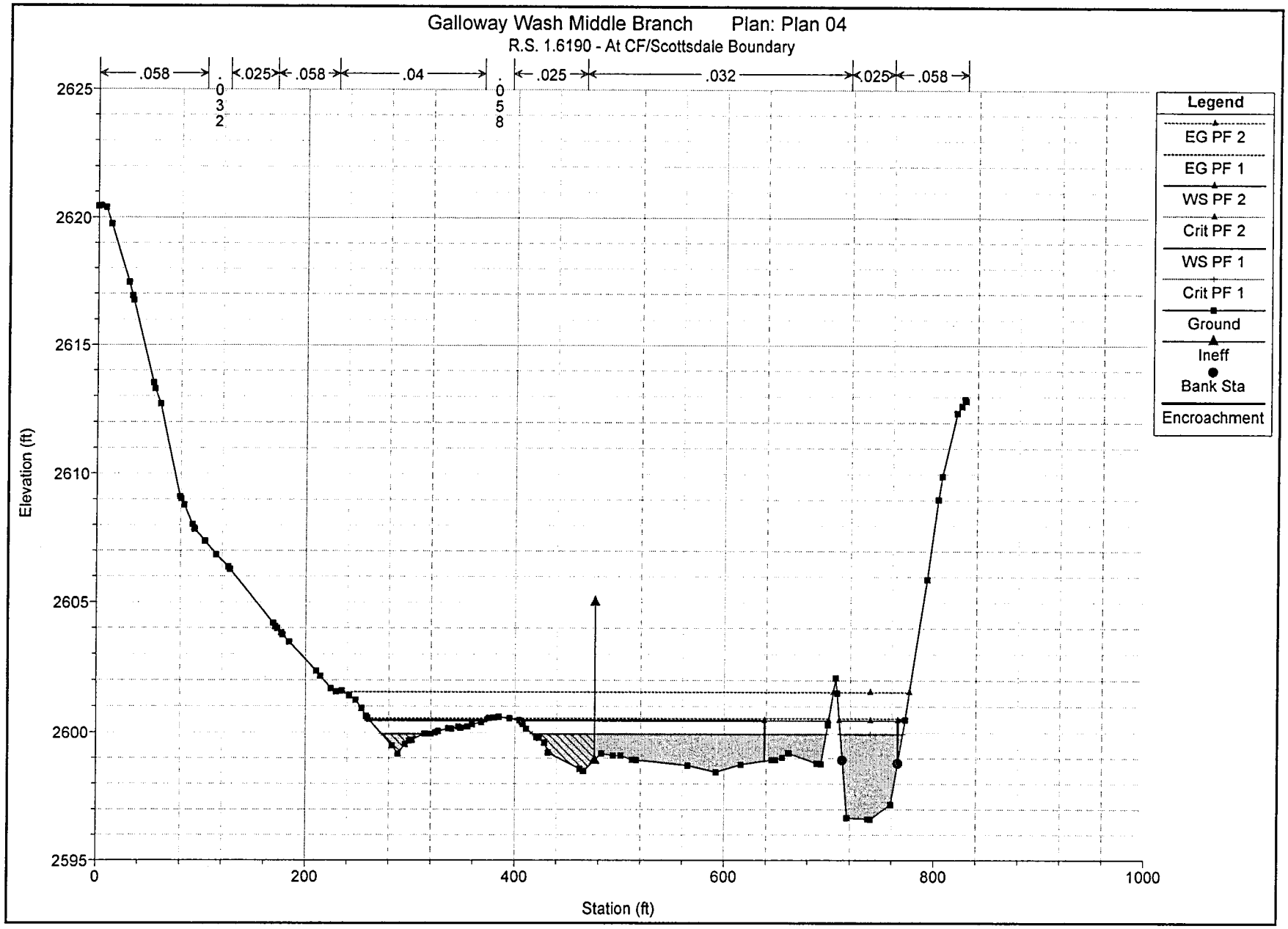
GalMidBrnch

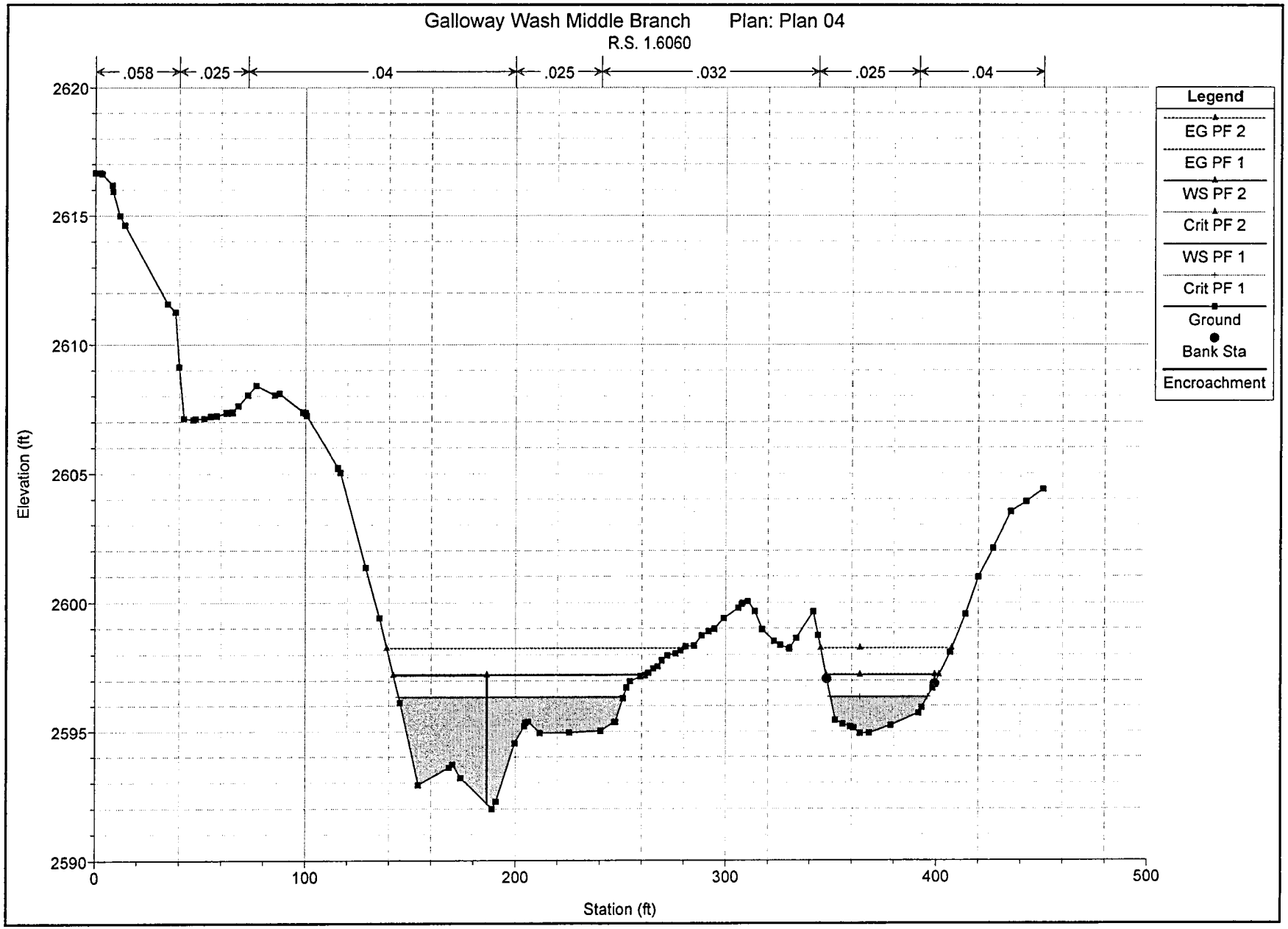

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.6862 (Outside limits of detailed study)
.032
.025
.035
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2645
2640
2635
2630
2625
2620
2615
2610
2605
0
100
200
300
400
500
600
Station (ft)

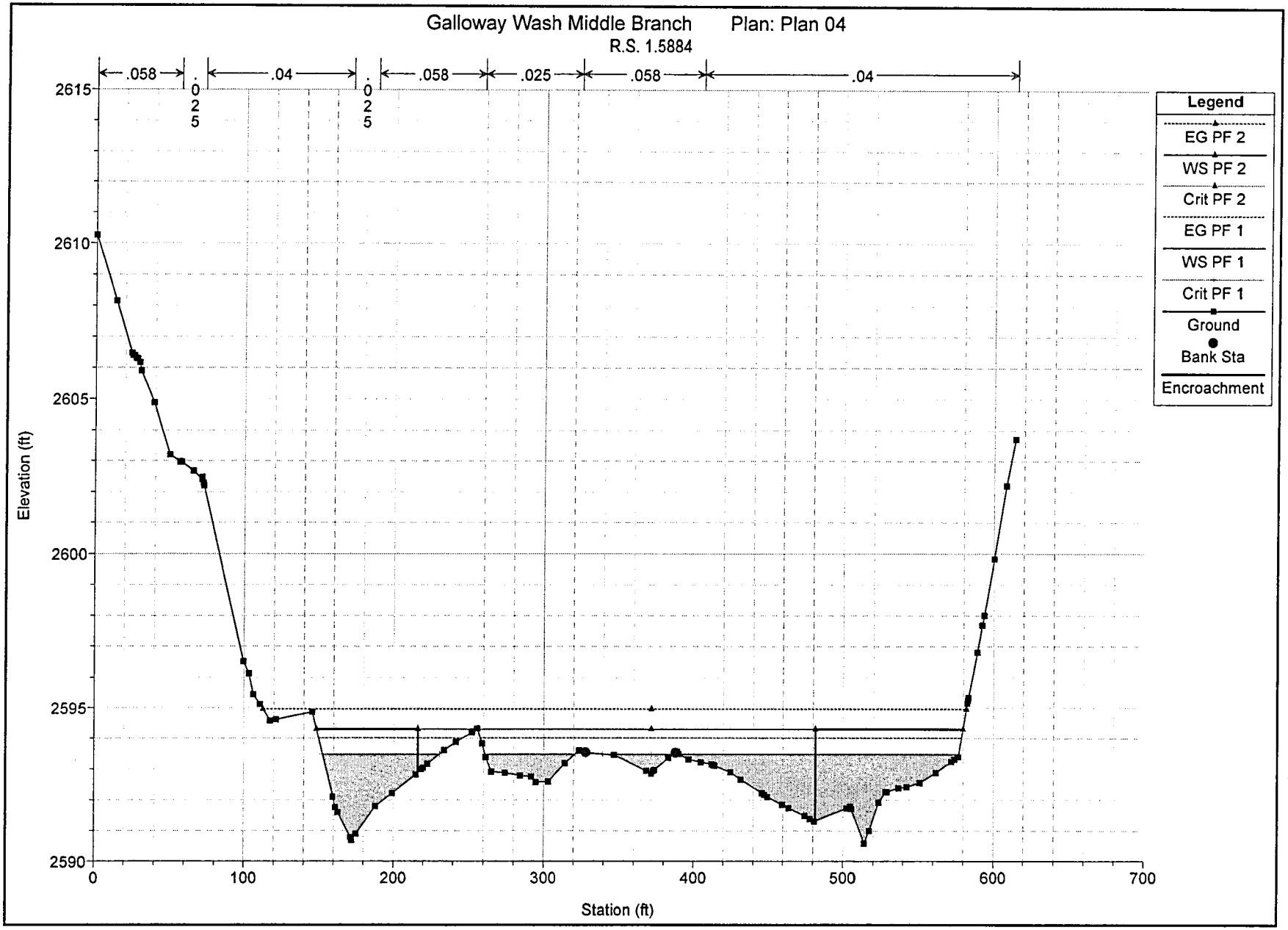

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.6631 (Outside limits of detailed study)
.058
.032
.025
.035
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2635
2630
2625
2620
2615
2610
2605
2600
0
100
200
300
400
500
600
700
Station (ft)

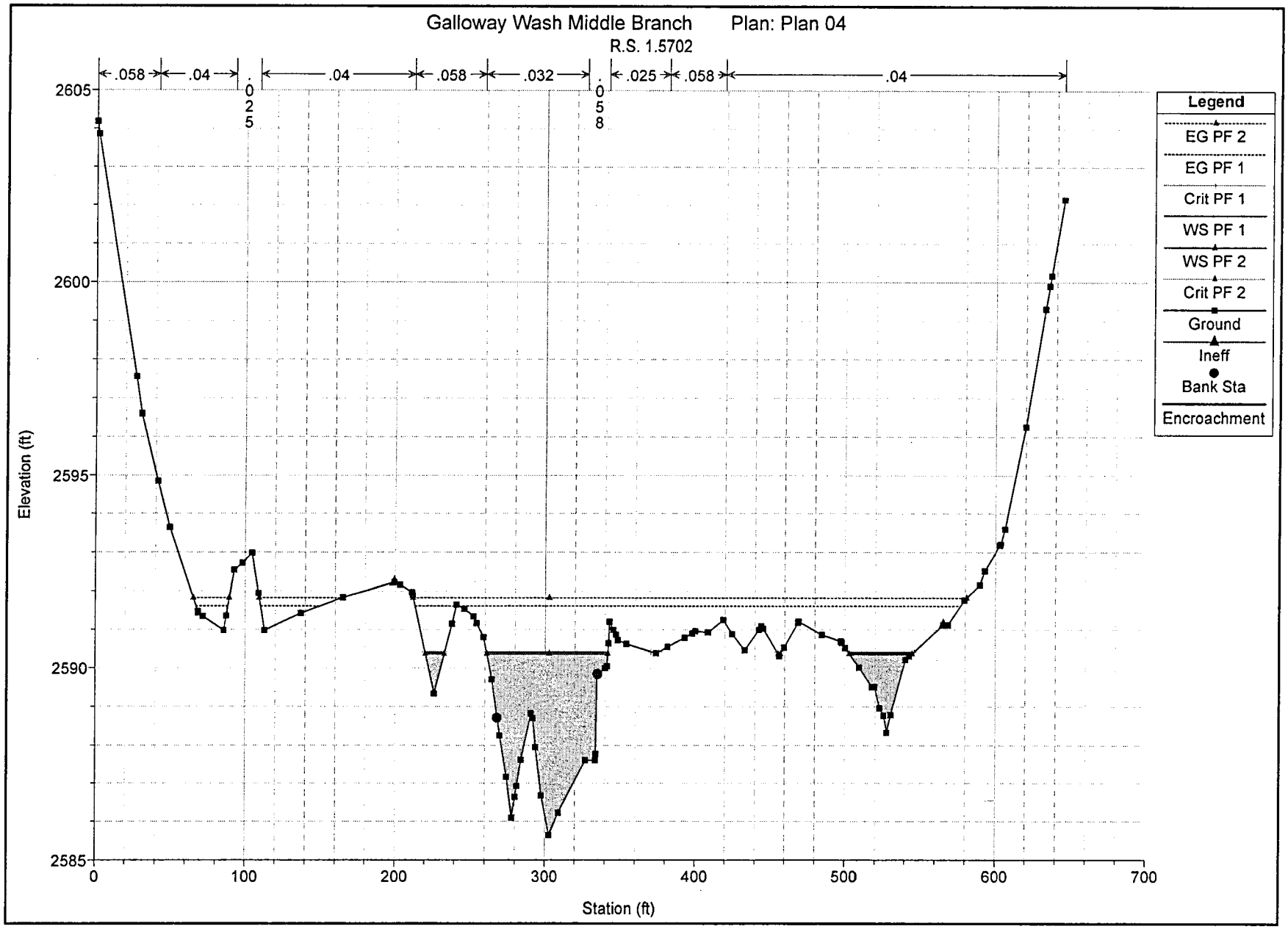

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.6502 (Outside limit of detailed study)
.058
.032
.025
.035
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2630
2625
2620
2615
2610
2605
2600
0
100
200
300
400
500
600
700
800
Station (ft)

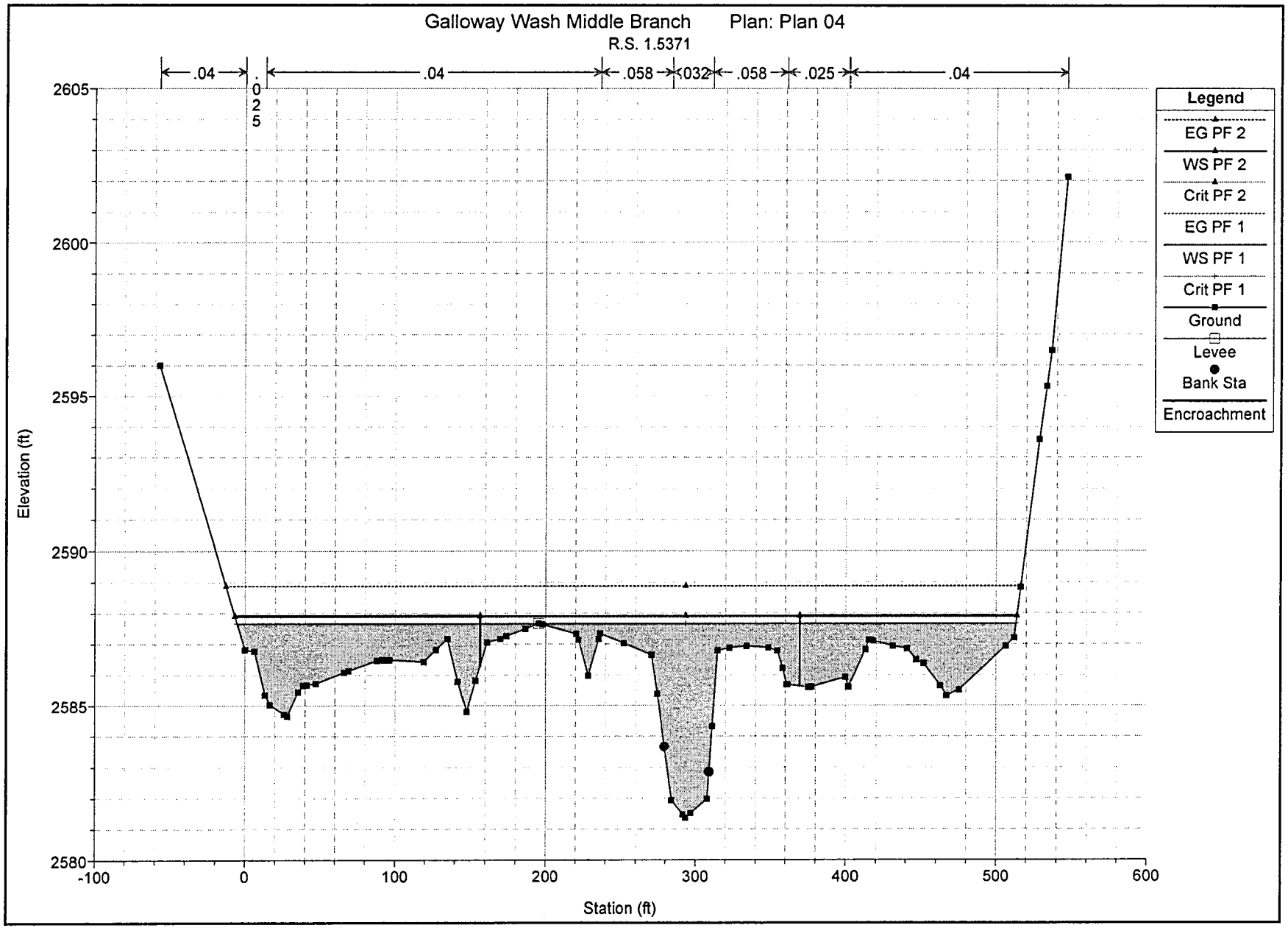

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.6346 (Outside limits of detailed study)
.025
.032
.025
.035
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2620
2615
2610
2605
2600
2595
0
100
200
300
400
500
600
700
800
Station (ft)

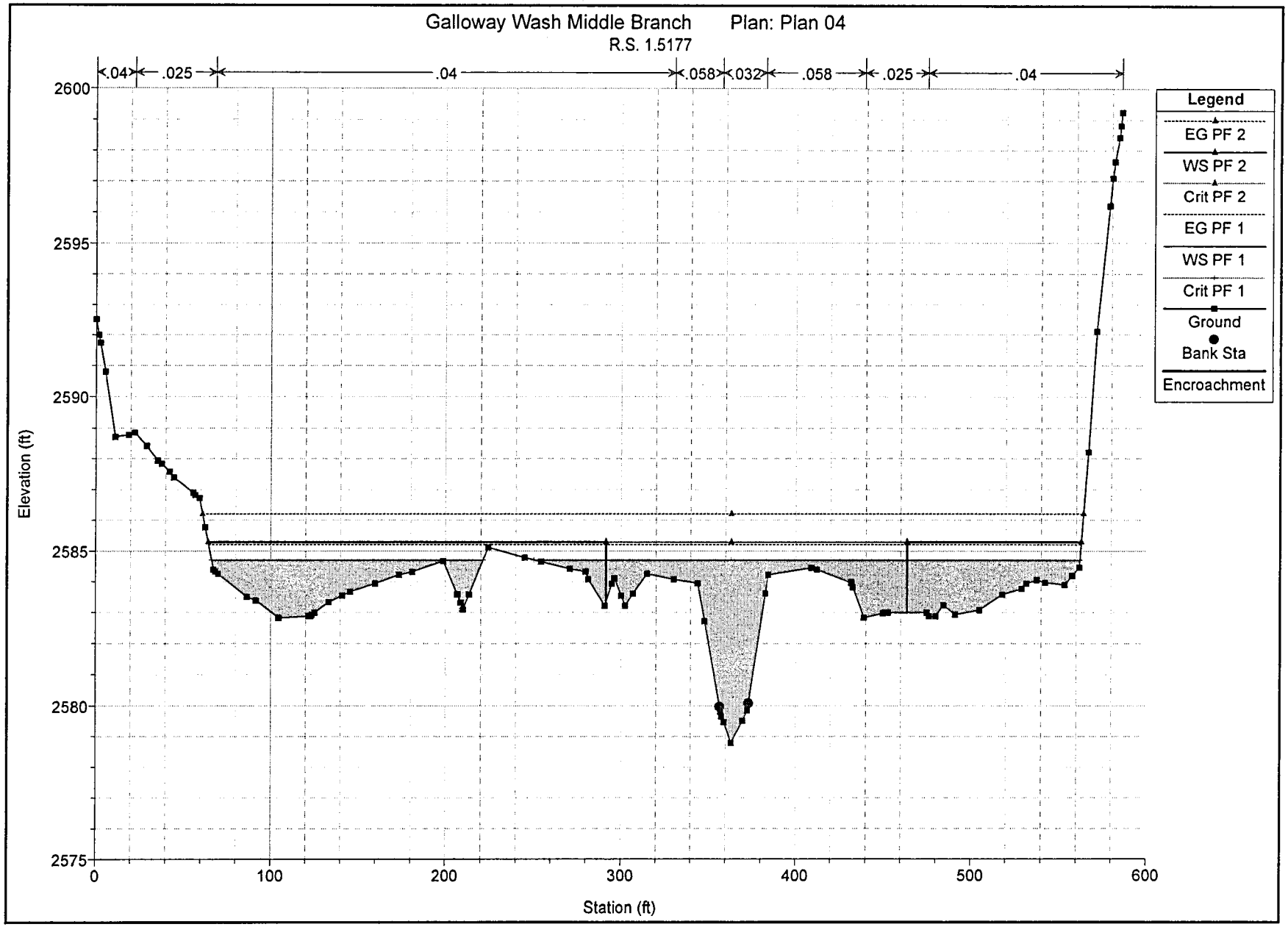

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.6190 - At CF/Scottsdale Boundary
.058
.032
.025
.058
.04
.058
.025
.032
.025
.058
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
2625
2620
2615
2610
2605
2600
2595
0
200
400
600
800
1000
Station (ft)

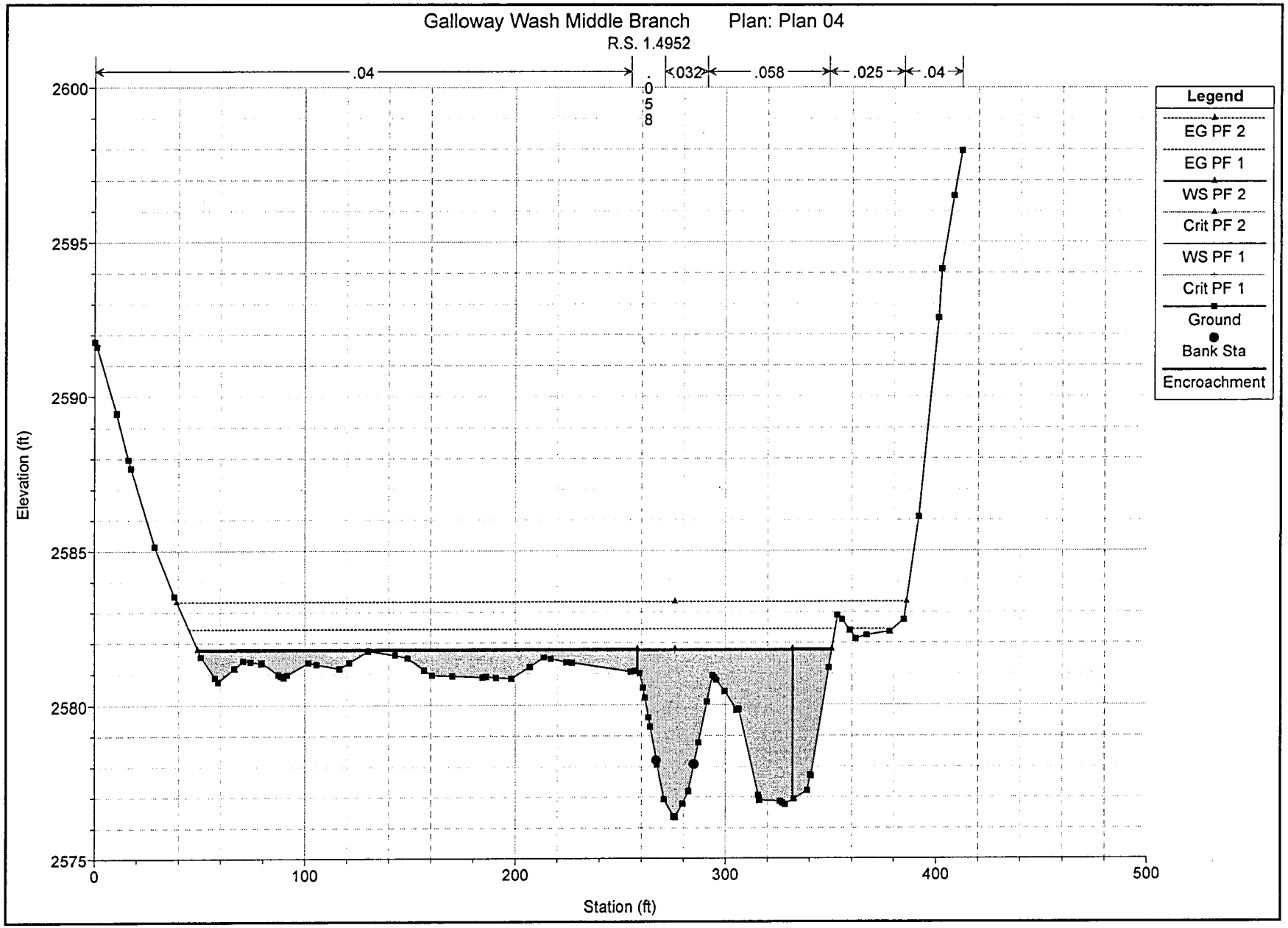

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.6060
.058
.025
.04
.025
.032
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2620
2615
2610
2605
2600
2595
2590
0
100
200
300
400
500
Station (ft)

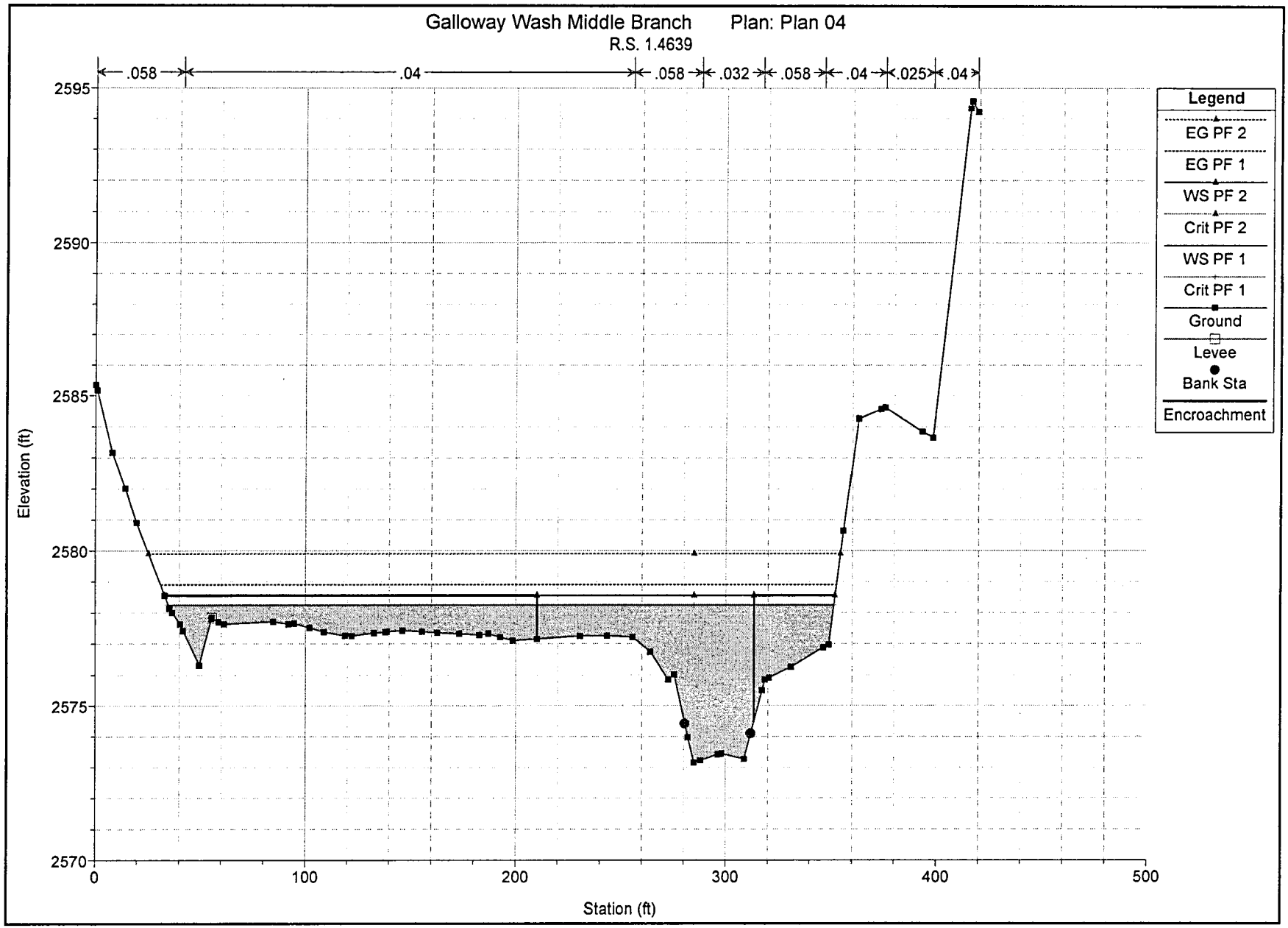

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 1.5884
.058
.025
.04
.025
.058
.025
.058
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2615
2610
2605
2600
2595
2590
0
100
200
300
400
500
600
700
Station (ft)

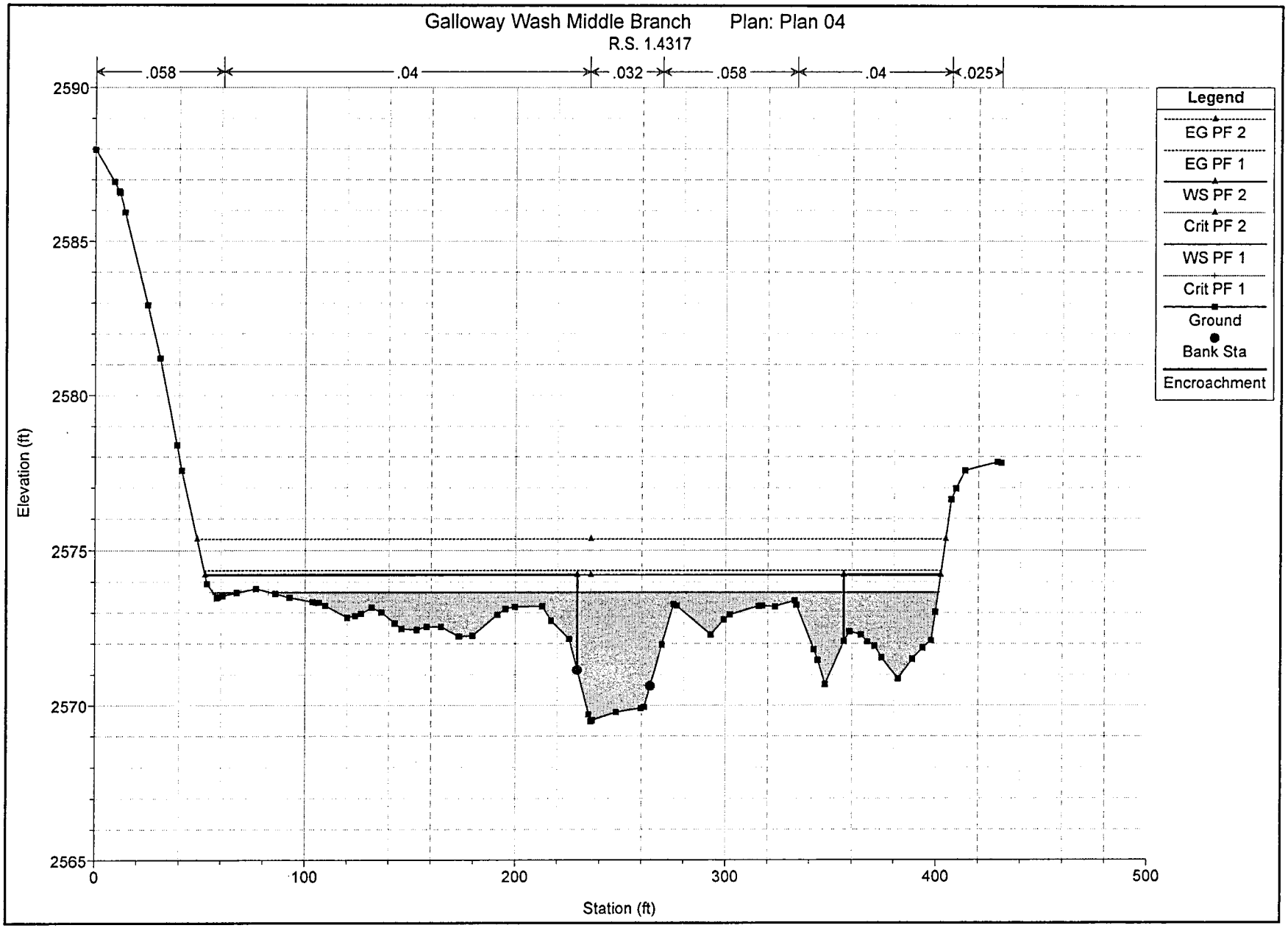

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.5702
.058
.04
.025
.04
.058
.032
.058
.025
.058
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
2605
2600
2595
2590
2585
0
100
200
300
400
500
600
700
Station (ft)

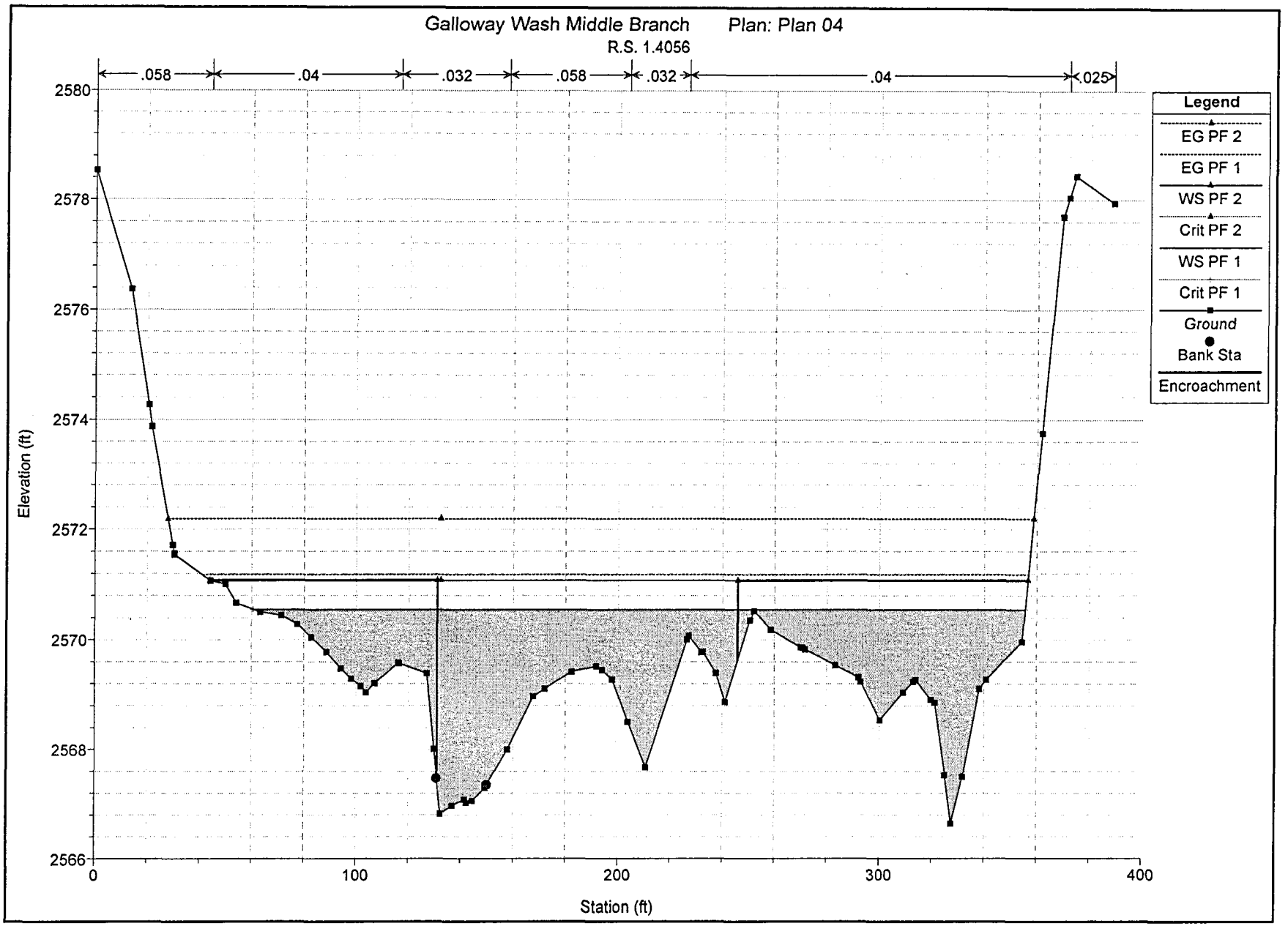

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.5371
.04
.025
.04
.058
.032
.058
.025
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Encroachment
Elevation (ft)
2605
2600
2595
2590
2585
2580
-100
0
100
200
300
400
500
600
Station (ft)

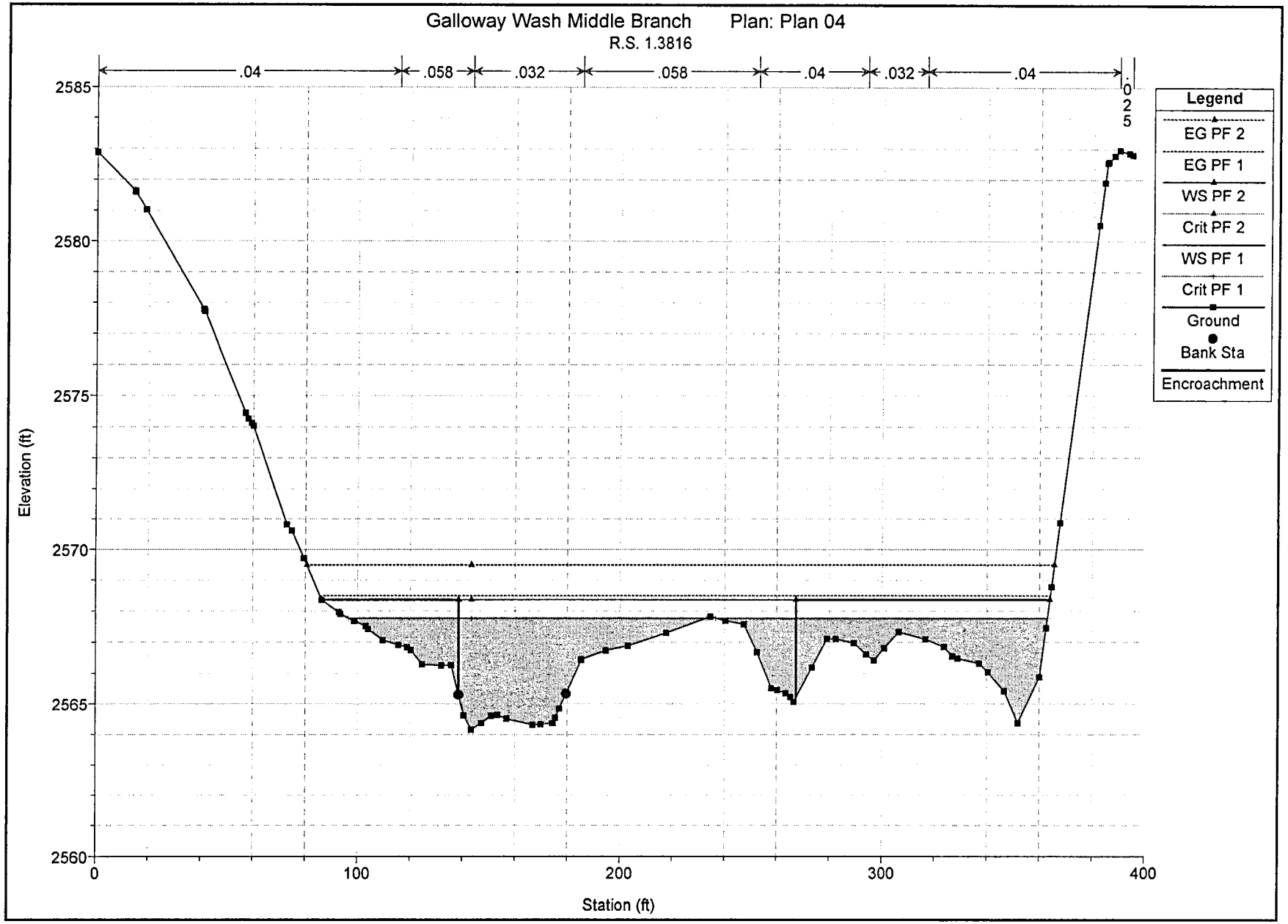

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.5177
.04
.025
.04
.058
.032
.058
.025
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2600
2595
2590
2585
2580
2575
0
100
200
300
400
500
600
Station (ft)

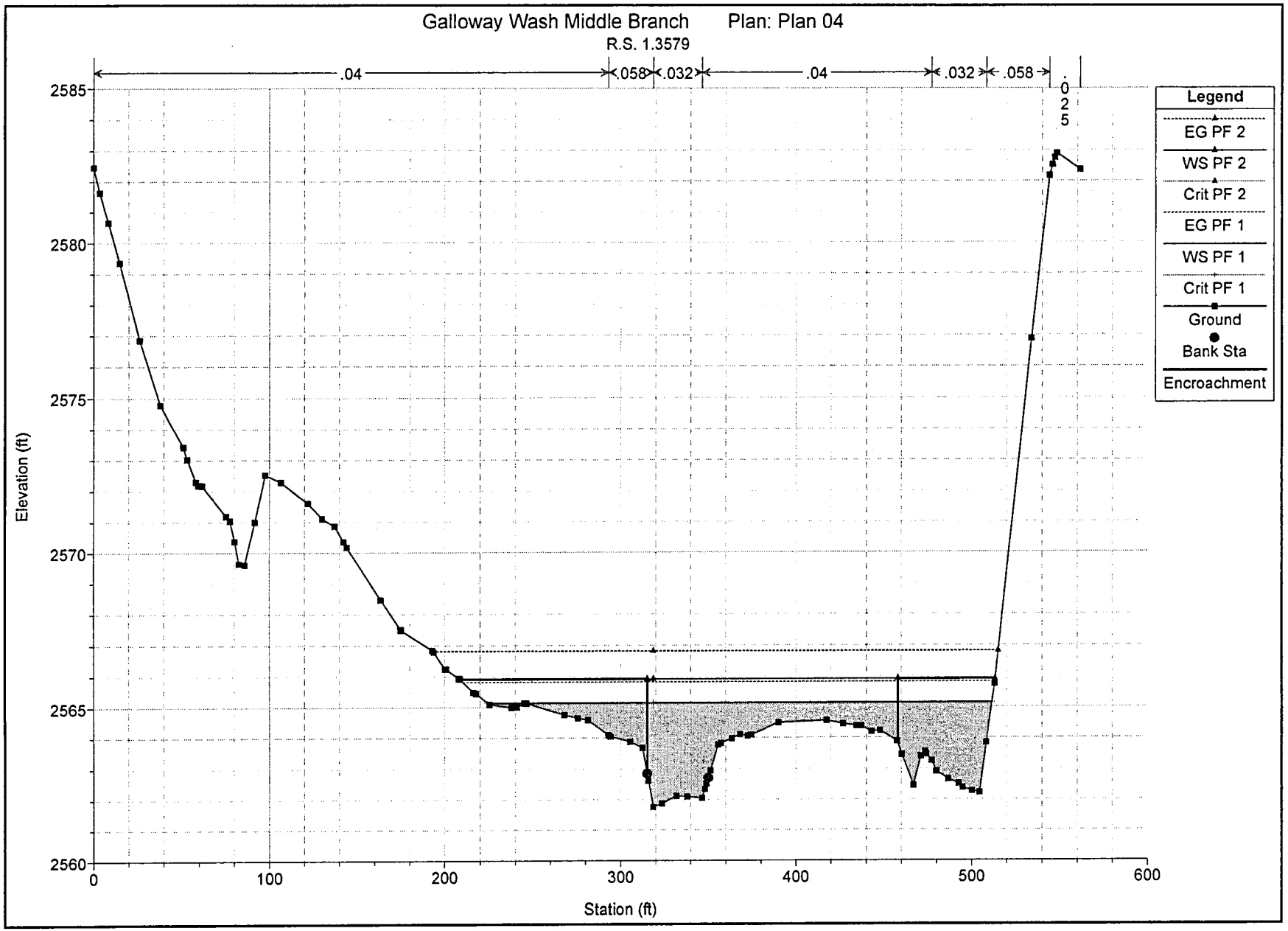

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.4952
.04
.058
.032
.058
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2600
2595
2590
2585
2580
2575
0
100
200
300
400
500
Station (ft)

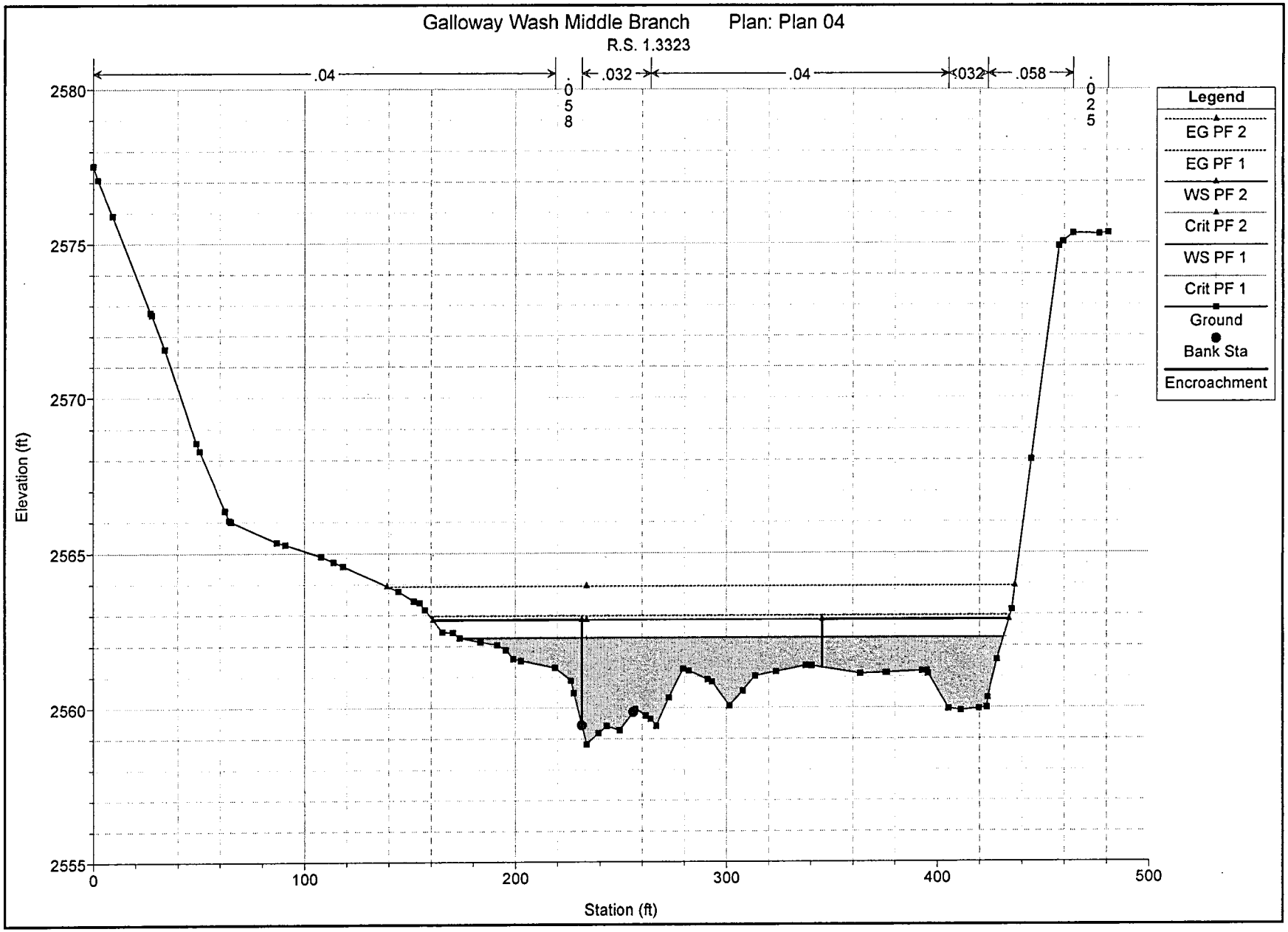

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.4639
.058
.04
.058
.032
.058
.04
.025
.04
Elevation (ft)
2595
2590
2585
2580
2575
2570
0
100
200
300
400
500
Station (ft)
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Encroachment

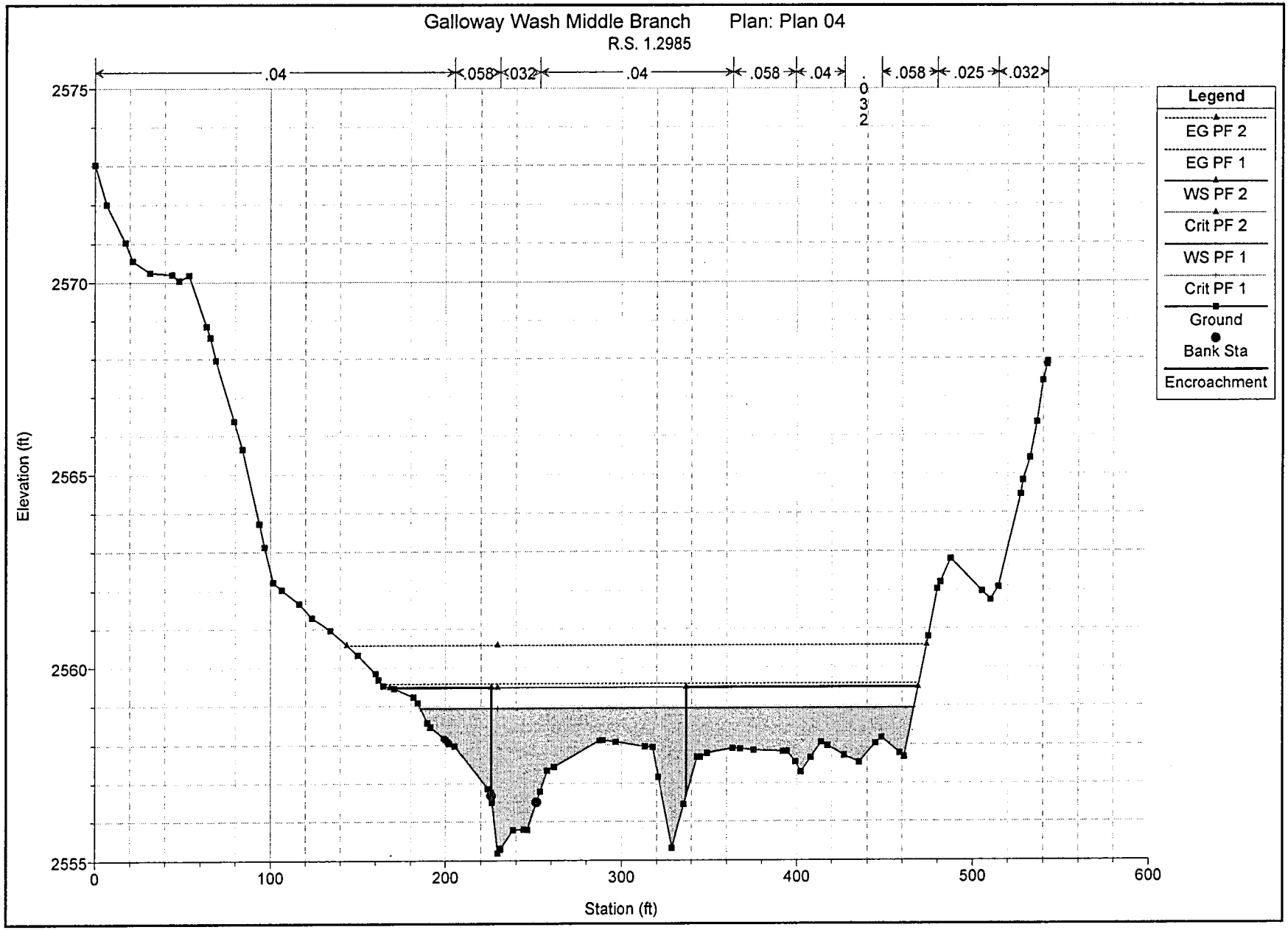

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.4317
.058
.04
.032
.058
.04
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2590
2585
2580
2575
2570
2565
0
100
200
300
400
500
Station (ft)

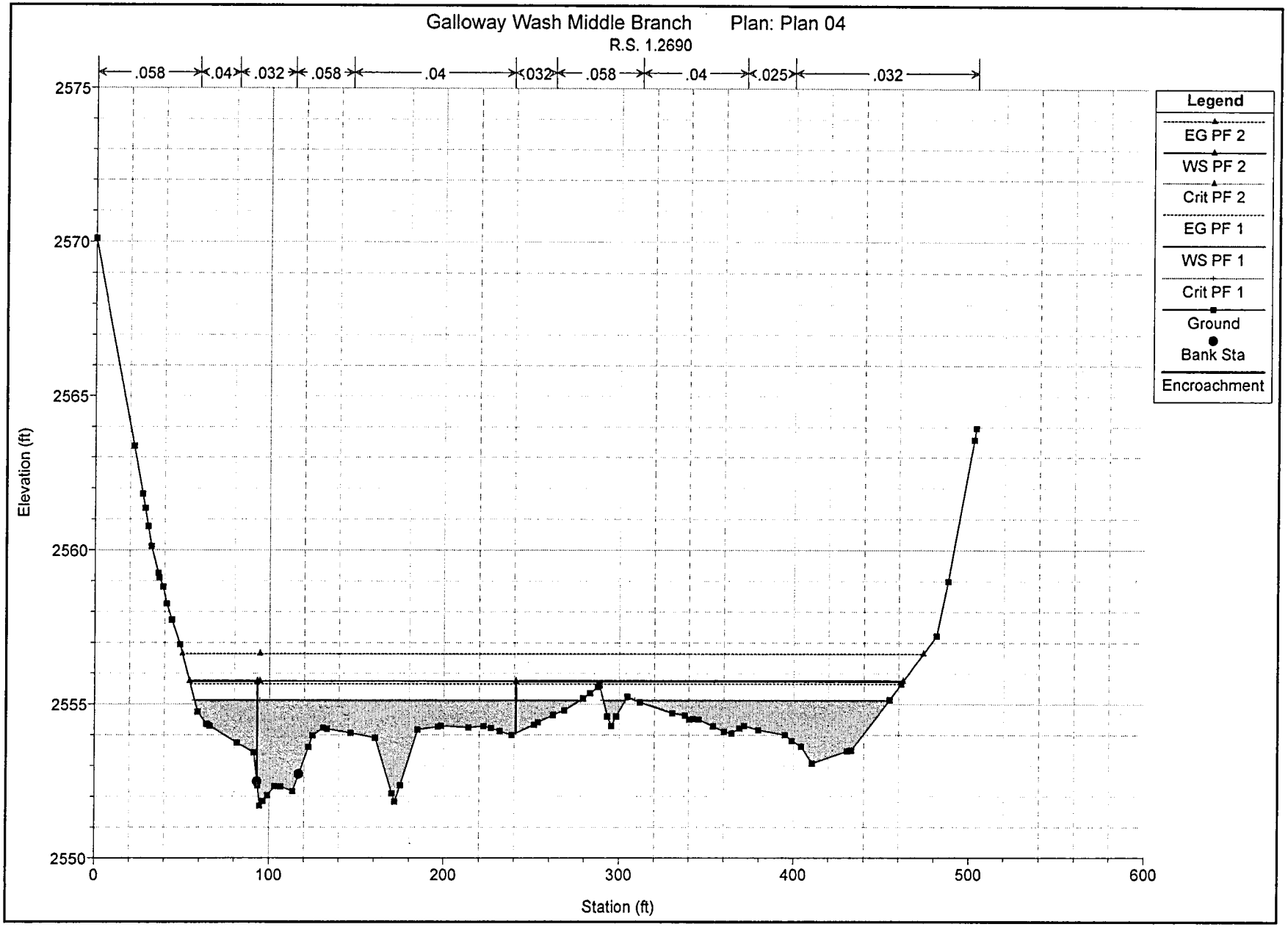

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 1.4056
.058
.04
.032
.058
.032
.04
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2580
2578
2576
2574
2572
2570
2568
2566
0
100
200
300
400
Station (ft)

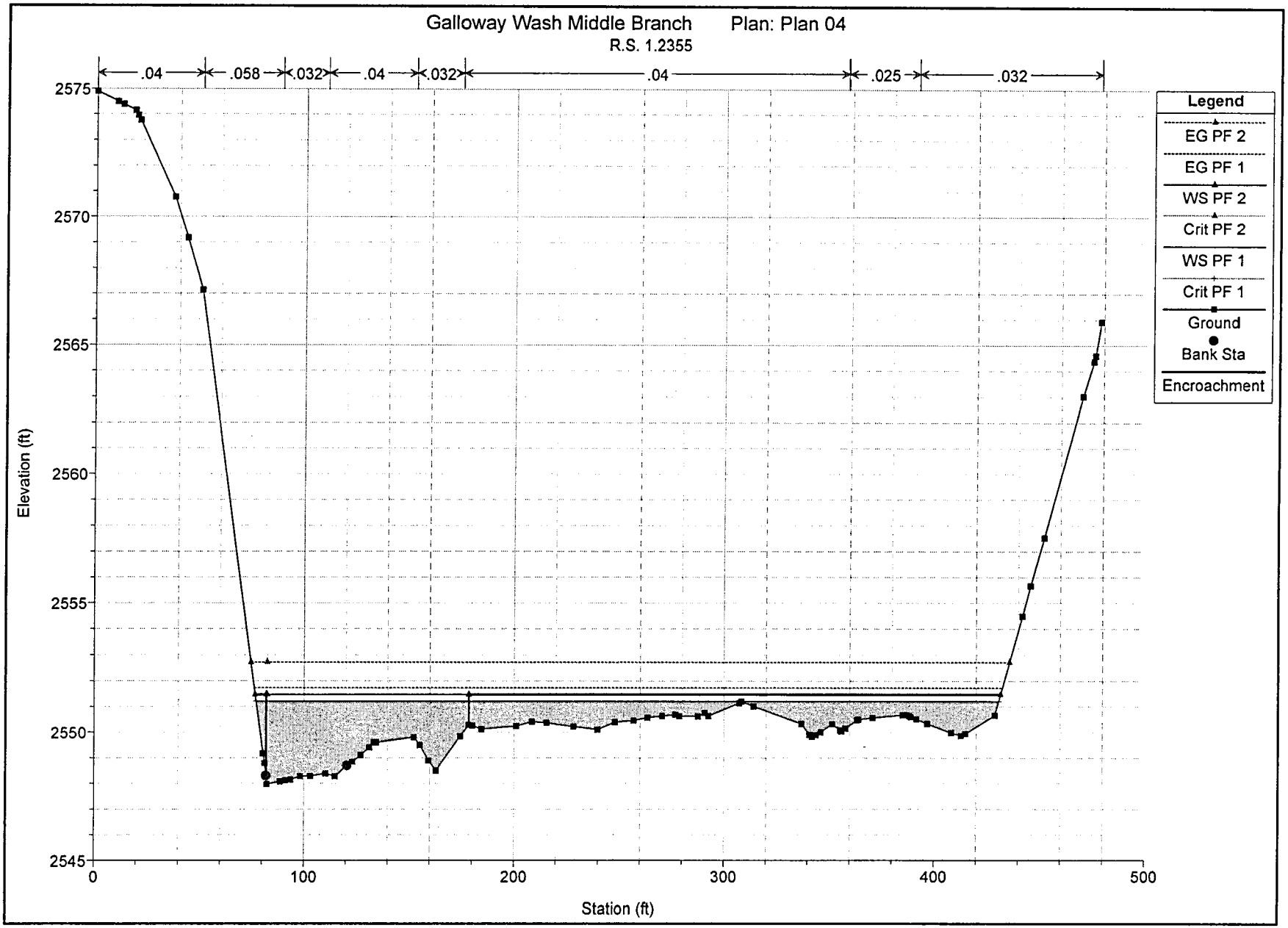

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.3816
.04
.058
.032
.058
.04
.032
.04
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2585
2580
2575
2570
2565
2560
0
100
200
300
400
Station (ft)

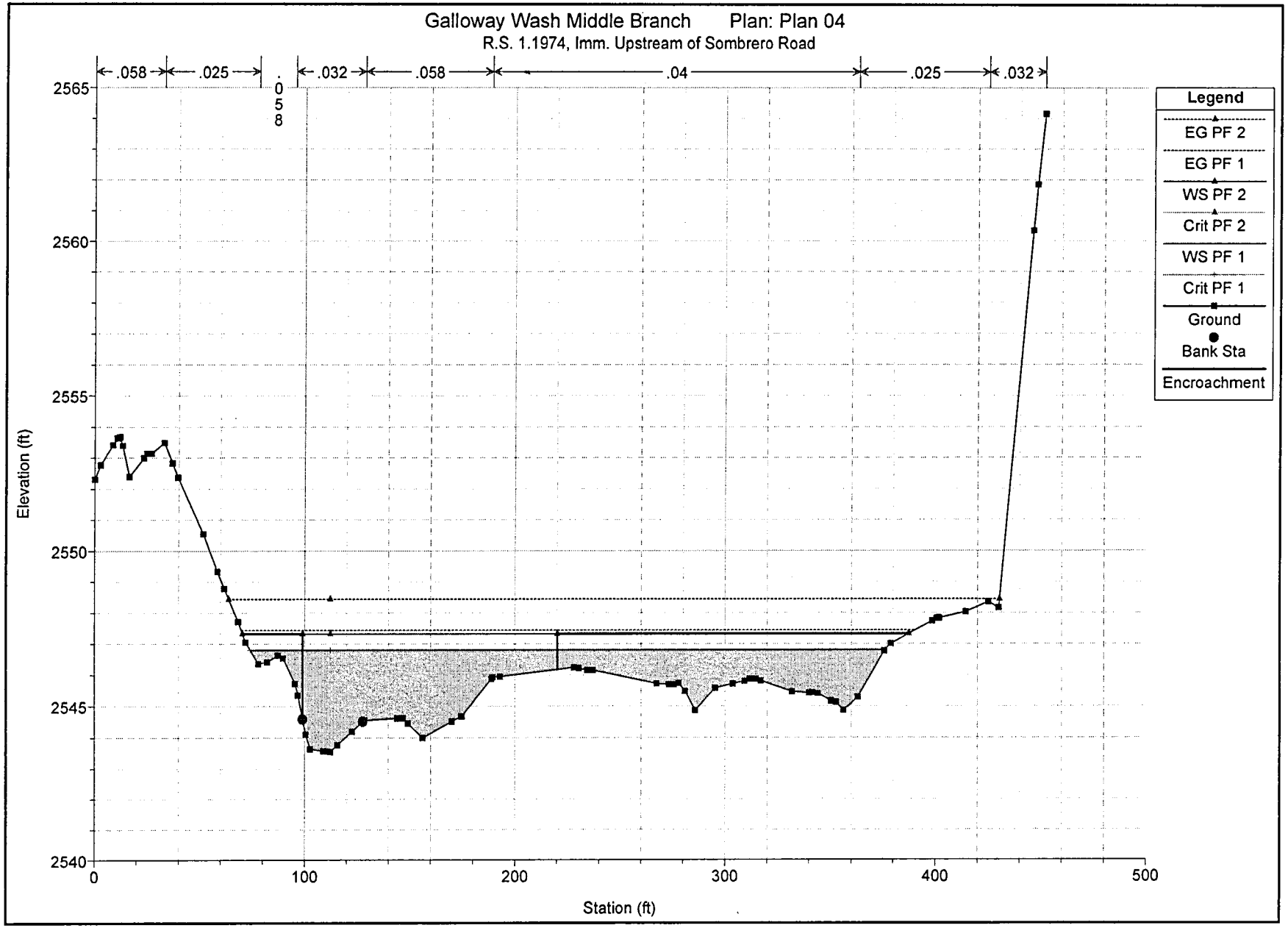

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.3579
.04
.058
.032
.04
.032
.058
.025
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2585
2580
2575
2570
2565
2560
0
100
200
300
400
500
600
Station (ft)

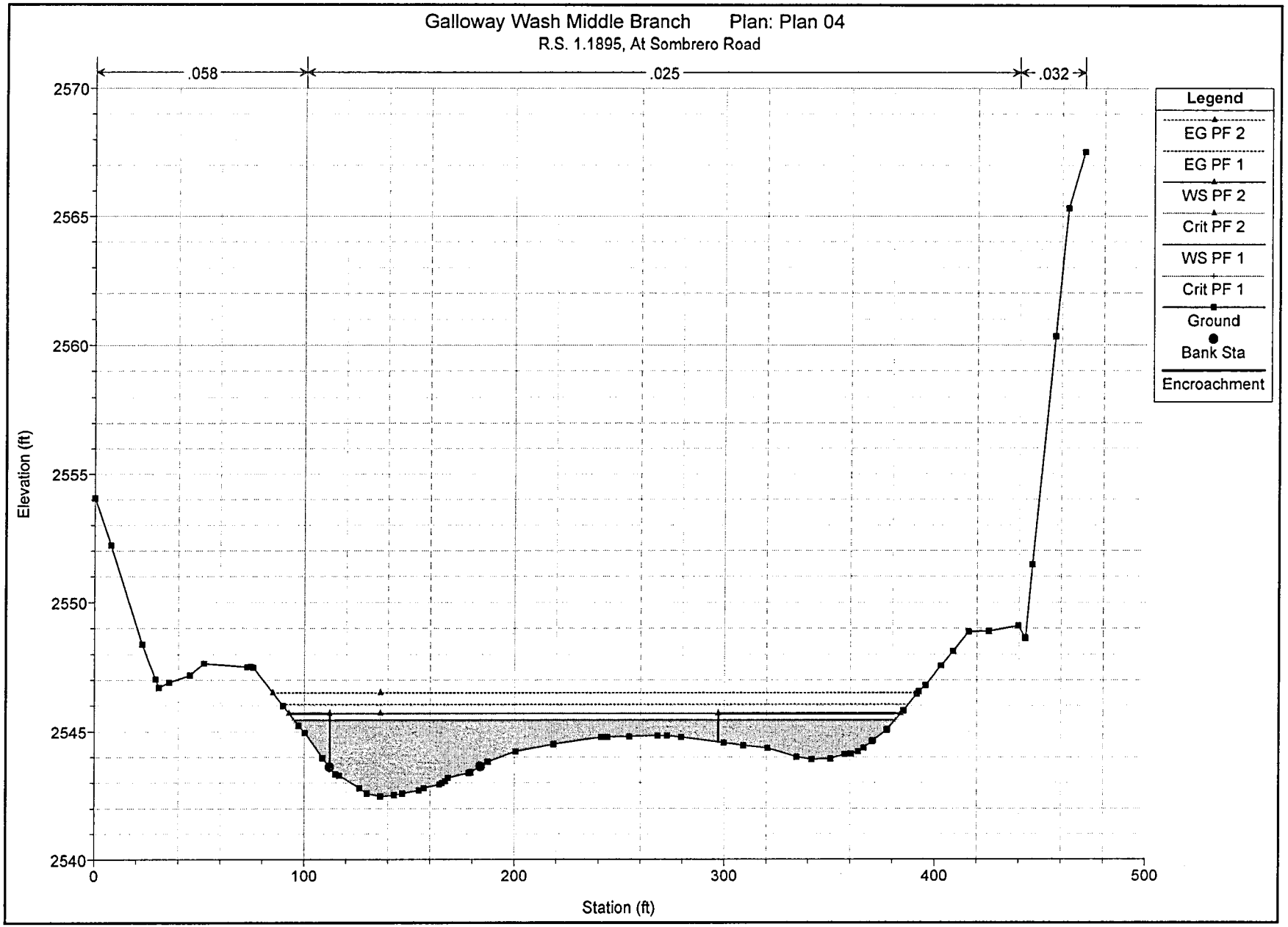

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.3323
.04
.058
.032
.04
.032
.058
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2580
2575
2570
2565
2560
2555
0
100
200
300
400
500
Station (ft)

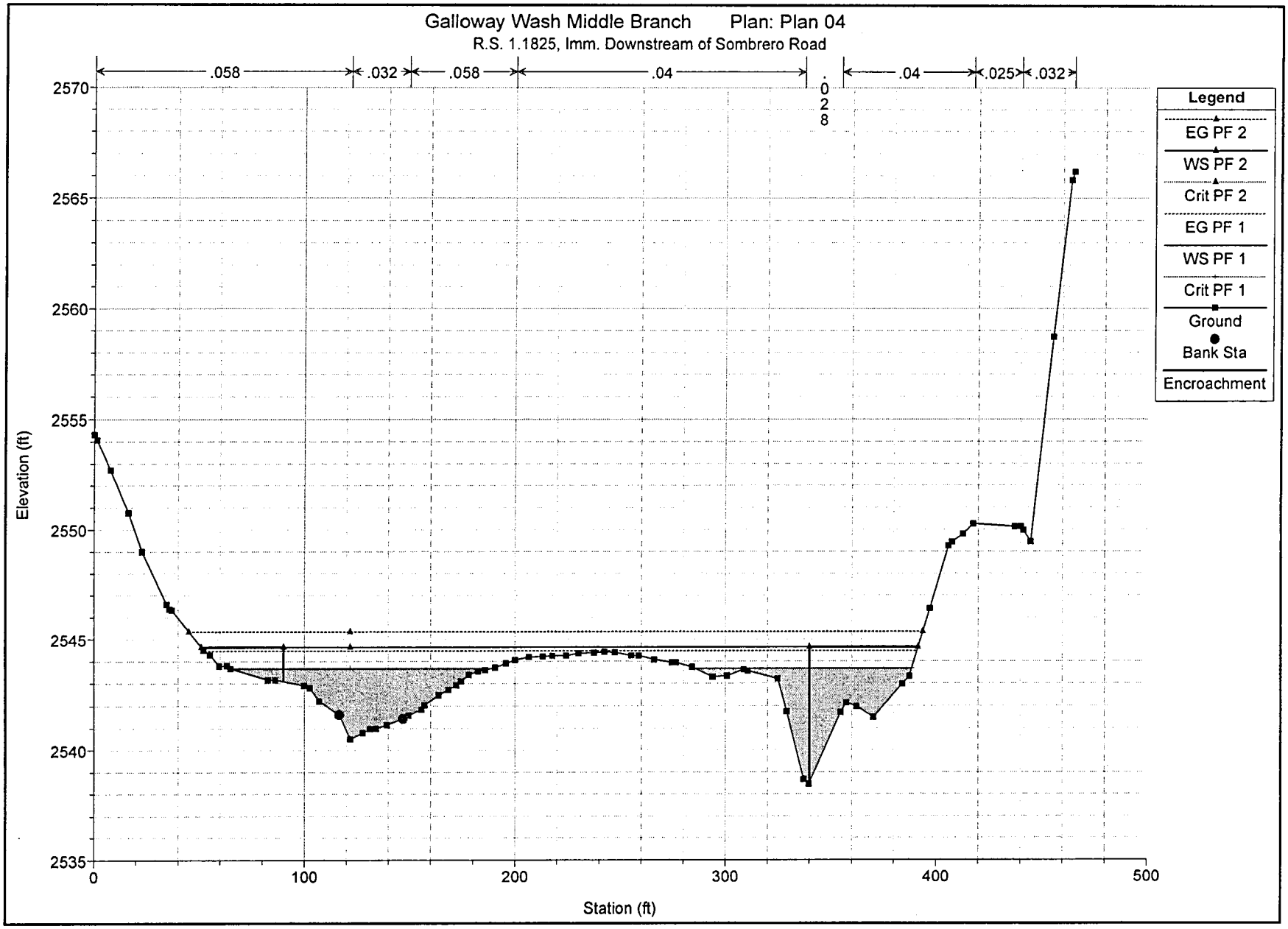

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.2985
.04
.058
.032
.04
.058
.04
.032
.058
.025
.032
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2575
2570
2565
2560
2555
0
100
200
300
400
500
600
Station (ft)

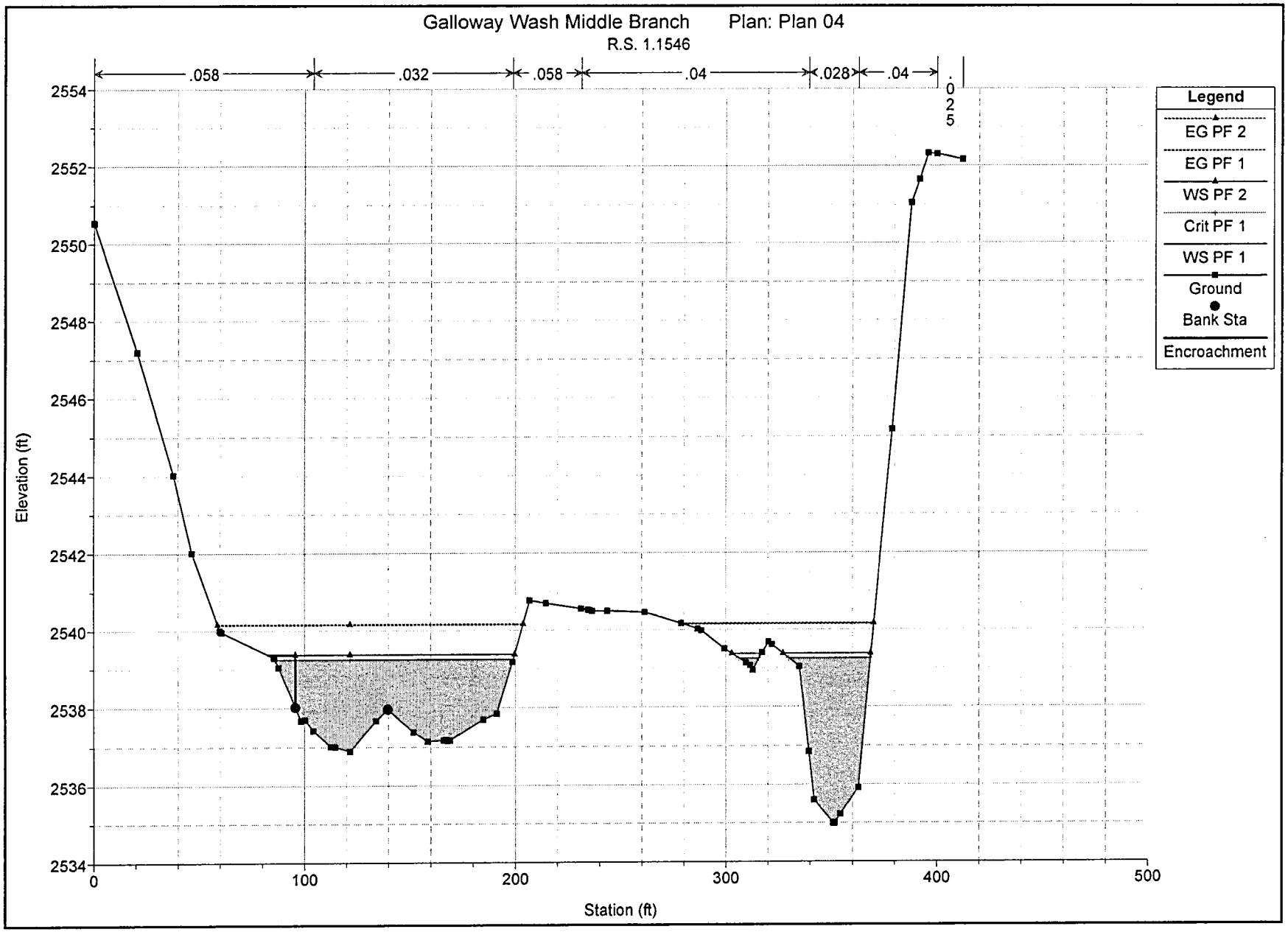

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 1.2690
.058
.04
.032
.058
.04
.032
.058
.04
.025
.032
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2575
2570
2565
2560
2555
2550
0
100
200
300
400
500
600
Station (ft)

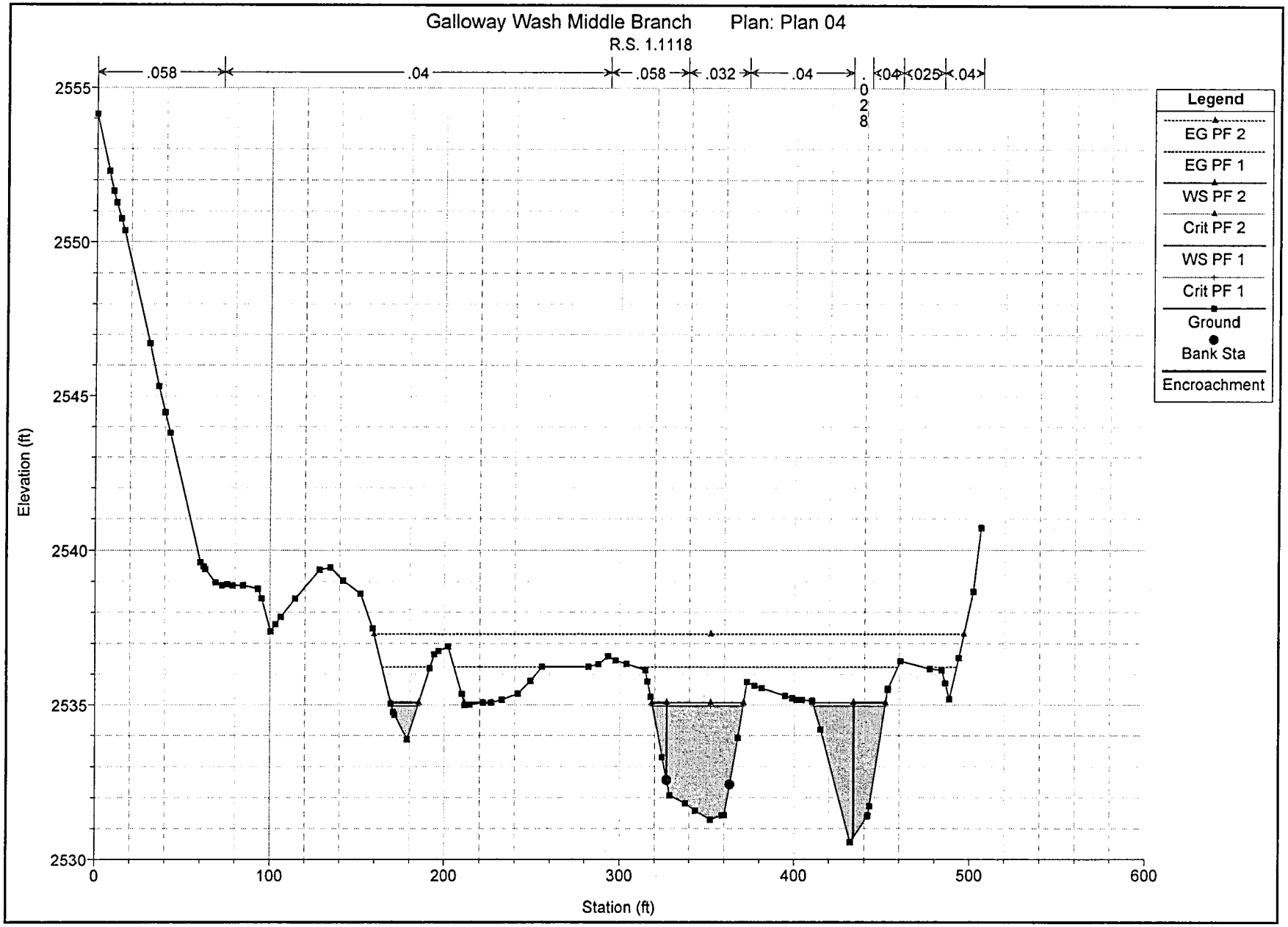

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 1.2355
.04
.058
.032
.04
.032
.04
.025
.032
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2575
2570
2565
2560
2555
2550
2545
0
100
200
300
400
500
Station (ft)

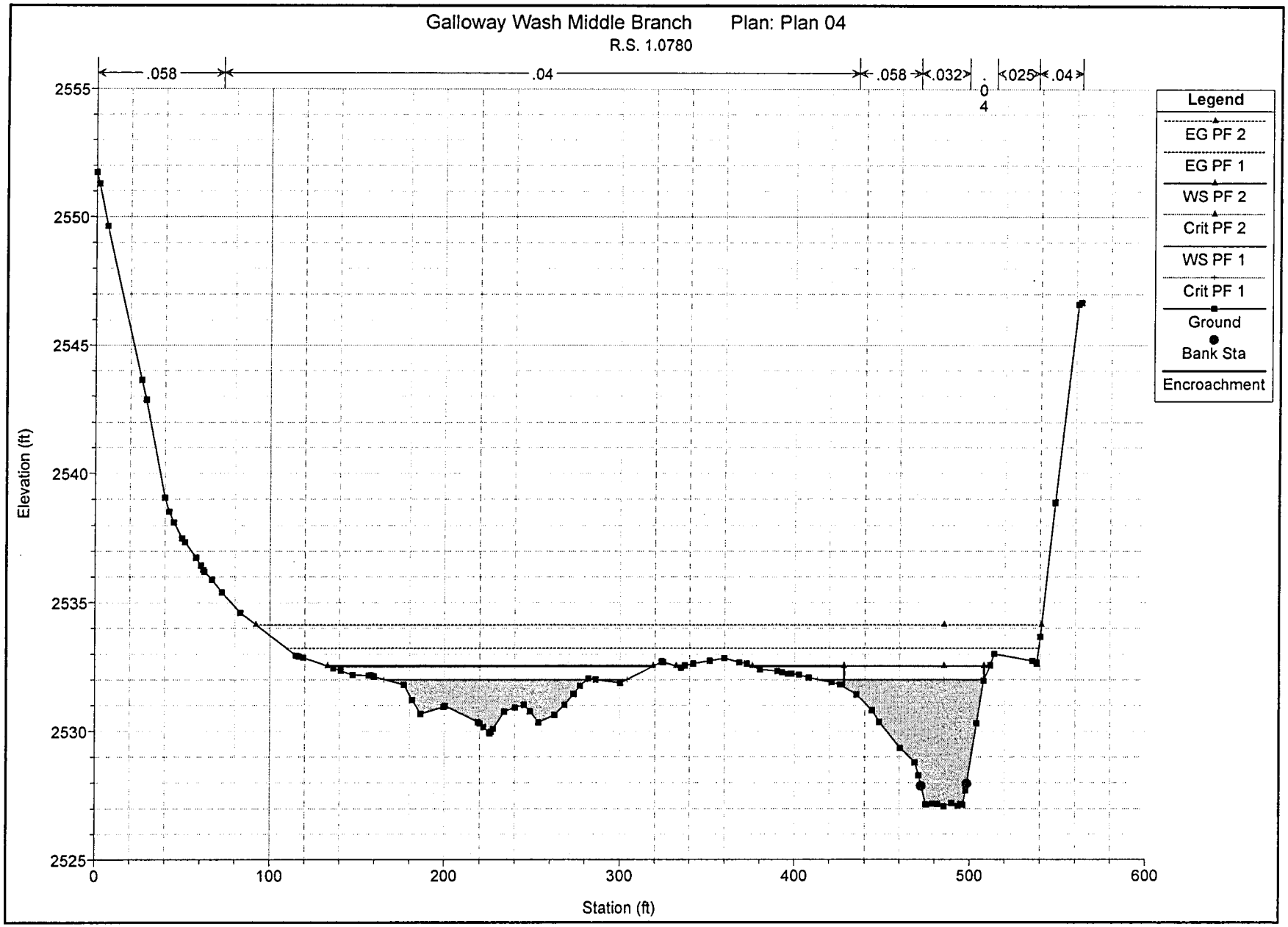

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.1974, Imm. Upstream of Sombrero Road
.058
.025
.058
.032
.058
.04
.025
.032
Elevation (ft)
2565
2560
2555
2550
2545
2540
0
100
200
300
400
500
Station (ft)
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment

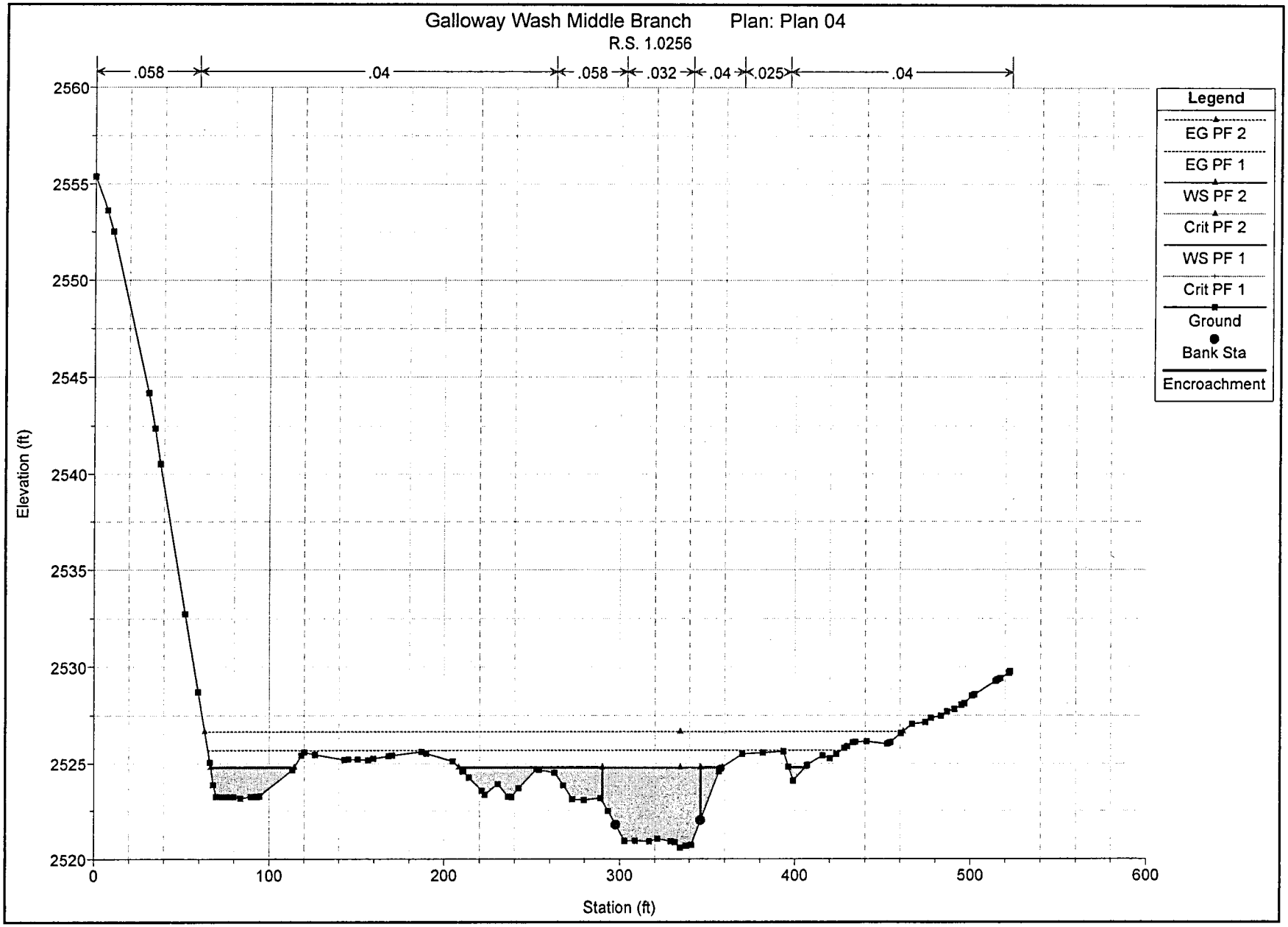

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.1895, At Sombrero Road
.058
.025
.032
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2570
2565
2560
2555
2550
2545
2540
0
100
200
300
400
500
Station (ft)

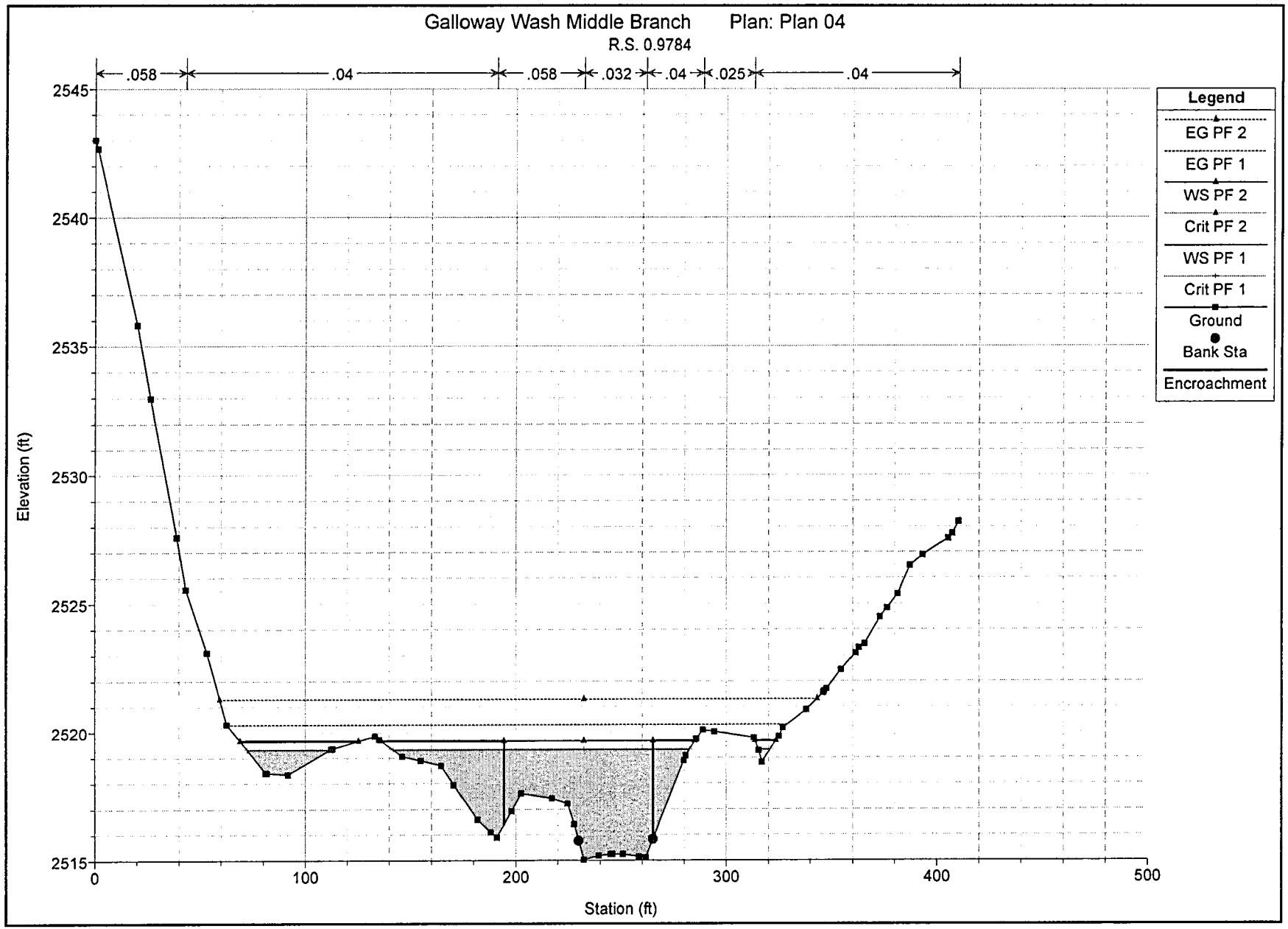

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.1825, Imm. Downstream of Sombrero Road
.058
.032
.058
.04
.028
.04
.025
.032
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2570
2565
2560
2555
2550
2545
2540
2535
0
100
200
300
400
500
Station (ft)

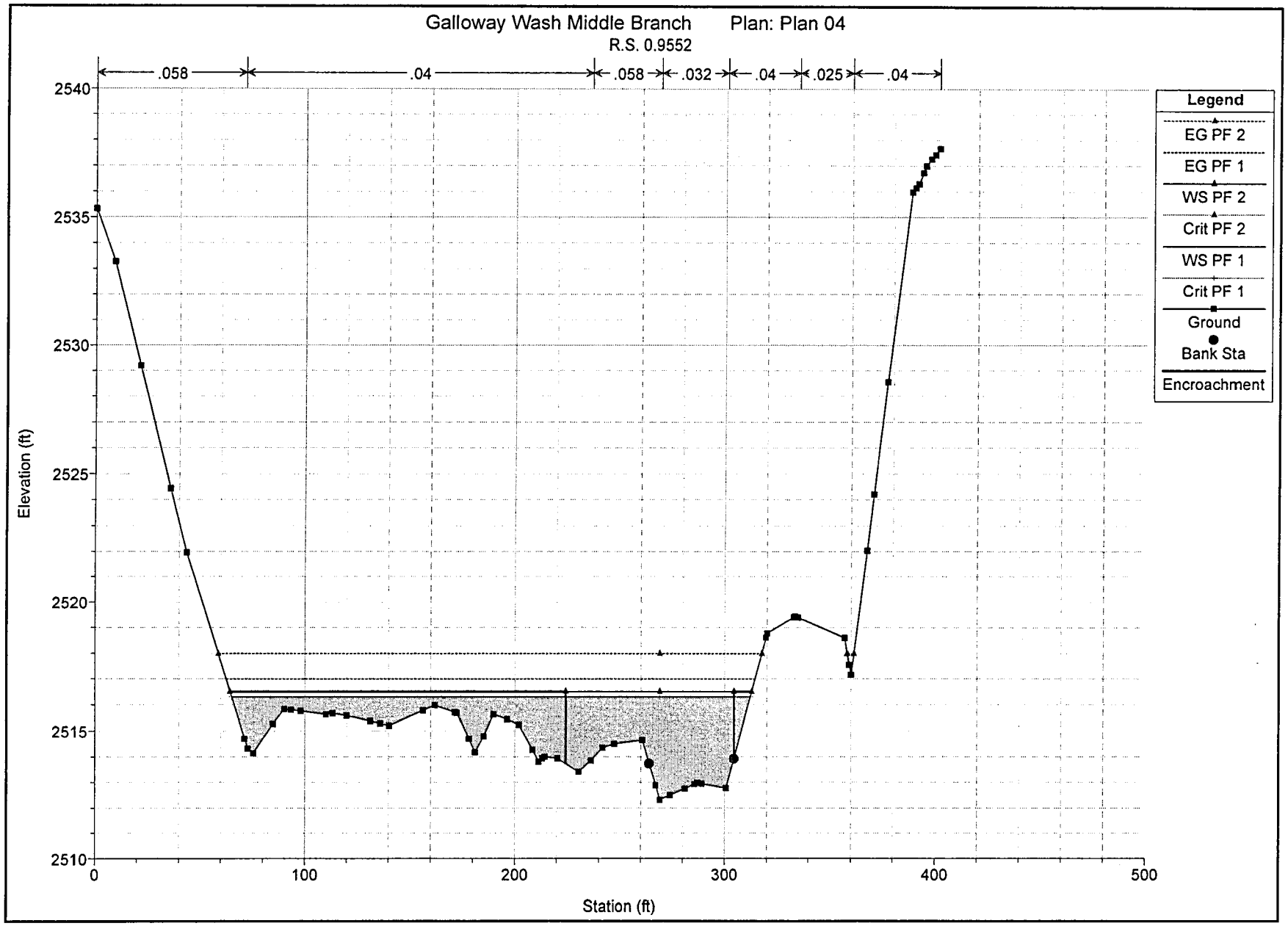

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.1546
.058
.032
.058
.04
.028
.04
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2554
2552
2550
2548
2546
2544
2542
2540
2538
2536
2534
0
100
200
300
400
500
Station (ft)

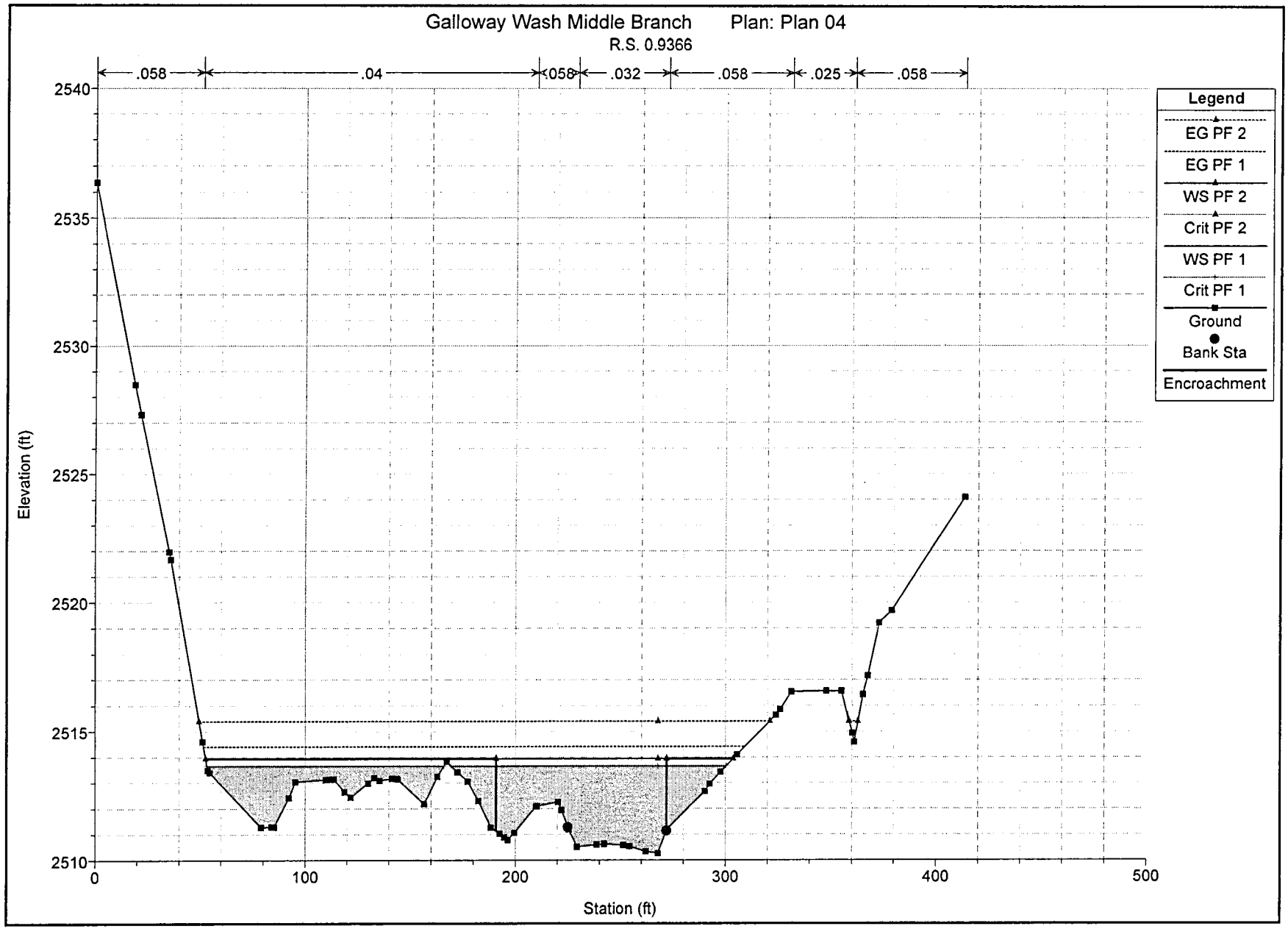

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.1118
.058
.04
.058
.032
.04
.028
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2555
2550
2545
2540
2535
2530
0
100
200
300
400
500
600
Station (ft)

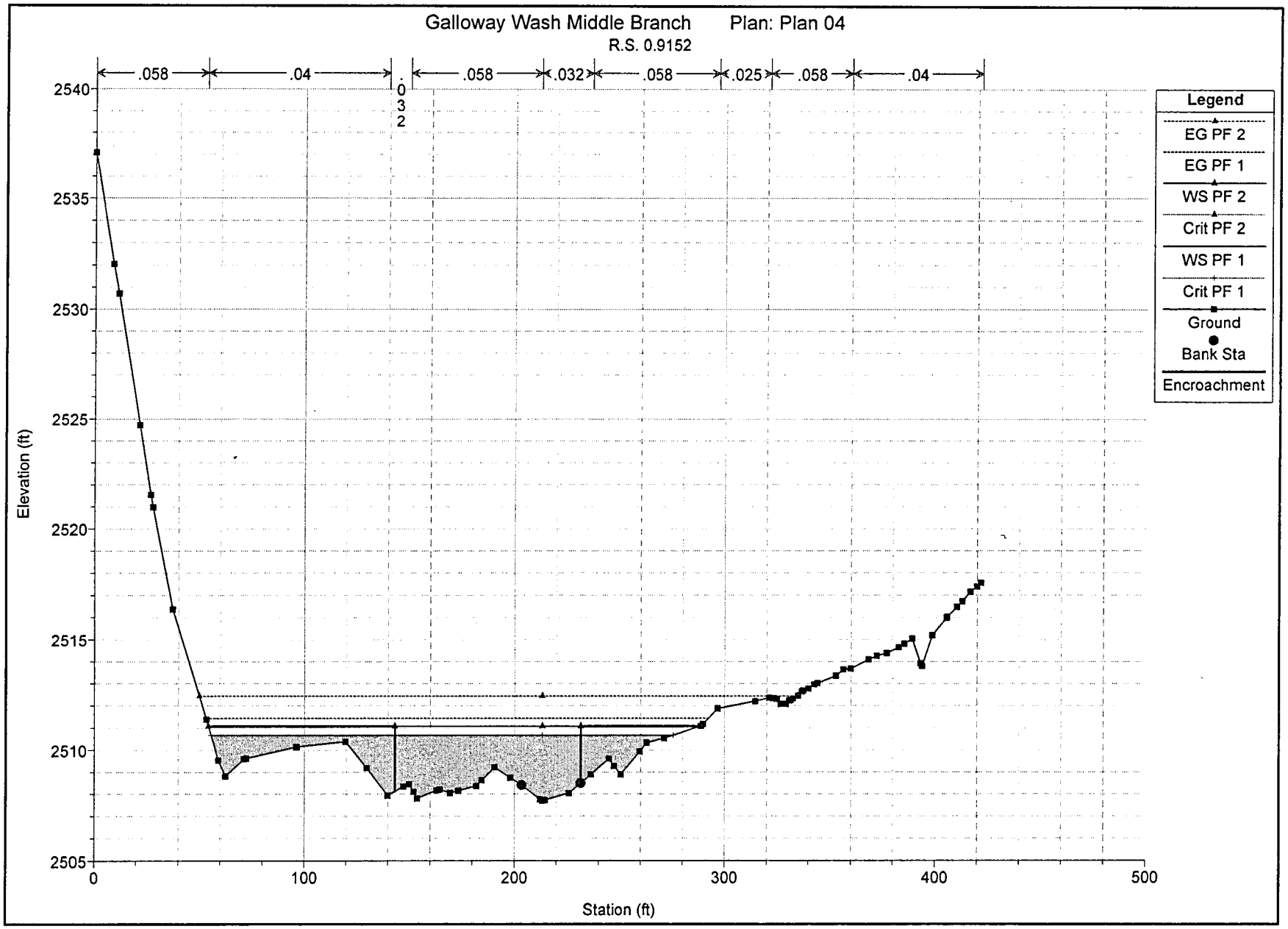

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 1.0780
.058
.04
.058
.032
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2555
2550
2545
2540
2535
2530
2525
0
100
200
300
400
500
600
Station (ft)

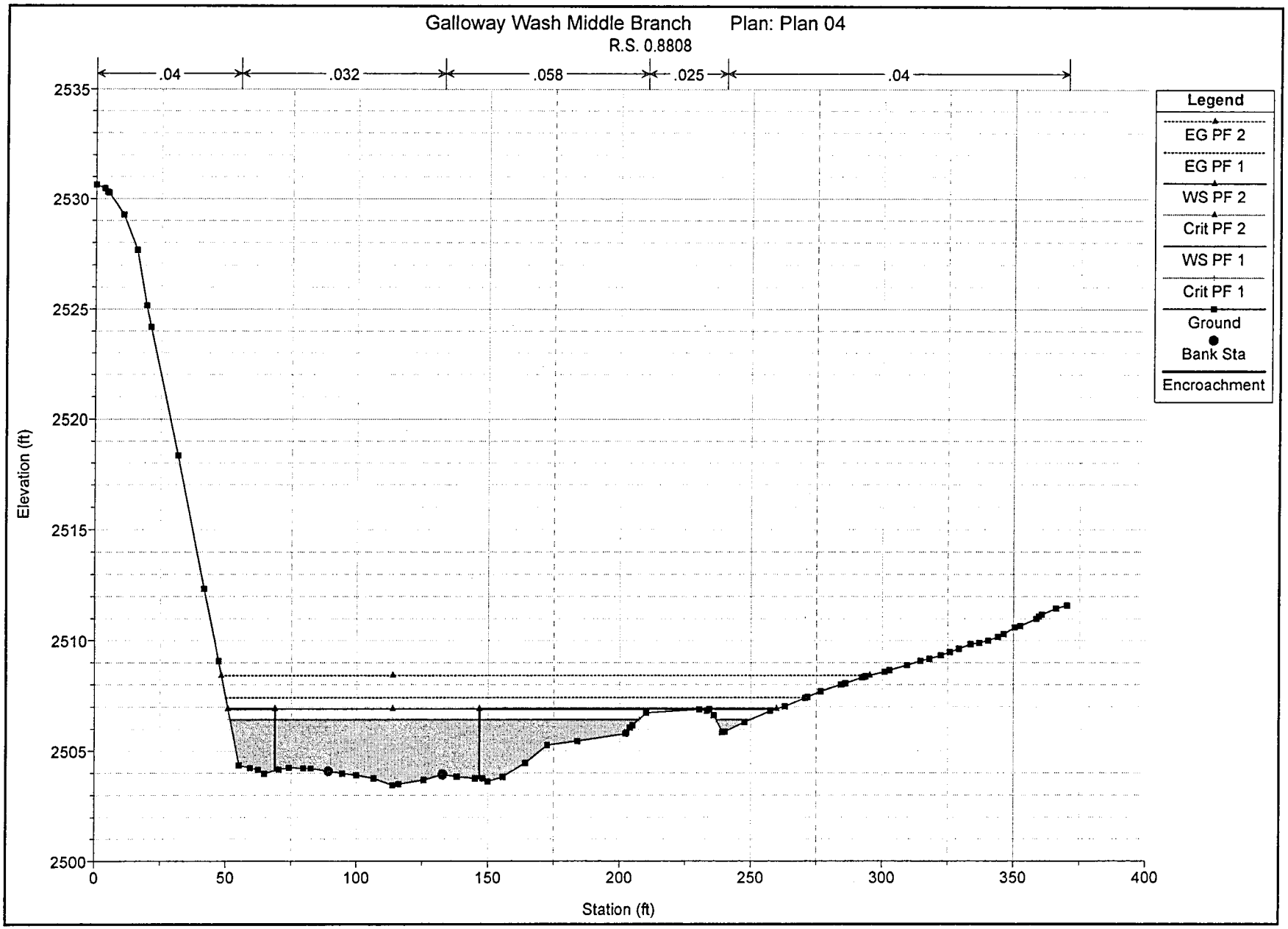

Galloway Wash Middle Branch Plan: Plan 04
R.S. 1.0256
.058
.04
.058
.032
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2560
2555
2550
2545
2540
2535
2530
2525
2520
0
100
200
300
400
500
600
Station (ft)

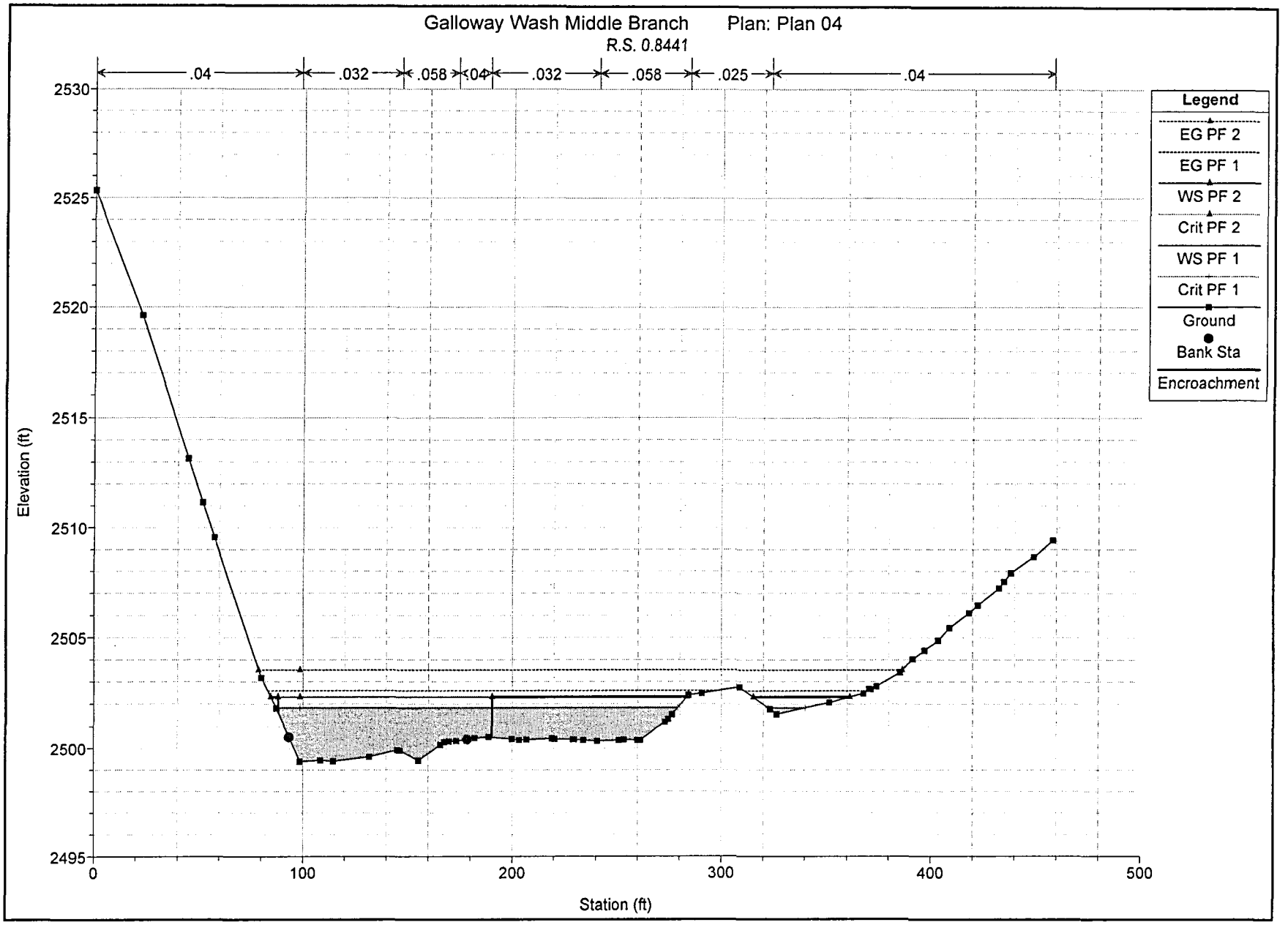

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.9784
.058
.04
.058
.032
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2545
2540
2535
2530
2525
2520
2515
0
100
200
300
400
500
Station (ft)

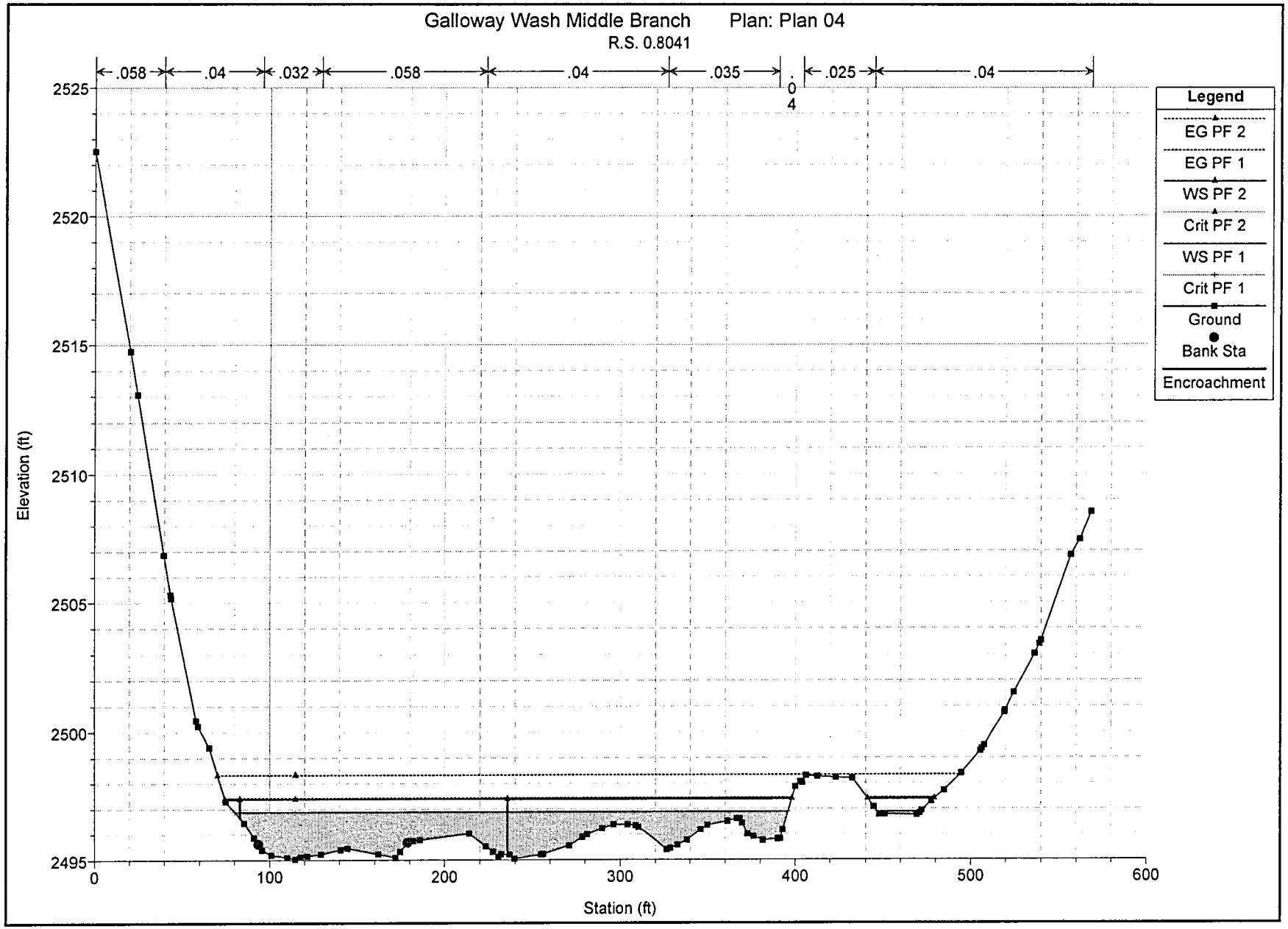

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.9552
.058
.04
.058
.032
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2540
2535
2530
2525
2520
2515
2510
0
100
200
300
400
500
Station (ft)

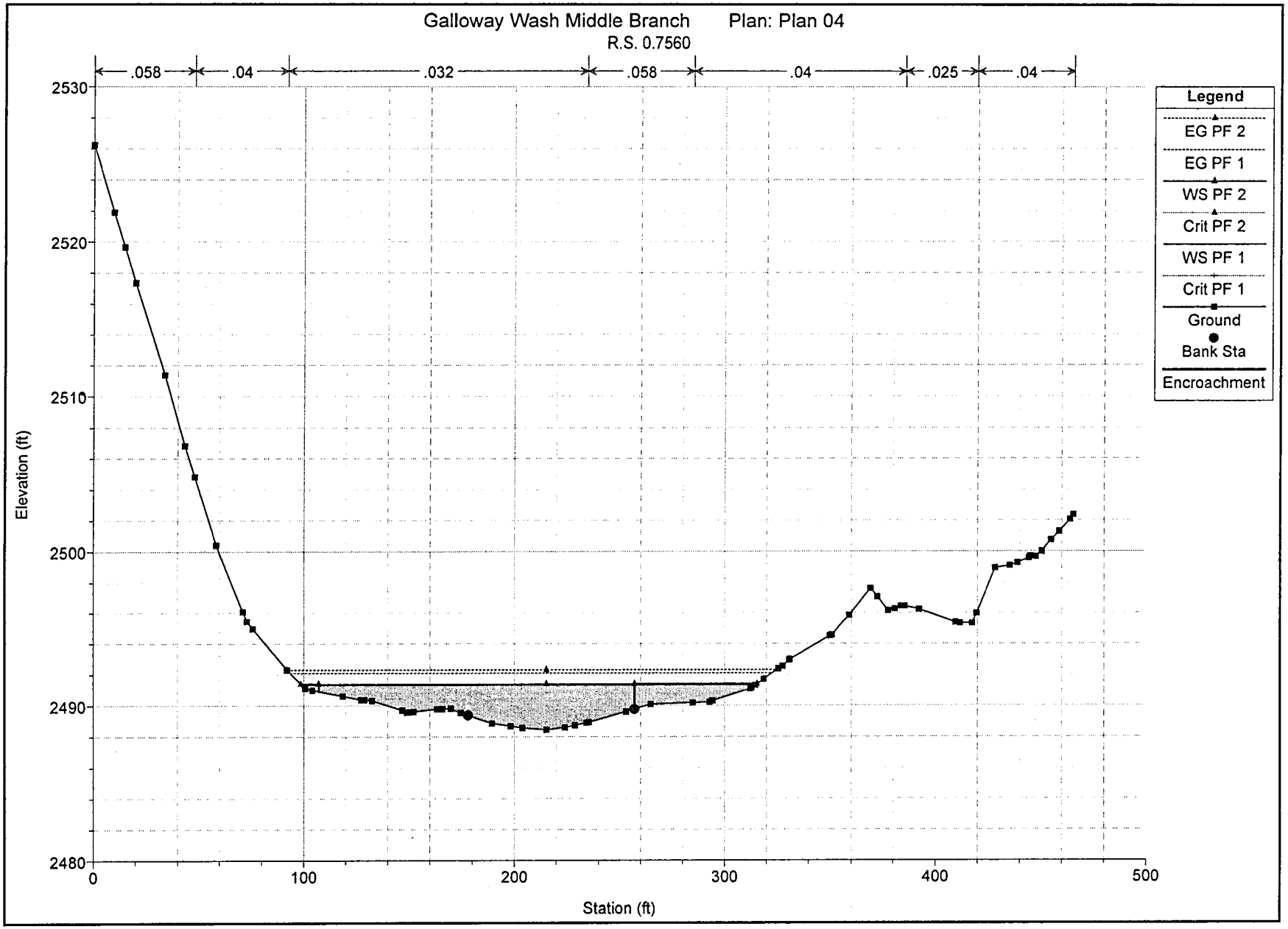

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.9366
.058
.04
.058
.032
.058
.025
.058
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2540
2535
2530
2525
2520
2515
2510
0
100
200
300
400
500
Station (ft)

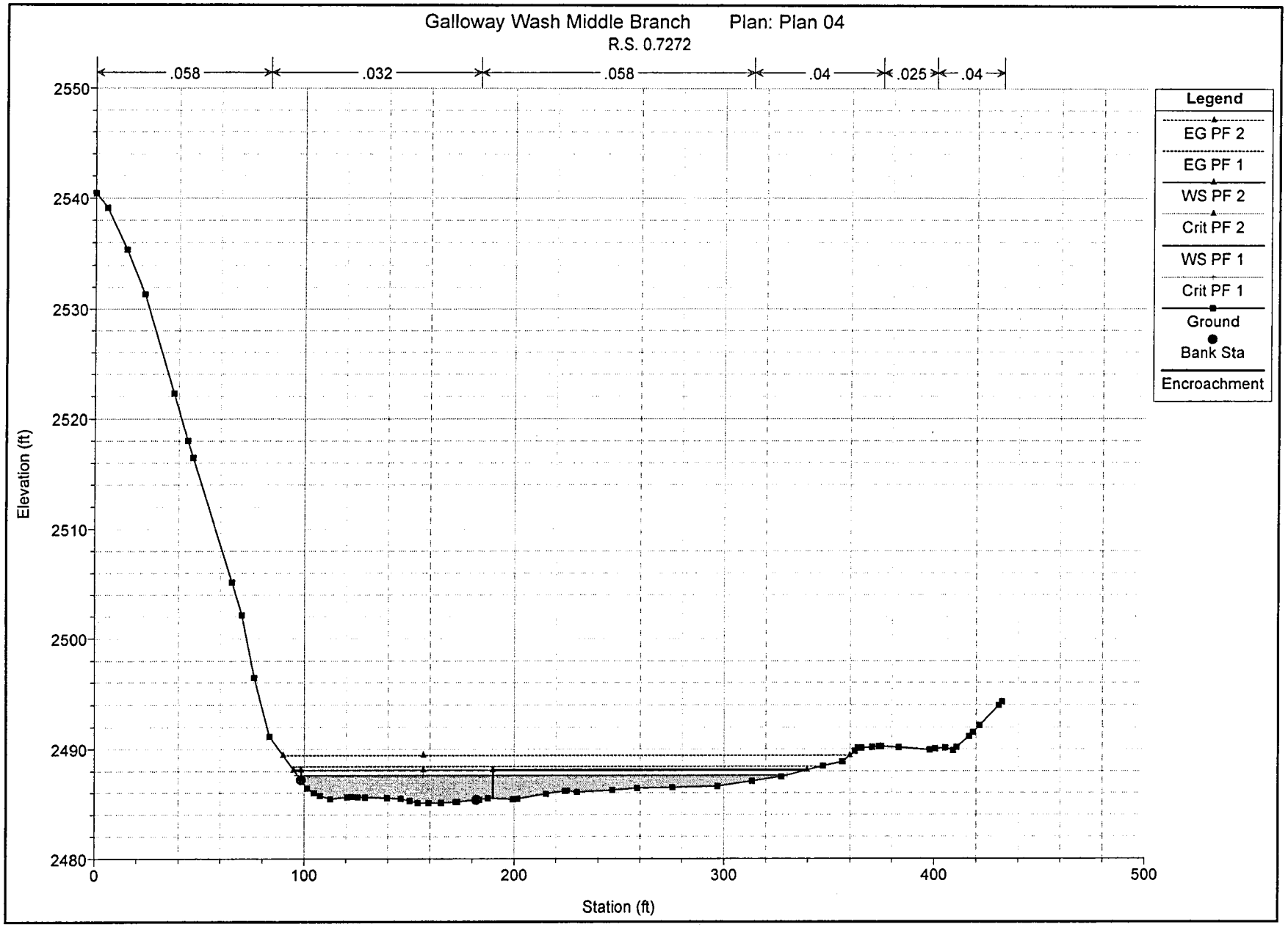

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.9152
.058
.04
.032
.058
.032
.058
.025
.058
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2540
2535
2530
2525
2520
2515
2510
2505
0
100
200
300
400
500
Station (ft)

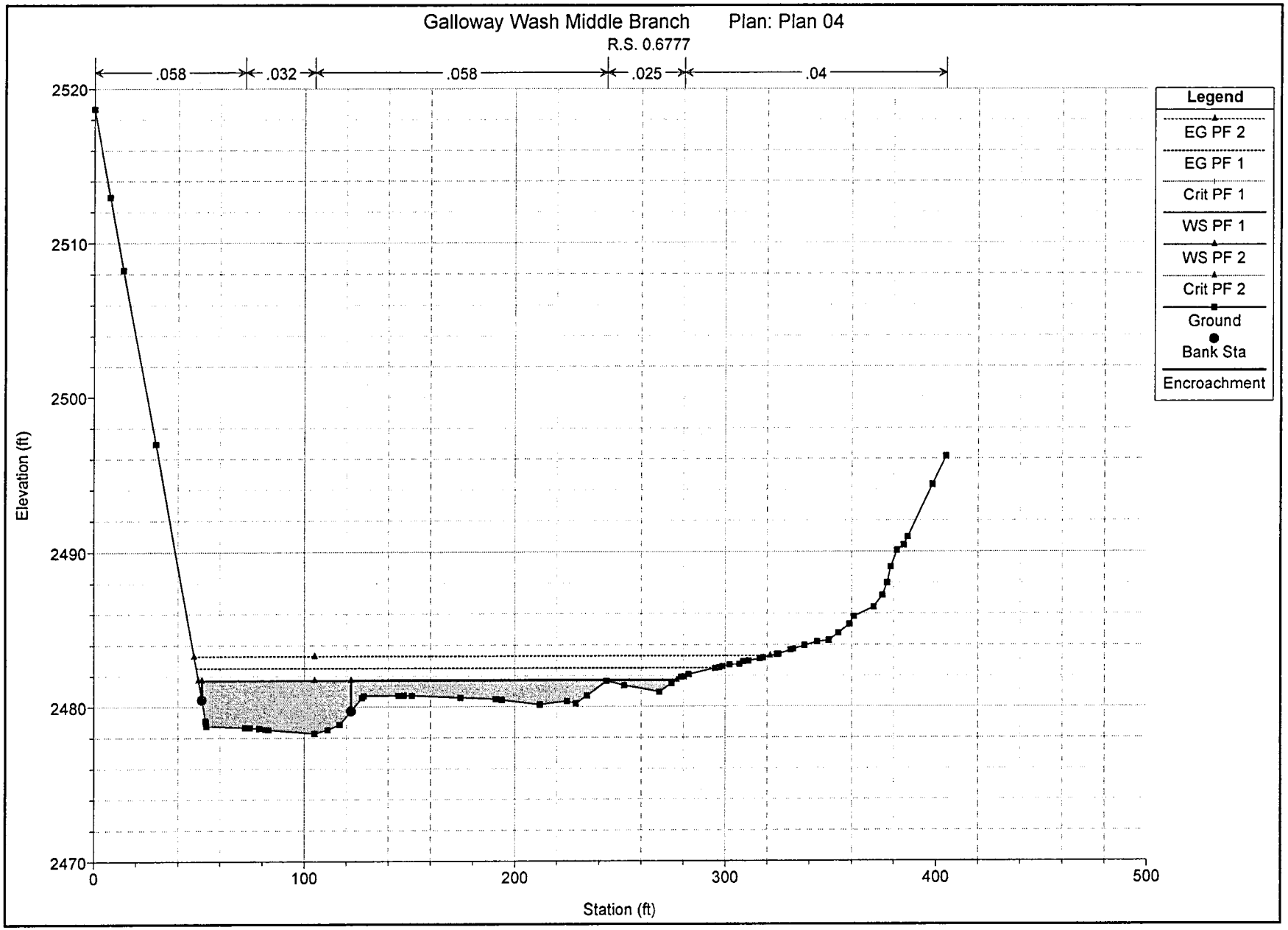

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.8808
.04
.032
.058
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2535
2530
2525
2520
2515
2510
2505
2500
0
50
100
150
200
250
300
350
400
Station (ft)

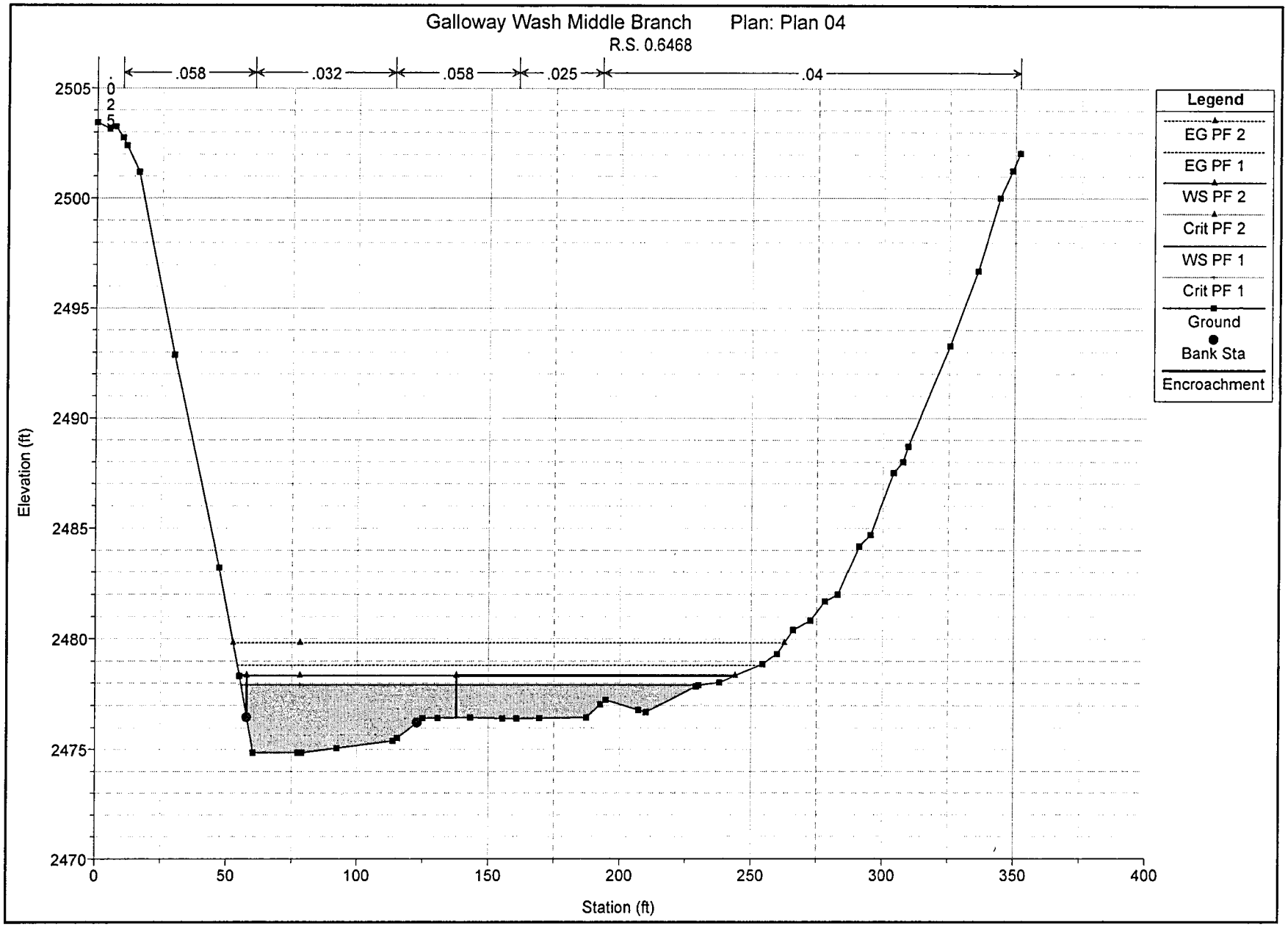

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.8441
.04
.032
.058
.04
.032
.058
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2530
2525
2520
2515
2510
2505
2500
2495
0
100
200
300
400
500
Station (ft)

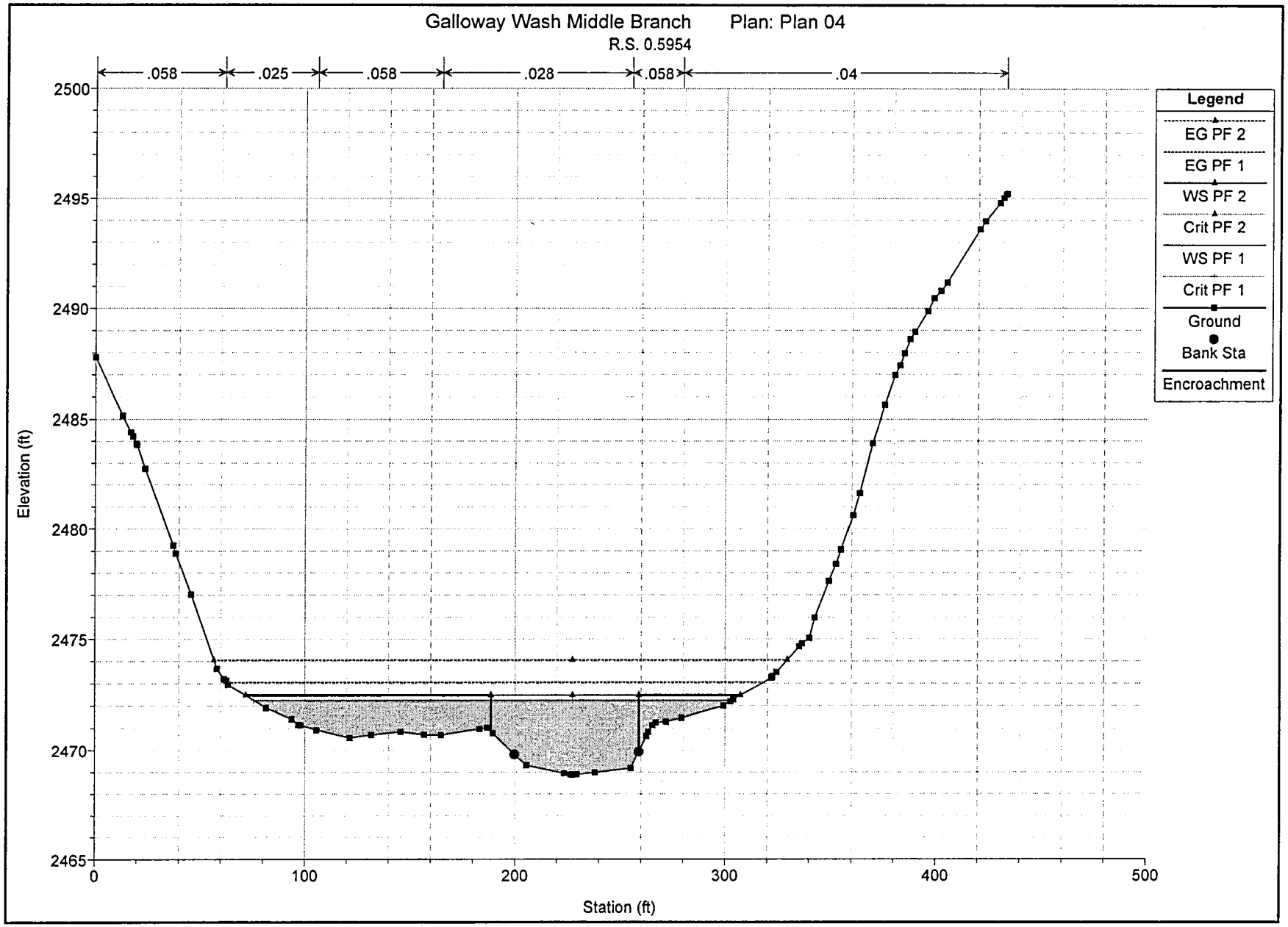

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.8041
.058
.04
.032
.058
.04
.035
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2525
2520
2515
2510
2505
2500
2495
0
100
200
300
400
500
600
Station (ft)

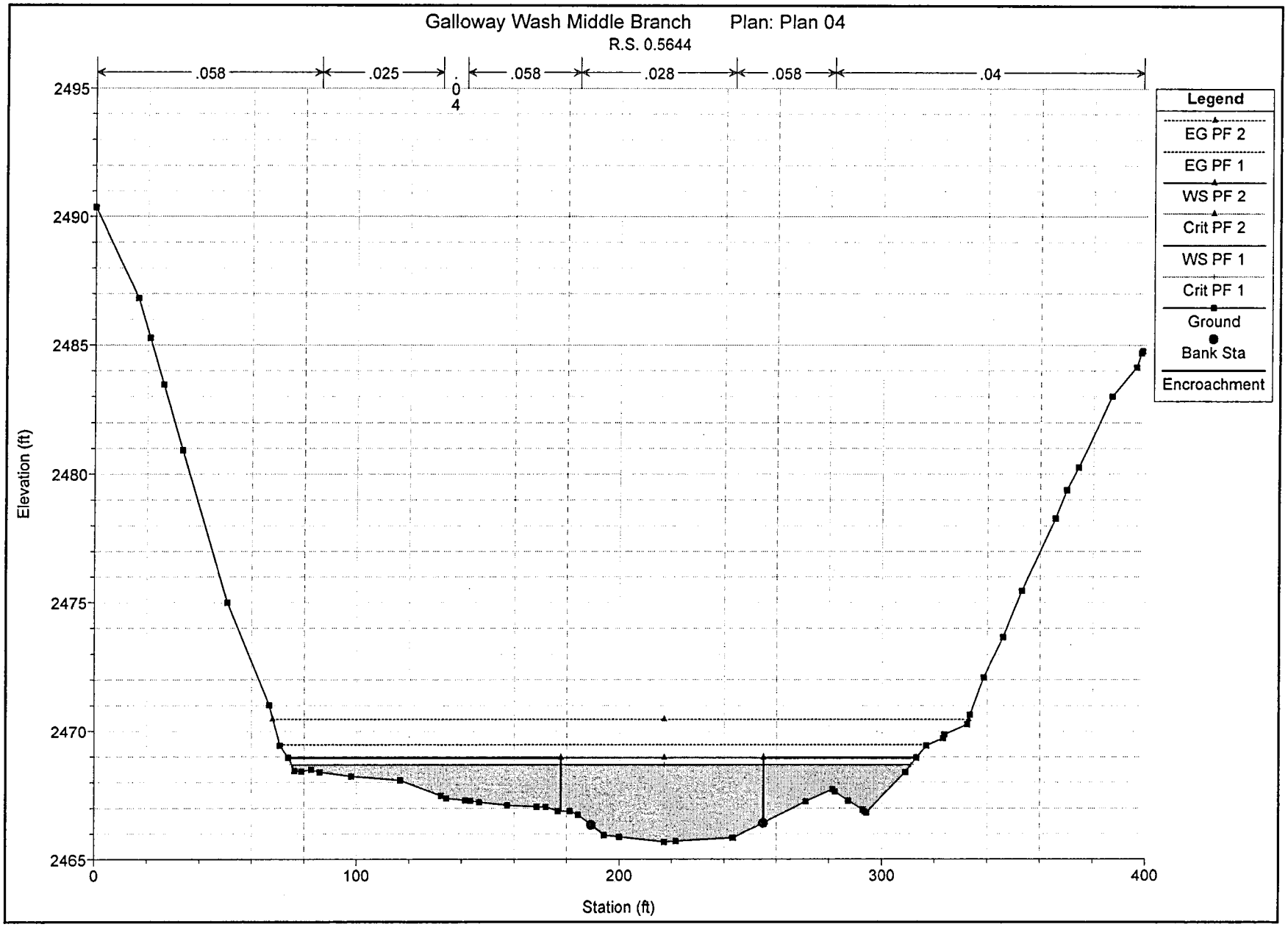

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.7560
.058
.04
.032
.058
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2530
2520
2510
2500
2490
2480
0
100
200
300
400
500
Station (ft)

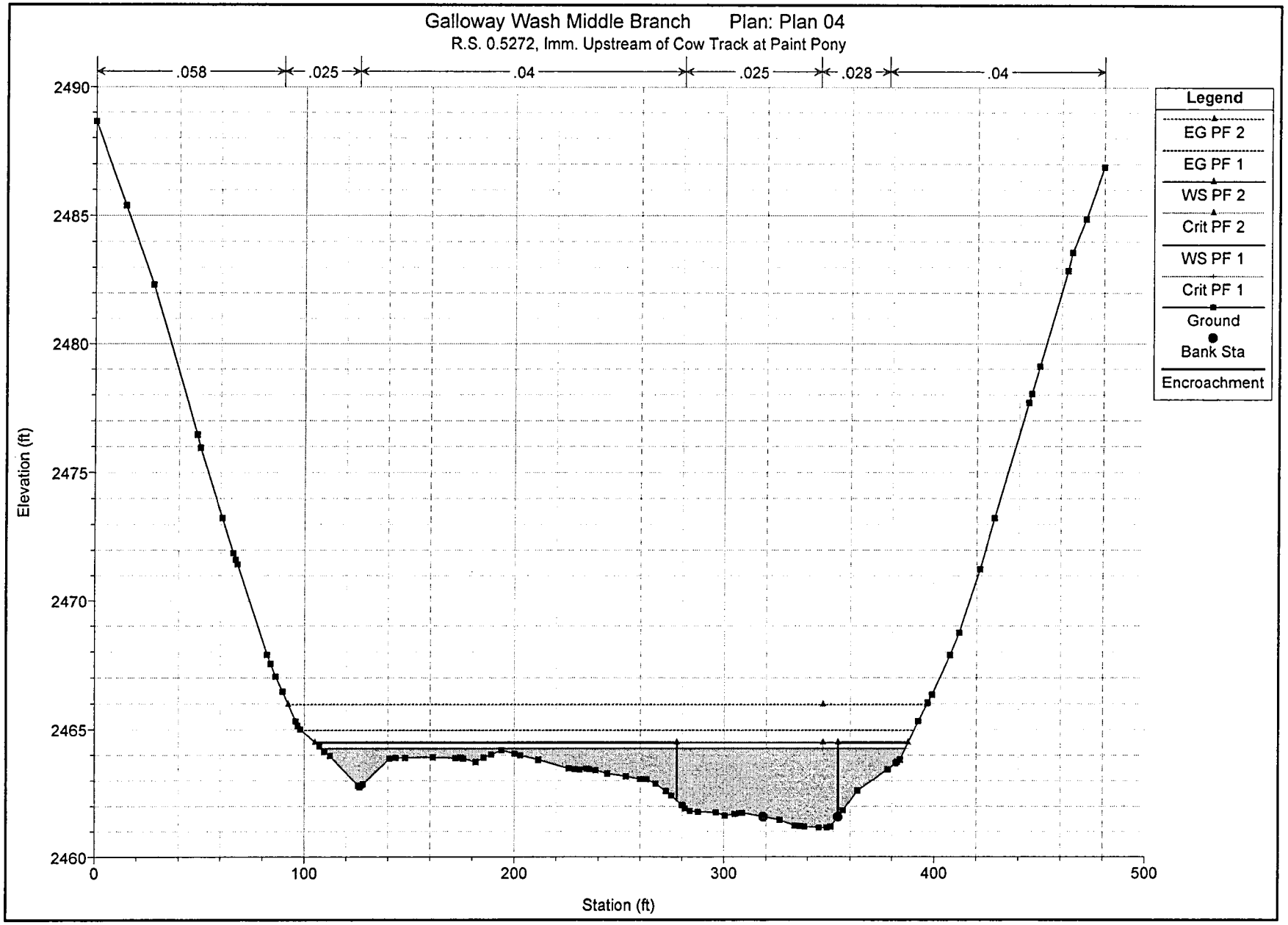

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.7272
.058
.032
.058
.04
.025
.04
Elevation (ft)
2550
2540
2530
2520
2510
2500
2490
2480
0
100
200
300
400
500
Station (ft)
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment

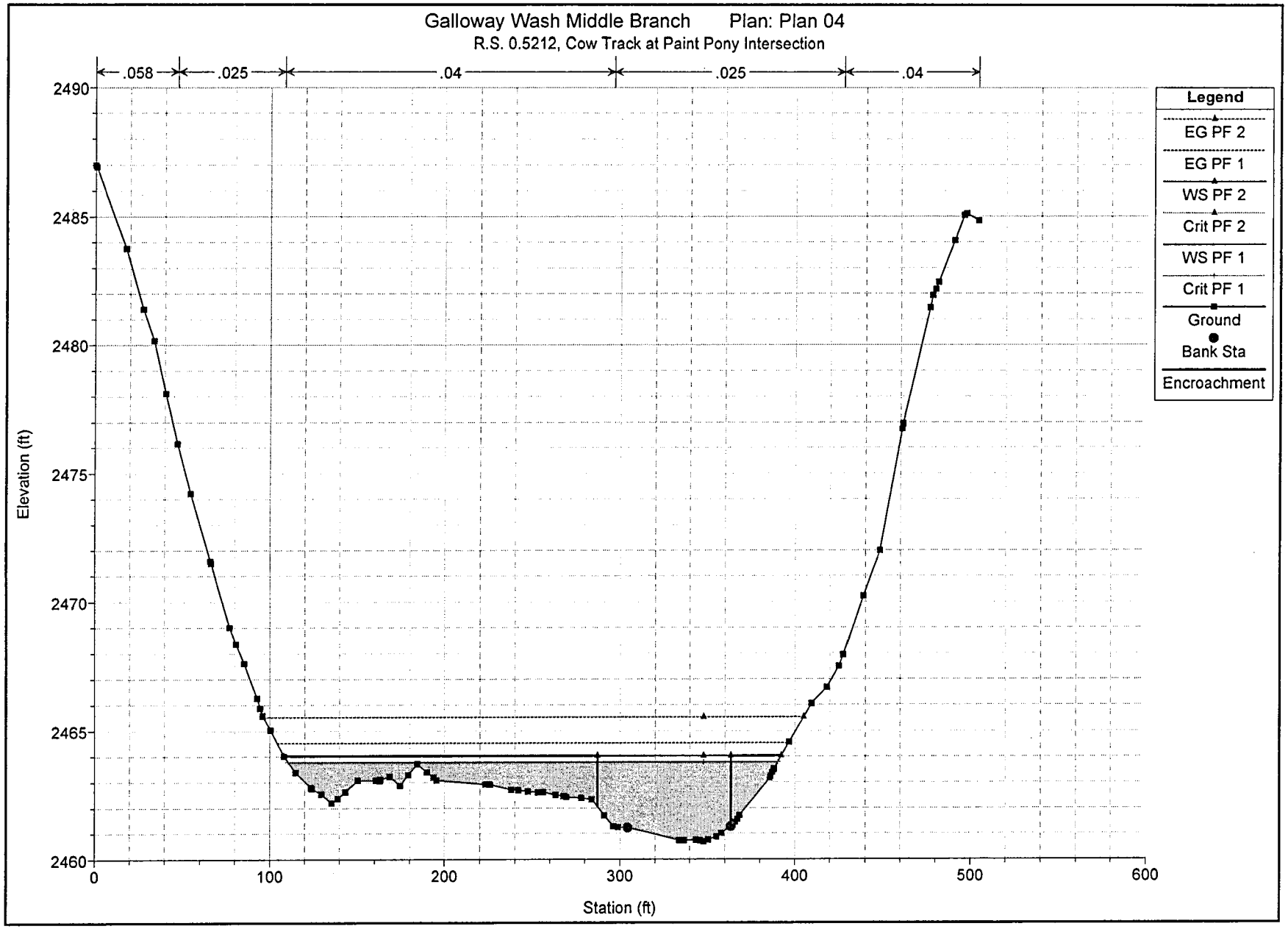

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.6777
.058
.032
.058
.025
.04
Elevation (ft)
2520
2510
2500
2490
2480
2470
0
100
200
300
400
500
Station (ft)
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment

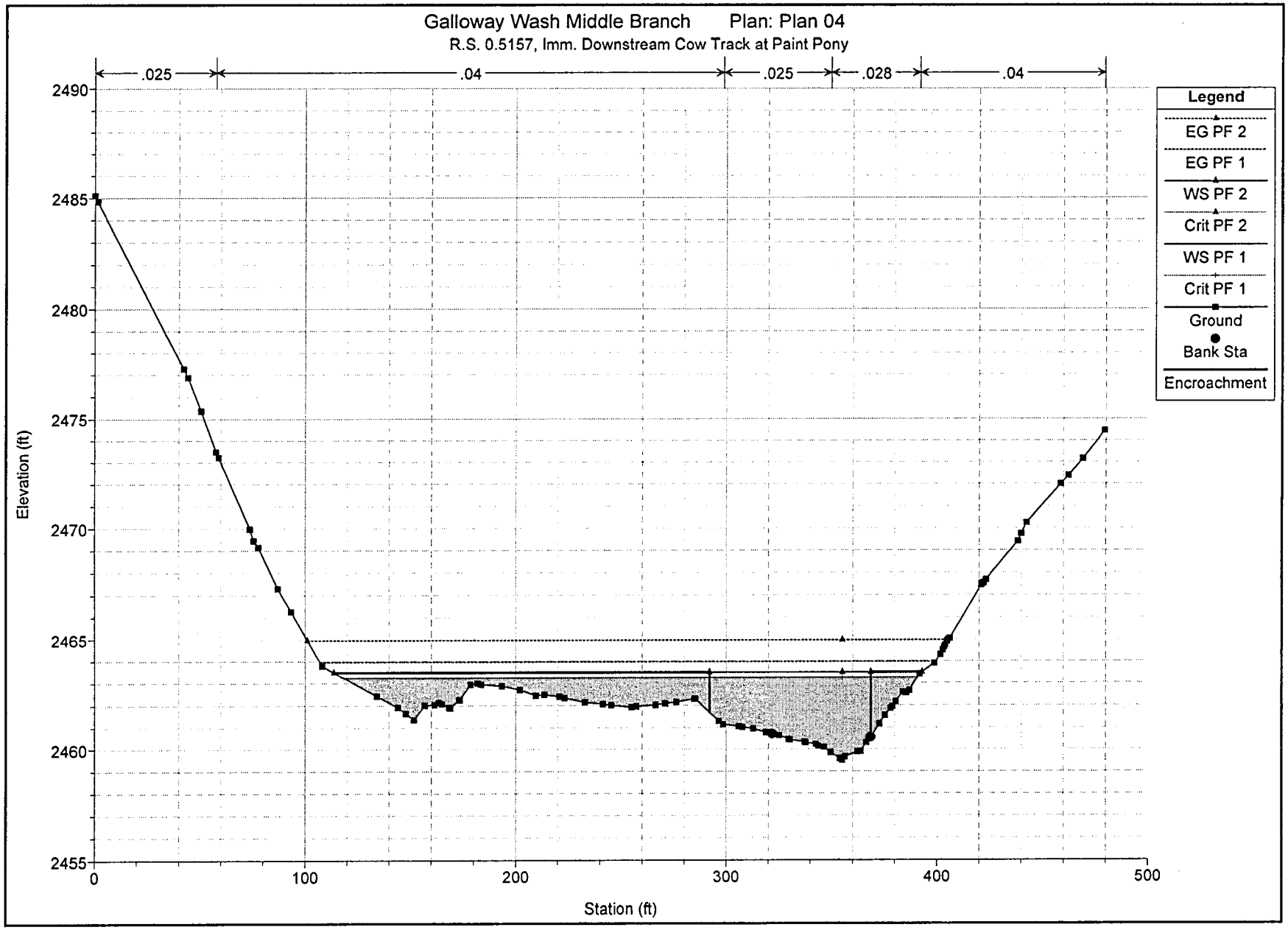

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.6468
.025
.058
.032
.058
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2505
2500
2495
2490
2485
2480
2475
2470
0
50
100
150
200
250
300
350
400
Station (ft)

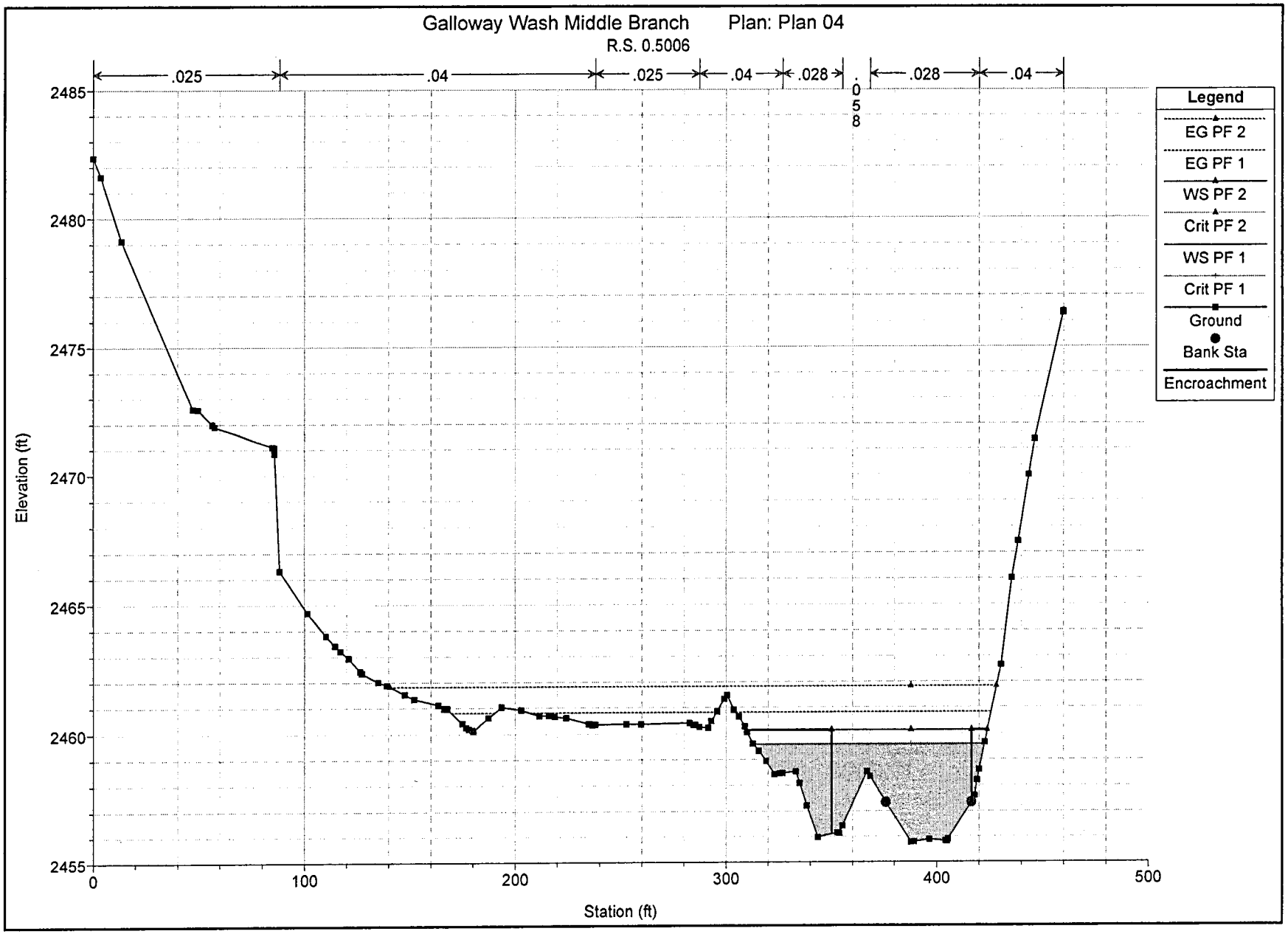

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.5954
.058
.025
.058
.028
.058
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2500
2495
2490
2485
2480
2475
2470
2465
0
100
200
300
400
500
Station (ft)

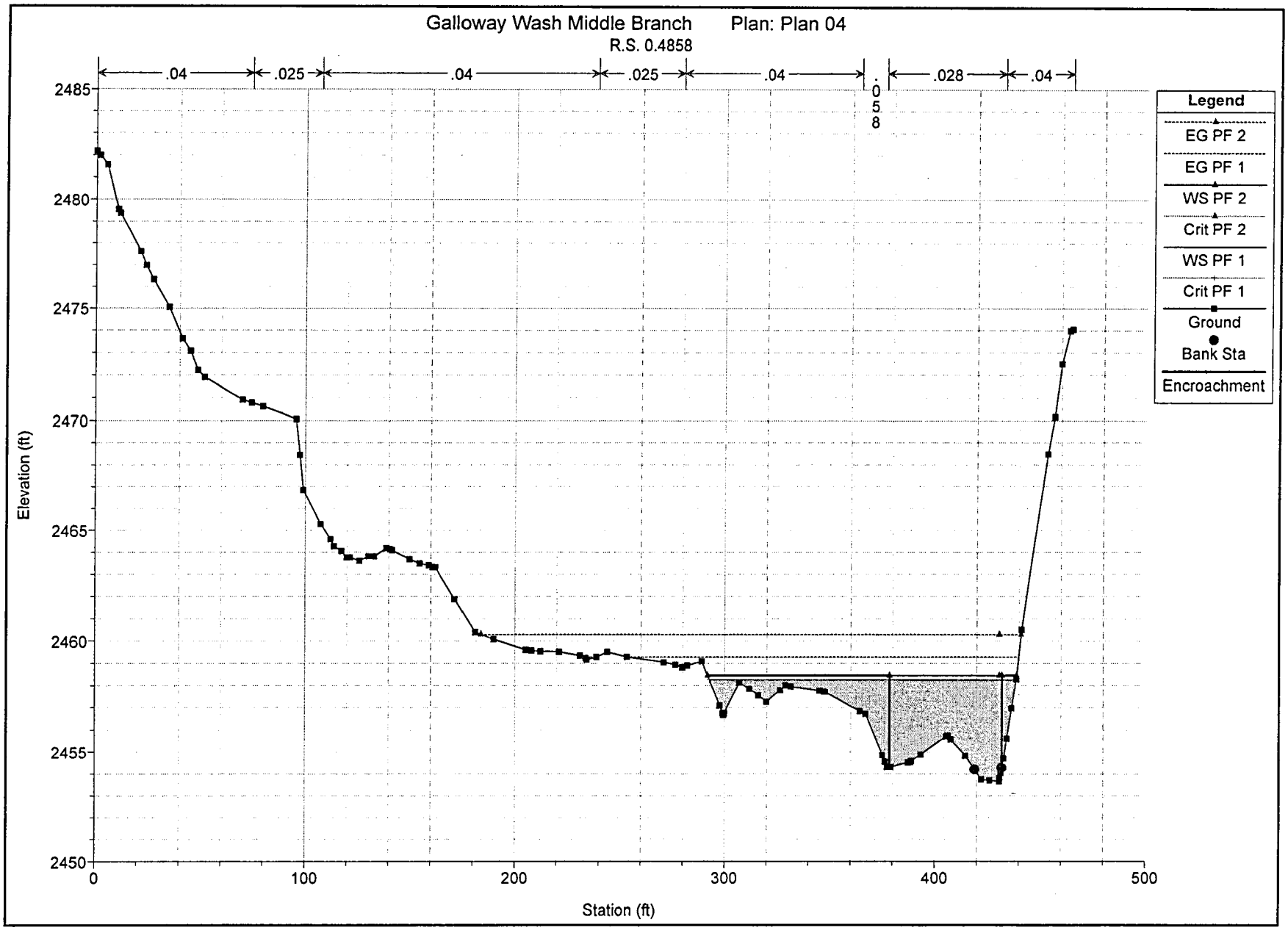

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.5644
.058
.025
.04
.058
.028
.058
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2495
2490
2485
2480
2475
2470
2465
0
100
200
300
400
Station (ft)

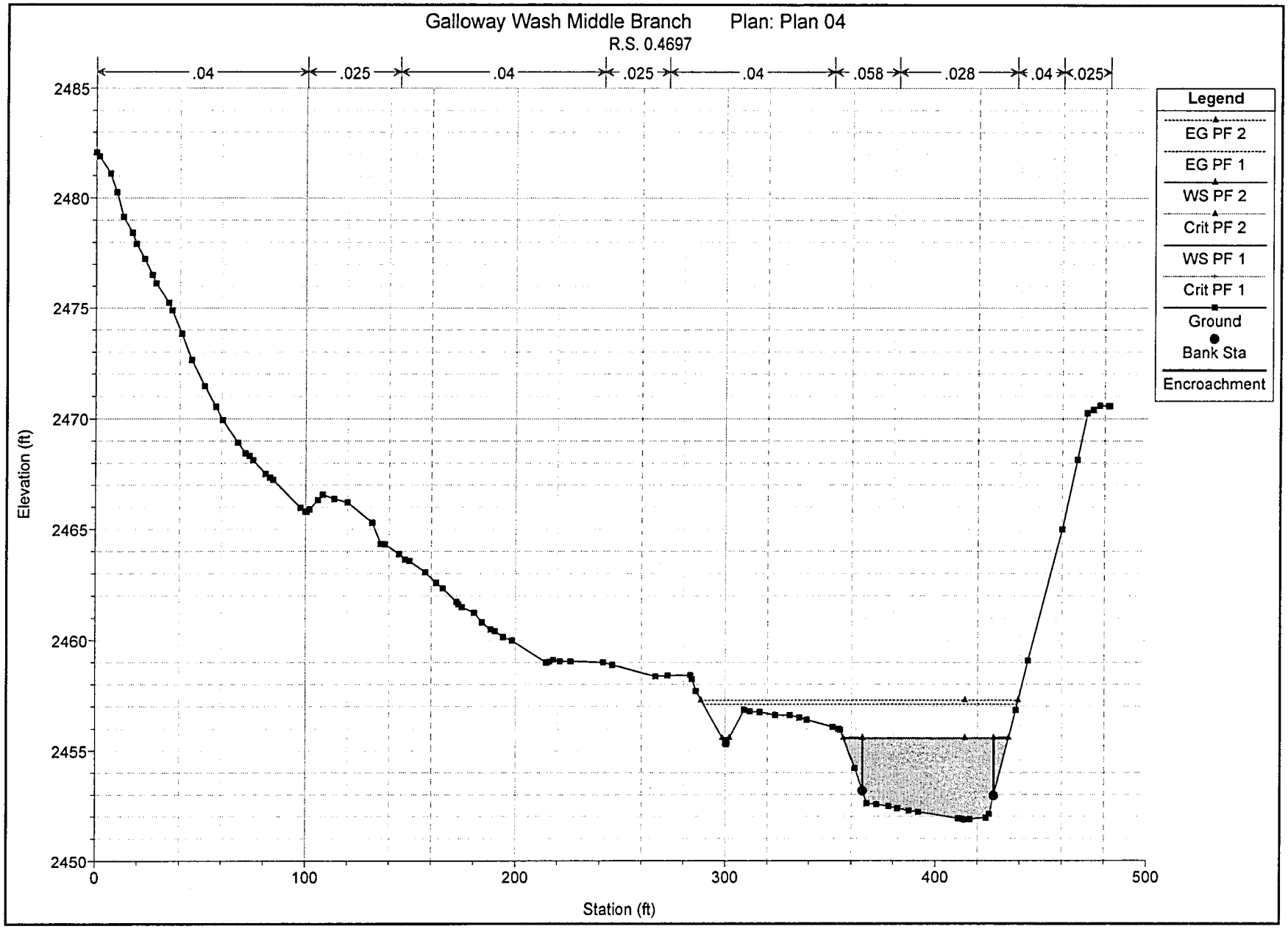

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.5272, Imm. Upstream of Cow Track at Paint Pony
.058
.025
.04
.025
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2490
2485
2480
2475
2470
2465
2460
0
100
200
300
400
500
Station (ft)

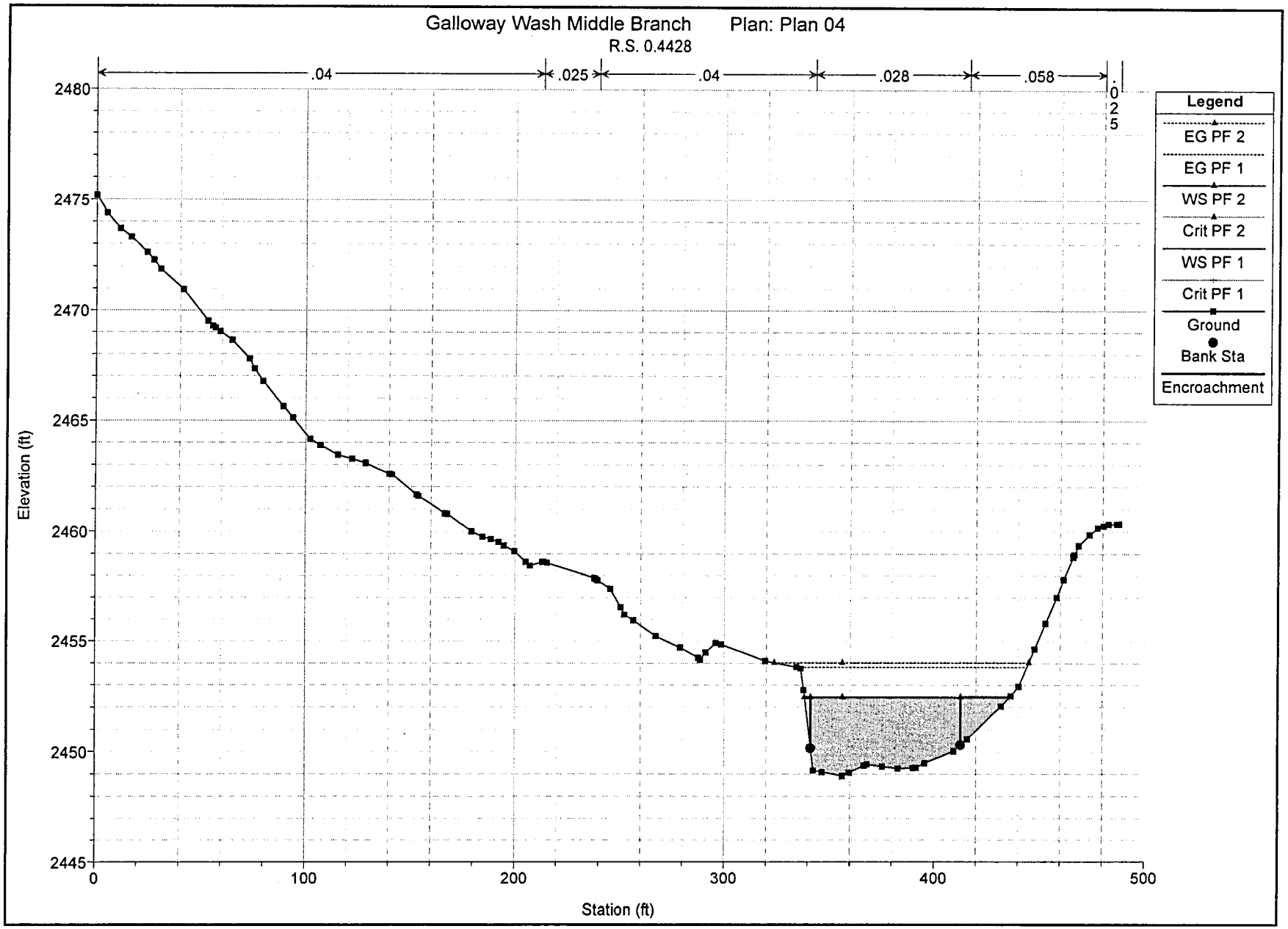

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.5212, Cow Track at Paint Pony Intersection
.058
.025
.04
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2490
2485
2480
2475
2470
2465
2460
0
100
200
300
400
500
600
Station (ft)

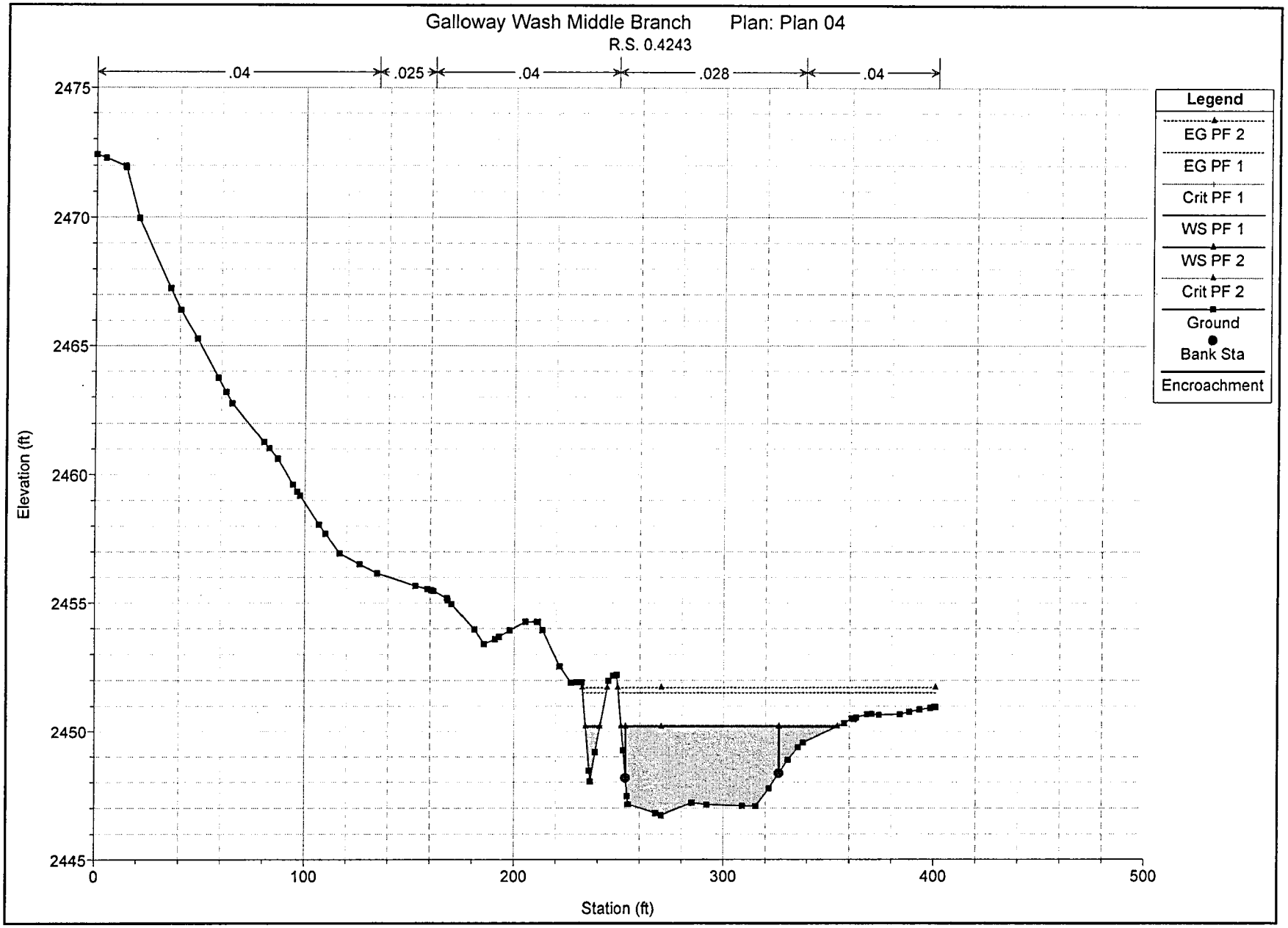

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.5157, Imm. Downstream Cow Track at Paint Pony
.025
.04
.025
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2490
2485
2480
2475
2470
2465
2460
2455
0
100
200
300
400
500
Station (ft)

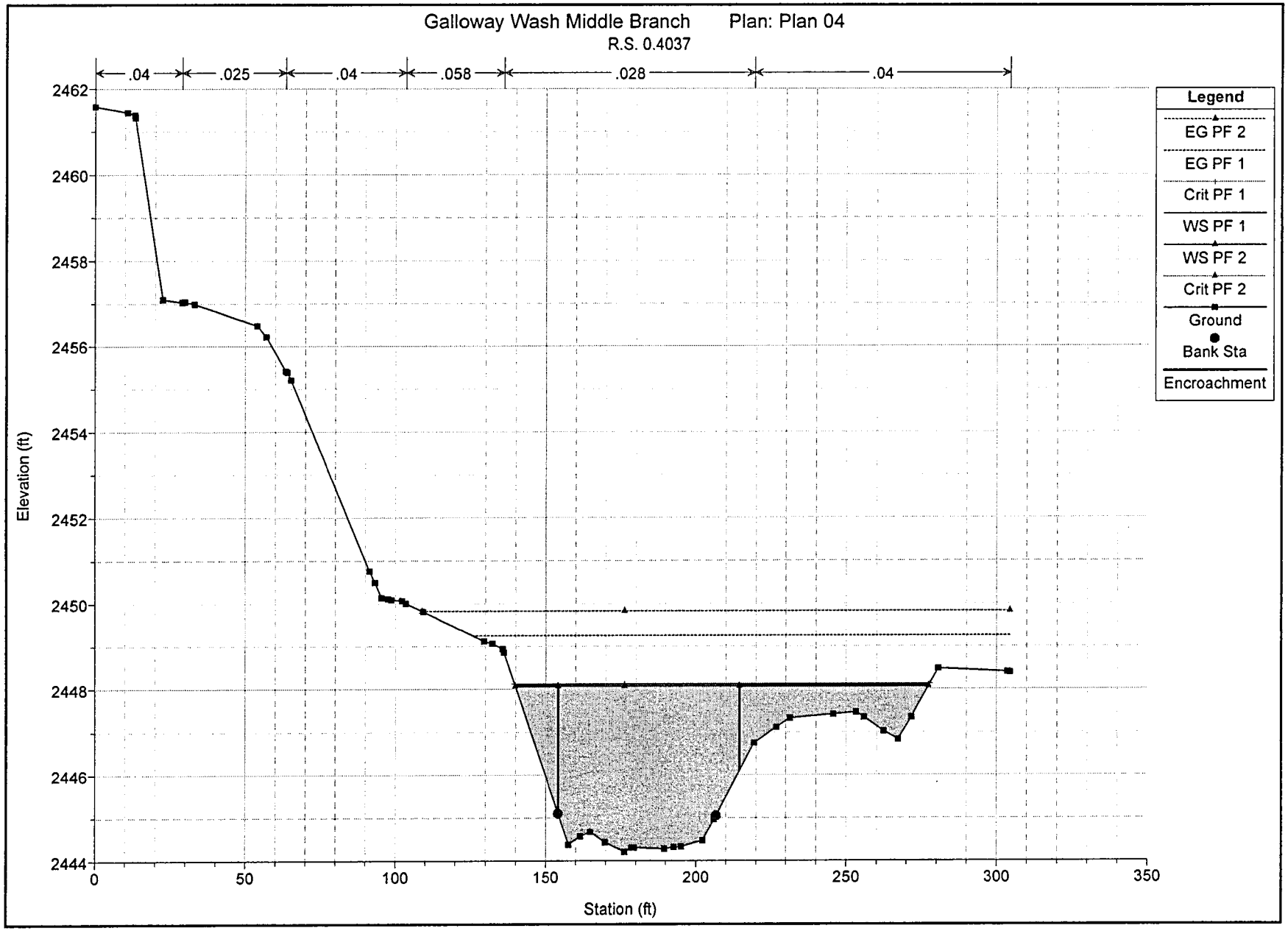

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.5006
.025
.04
.025
.04
.028
.058
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2485
2480
2475
2470
2465
2460
2455
0
100
200
300
400
500
Station (ft)

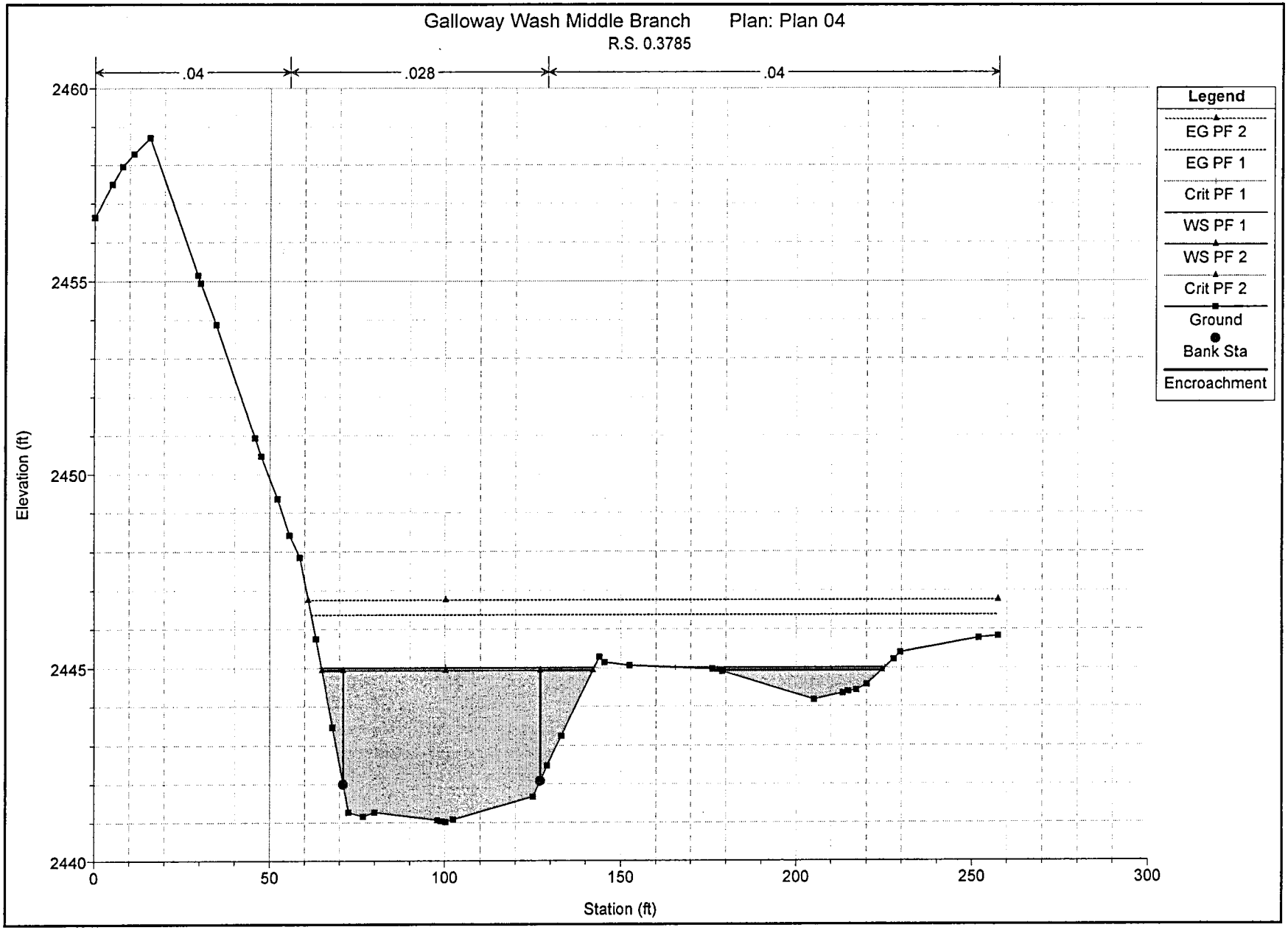

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.4858
.04
.025
.04
.025
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2485
2480
2475
2470
2465
2460
2455
2450
0
100
200
300
400
500
Station (ft)

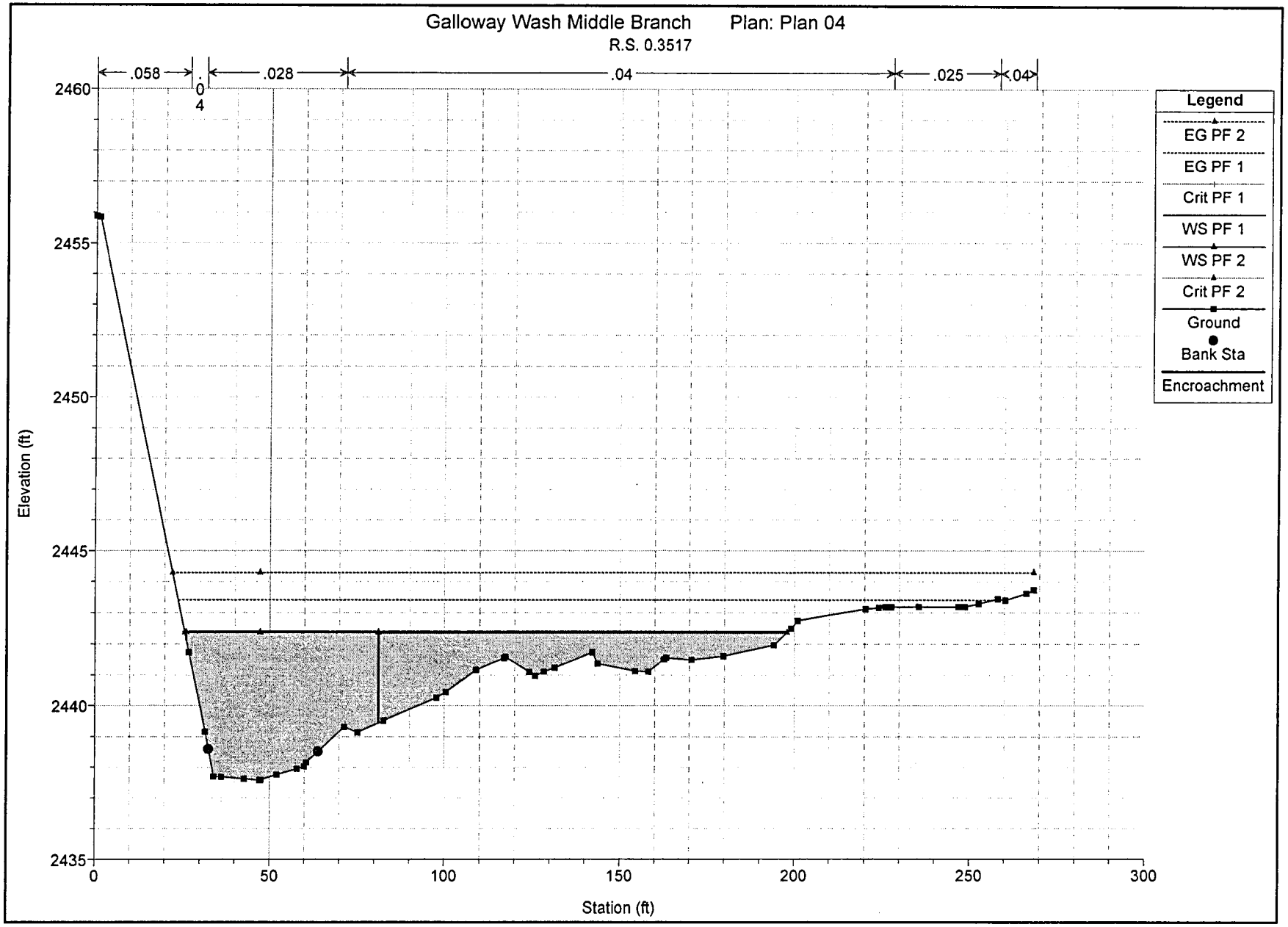

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.4697
.04
.025
.04
.025
.04
.058
.028
.04
.025
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2485
2480
2475
2470
2465
2460
2455
2450
0
100
200
300
400
500
Station (ft)


Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.4428
.04
.025
.04
.028
.058
0.25
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2480
2475
2470
2465
2460
2455
2450
2445
0
100
200
300
400
500
Station (ft)

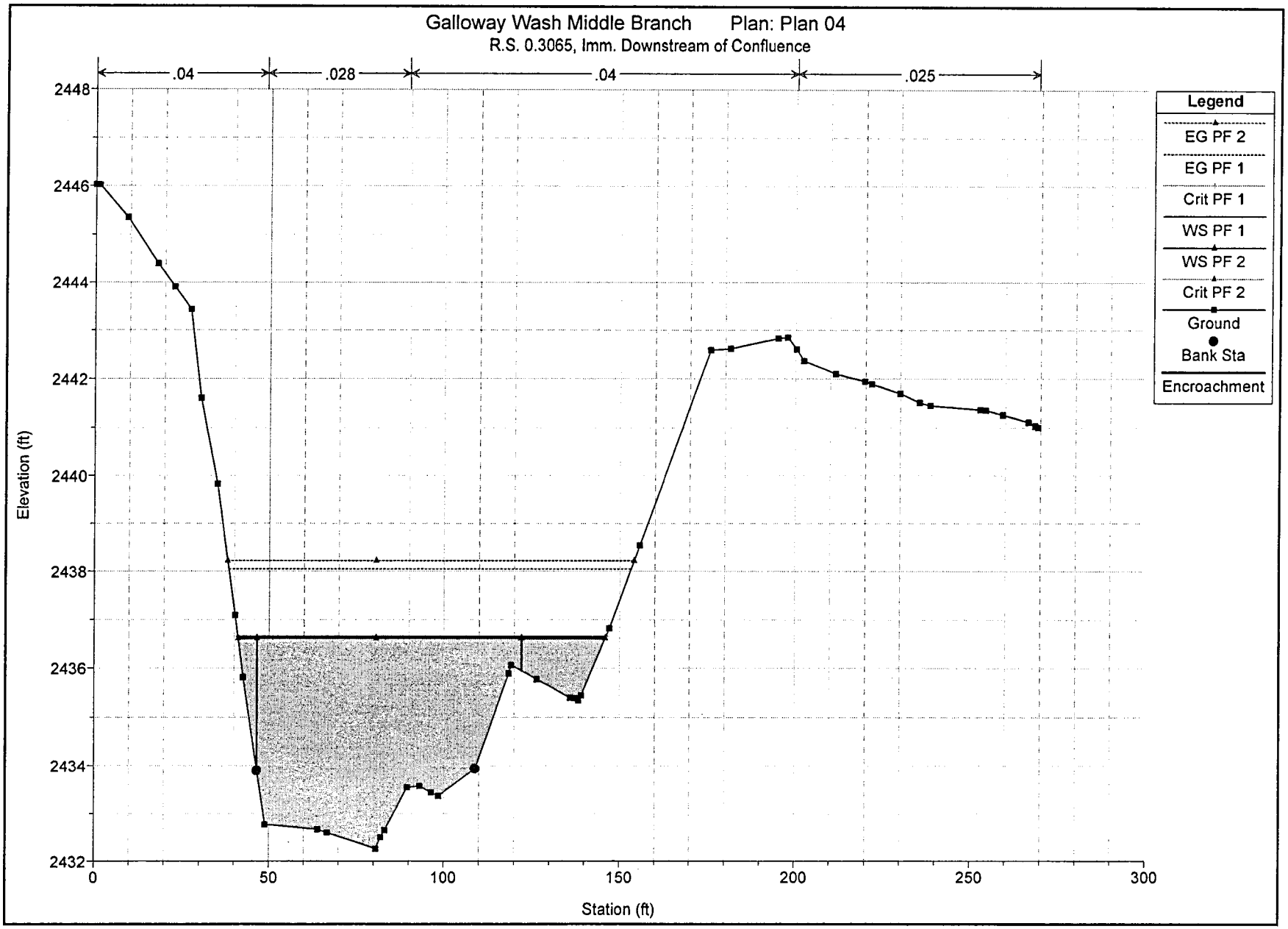

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.4243
.04
.025
.04
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2475
2470
2465
2460
2455
2450
2445
0
100
200
300
400
500
Station (ft)

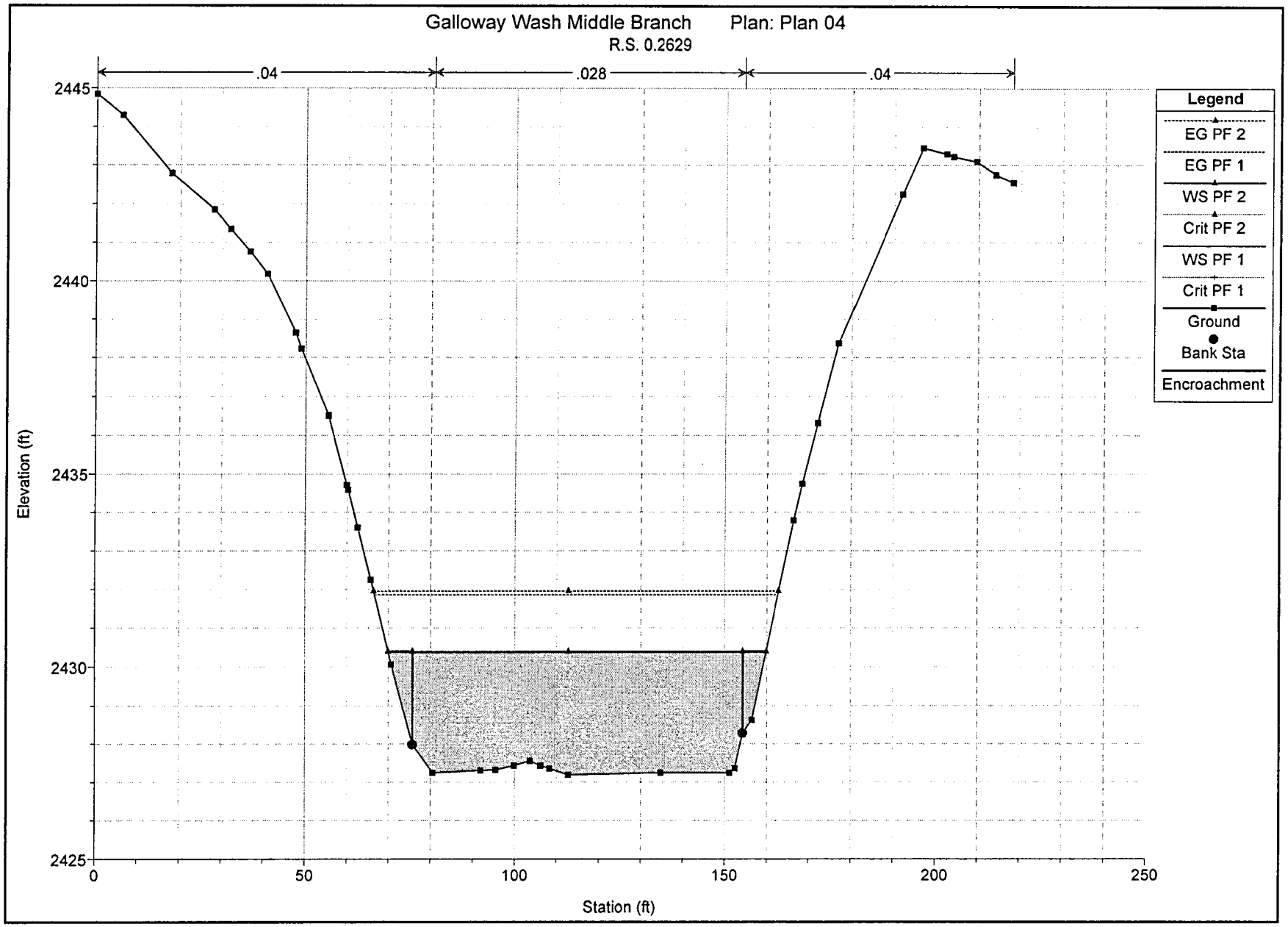

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.4037
.04
.025
.04
.058
.028
.04
Elevation (ft)
2462
2460
2458
2456
2454
2452
2450
2448
2446
2444
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment

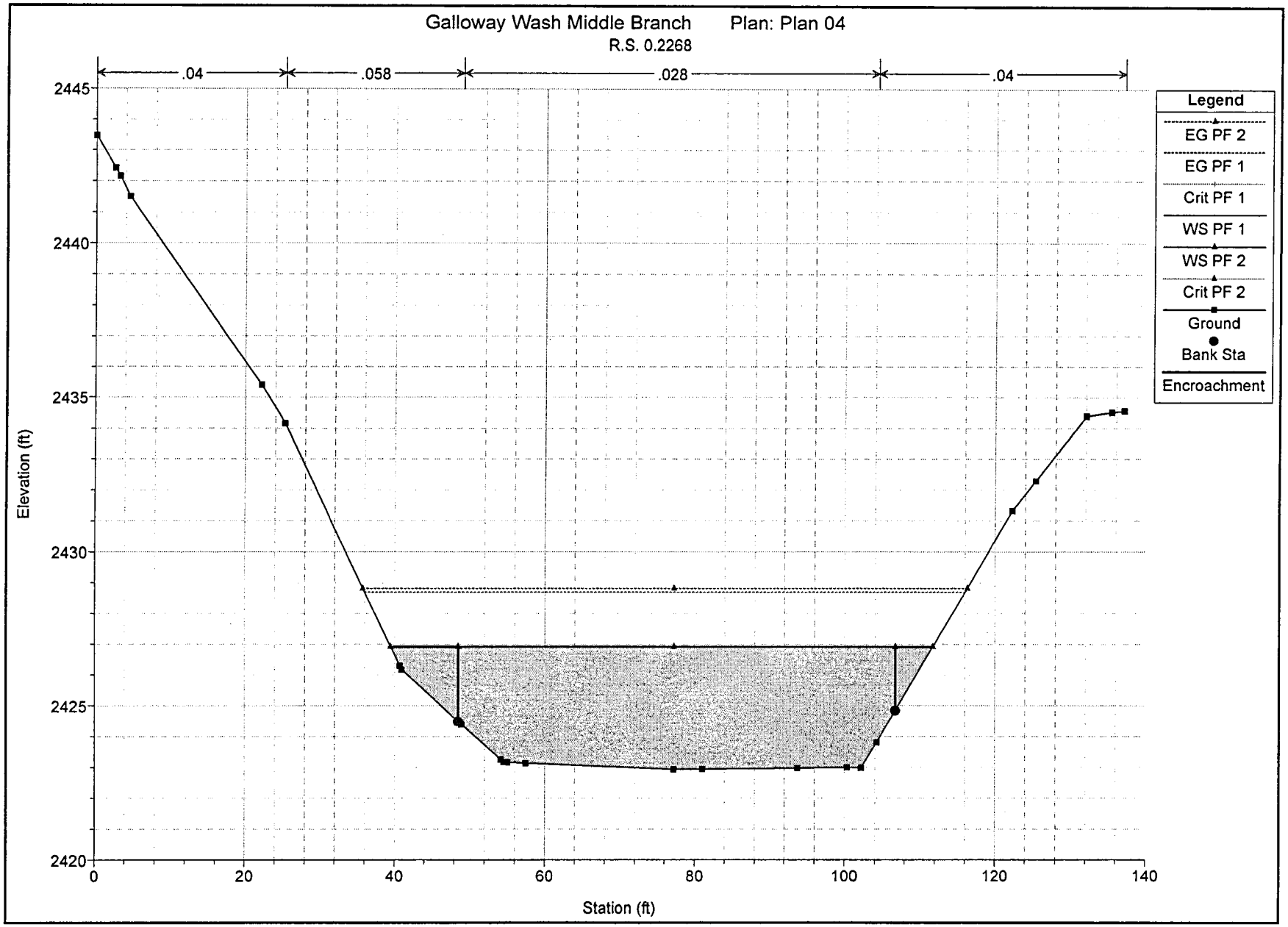

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.3785
.04
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2460
2455
2450
2445
2440
0
50
100
150
200
250
300
Station (ft)

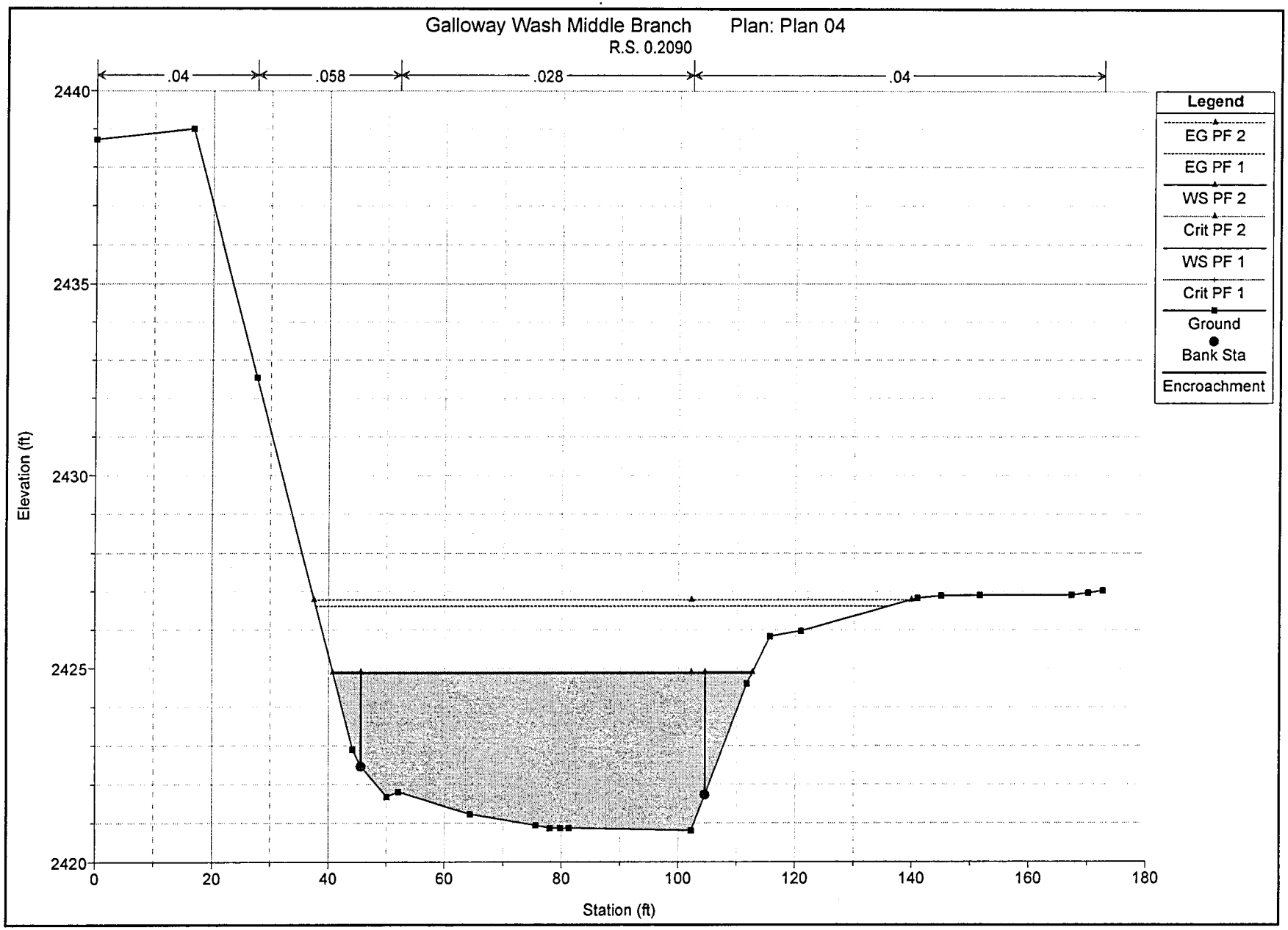

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.3517
.058
.04
.028
.04
.025
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2460
2455
2450
2445
2440
2435
0
50
100
150
200
250
300
Station (ft)

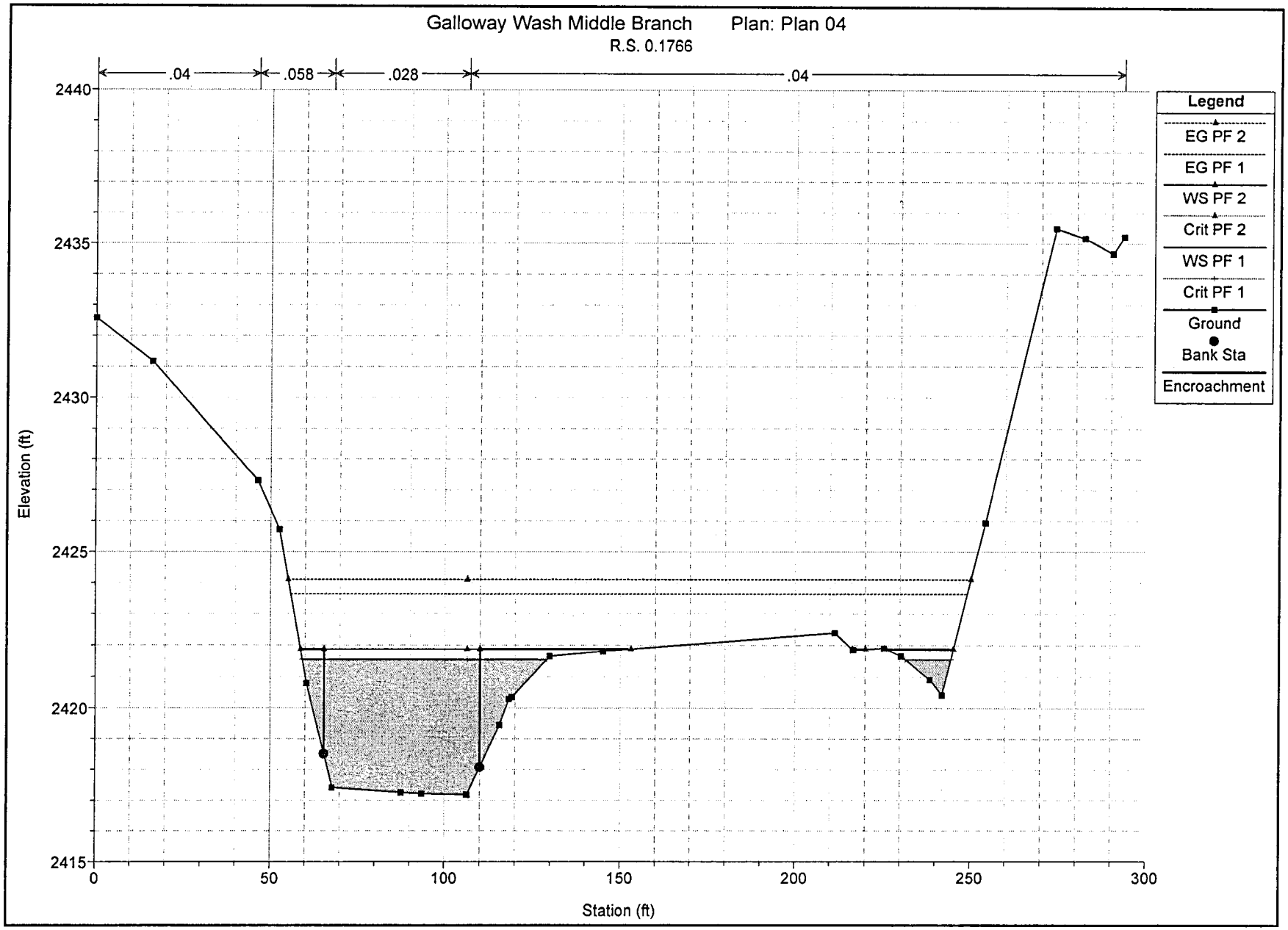
GalMidBrnch Comb

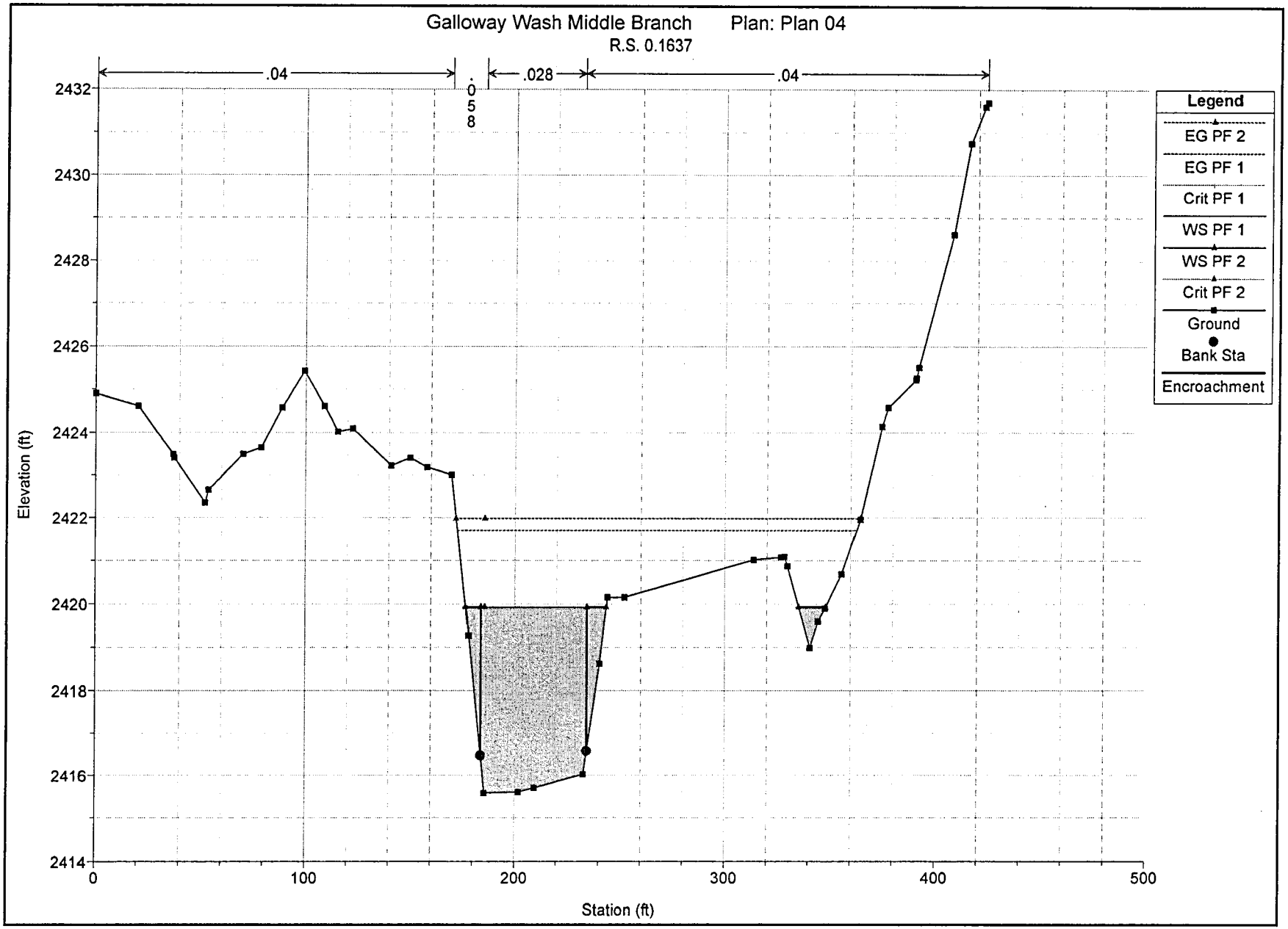

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.3065, Imm. Downstream of Confluence
.04
.028
.04
.025
Elevation (ft)
2448
2446
2444
2442
2440
2438
2436
2434
2432
0
50
100
150
200
250
300
Station (ft)
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment

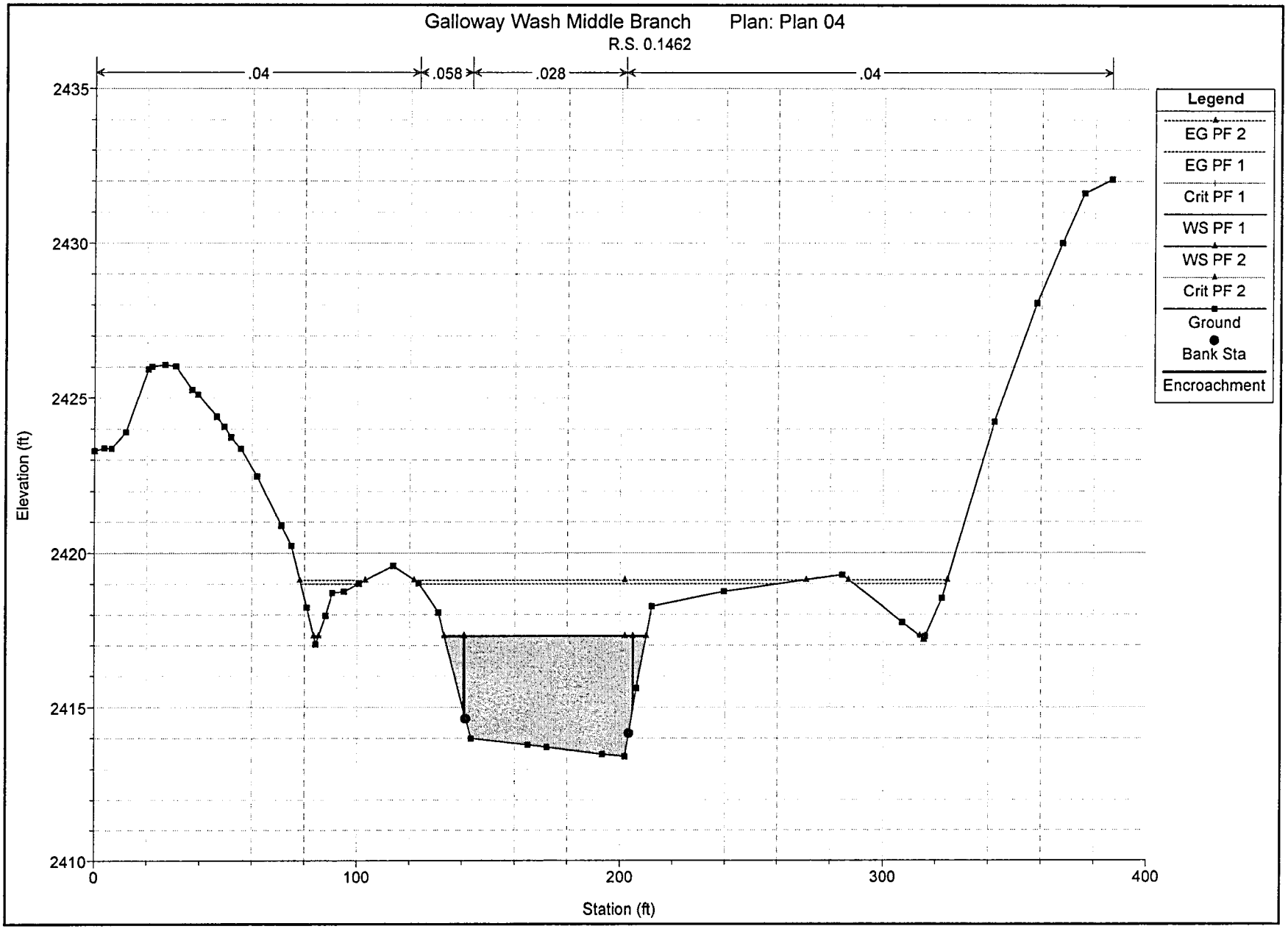

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.2629
.04
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2445
2440
2435
2430
2425
0
50
100
150
200
250
Station (ft)

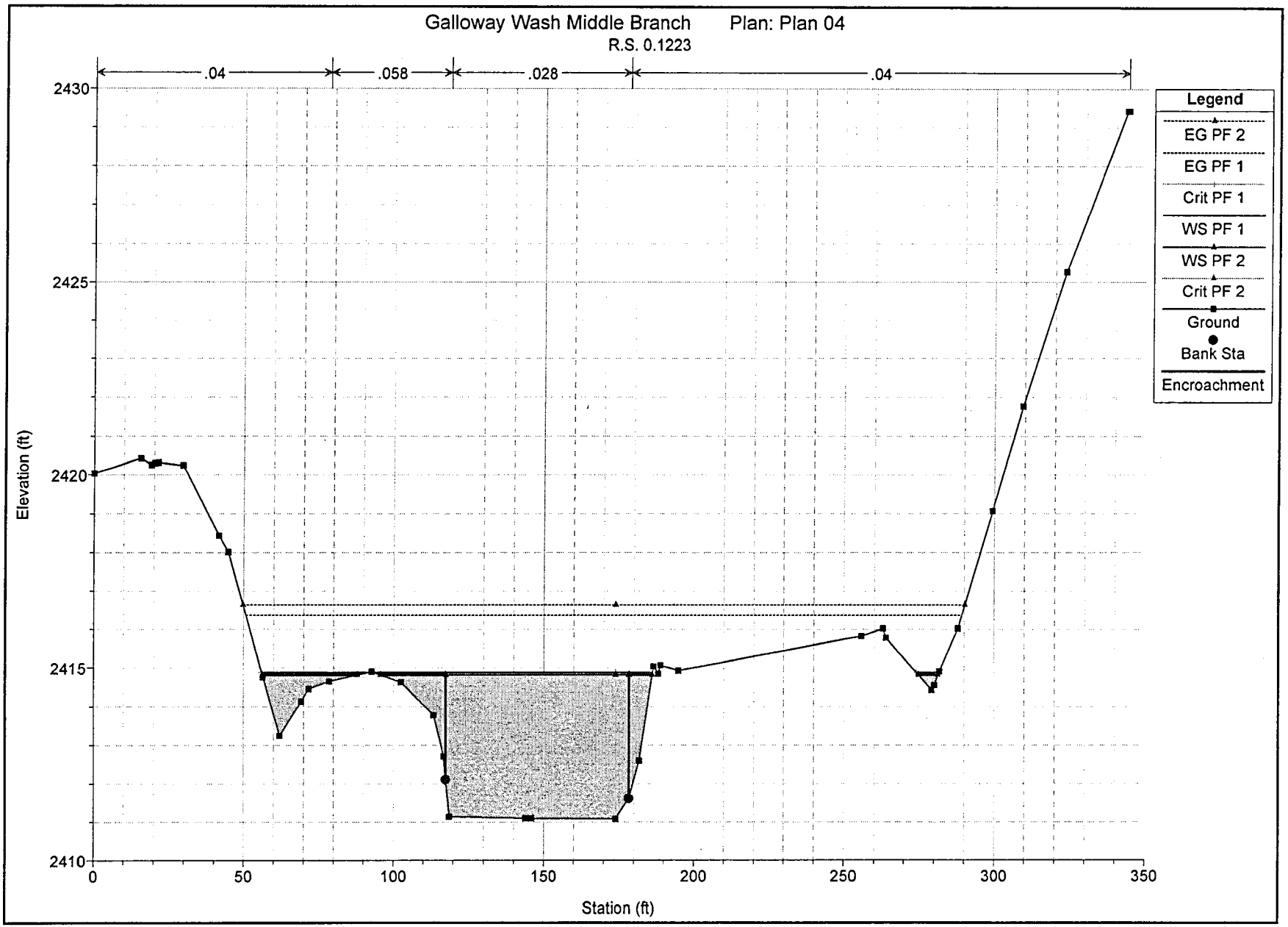

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.2268
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2445
2440
2435
2430
2425
2420
0
20
40
60
80
100
120
140
Station (ft)

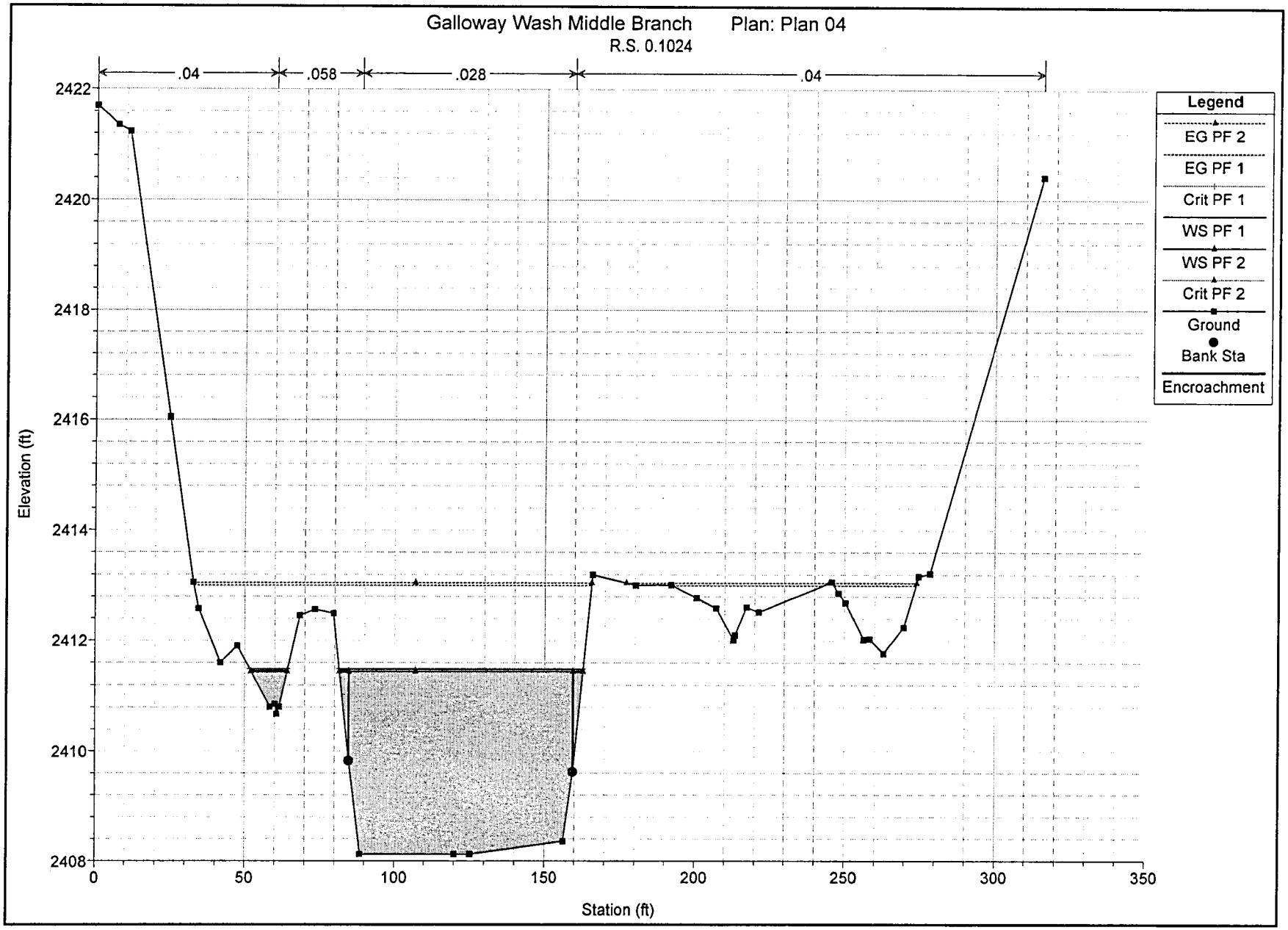

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.2090
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2440
2435
2430
2425
2420
0
20
40
60
80
100
120
140
160
180
Station (ft)

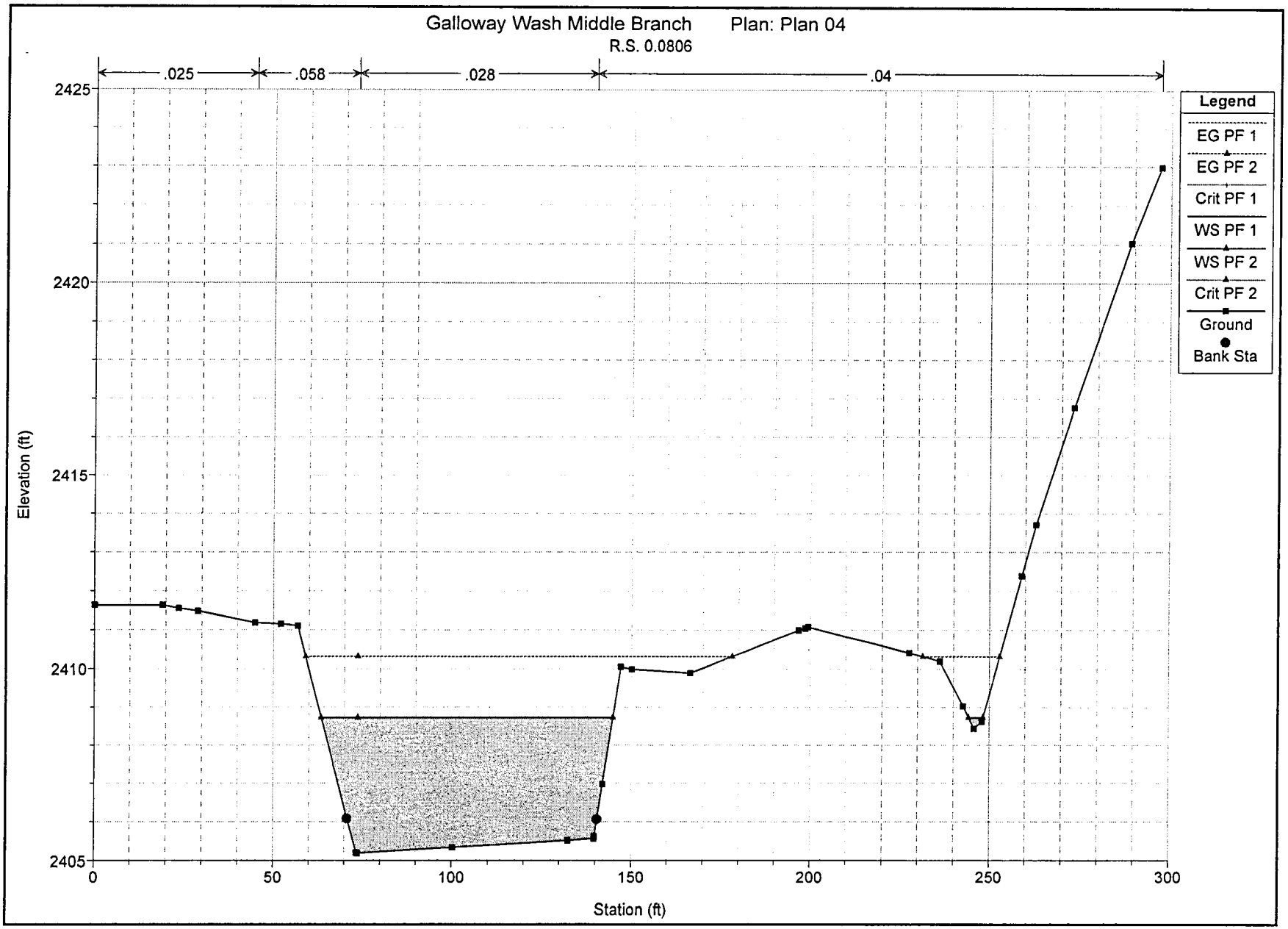

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.1766
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2440
2435
2430
2425
2420
2415
0
50
100
150
200
250
300
Station (ft)

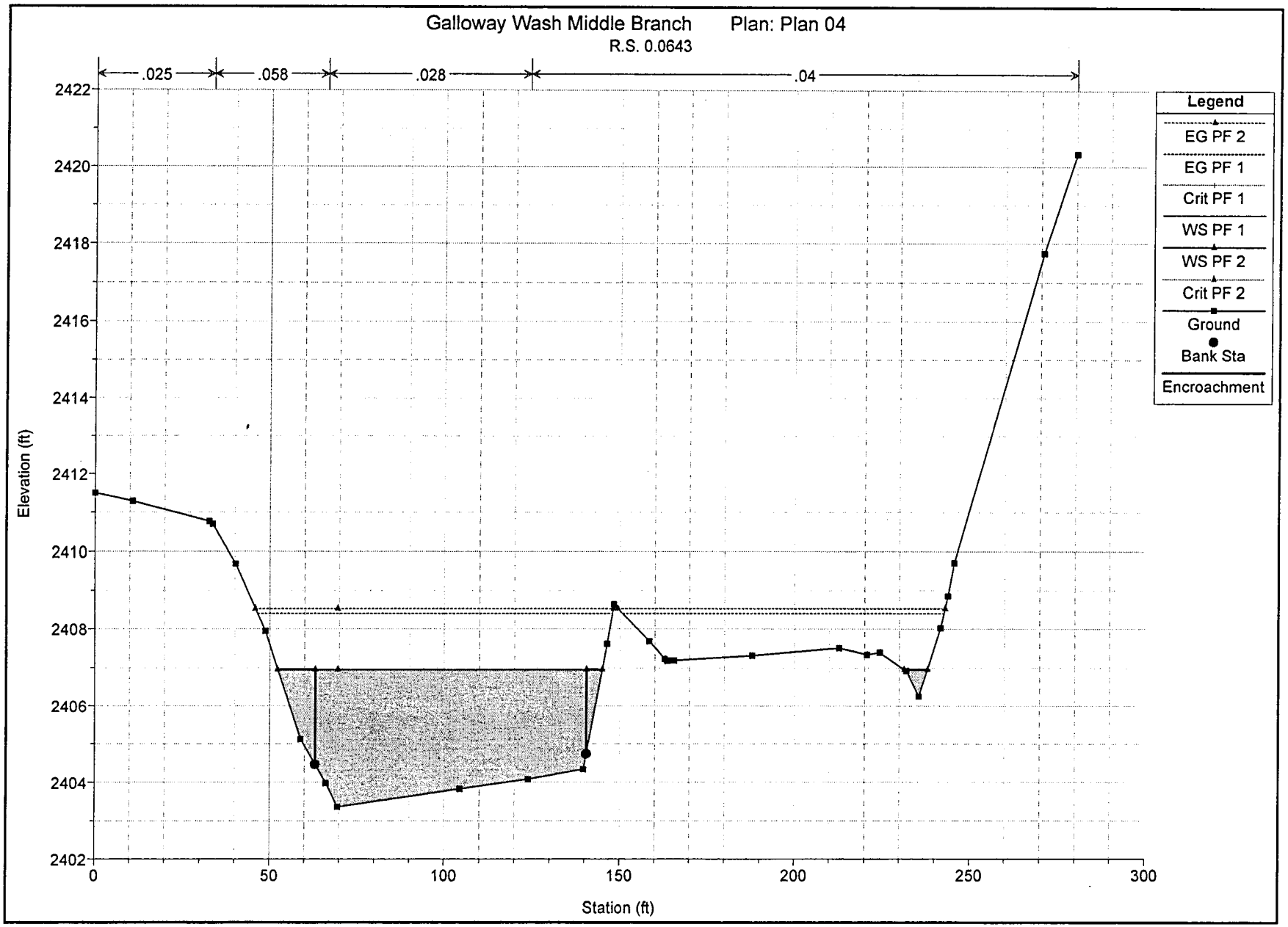

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.1637
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2432
2430
2428
2426
2424
2422
2420
2418
2416
2414
0
100
200
300
400
500
Station (ft)

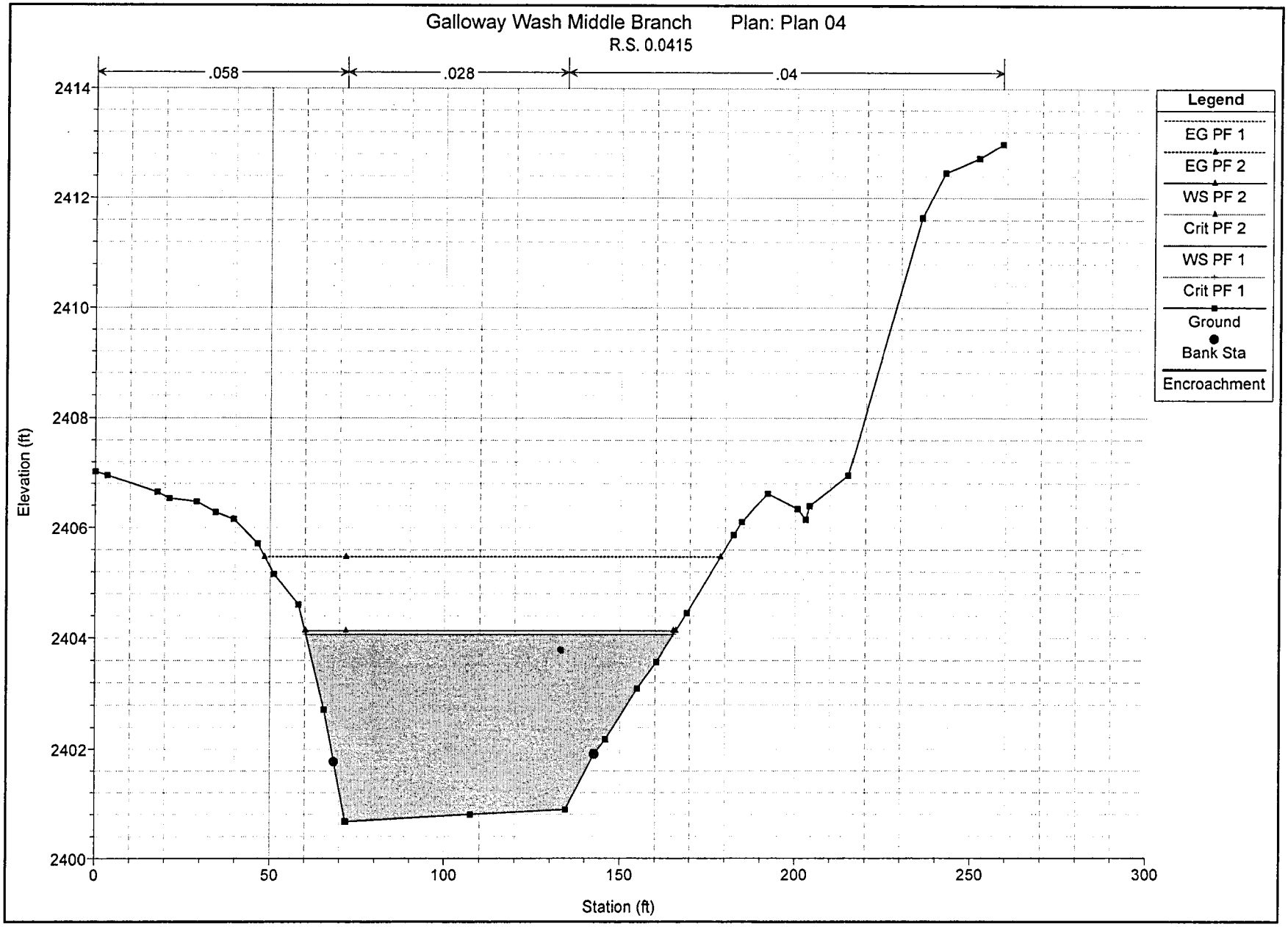

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.1462
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2435
2430
2425
2420
2415
2410
0
100
200
300
400
Station (ft)

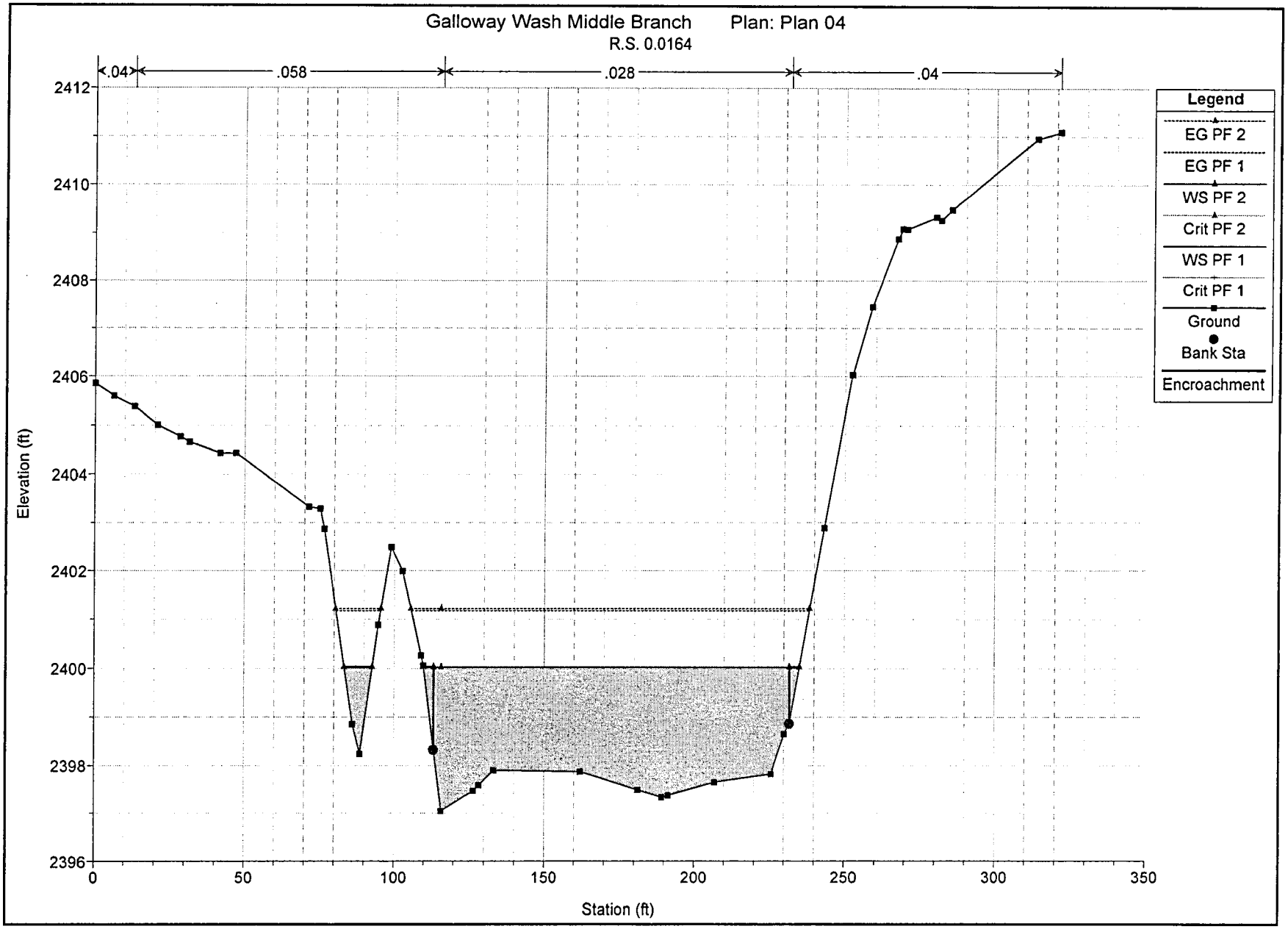

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.1223
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2430
2425
2420
2415
2410
0
50
100
150
200
250
300
350
Station (ft)

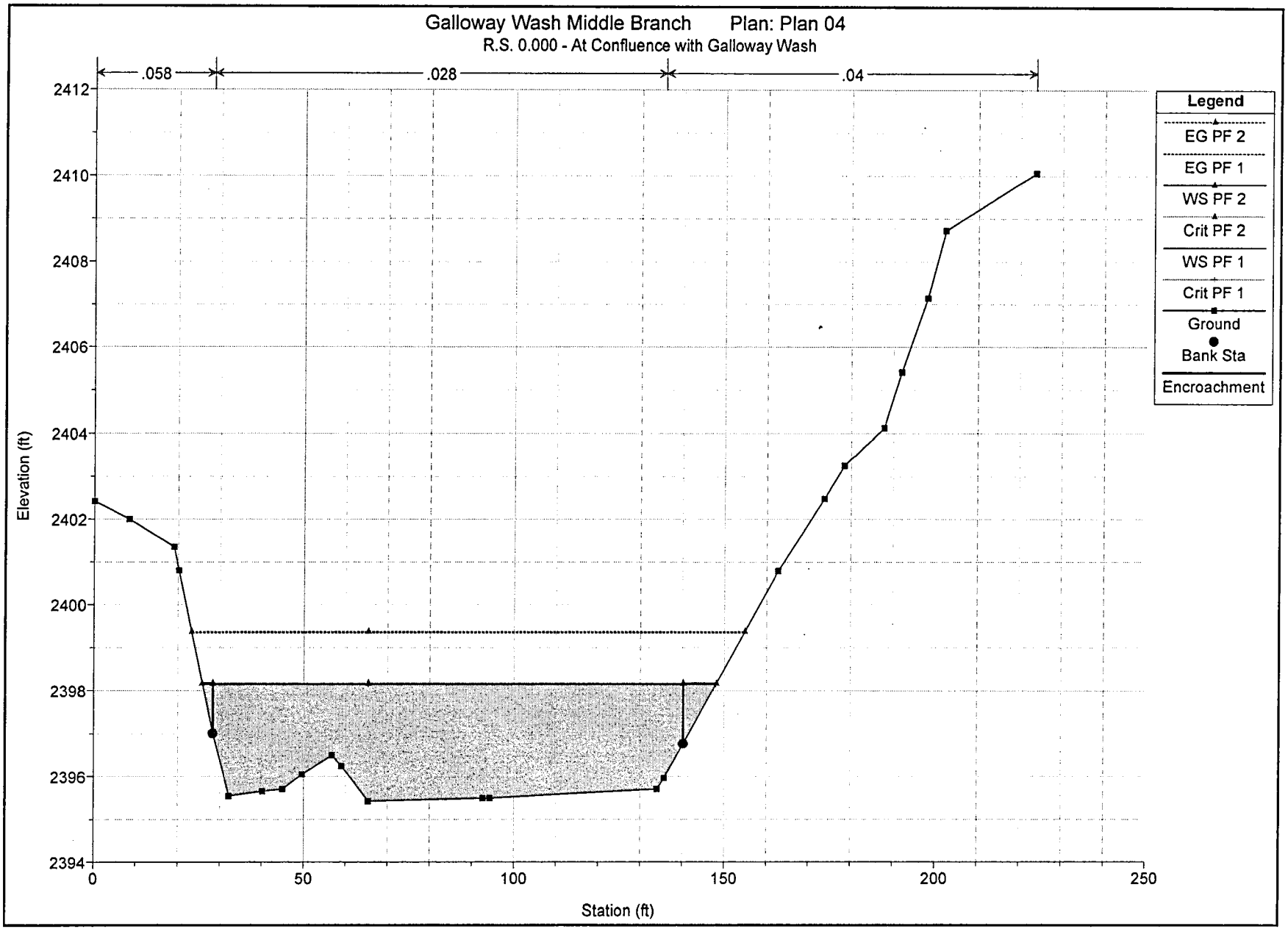

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.1024
.04
.058
.028
.04
Elevation (ft)
2422
2420
2418
2416
2414
2412
2410
2408
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment


Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.0806
.025
.058
.028
.04
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Elevation (ft)
2425
2420
2415
2410
2405
0
50
100
150
200
250
300
Station (ft)

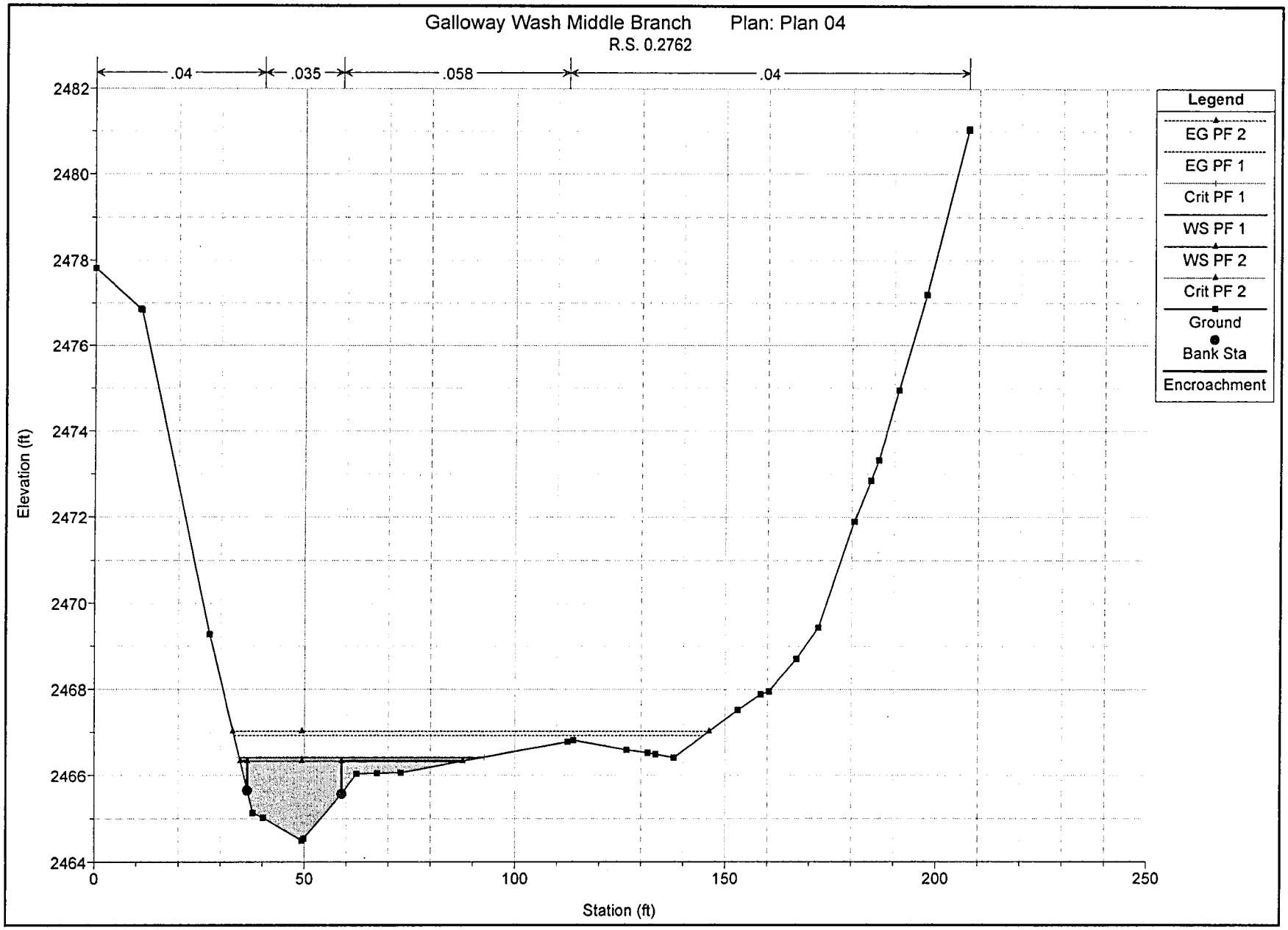

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.0643
.025
.058
.028
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2422
2420
2418
2416
2414
2412
2410
2408
2406
2404
2402
0
50
100
150
200
250
300
Station (ft)

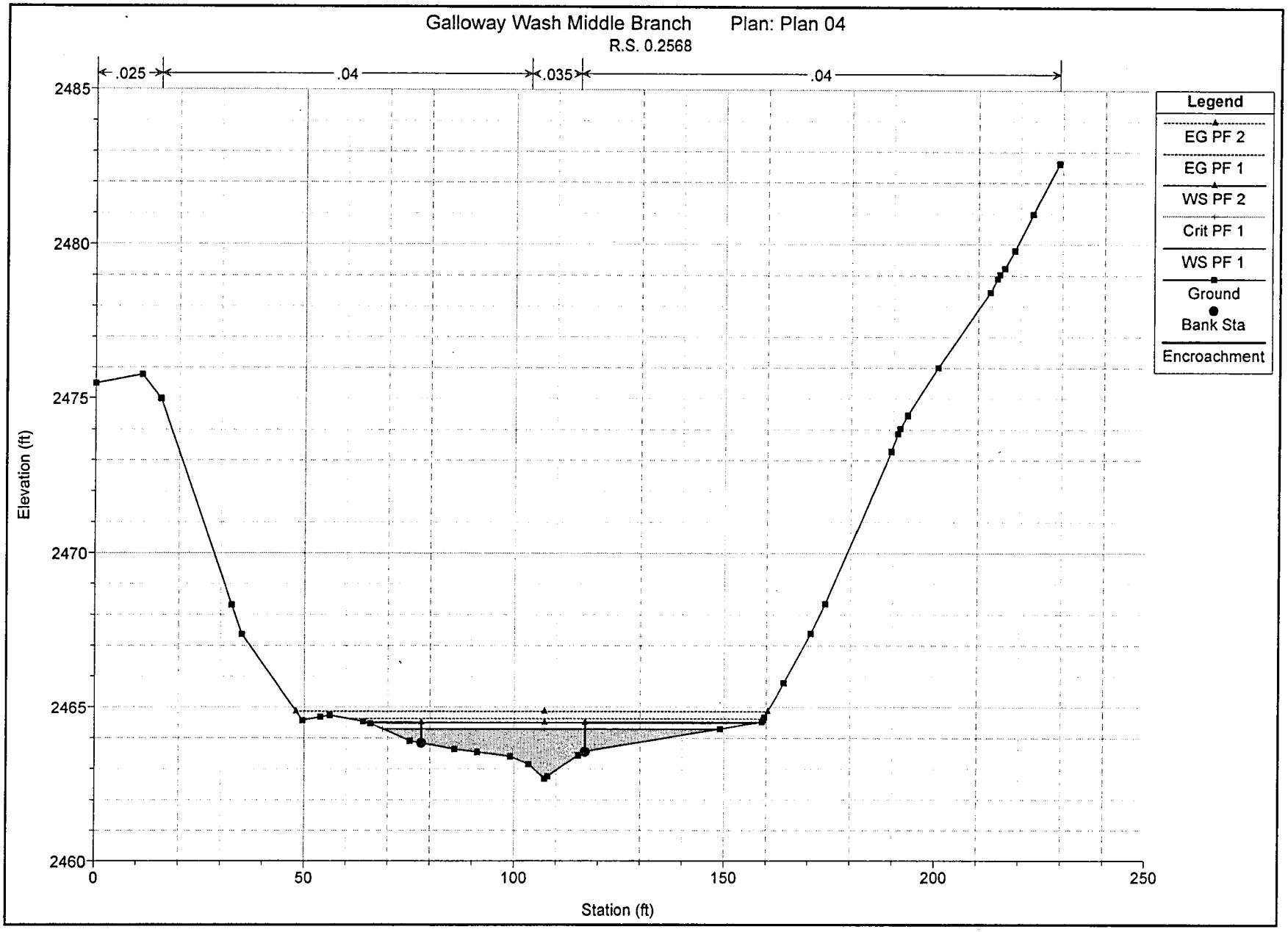

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.0415
.058
.028
.04
Elevation (ft)
Station (ft)
2414
2412
2410
2408
2406
2404
2402
2400
0
50
100
150
200
250
300
Legend
EG PF 1
EG PF 2
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment

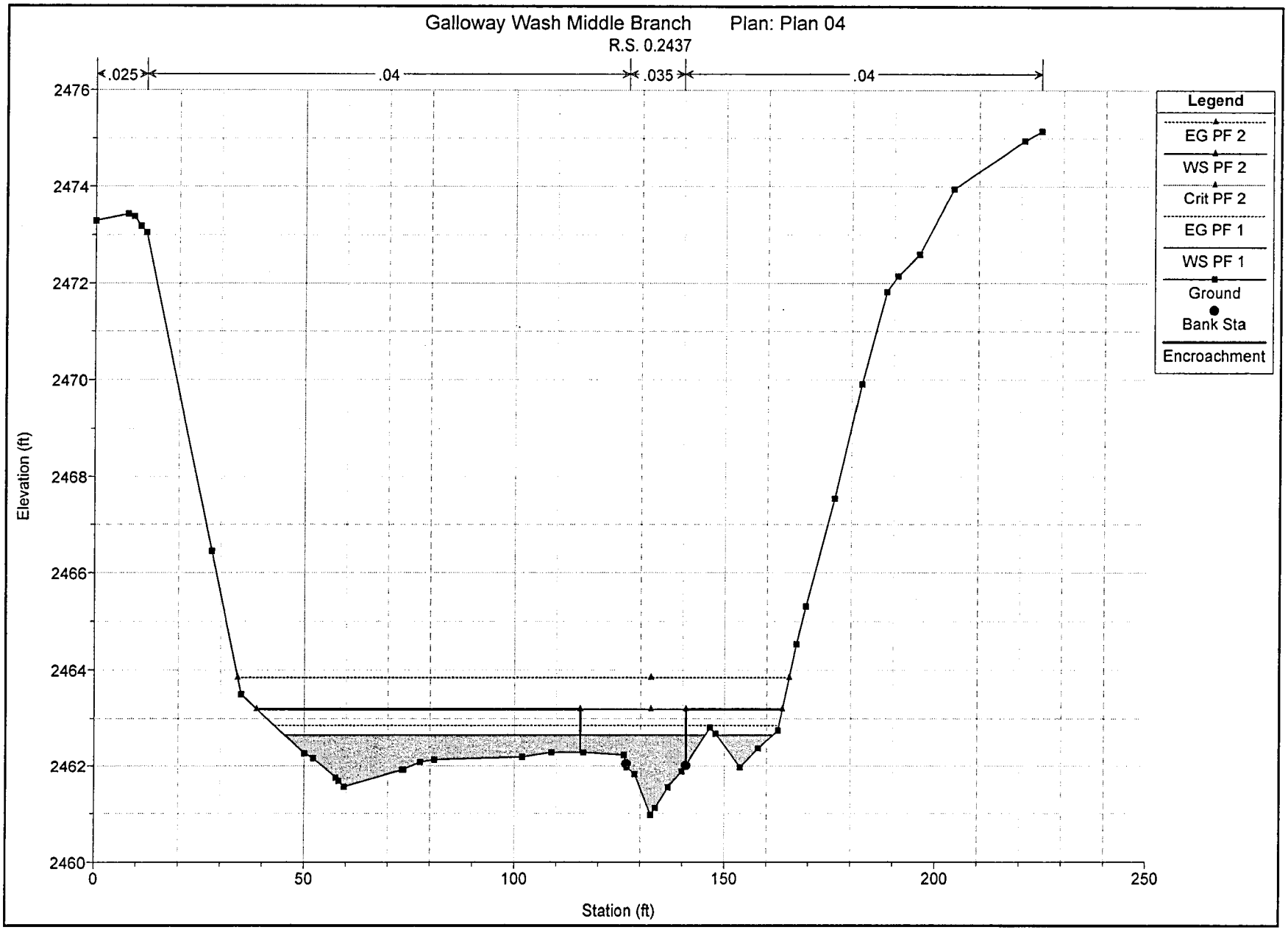

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.0164
.04
.058
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2412
2410
2408
2406
2404
2402
2400
2398
2396
0
50
100
150
200
250
300
350
Station (ft)

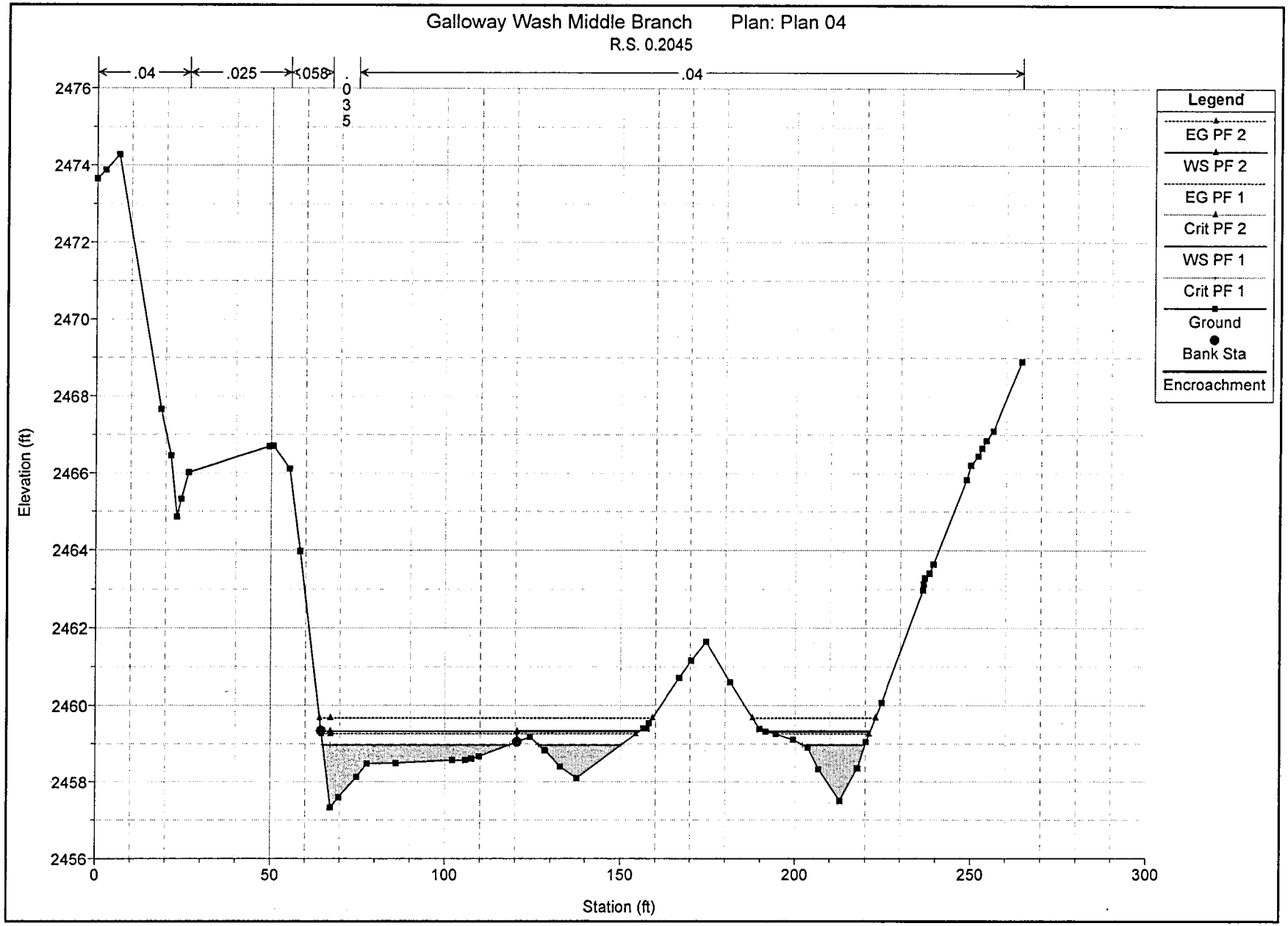

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.000 - At Confluence with Galloway Wash
.058
.028
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2412
2410
2408
2406
2404
2402
2400
2398
2396
2394
0
50
100
150
200
250
Station (ft)

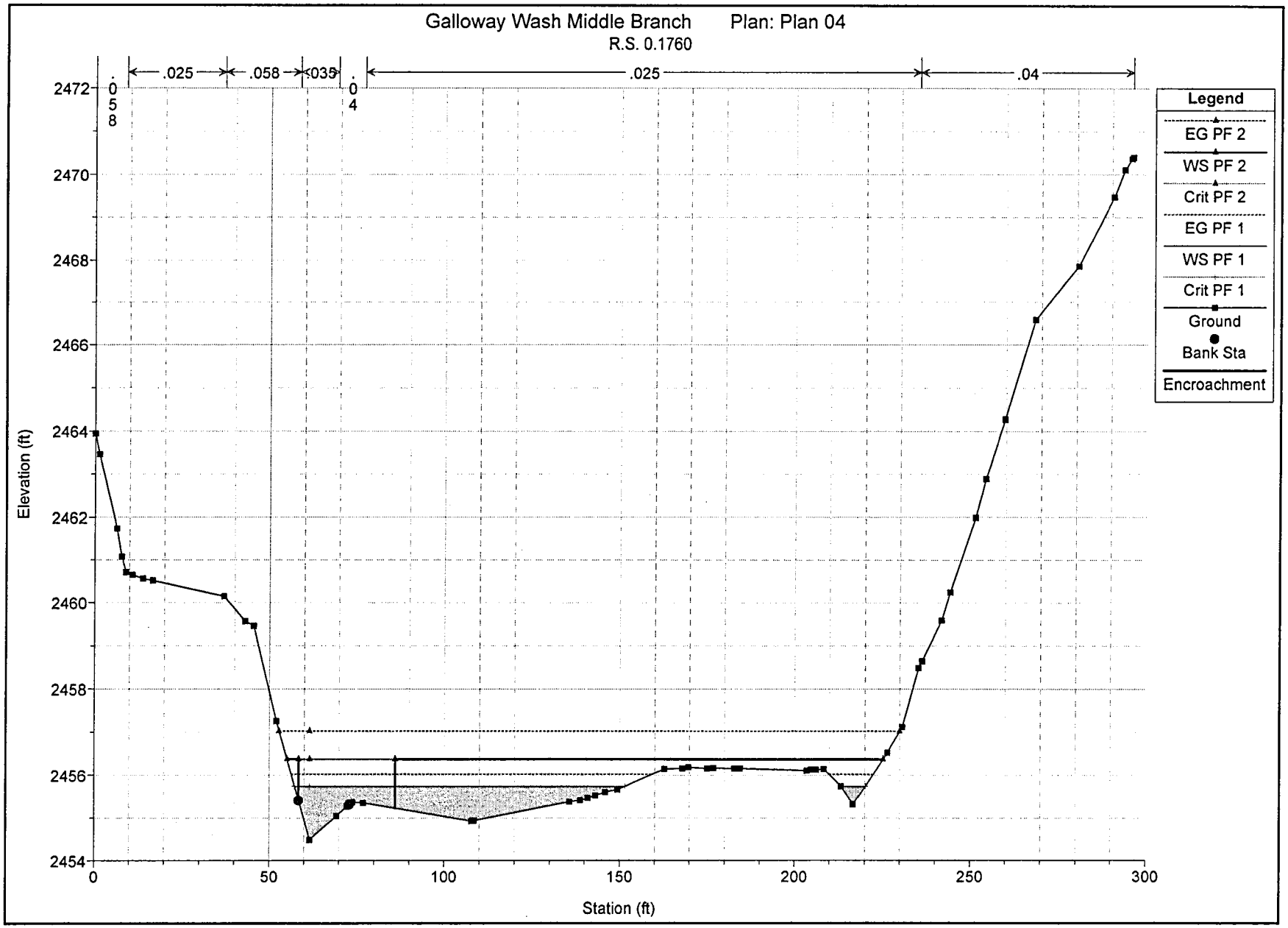
GalMidBrnch Trib

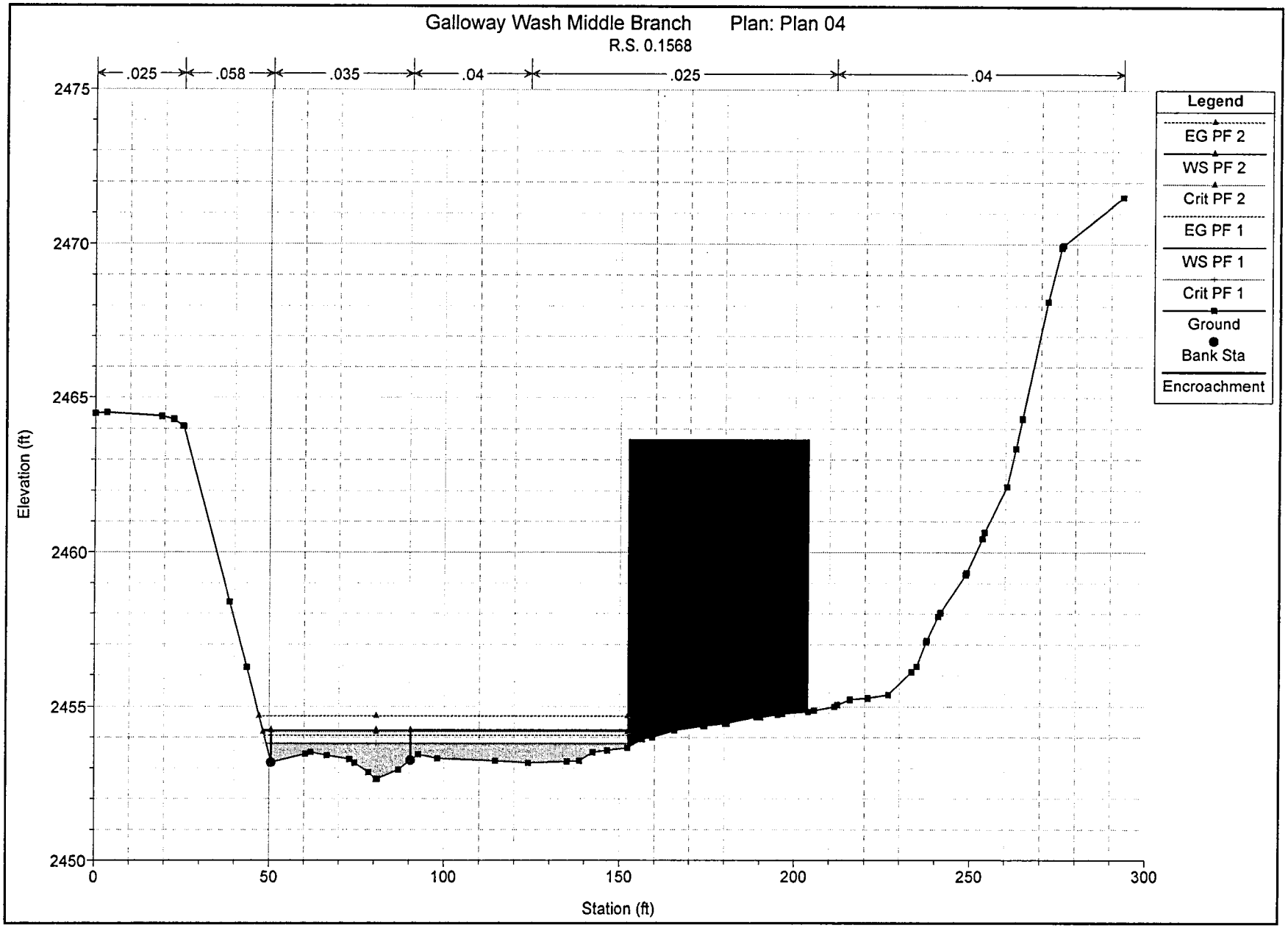

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.2762
.04
.035
.058
.04
Legend
EG PF 2
EG PF 1
Crit PF 1
WS PF 1
WS PF 2
Crit PF 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2482
2480
2478
2476
2474
2472
2470
2468
2466
2464
0
50
100
150
200
250
Station (ft)

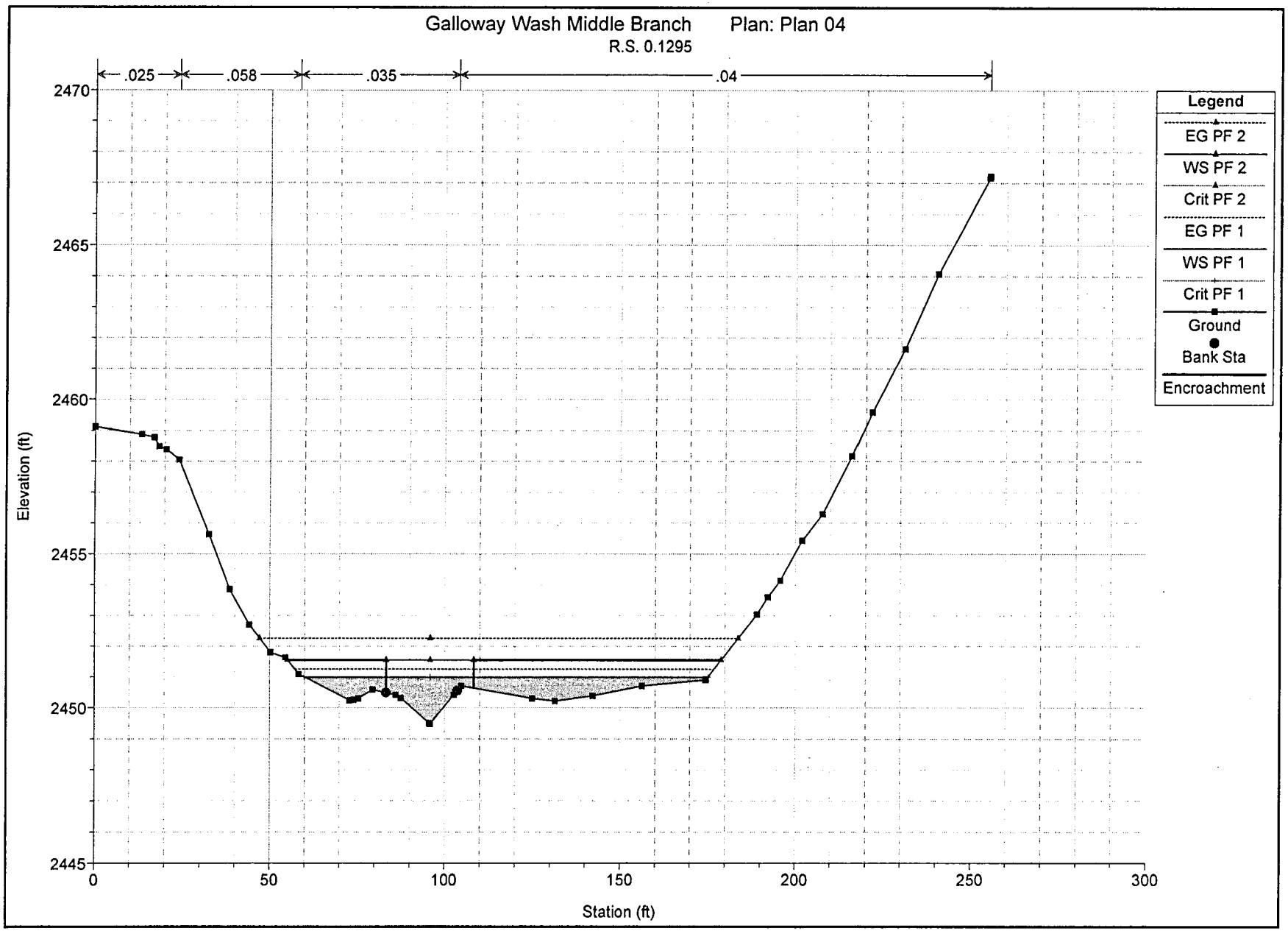

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.2568
.025
.04
.035
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2485
2480
2475
2470
2465
2460
0
50
100
150
200
250
Station (ft)

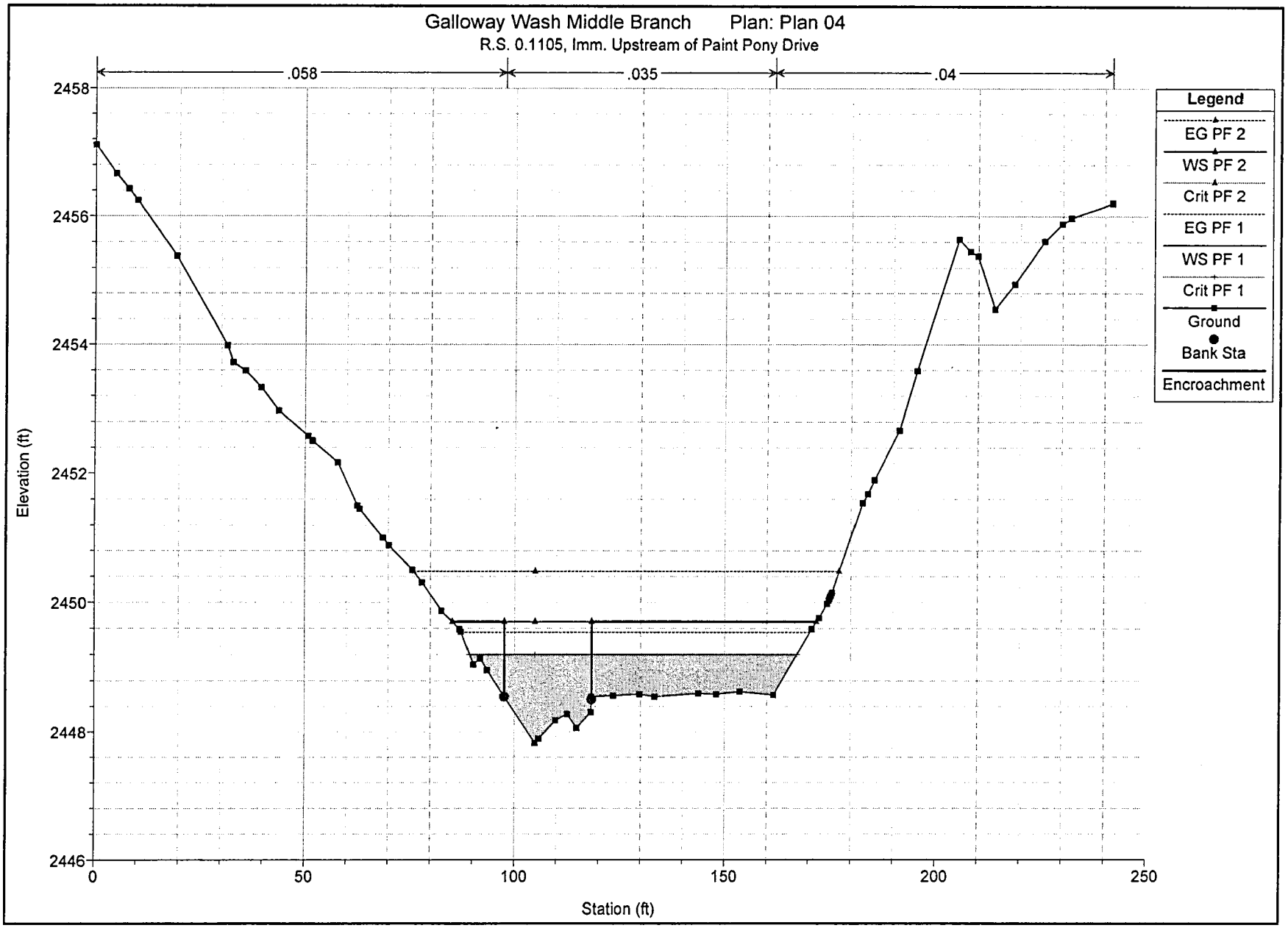

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.2437
.025
.04
.035
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2476
2474
2472
2470
2468
2466
2464
2462
2460
0
50
100
150
200
250
Station (ft)

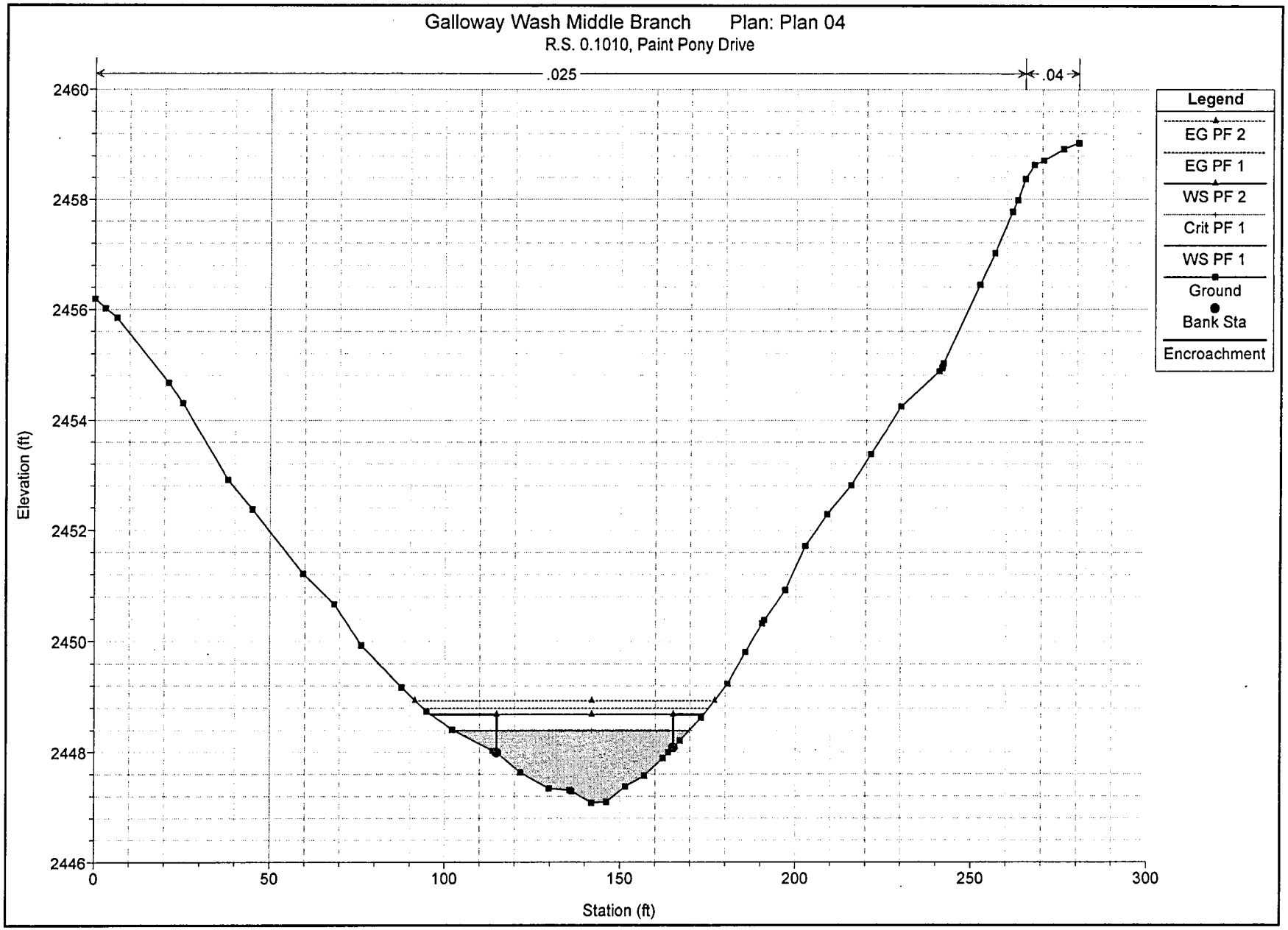

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.2045
.04
.025
.058
.035
.04
Legend
EG PF 2
WS PF 2
EG PF 1
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2476
2474
2472
2470
2468
2466
2464
2462
2460
2458
2456
0
50
100
150
200
250
300
Station (ft)

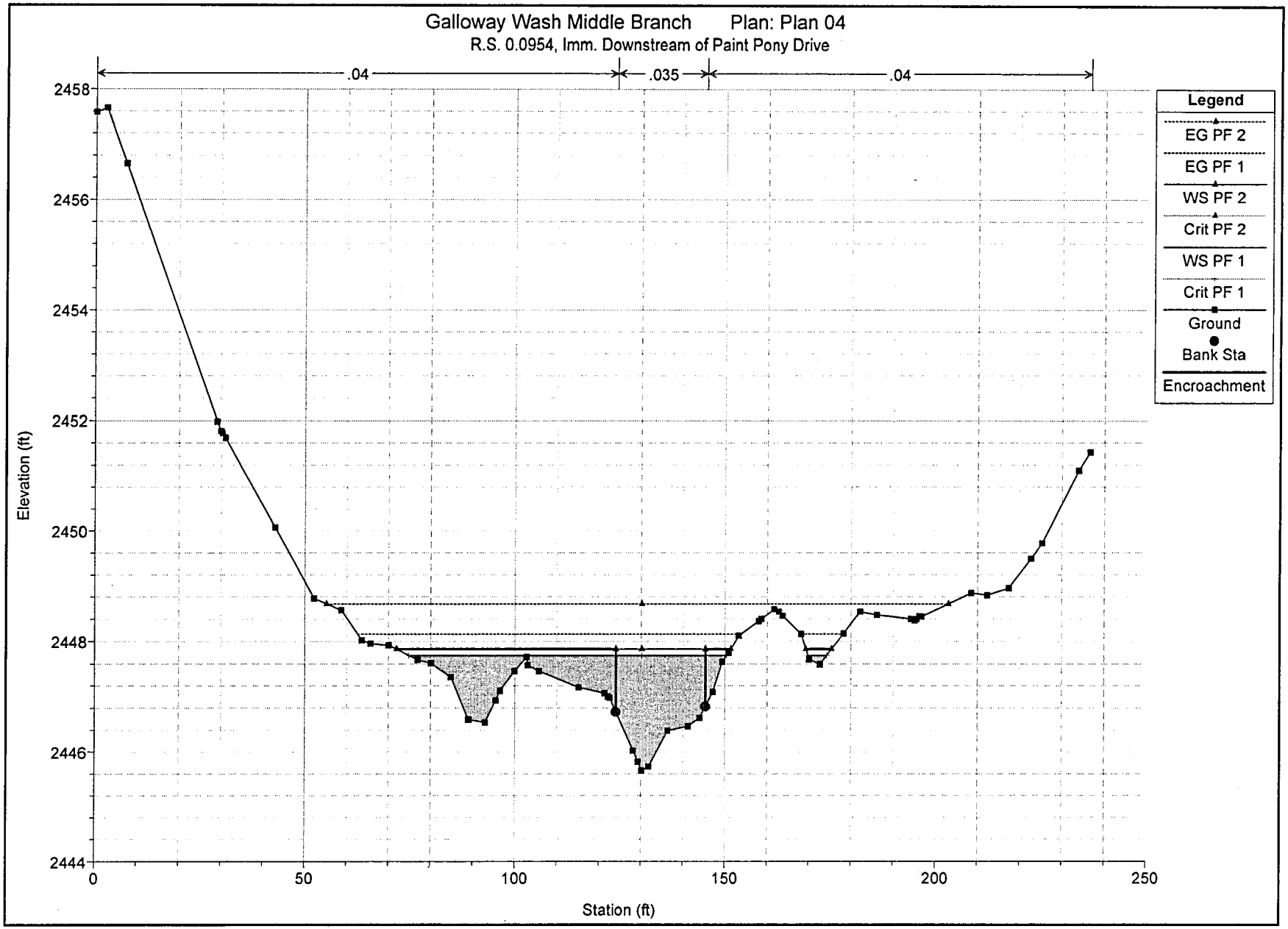

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.1760
.058
.025
.058
.035
.04
.025
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2454
2456
2458
2460
2462
2464
2466
2468
2470
2472
Station (ft)
0
50
100
150
200
250
300

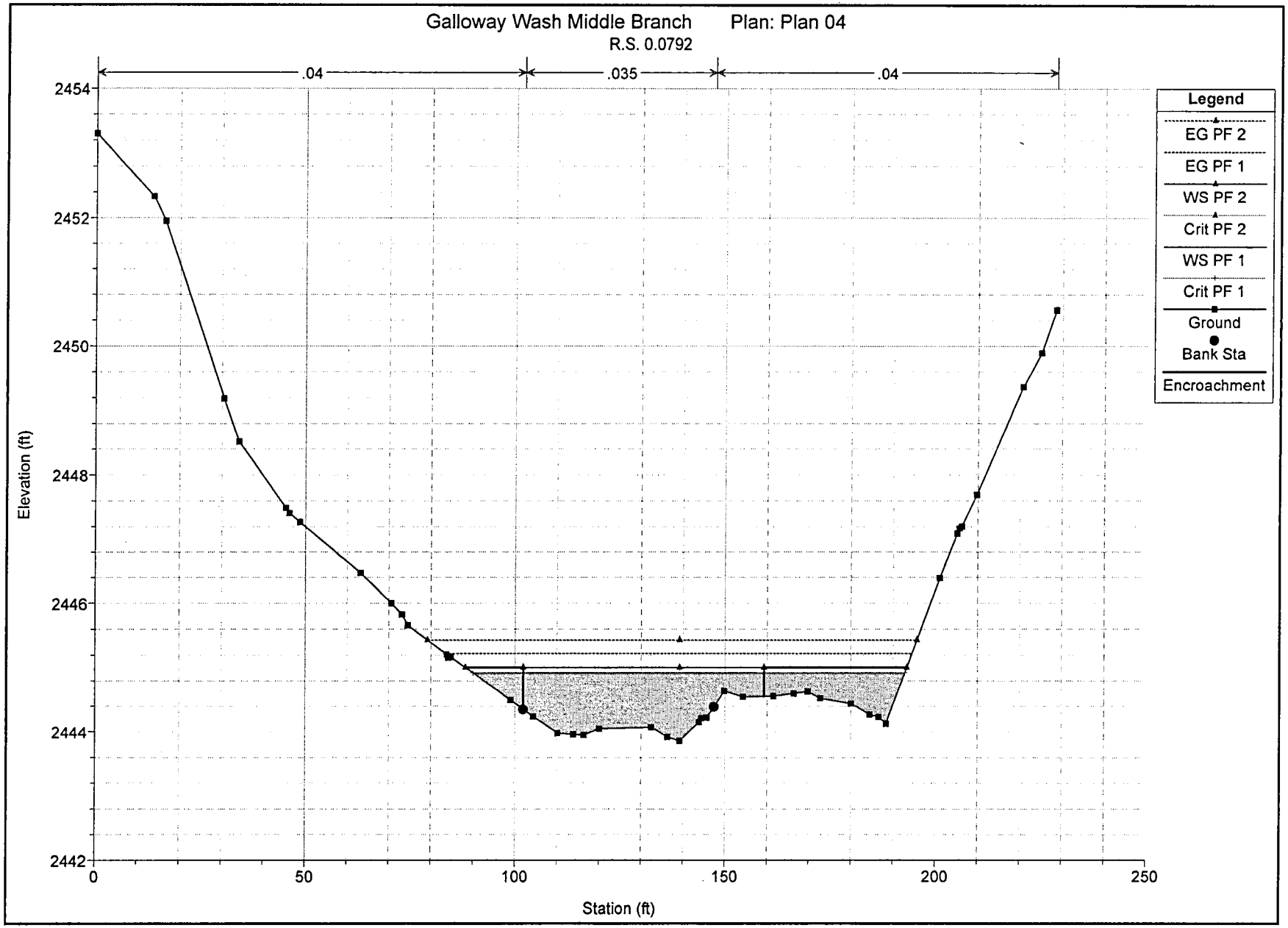

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.1568
.025
.058
.035
.04
.025
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2475
2470
2465
2460
2455
2450
0
50
100
150
200
250
300
Station (ft)

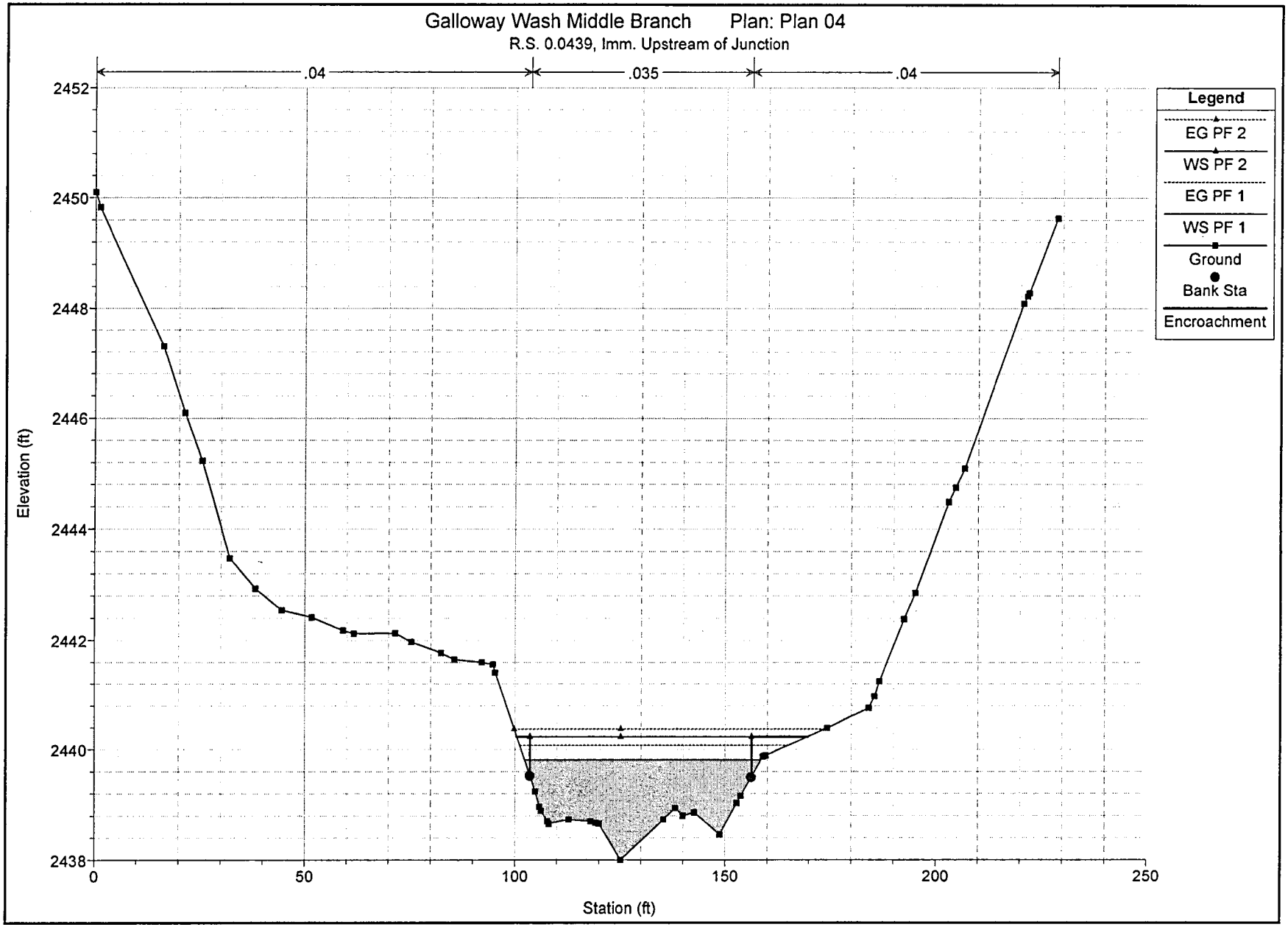

Galloway Wash Middle Branch
Plan: Plan 04
R.S. 0.1295
.025
.058
.035
.04
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2470
2465
2460
2455
2450
2445
0
50
100
150
200
250
300
Station (ft)


Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.1105, Imm. Upstream of Paint Pony Drive
.058
.035
.04
Elevation (ft)
2458
2456
2454
2452
2450
2448
2446
0
50
100
150
200
250
Station (ft)
Legend
EG PF 2
WS PF 2
Crit PF 2
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment

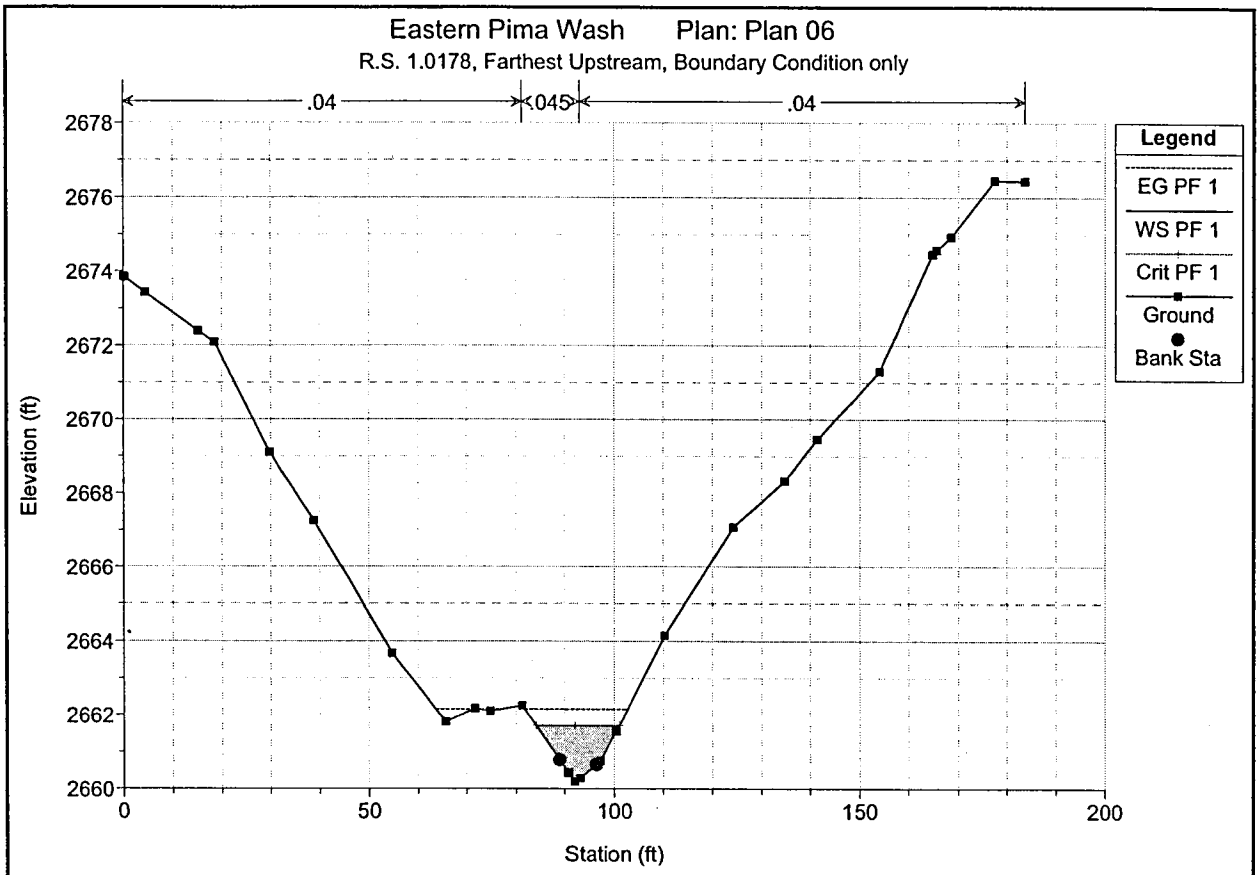

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.1010, Paint Pony Drive
.025
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2460
2458
2456
2454
2452
2450
2448
2446
0
50
100
150
200
250
300
Station (ft)

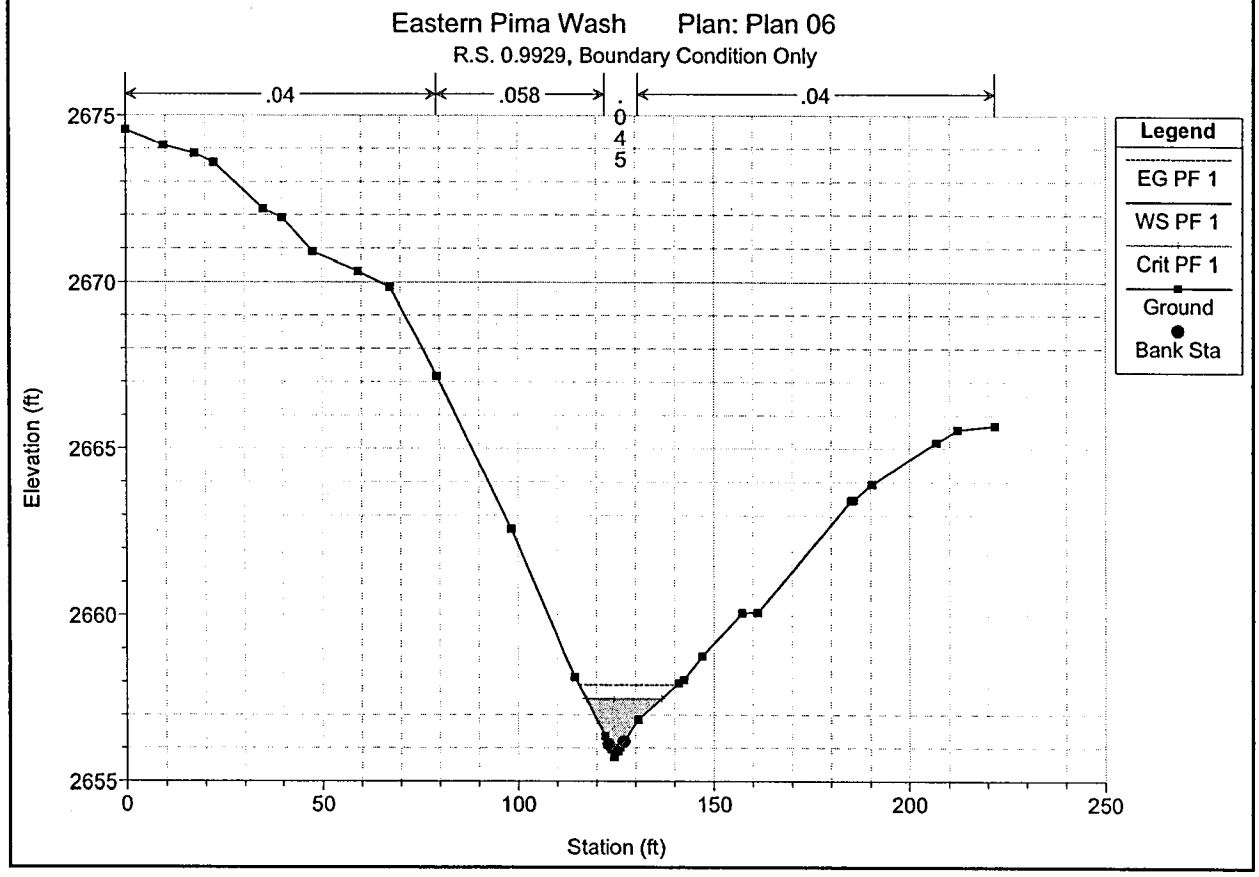

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.0954, Imm. Downstream of Paint Pony Drive
.04
.035
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2458
2456
2454
2452
2450
2448
2446
2444
0
50
100
150
200
250
Station (ft)

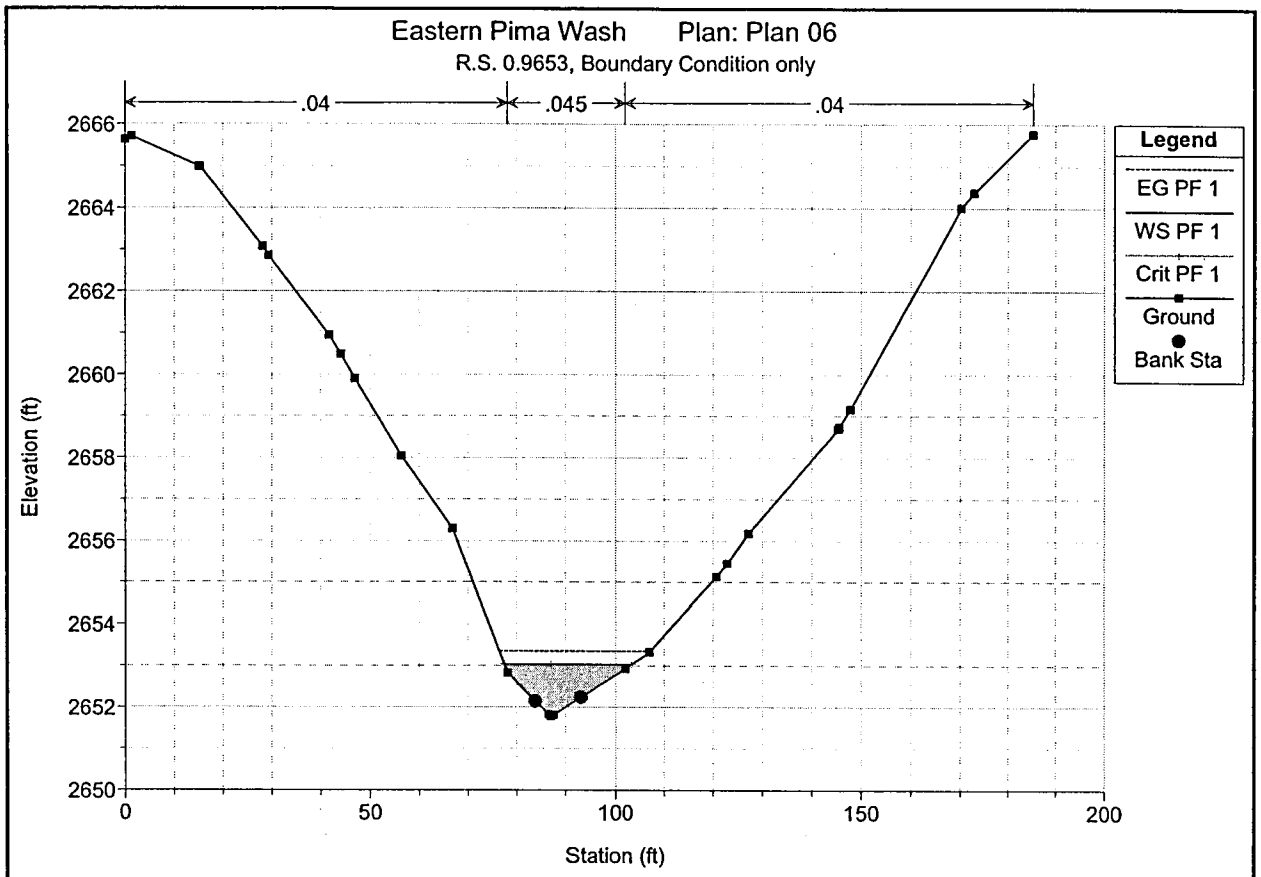

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.0792
.04
.035
.04
Legend
EG PF 2
EG PF 1
WS PF 2
Crit PF 2
WS PF 1
Crit PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2454
2452
2450
2448
2446
2444
2442
0
50
100
150
200
250
Station (ft)

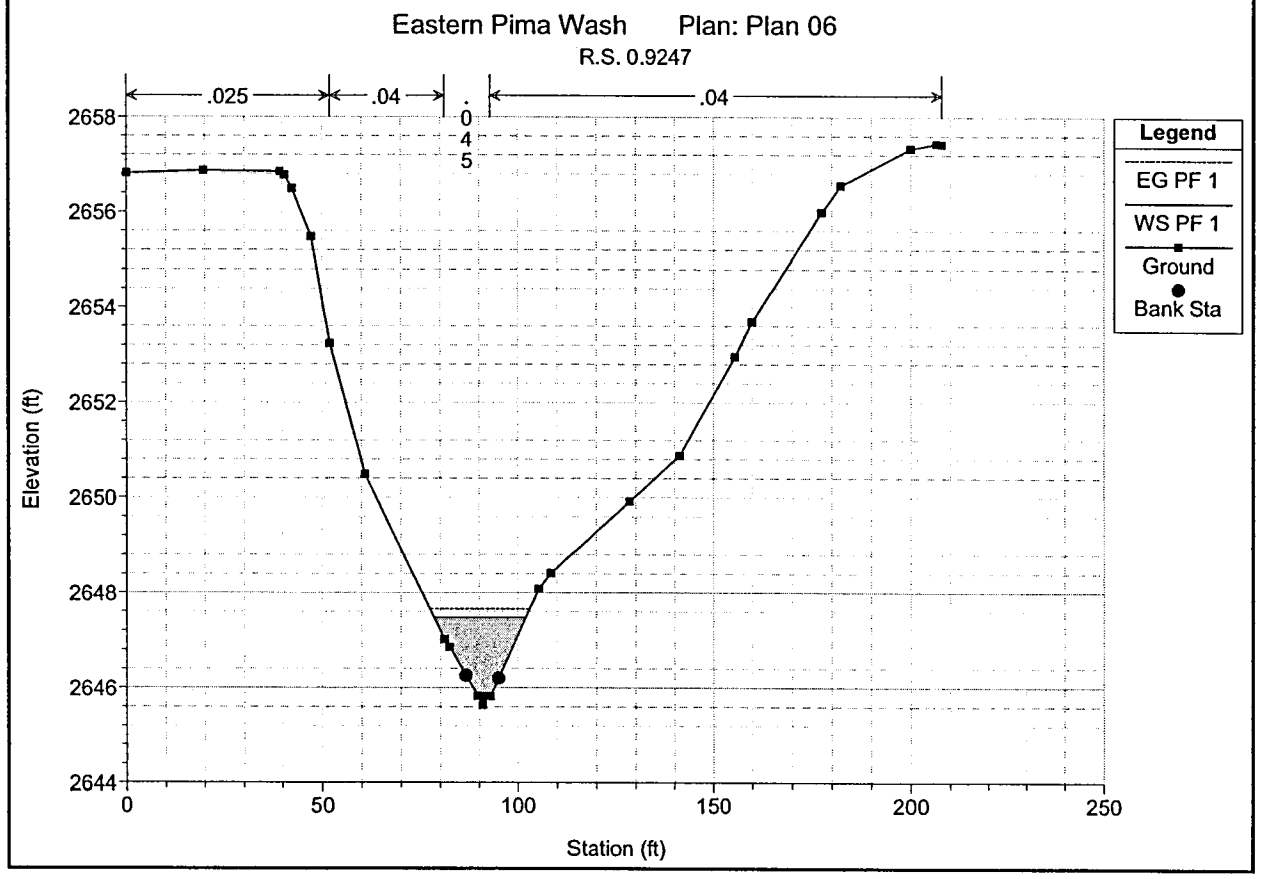

Galloway Wash Middle Branch Plan: Plan 04
R.S. 0.0439, Imm. Upstream of Junction
.04
.035
.04
Legend
EG PF 2
WS PF 2
EG PF 1
WS PF 1
Ground
Bank Sta
Encroachment
Elevation (ft)
2452
2450
2448
2446
2444
2442
2440
2438
0
50
100
150
200
250
Station (ft)

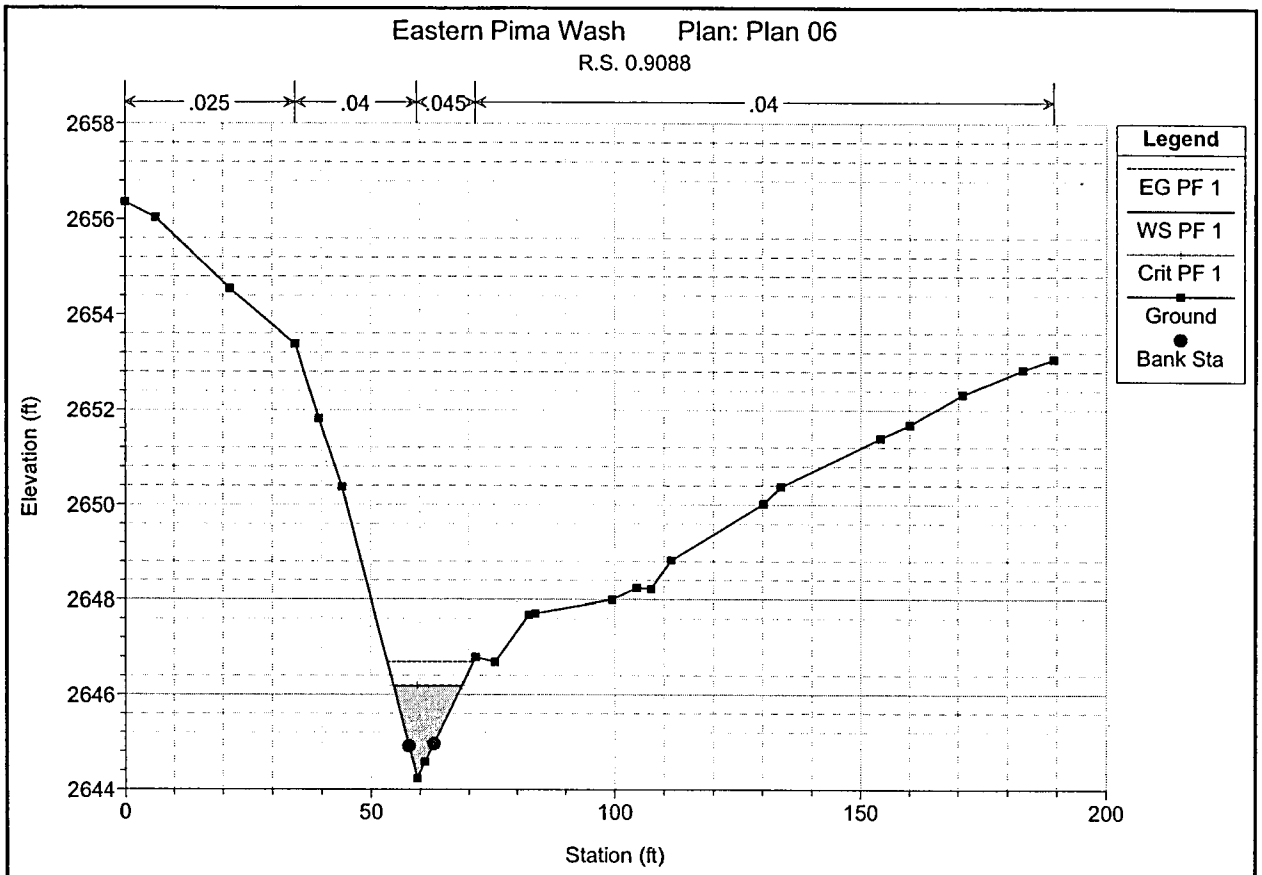
Eastern Pima Wash

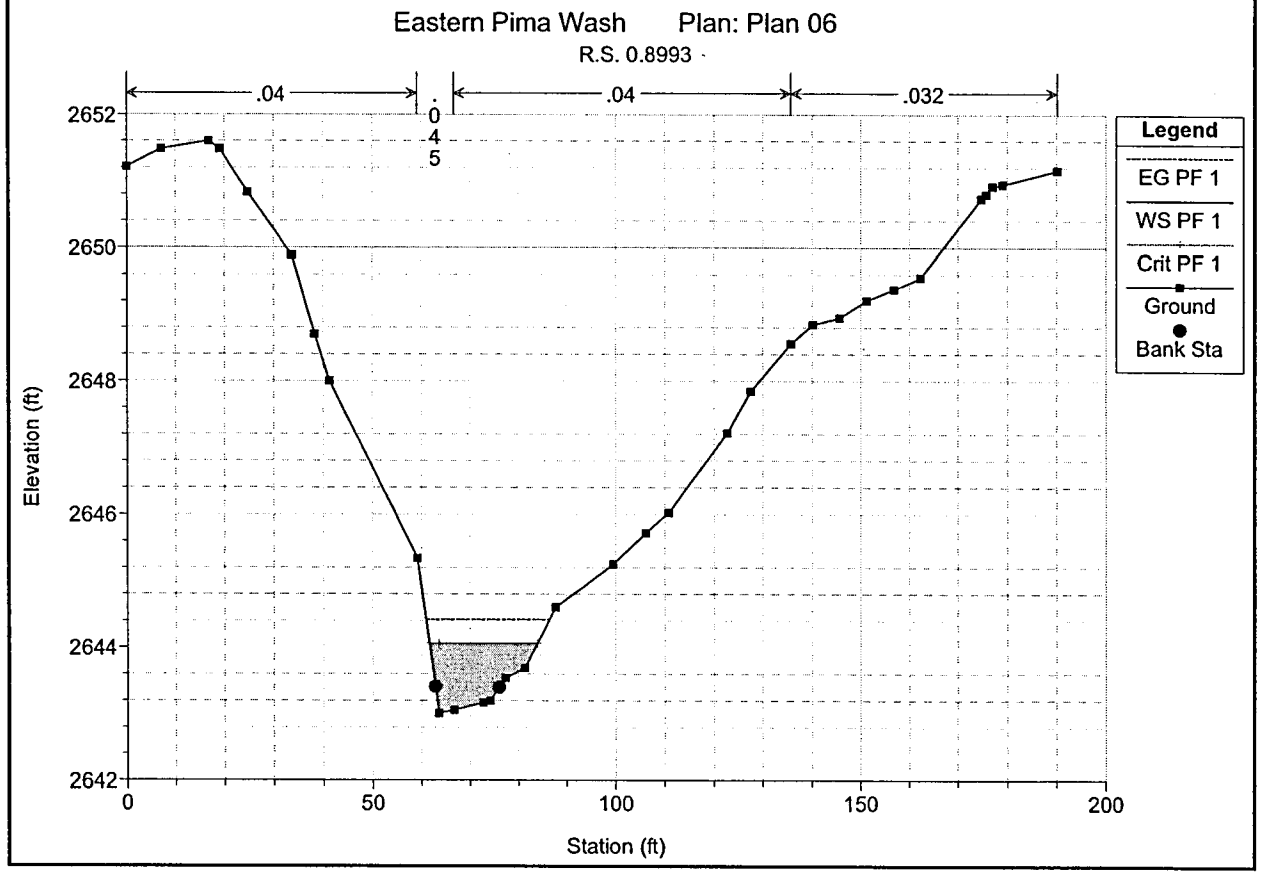

Eastern Pima Wash Plan: Plan 06
R.S. 1.0178, Farthest Upstream, Boundary Condition only
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

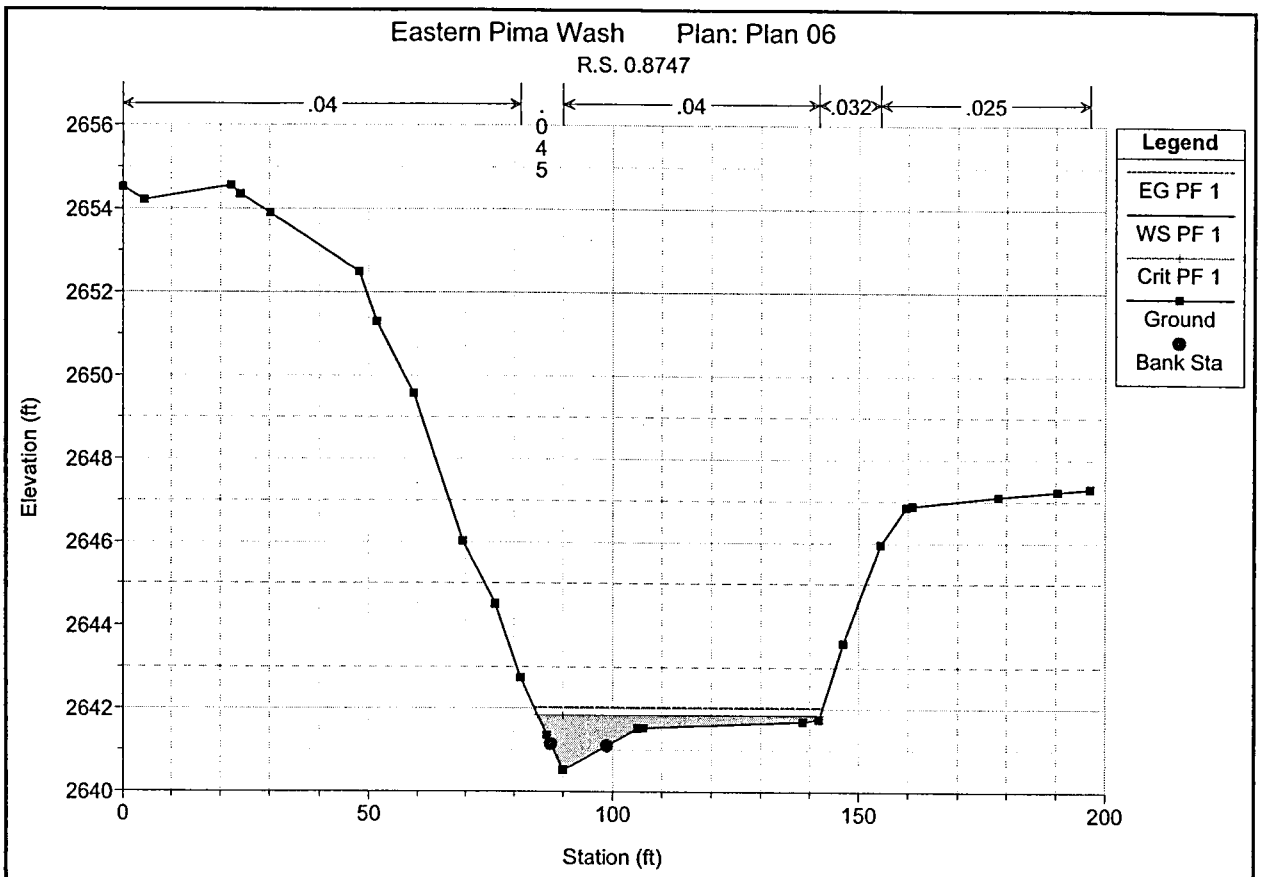

Eastern Pima Wash Plan: Plan 06
R.S. 0.9929, Boundary Condition Only
.04
.058
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

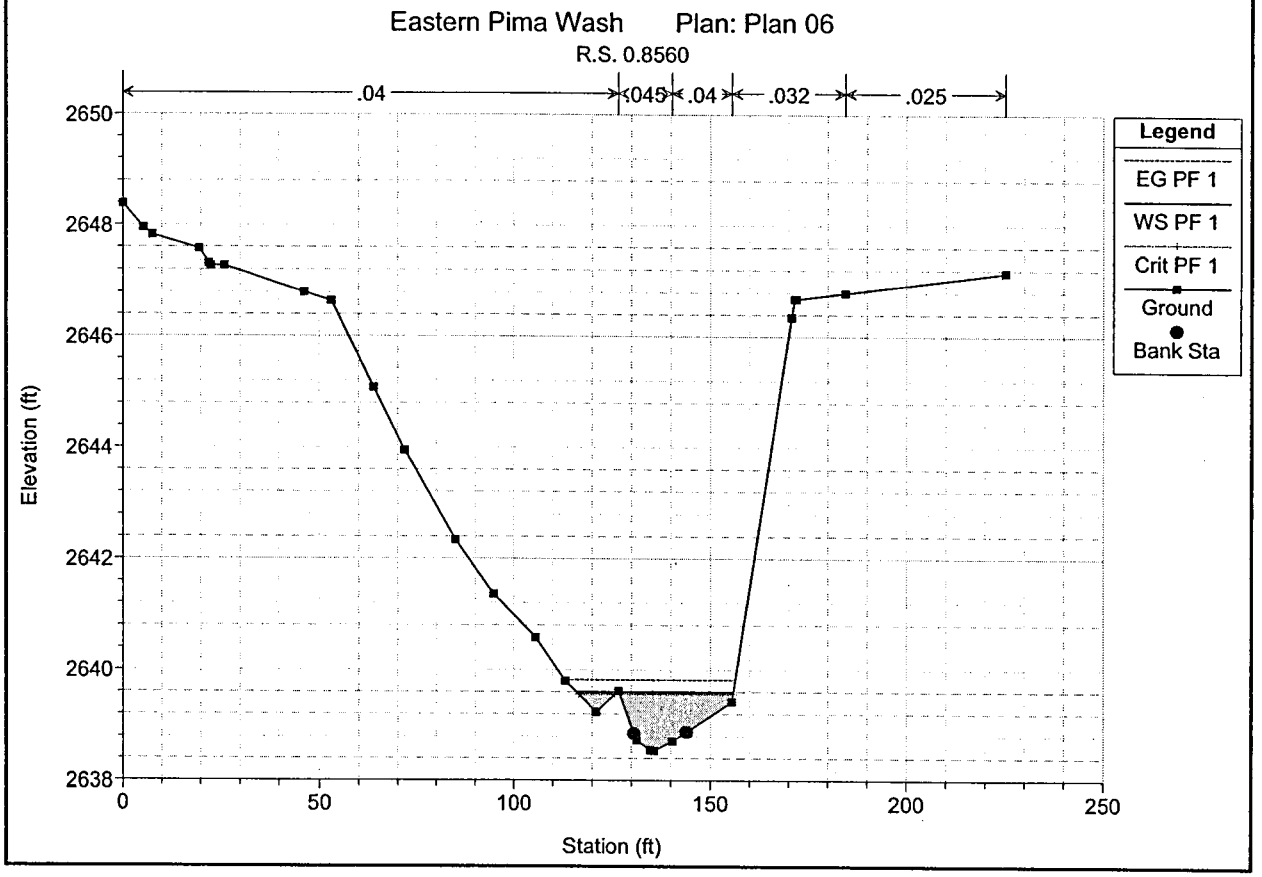

Eastern Pima Wash Plan: Plan 06
R.S. 0.9653, Boundary Condition only
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

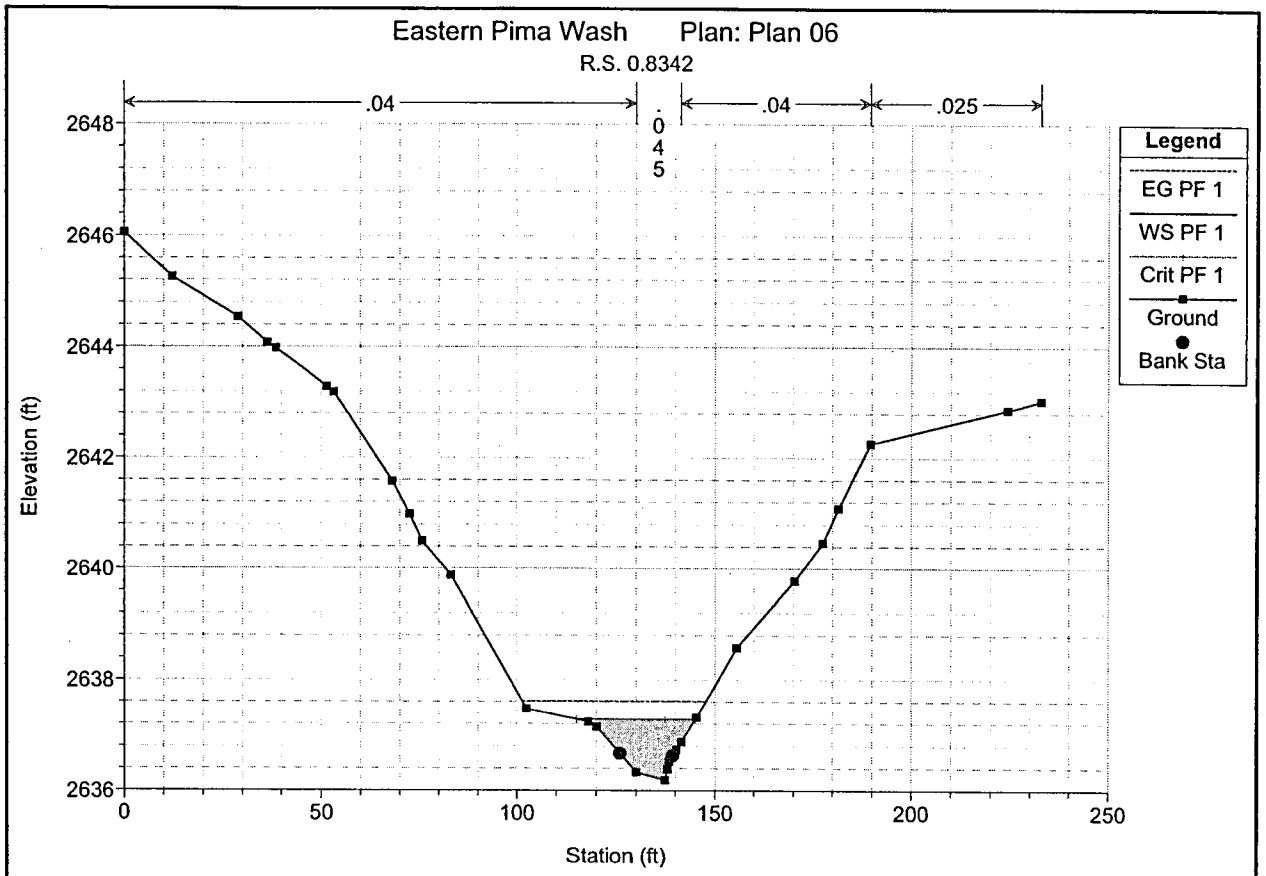

Eastern Pima Wash Plan: Plan 06
R.S. 0.9247
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

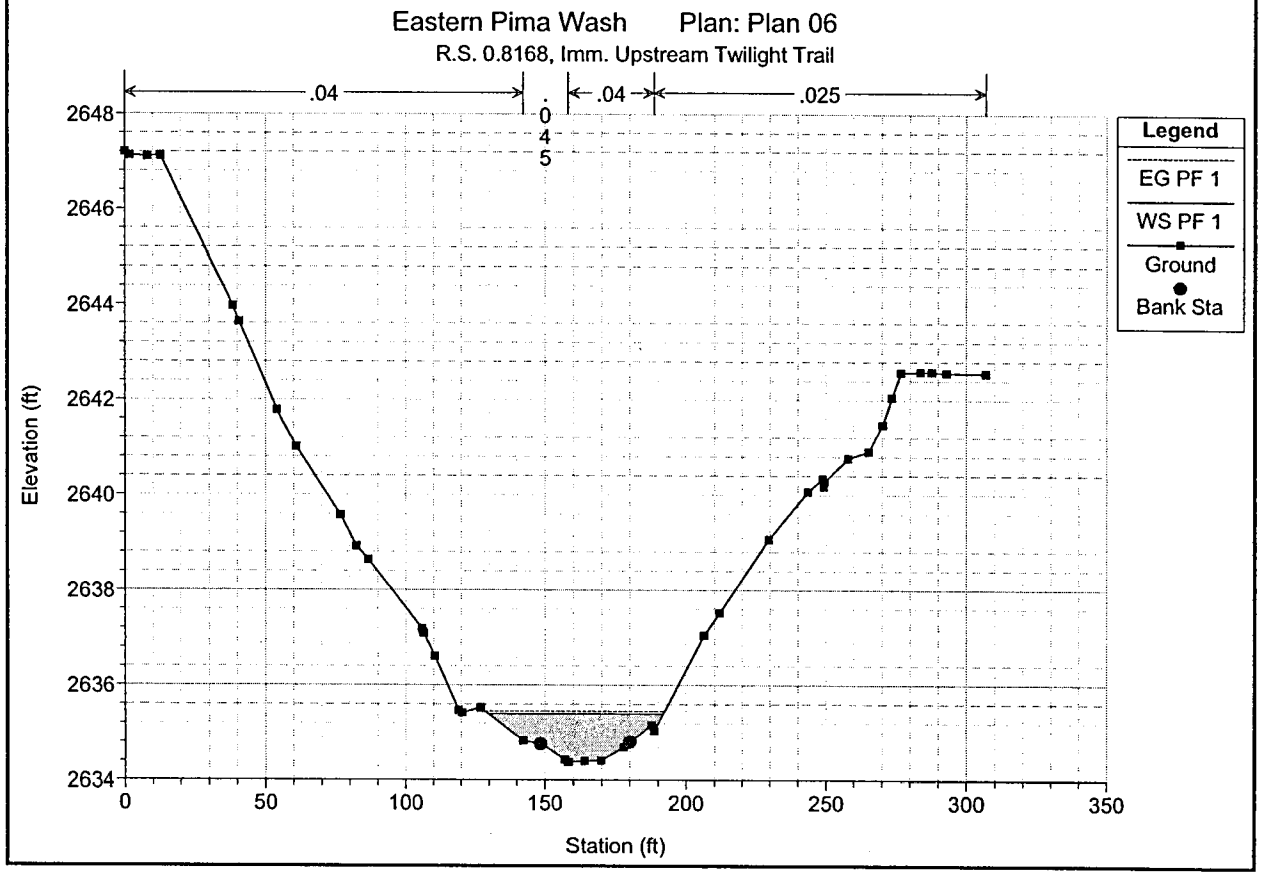

Eastern Pima Wash Plan: Plan 06
R.S. 0.9088
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2658
2656
2654
2652
2650
2648
2646
2644
0
50
100
150
200
Station (ft)

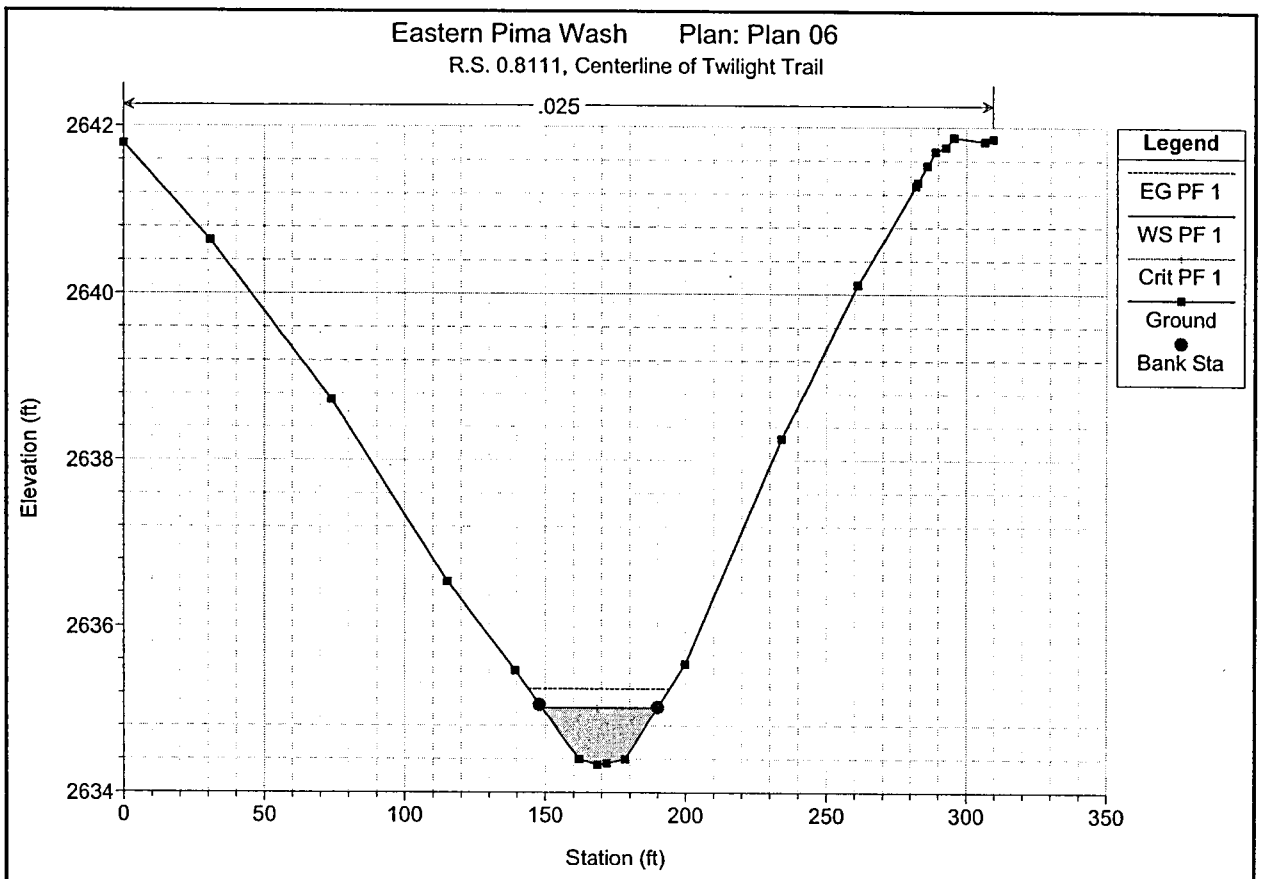

Eastern Pima Wash Plan: Plan 06
R.S. 0.8993
.04
.045
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2652
2650
2648
2646
2644
2642
0
50
100
150
200
Station (ft)

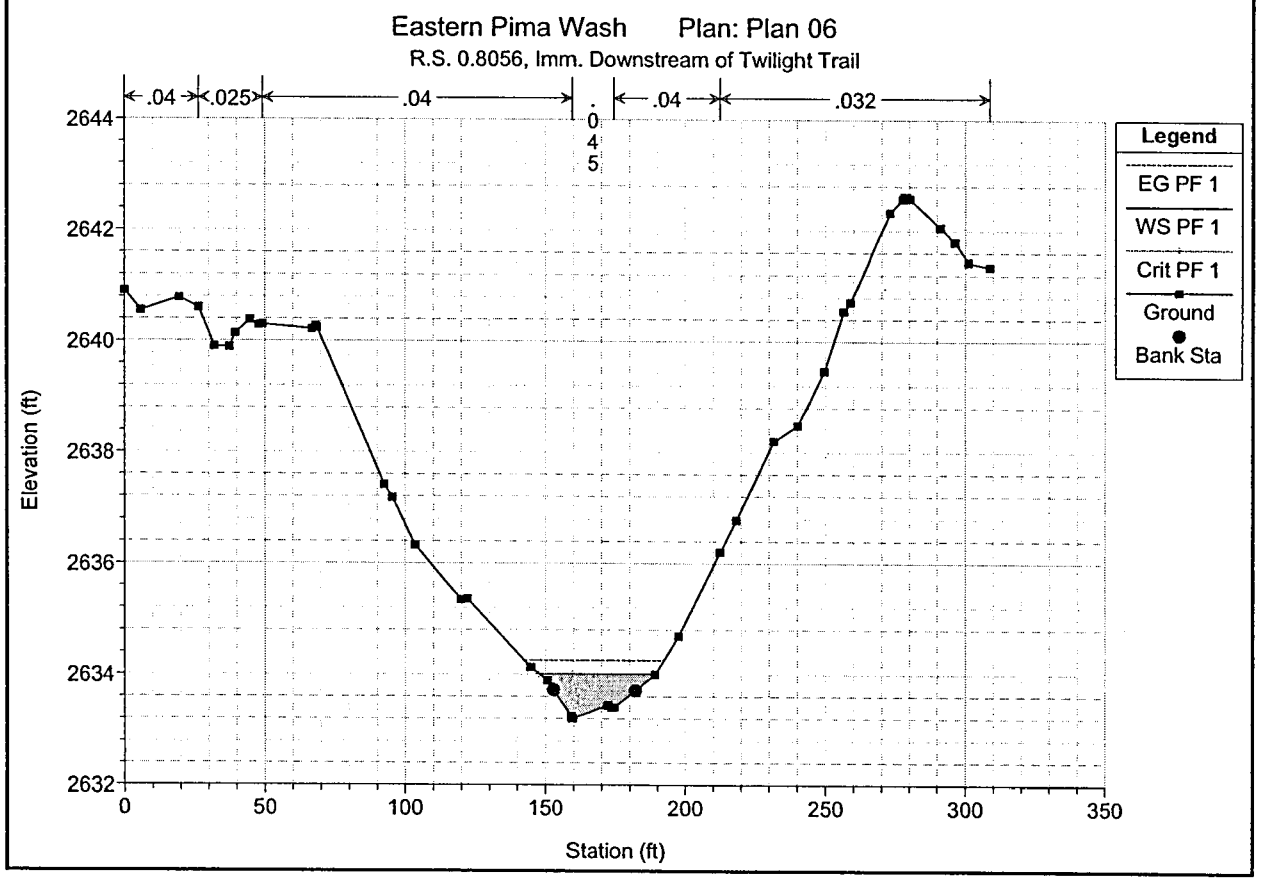

Eastern Pima Wash Plan: Plan 06
R.S. 0.8747
.04
.045
.04
.032
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2656
2654
2652
2650
2648
2646
2644
2642
2640
0
50
100
150
200

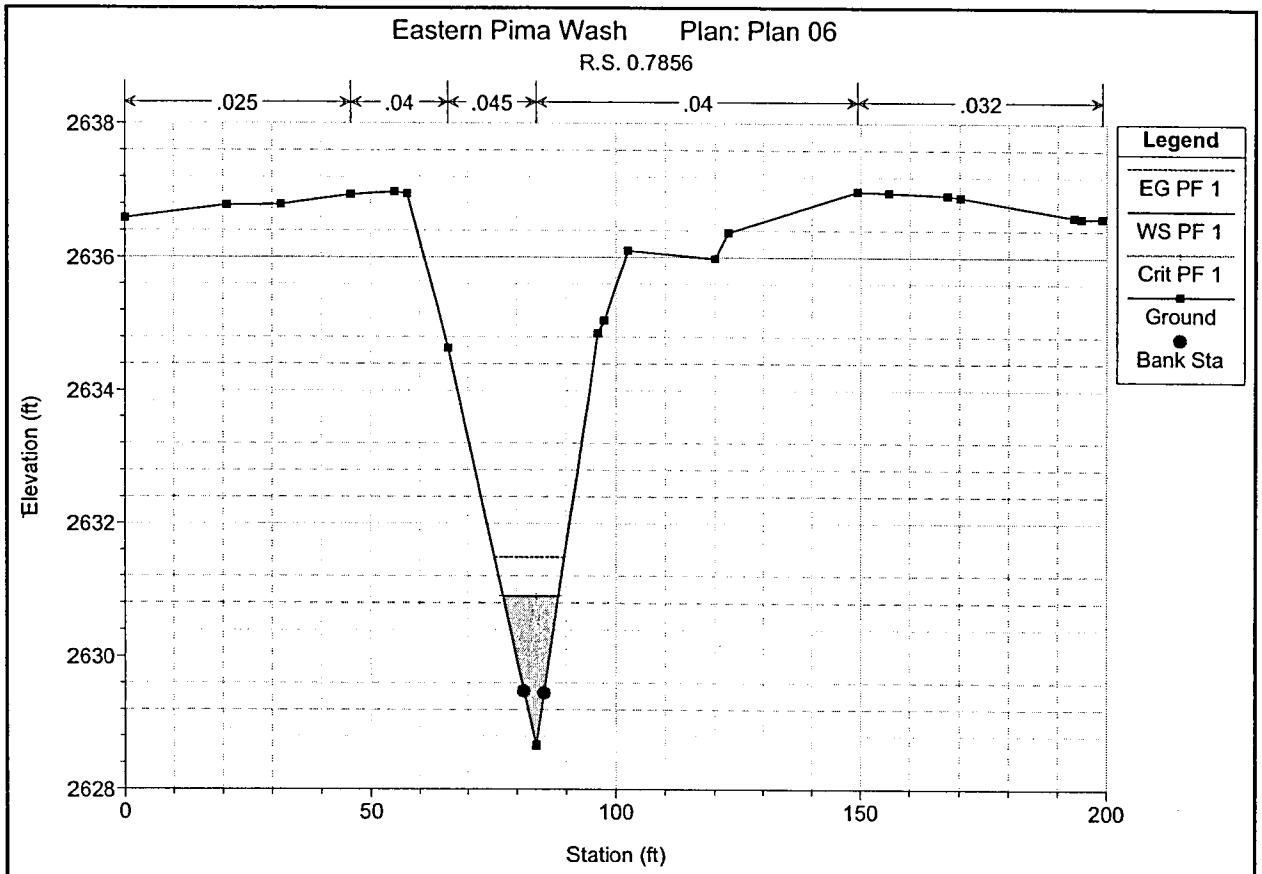

Eastern Pima Wash Plan: Plan 06
R.S. 0.8560
.04
.045
.04
.032
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2650
2648
2646
2644
2642
2640
2638
0
50
100
150
200
250

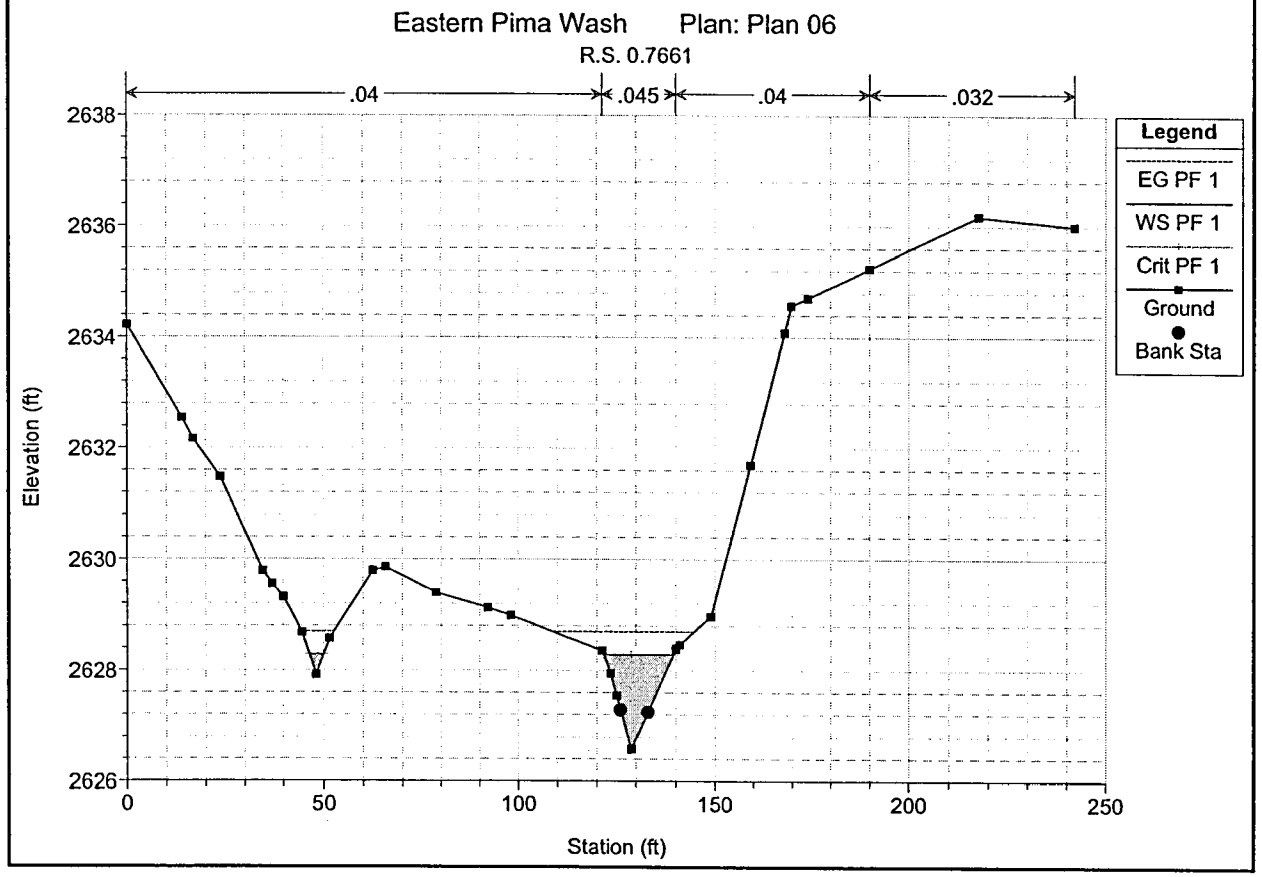

Eastern Pima Wash Plan: Plan 06
R.S. 0.8342
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2648
2646
2644
2642
2640
2638
2636
0
50
100
150
200
250

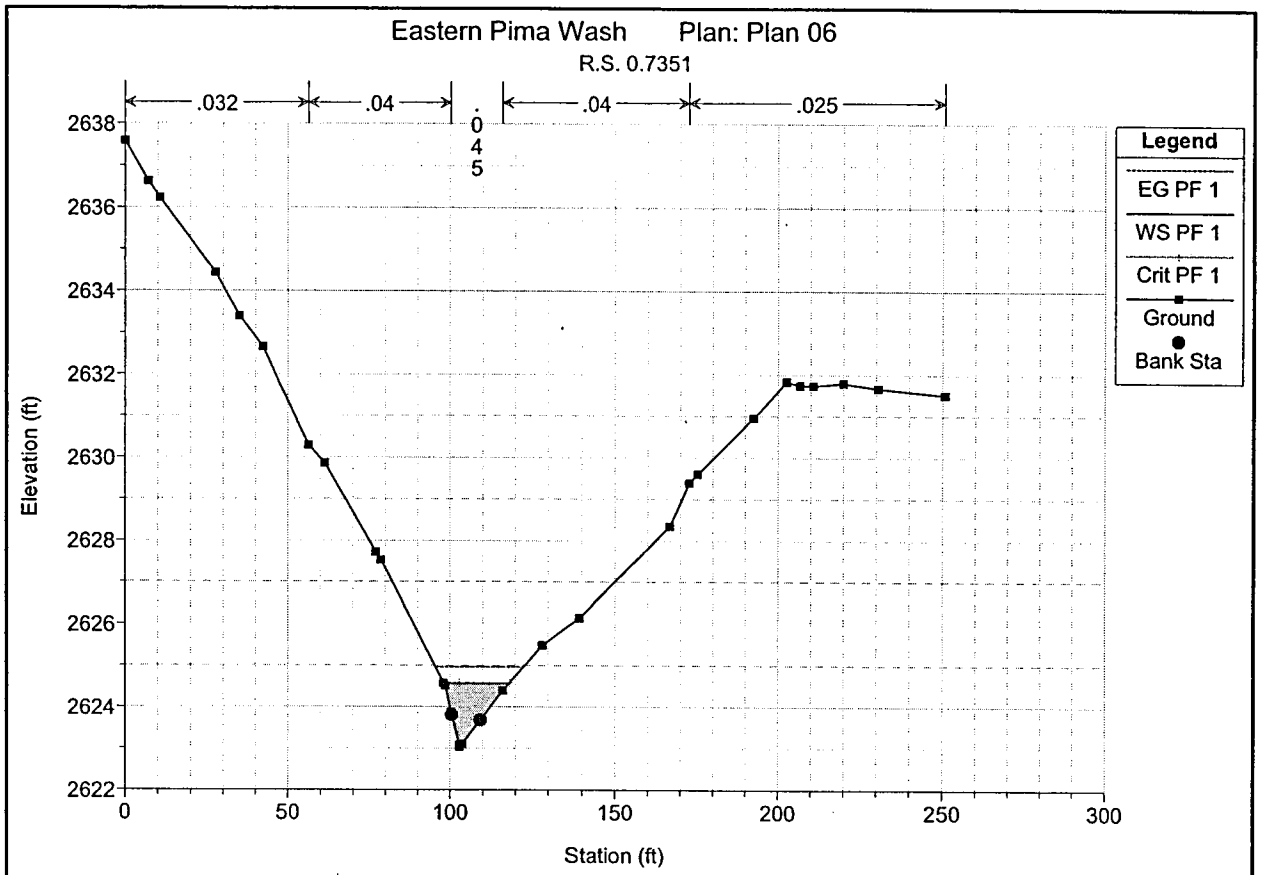

Eastern Pima Wash Plan: Plan 06
R.S. 0.8168, Imm. Upstream Twilight Trail
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2648
2646
2644
2642
2640
2638
2636
2634
0
50
100
150
200
250
300
350

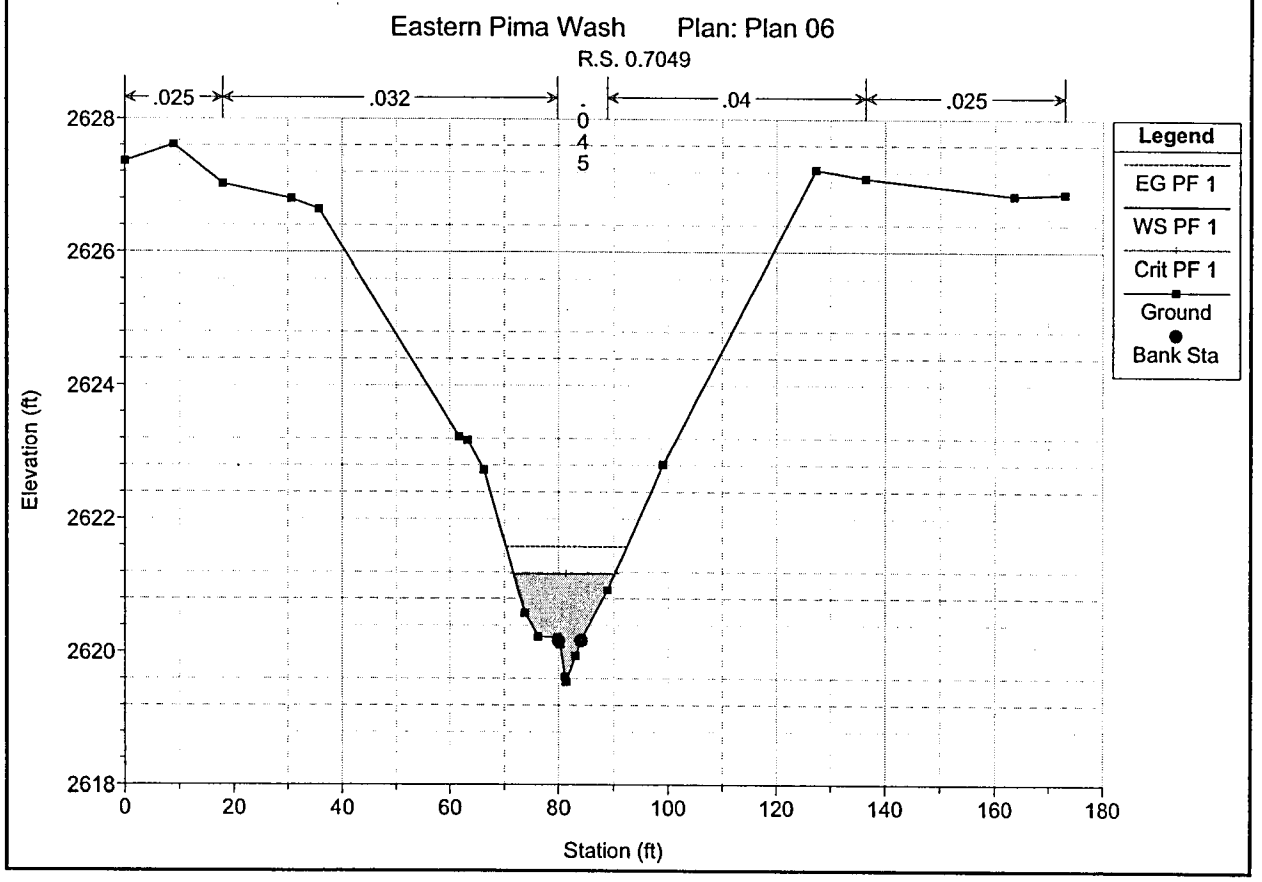

Eastern Pima Wash Plan: Plan 06
R.S. 0.8111, Centerline of Twilight Trail
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

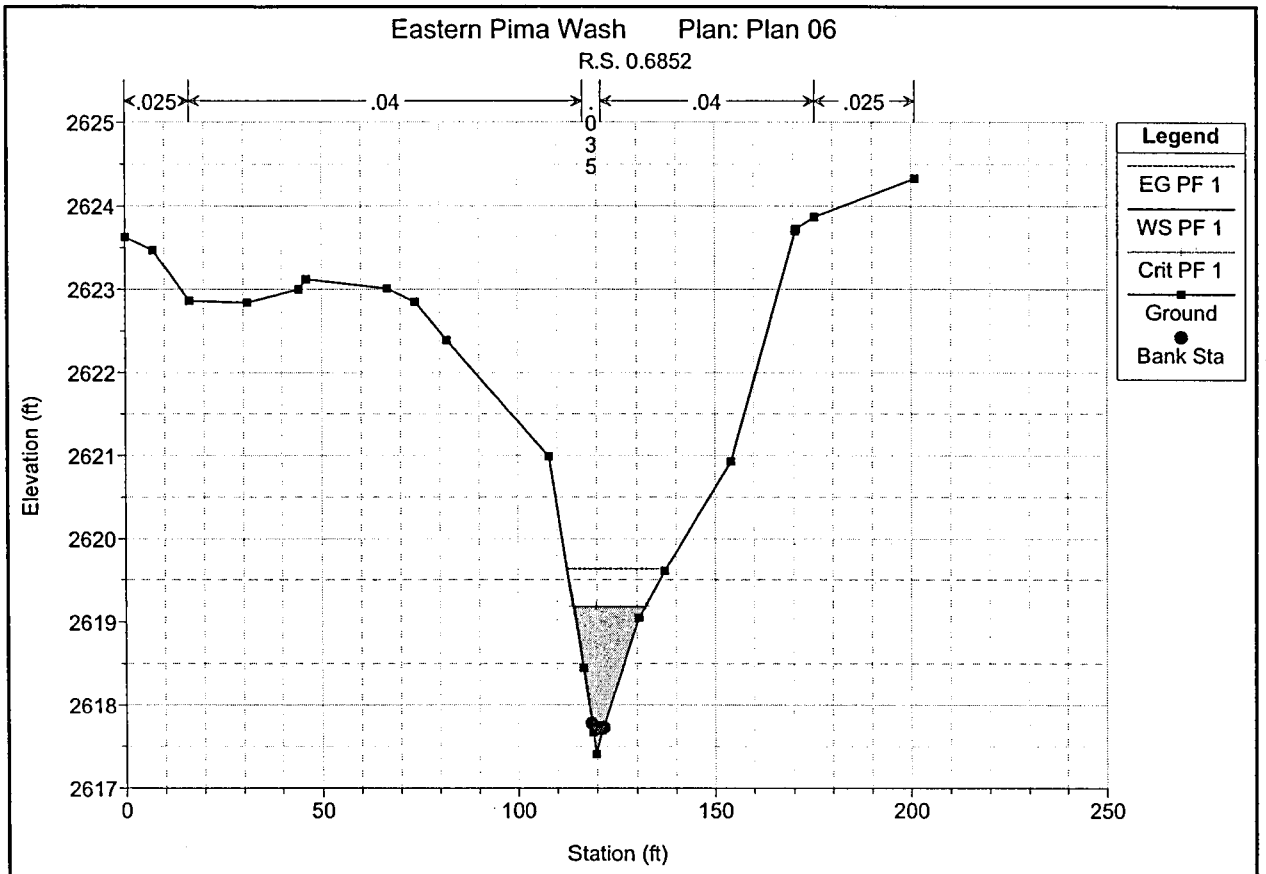

Eastern Pima Wash Plan: Plan 06
R.S. 0.8056, Imm. Downstream of Twilight Trail
.04
.025
.04
.045
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

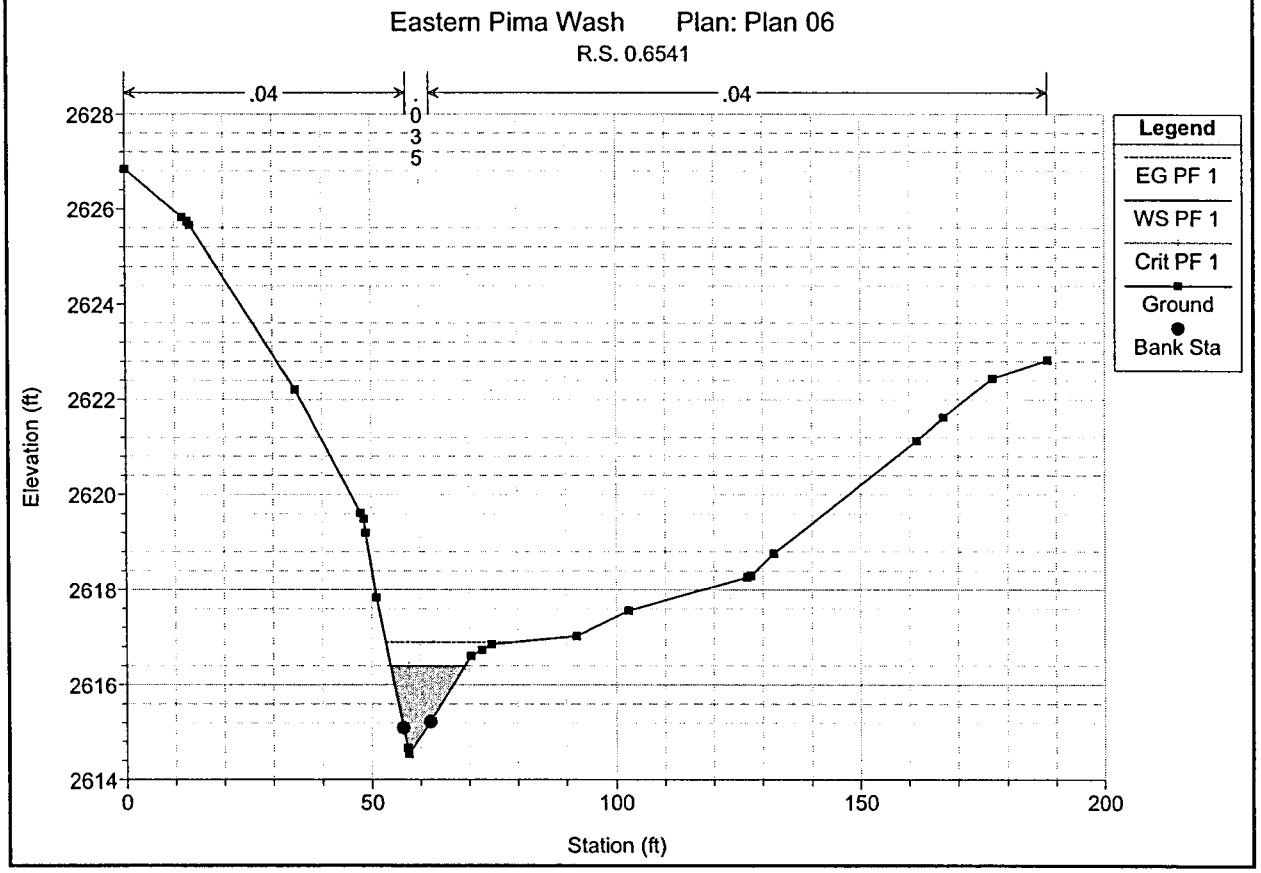

Eastern Pima Wash Plan: Plan 06
R.S. 0.7856
.025
.04
.045
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2638
2636
2634
2632
2630
2628
0
50
100
150
200
Station (ft)

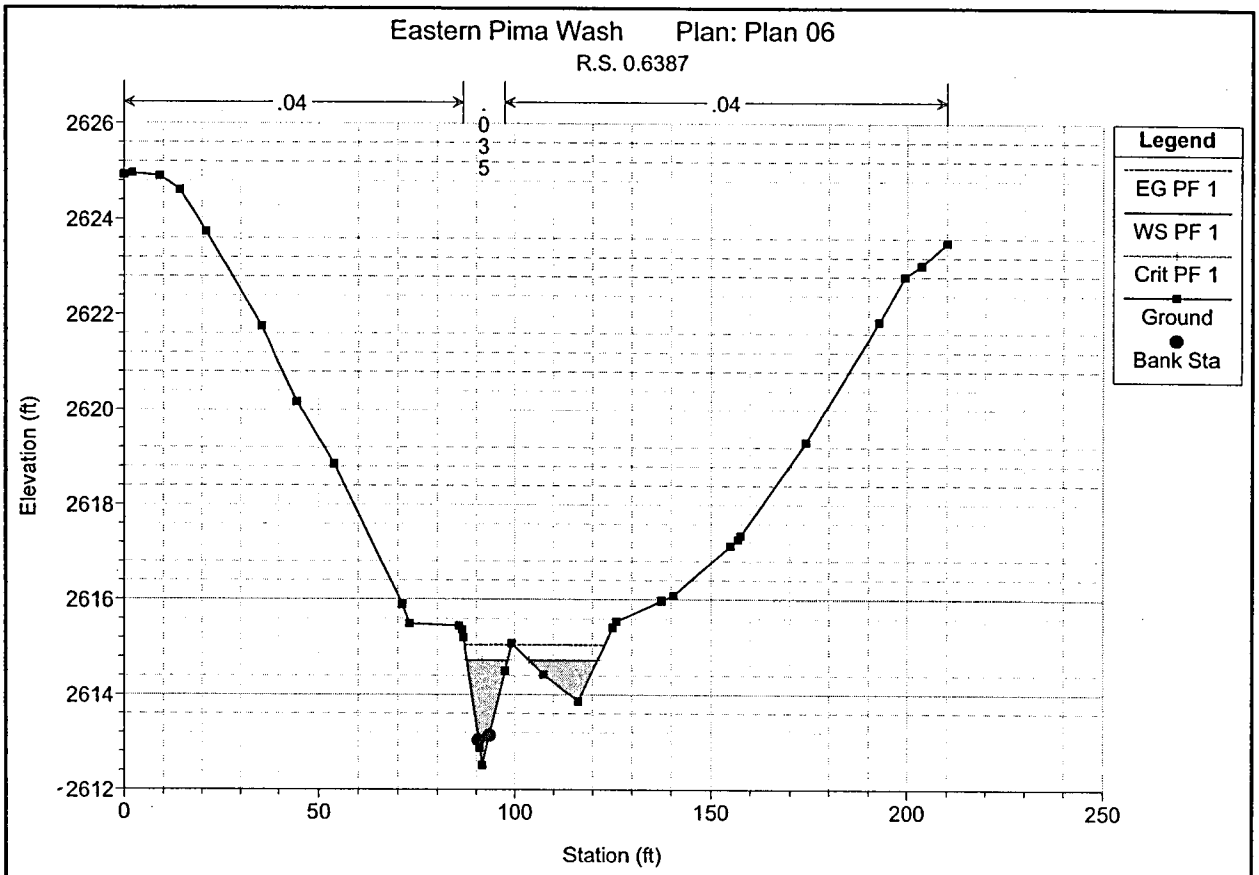

Eastern Pima Wash Plan: Plan 06
R.S. 0.7661
.04
.045
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2638
2636
2634
2632
2630
2628
2626
0
50
100
150
200
250
Station (ft)

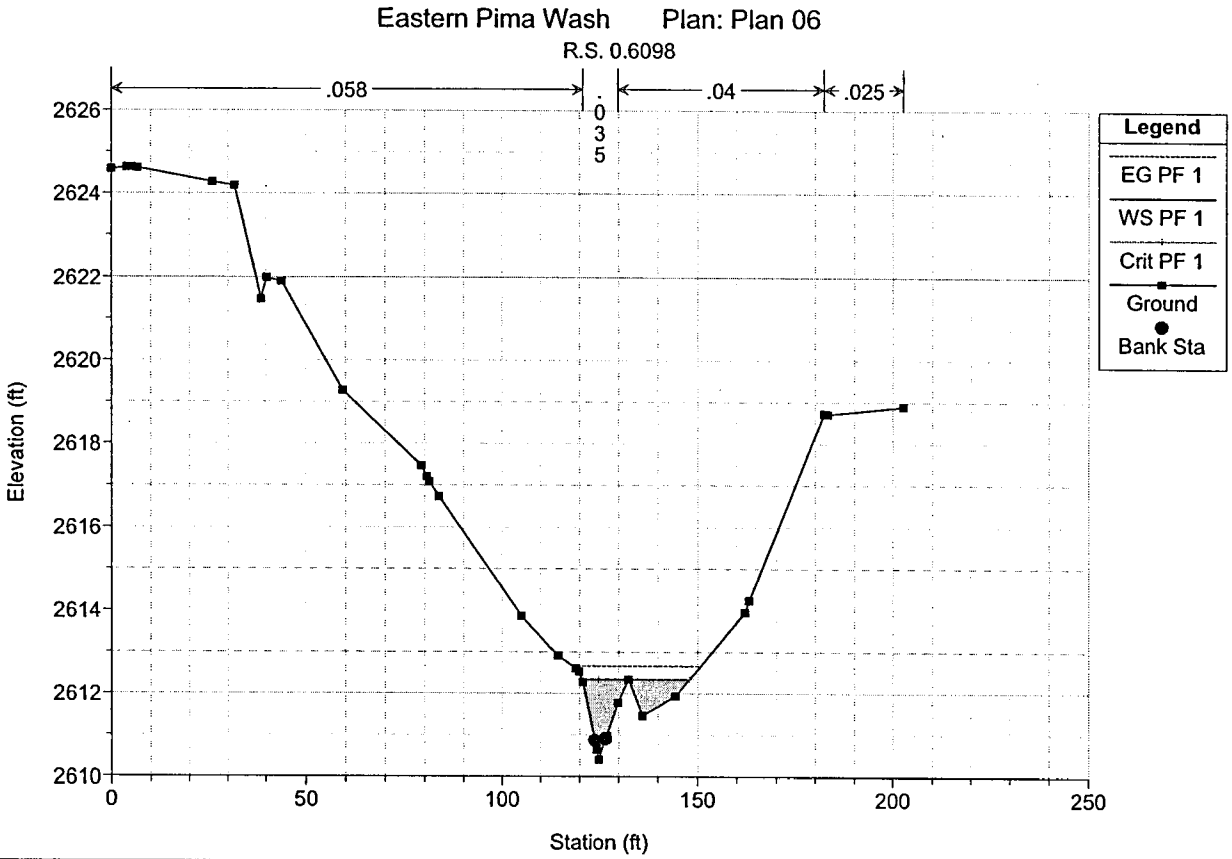

Eastern Pima Wash Plan: Plan 06
R.S. 0.7351
.032
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

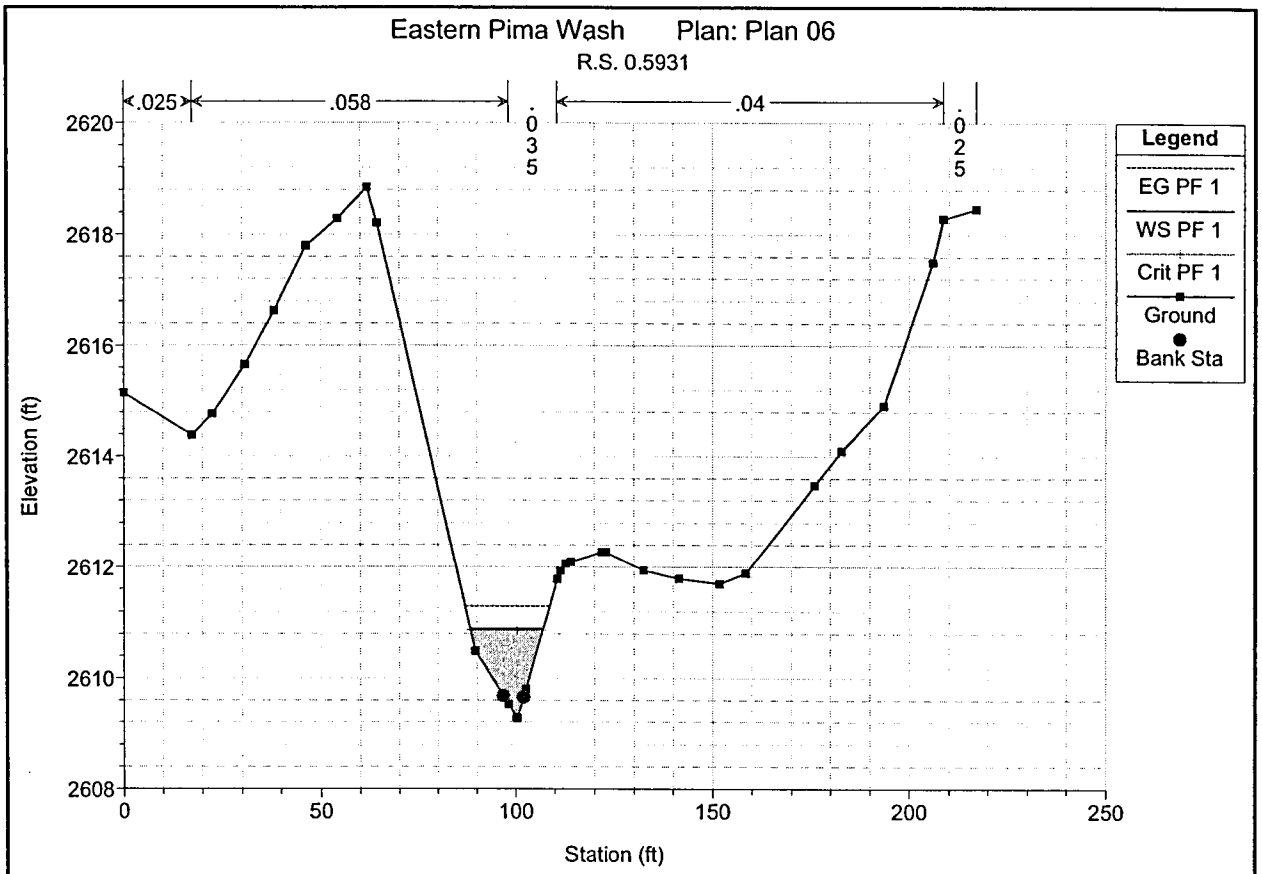

Eastern Pima Wash Plan: Plan 06
R.S. 0.7049
.025
.032
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

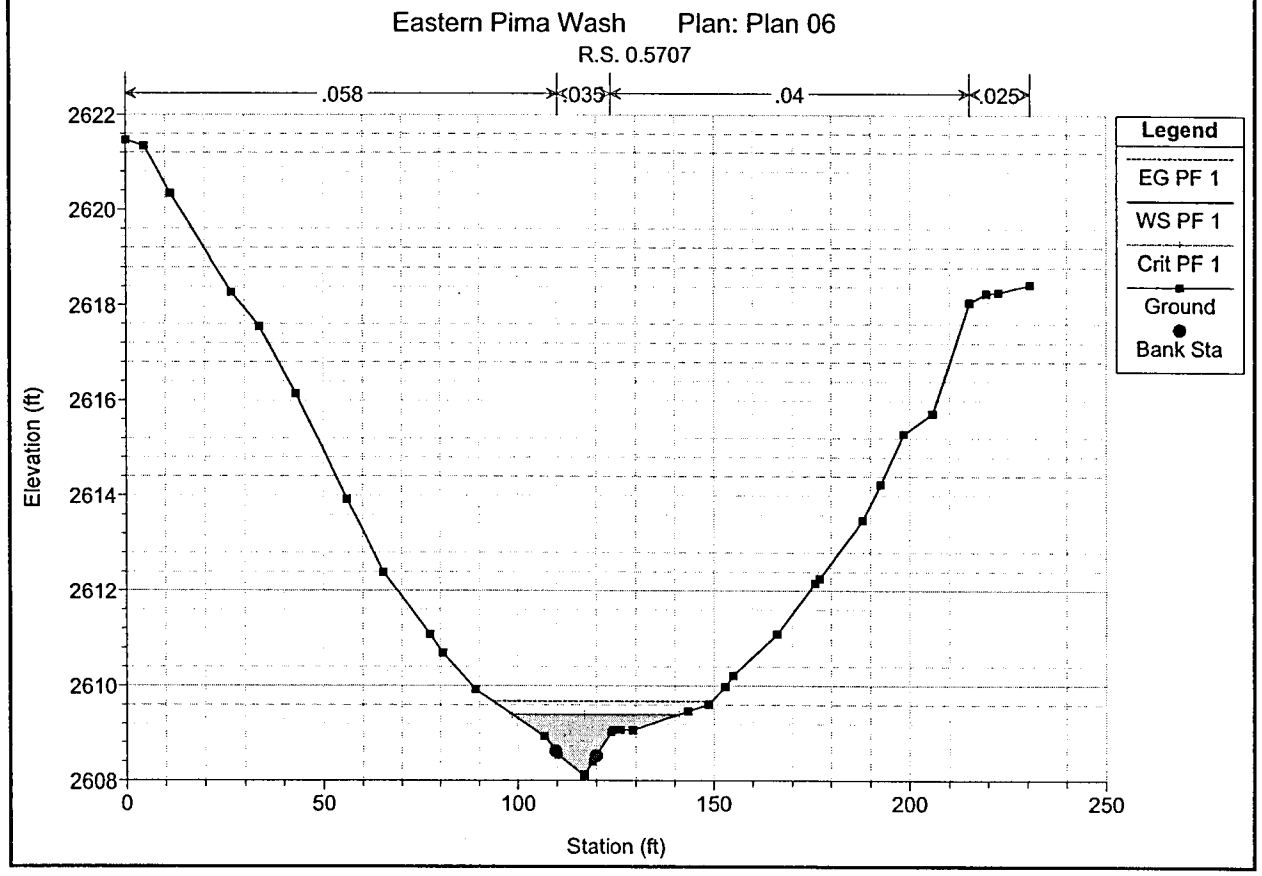

Eastern Pima Wash Plan: Plan 06
R.S. 0.6852
.025
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2625
2624
2623
2622
2621
2620
2619
2618
2617
0
50
100
150
200
250

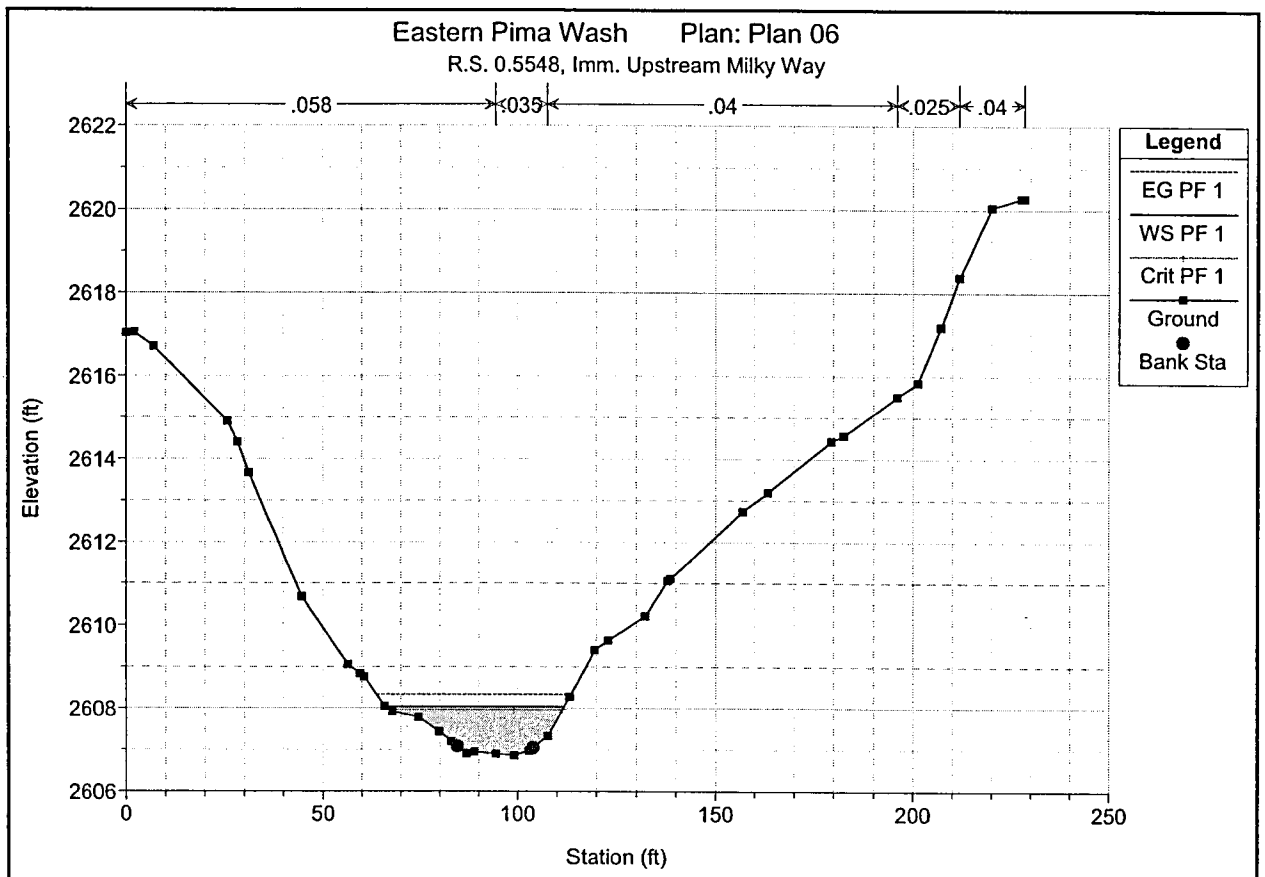

Eastern Pima Wash Plan: Plan 06
R.S. 0.6541
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2628
2626
2624
2622
2620
2618
2616
2614
0
50
100
150
200

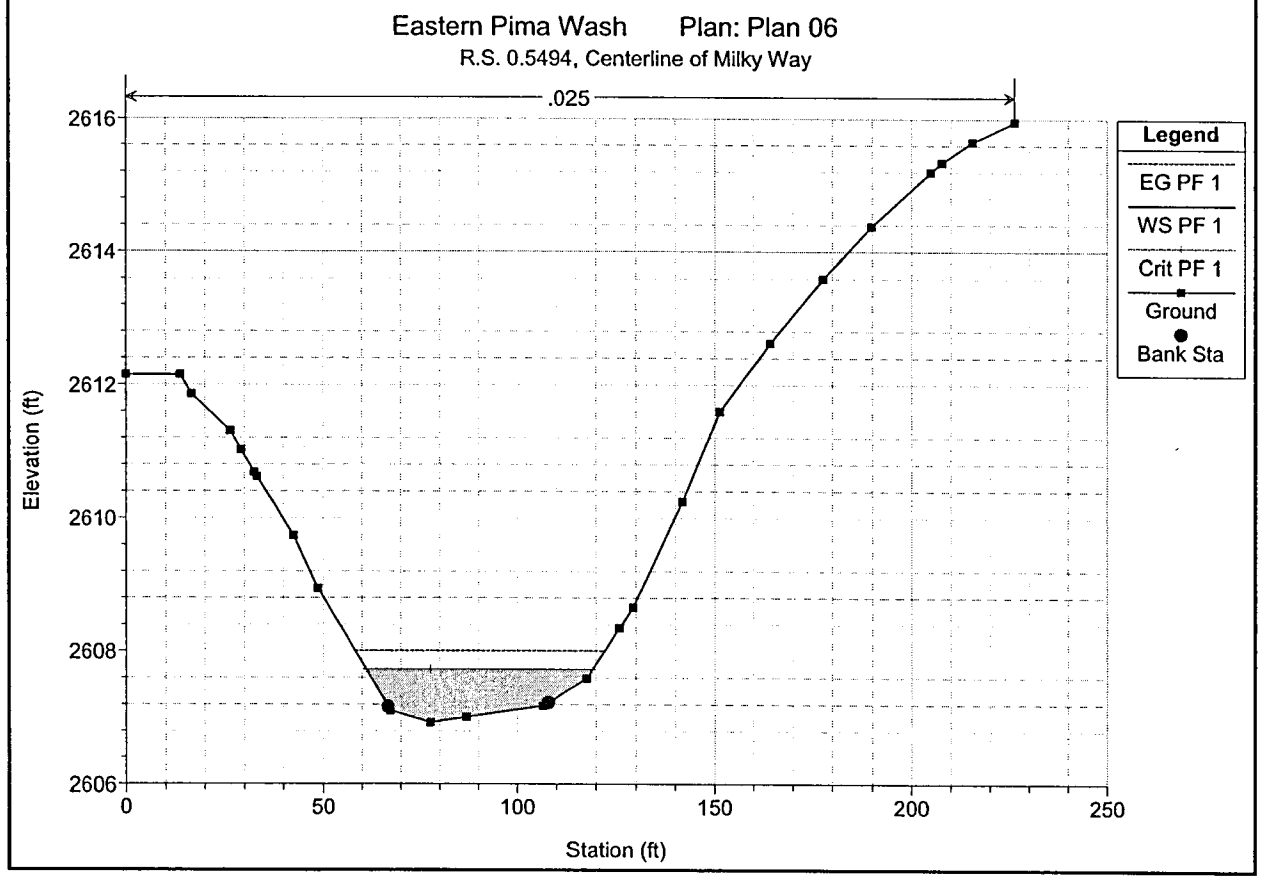

Eastern Pima Wash Plan: Plan 06
R.S. 0.6387
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2626
2624
2622
2620
2618
2616
2614
2612
0
50
100
150
200
250

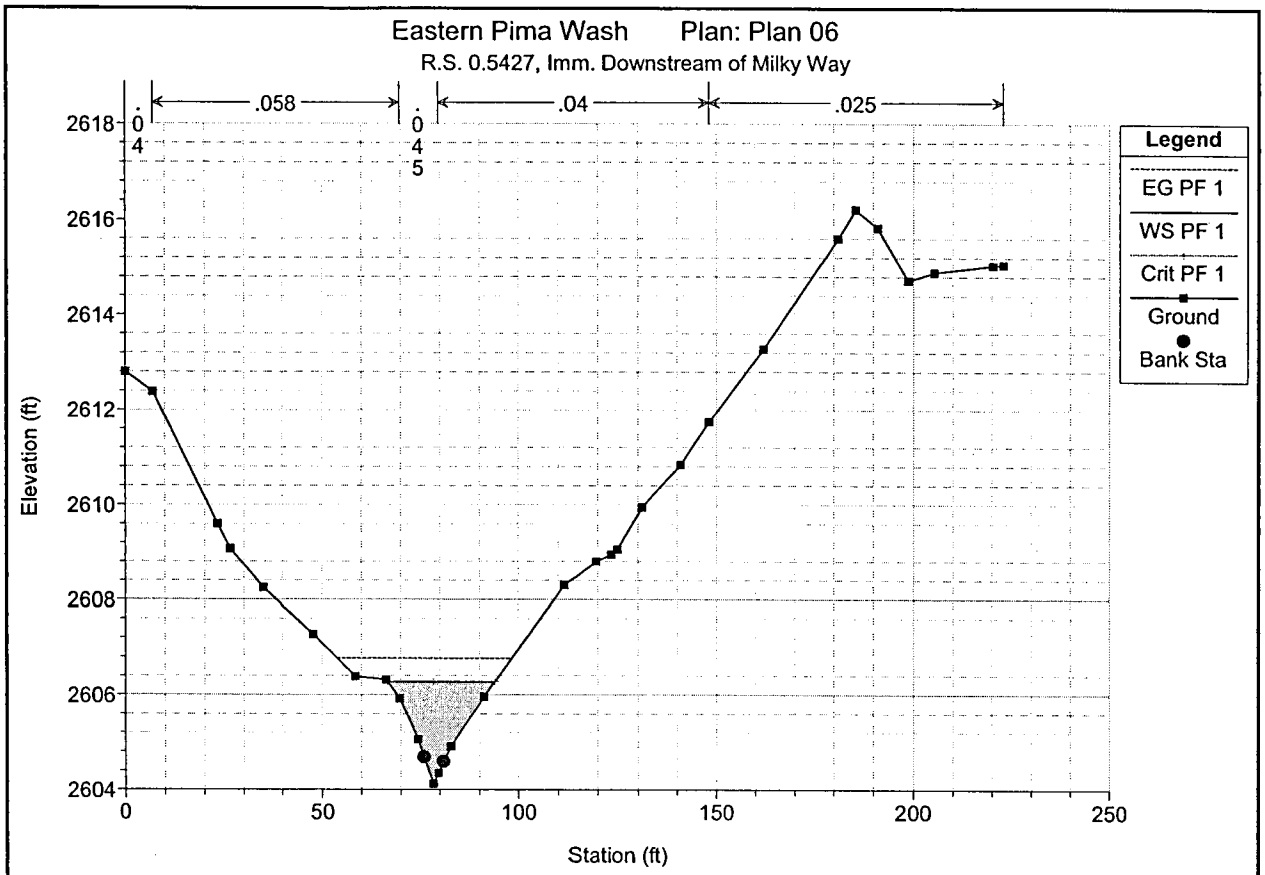

Eastern Pima Wash Plan: Plan 06
R.S. 0.6098
.058
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2626
2624
2622
2620
2618
2616
2614
2612
2610
0
50
100
150
200
250

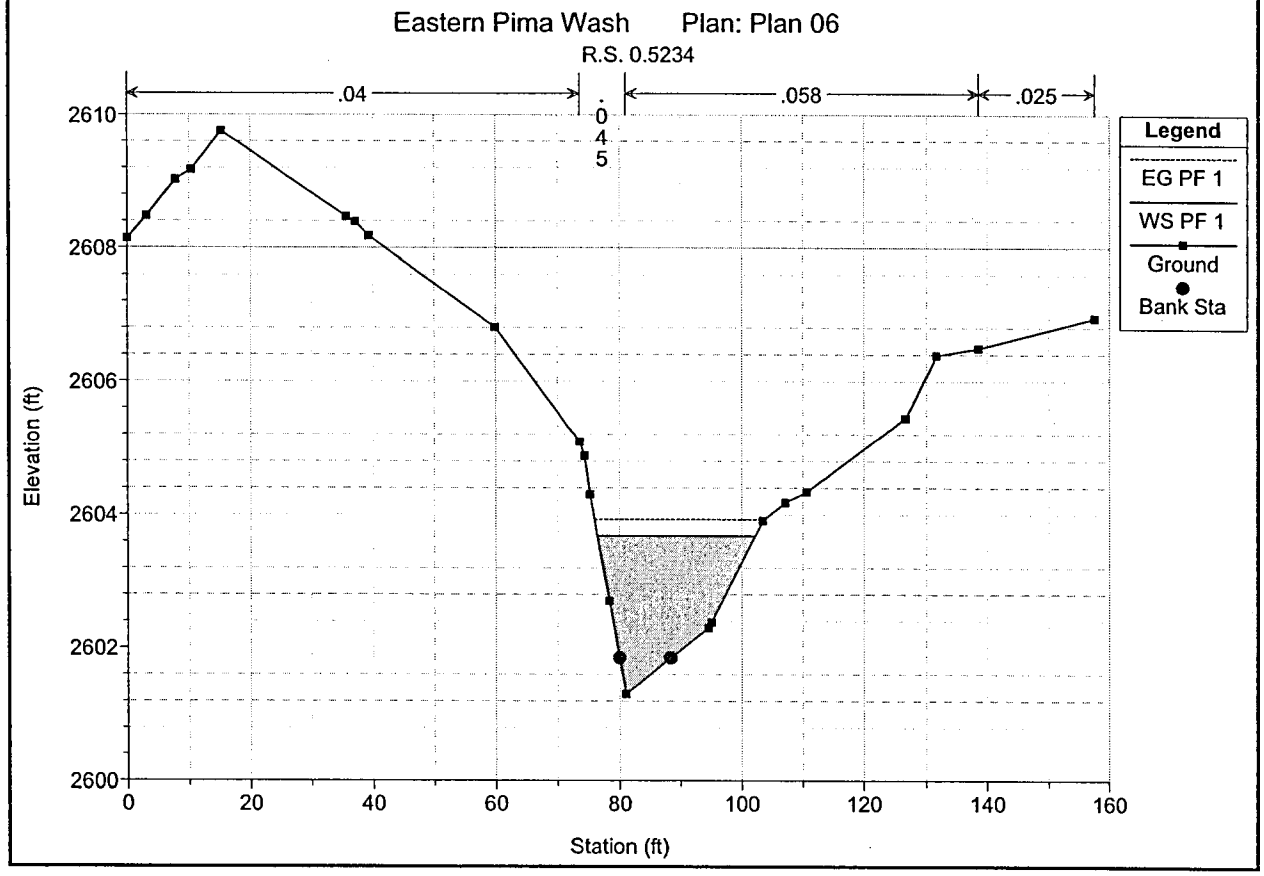

Eastern Pima Wash Plan: Plan 06
R.S. 0.5931
.025
.058
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2620
2618
2616
2614
2612
2610
2608
0
50
100
150
200
250

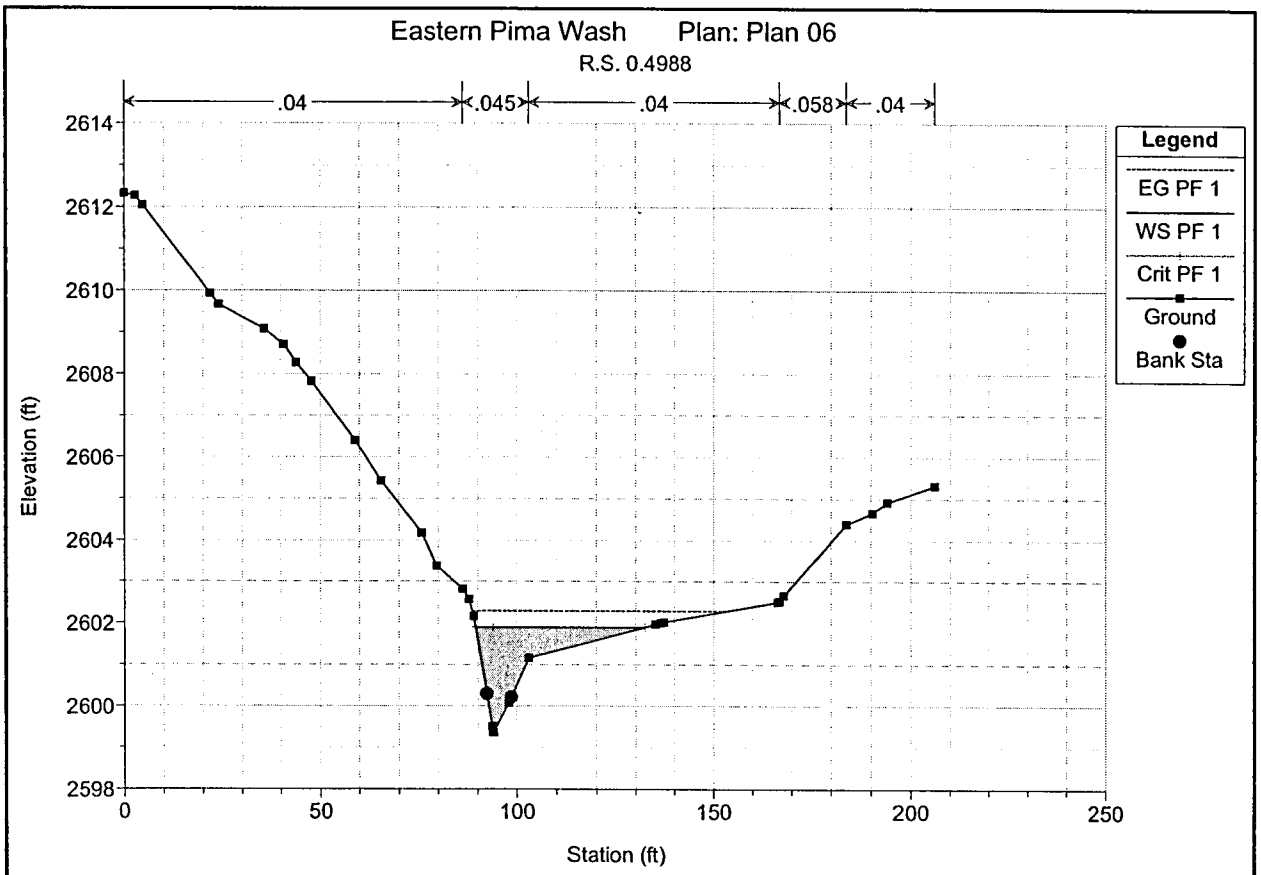

Eastern Pima Wash Plan: Plan 06
R.S. 0.5707
.058
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2622
2620
2618
2616
2614
2612
2610
2608
0
50
100
150
200
250

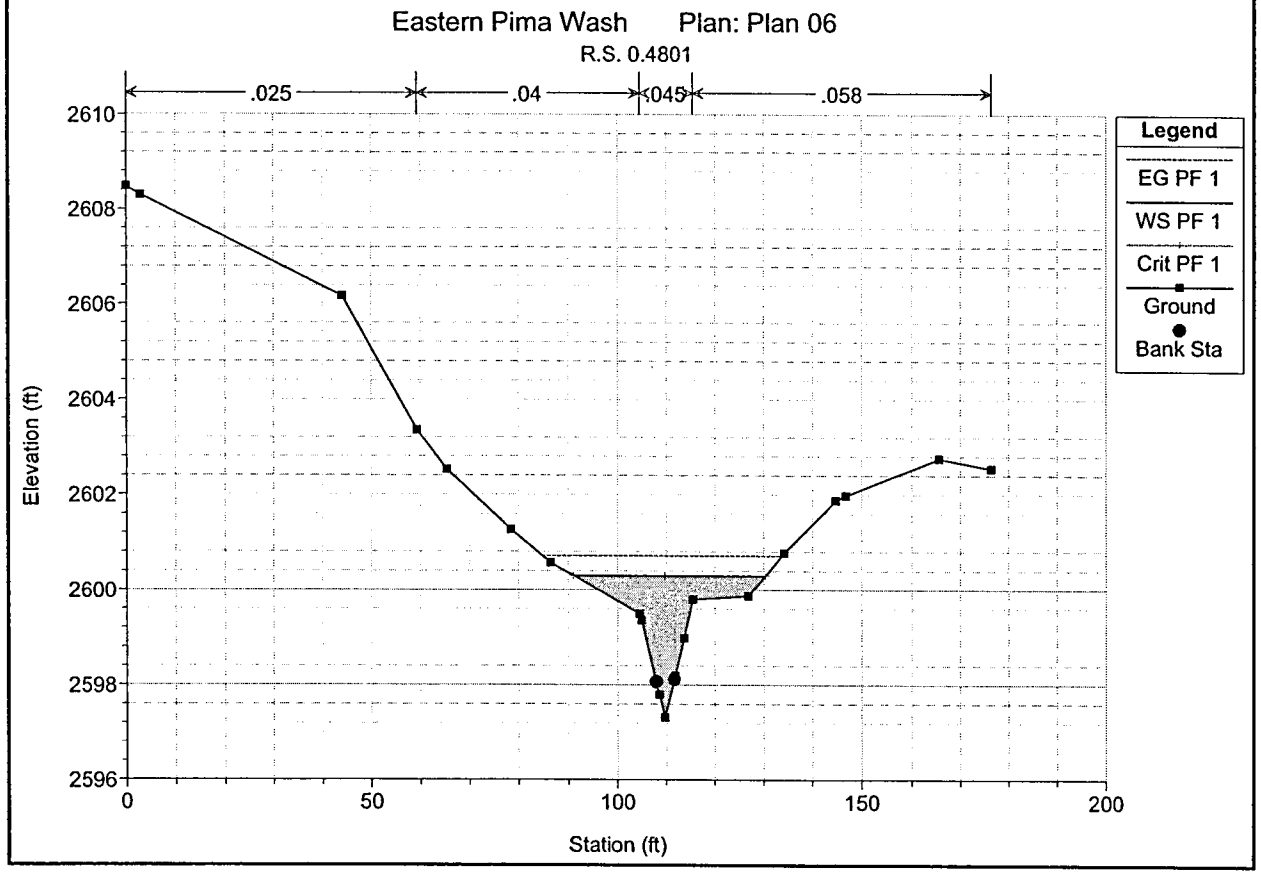

Eastern Pima Wash Plan: Plan 06
R.S. 0.5548, Imm. Upstream Milky Way
.058
.035
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2622
2620
2618
2616
2614
2612
2610
2608
2606
0
50
100
150
200
250

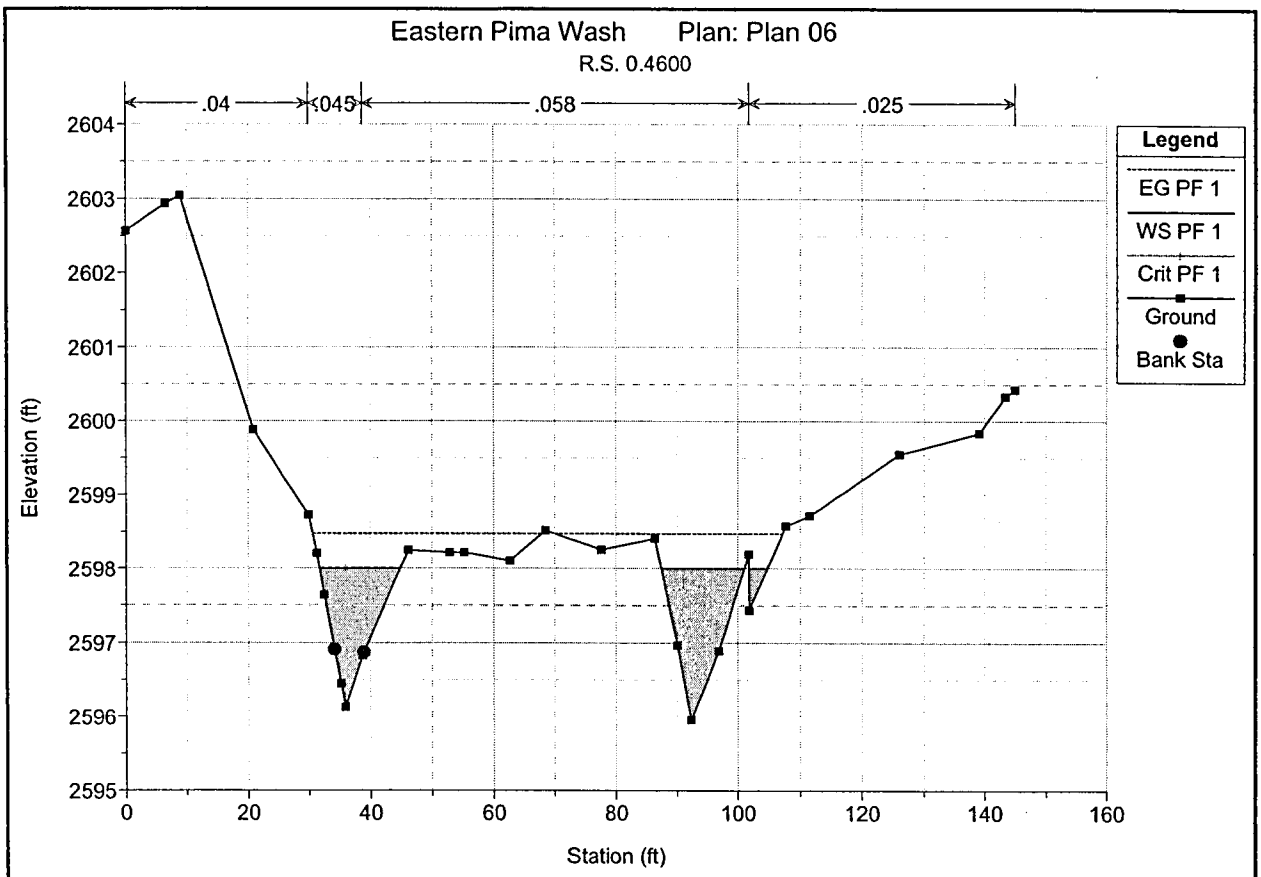

Eastern Pima Wash Plan: Plan 06
R.S. 0.5494, Centerline of Milky Way
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2616
2614
2612
2610
2608
2606
0
50
100
150
200
250

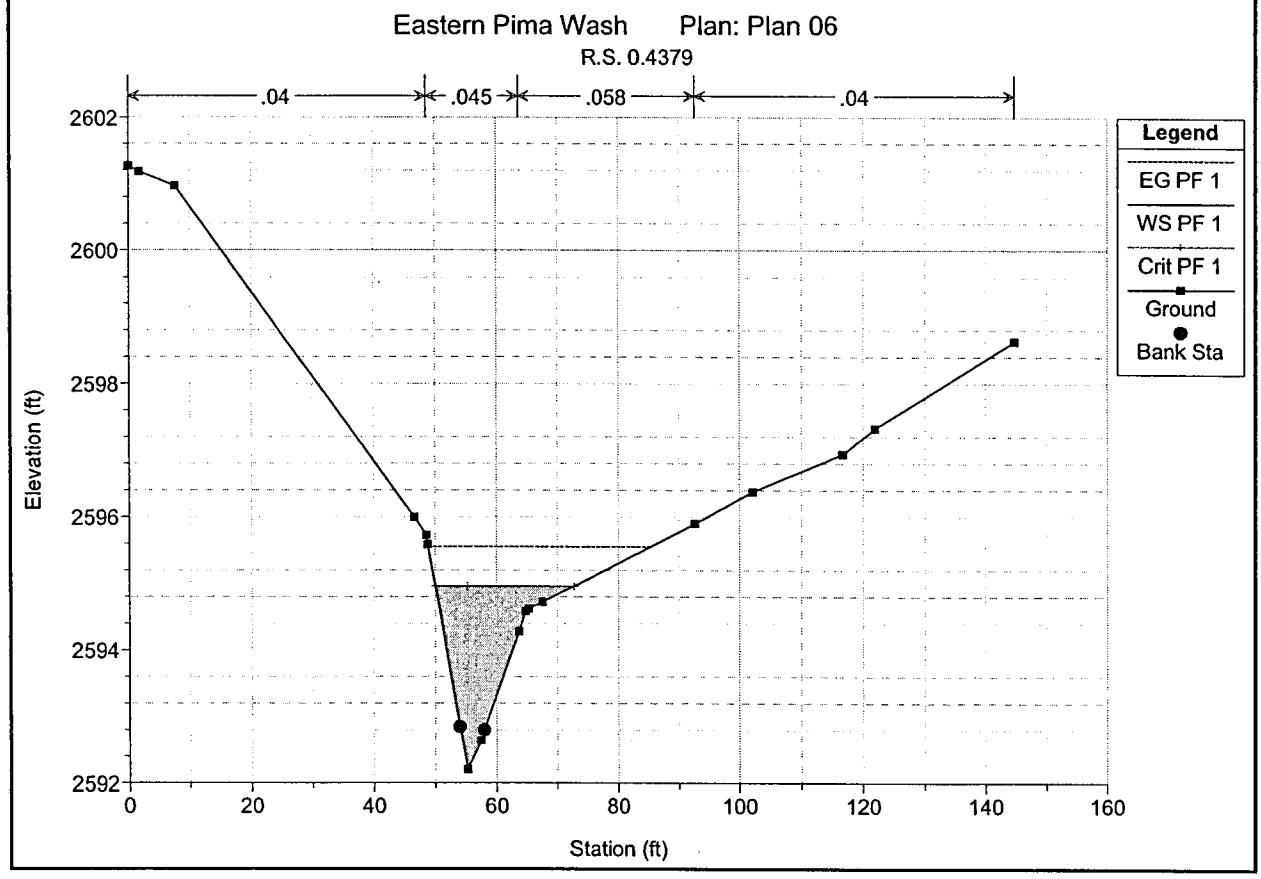

Eastern Pima Wash Plan: Plan 06
R.S. 0.5427, Imm. Downstream of Milky Way
.058
.04
.025
.04
.045
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

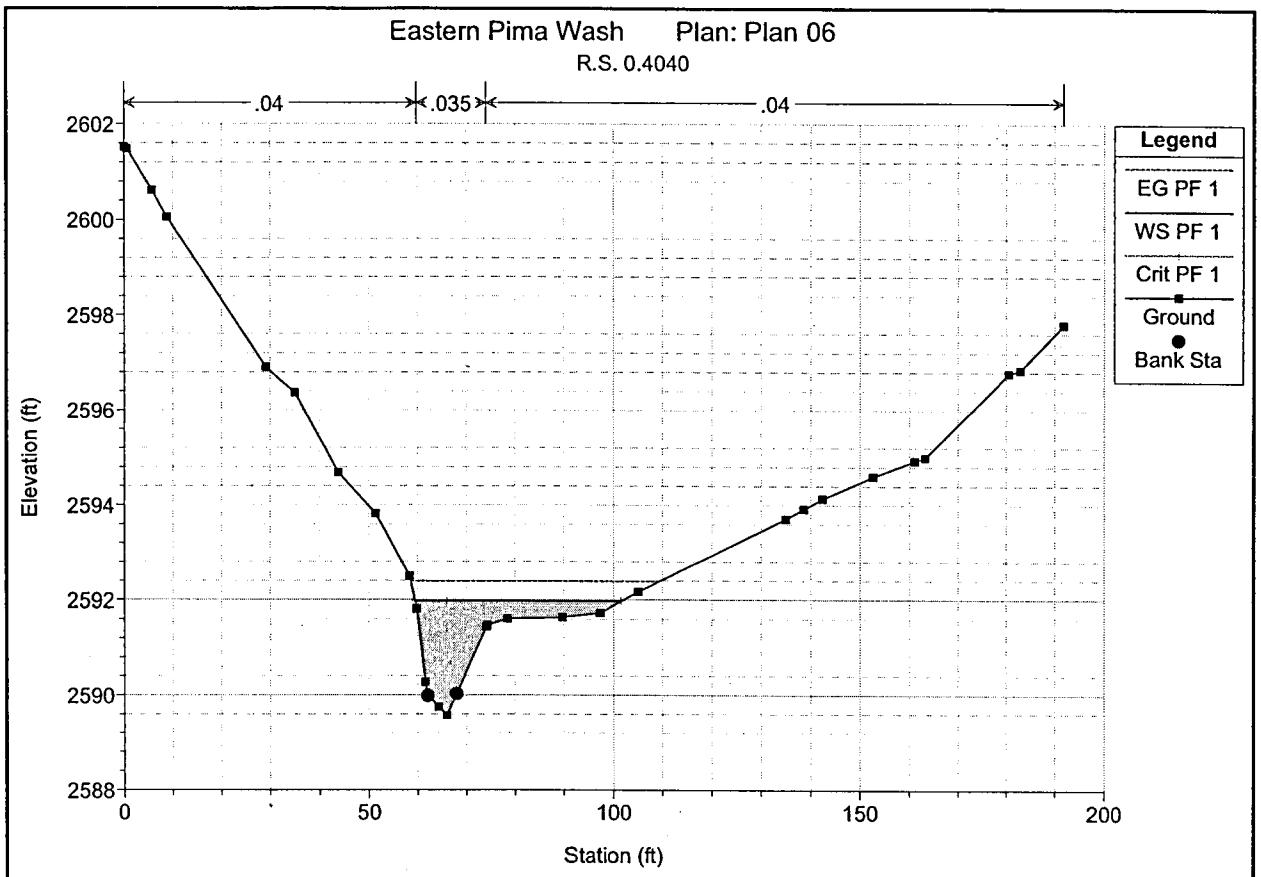

Eastern Pima Wash Plan: Plan 06
R.S. 0.5234
.04
.045
.058
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

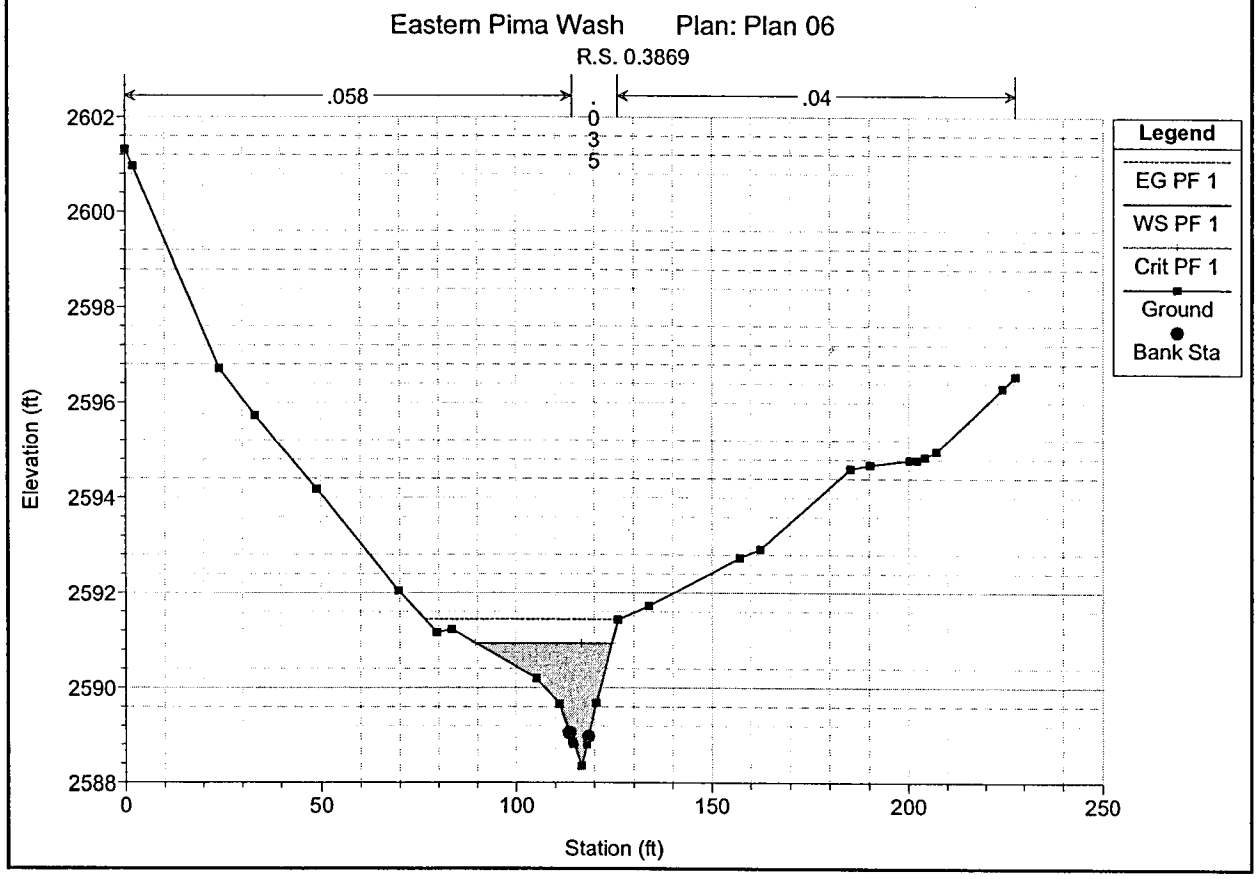

Eastern Pima Wash Plan: Plan 06
R.S. 0.4988
.04
.045
.04
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2614
2612
2610
2608
2606
2604
2602
2600
2598
0
50
100
150
200
250

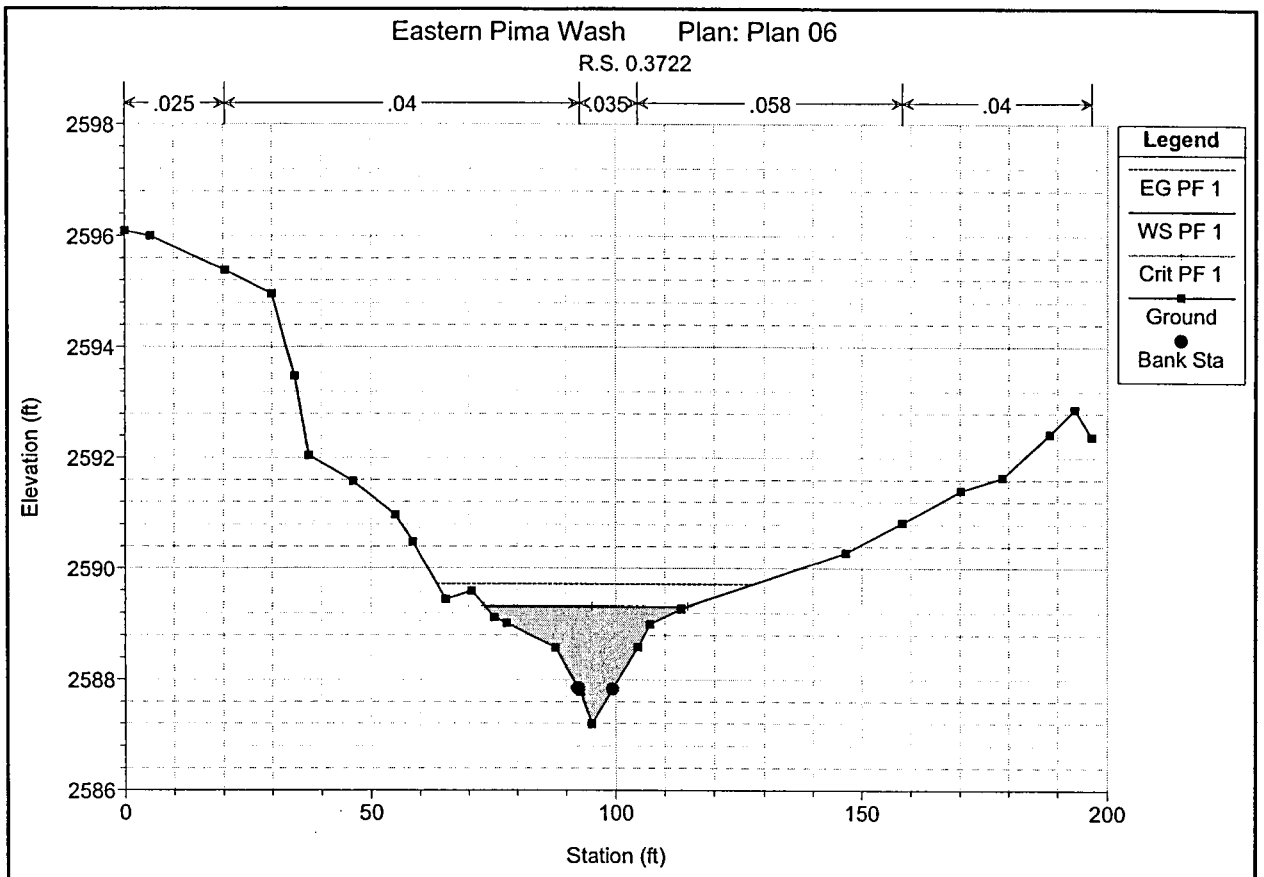

Eastern Pima Wash Plan: Plan 06
R.S. 0.4801
.025
.04
.045
.058
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2610
2608
2606
2604
2602
2600
2598
2596
0
50
100
150
200

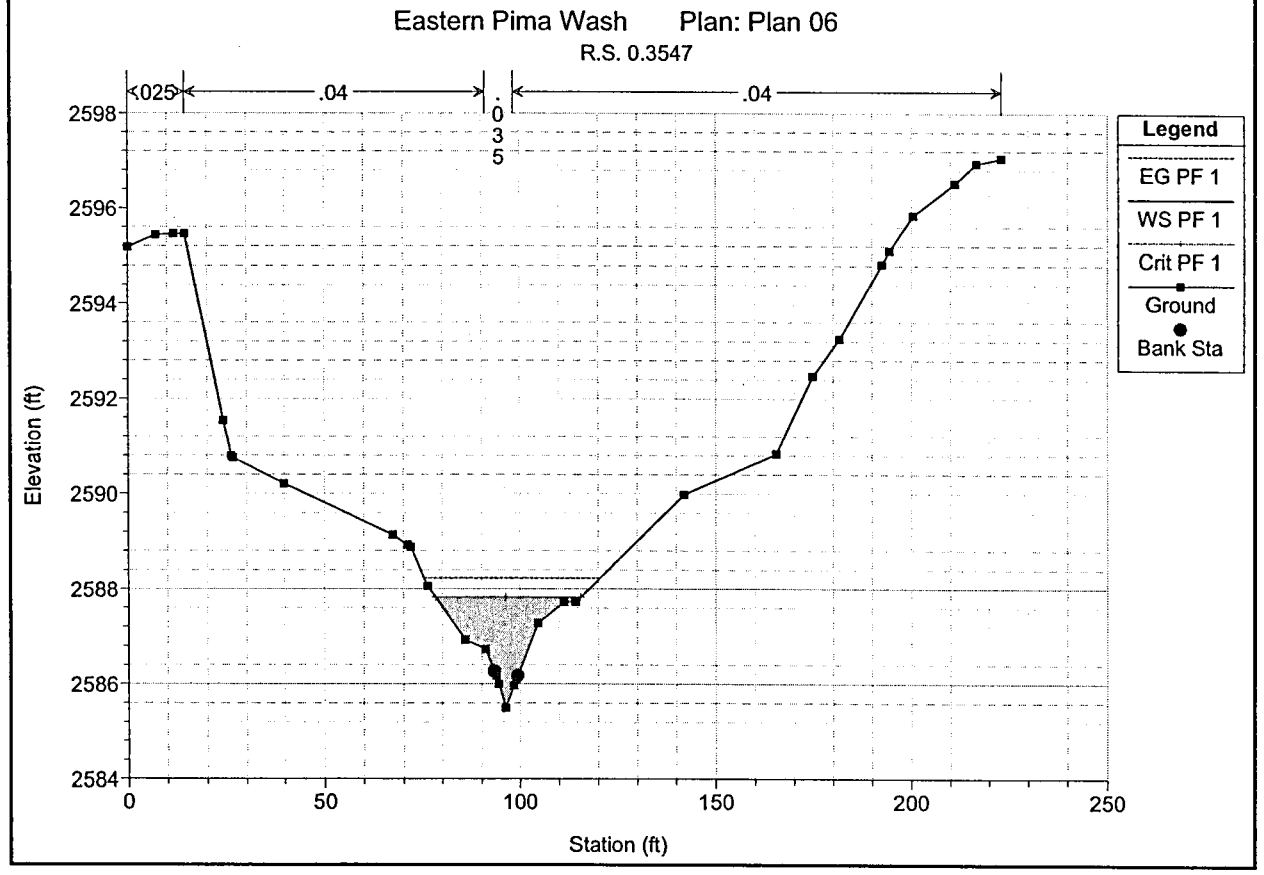

Eastern Pima Wash Plan: Plan 06
R.S. 0.4600
.04
.045
.058
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

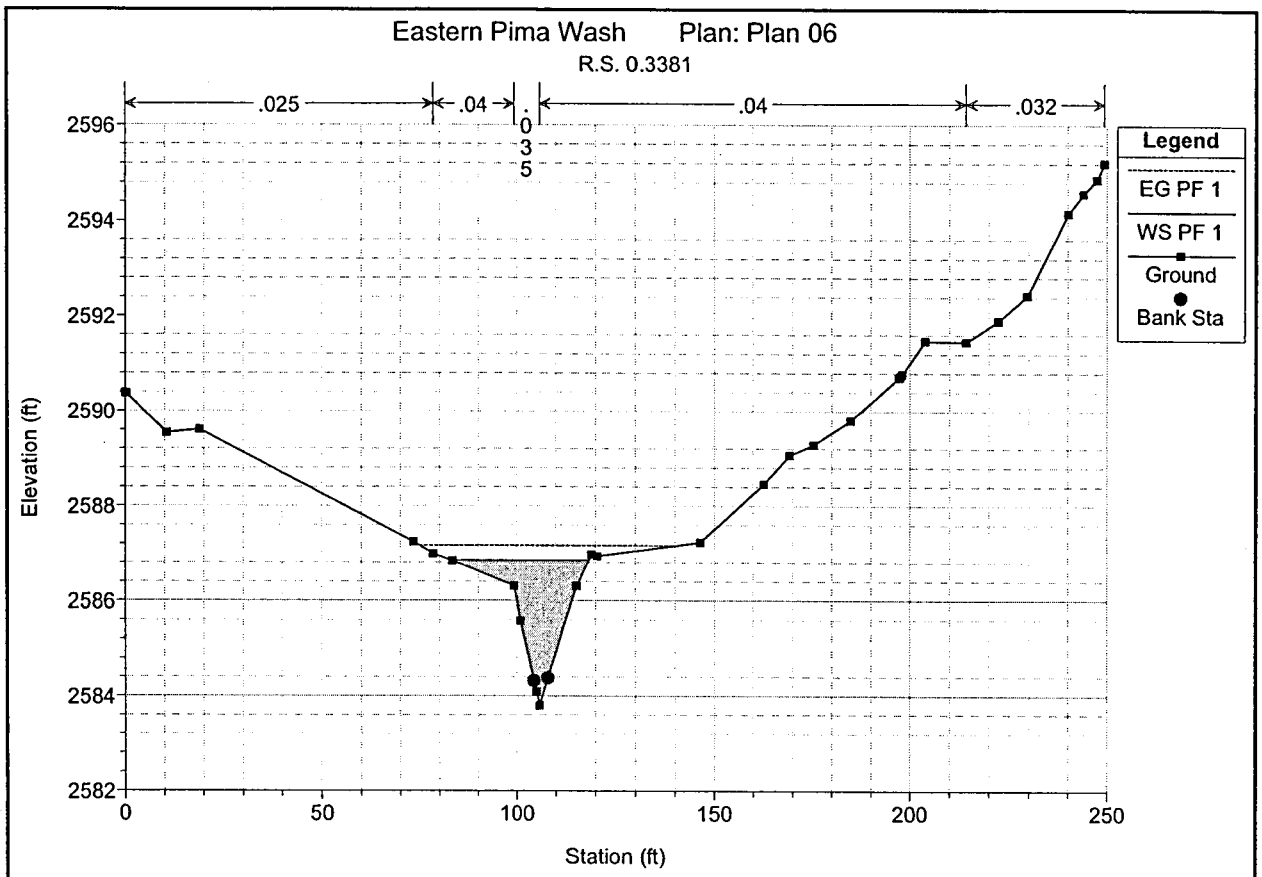

Eastern Pima Wash Plan: Plan 06
R.S. 0.4379
.04
.045
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

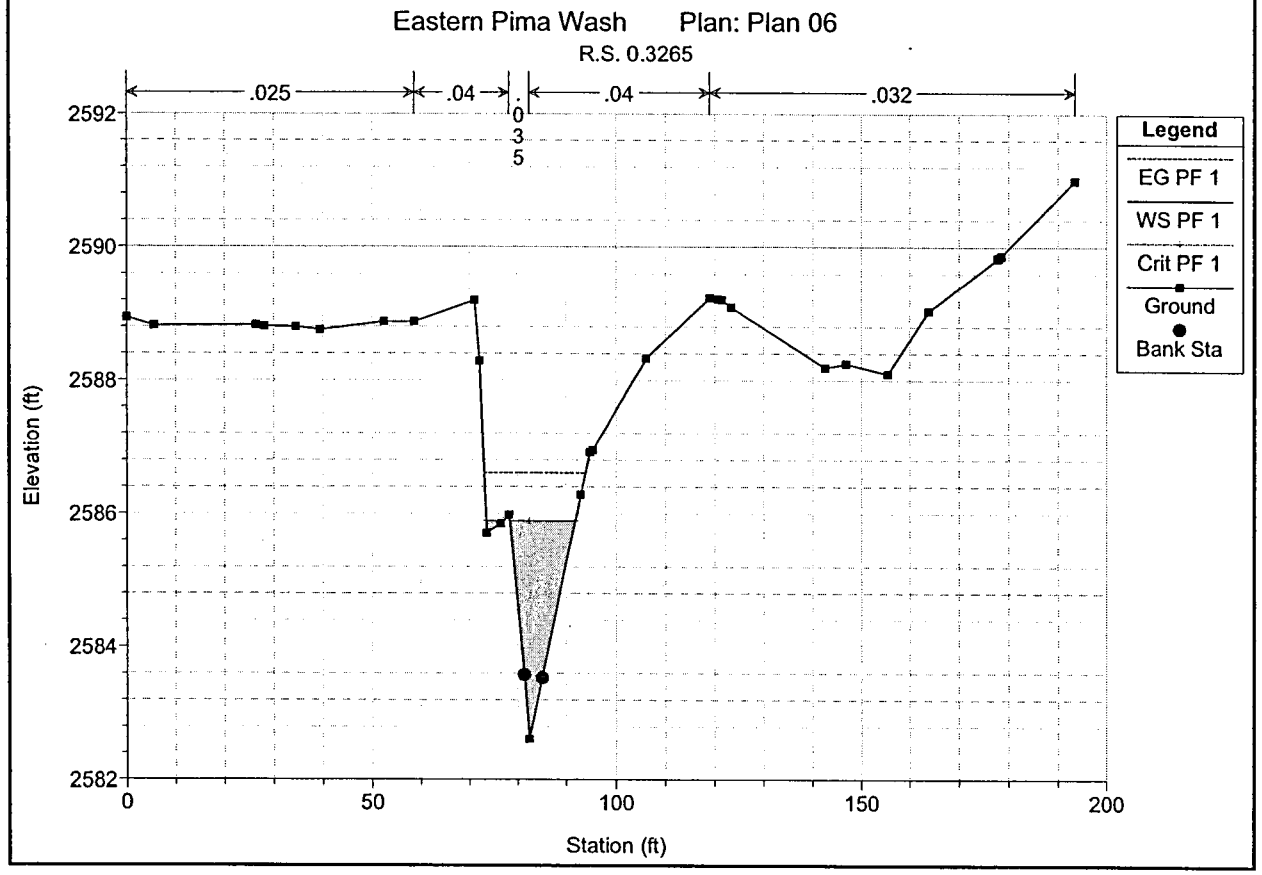

Eastern Pima Wash Plan: Plan 06
R.S. 0.4040
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2602
2600
2598
2596
2594
2592
2590
2588
0
50
100
150
200
Station (ft)

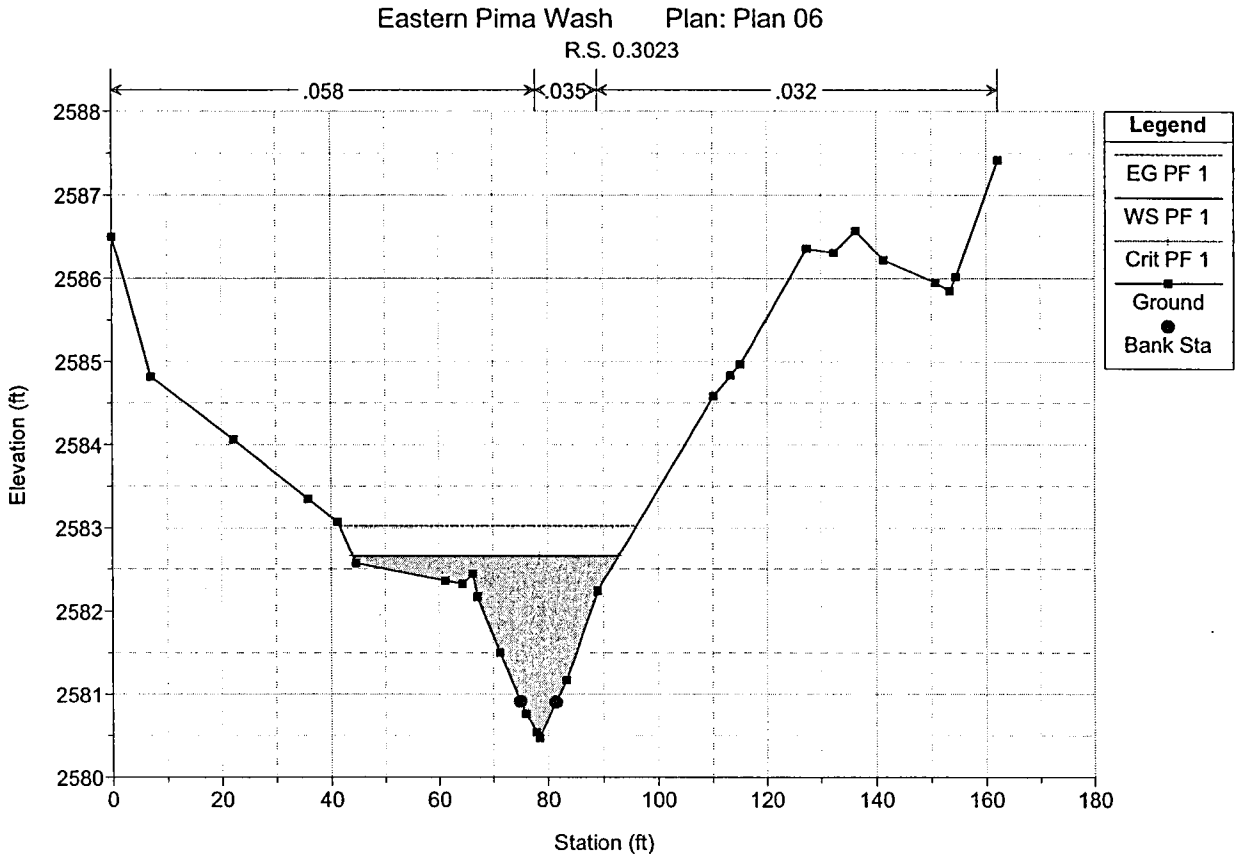

Eastern Pima Wash Plan: Plan 06
R.S. 0.3869
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2602
2600
2598
2596
2594
2592
2590
2588
0
50
100
150
200
250
Station (ft)

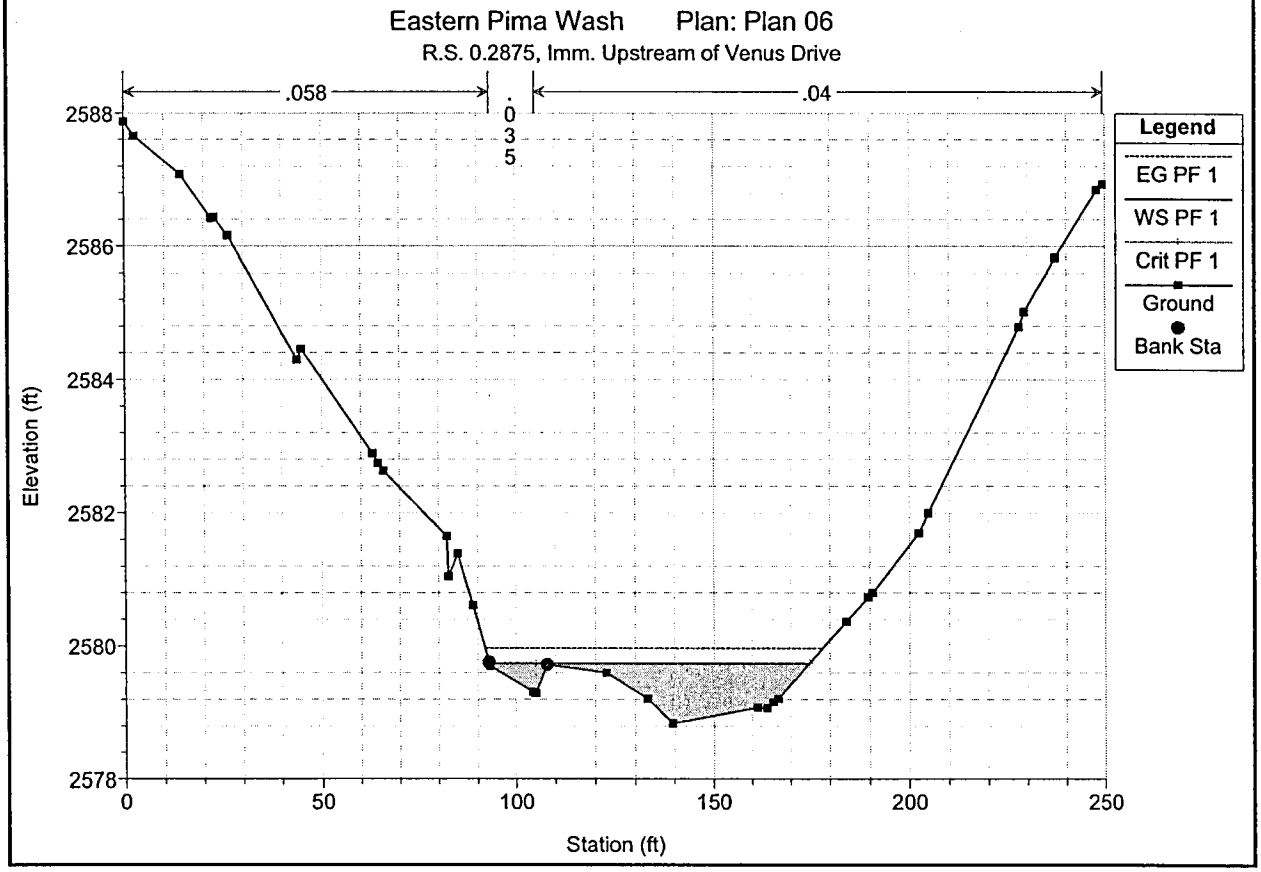

Eastern Pima Wash Plan: Plan 06
R.S. 0.3722
.025
.04
.035
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2598
2596
2594
2592
2590
2588
2586
0
50
100
150
200

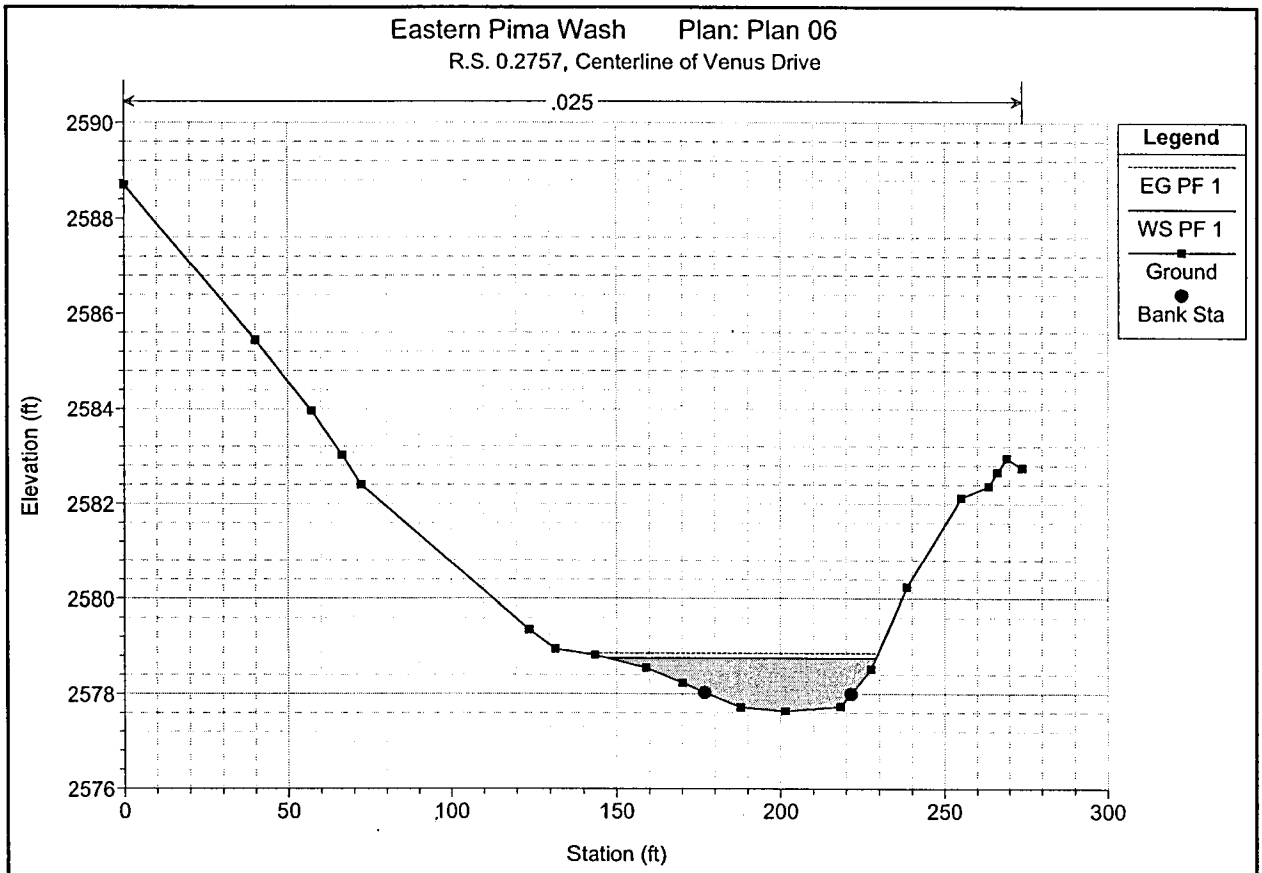

Eastern Pima Wash Plan: Plan 06
R.S. 0.3547
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2598
2596
2594
2592
2590
2588
2586
2584
0
50
100
150
200
250

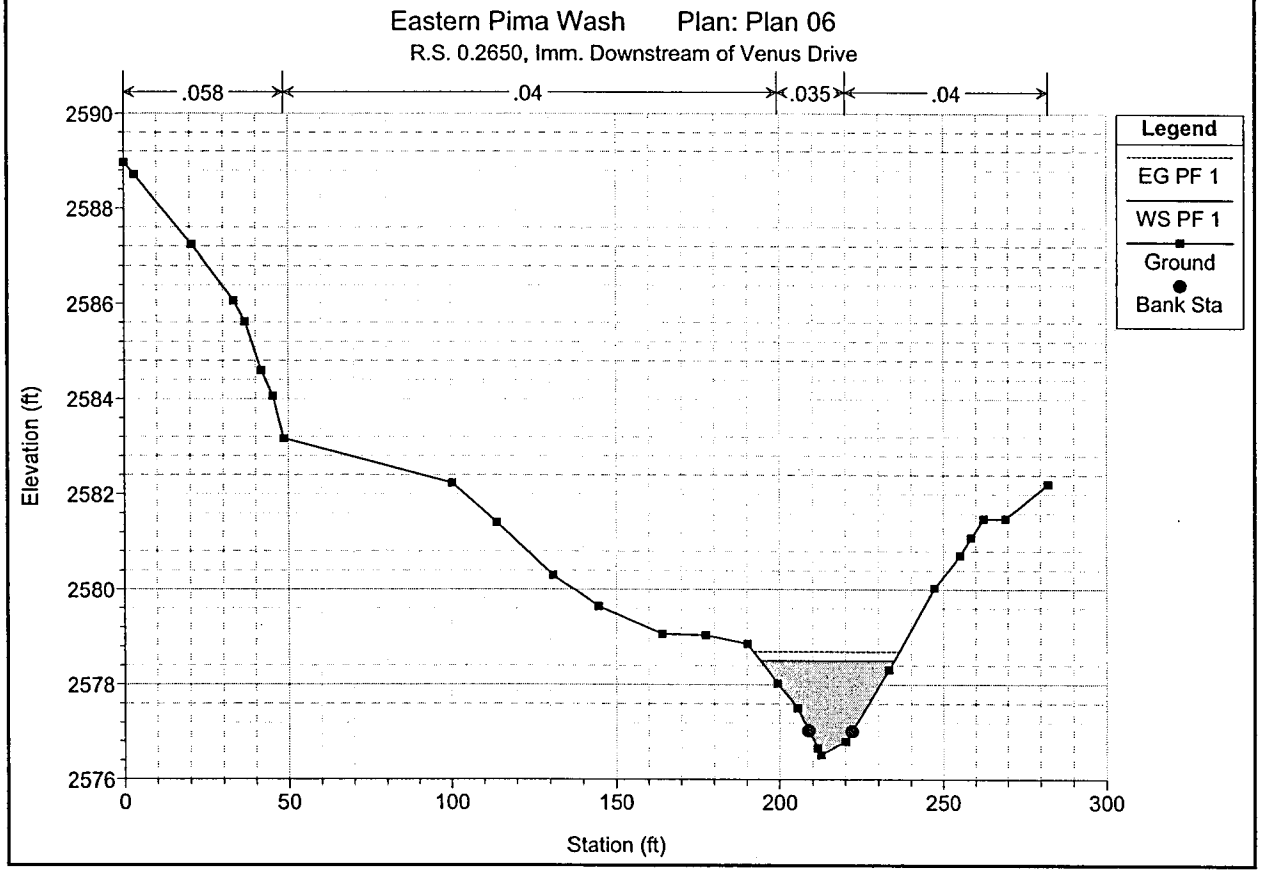

Eastern Pima Wash Plan: Plan 06
R.S. 0.3381
.025
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2596
2594
2592
2590
2588
2586
2584
2582
0
50
100
150
200
250
Station (ft)

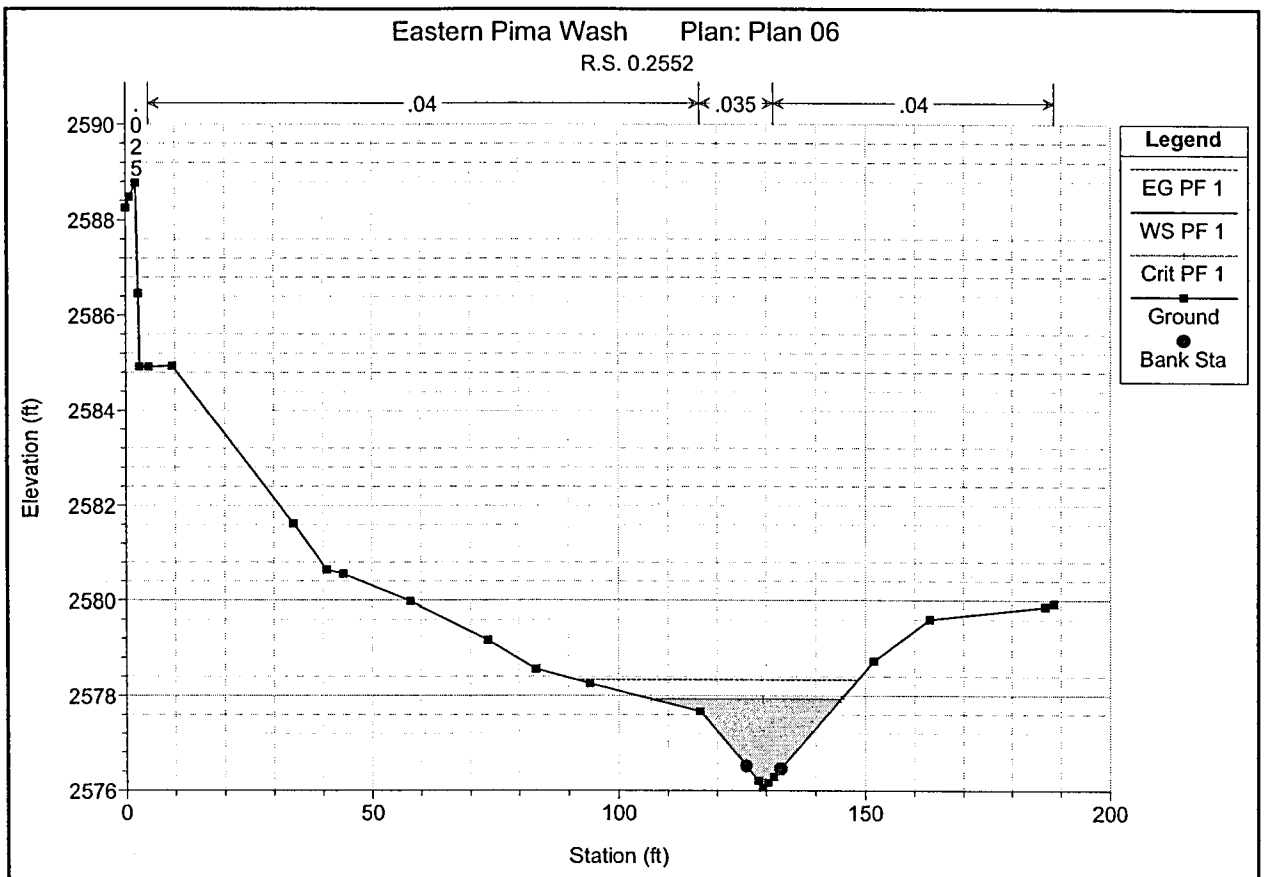

Eastern Pima Wash Plan: Plan 06
R.S. 0.3265
.025
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2592
2590
2588
2586
2584
2582
0
50
100
150
200
Station (ft)

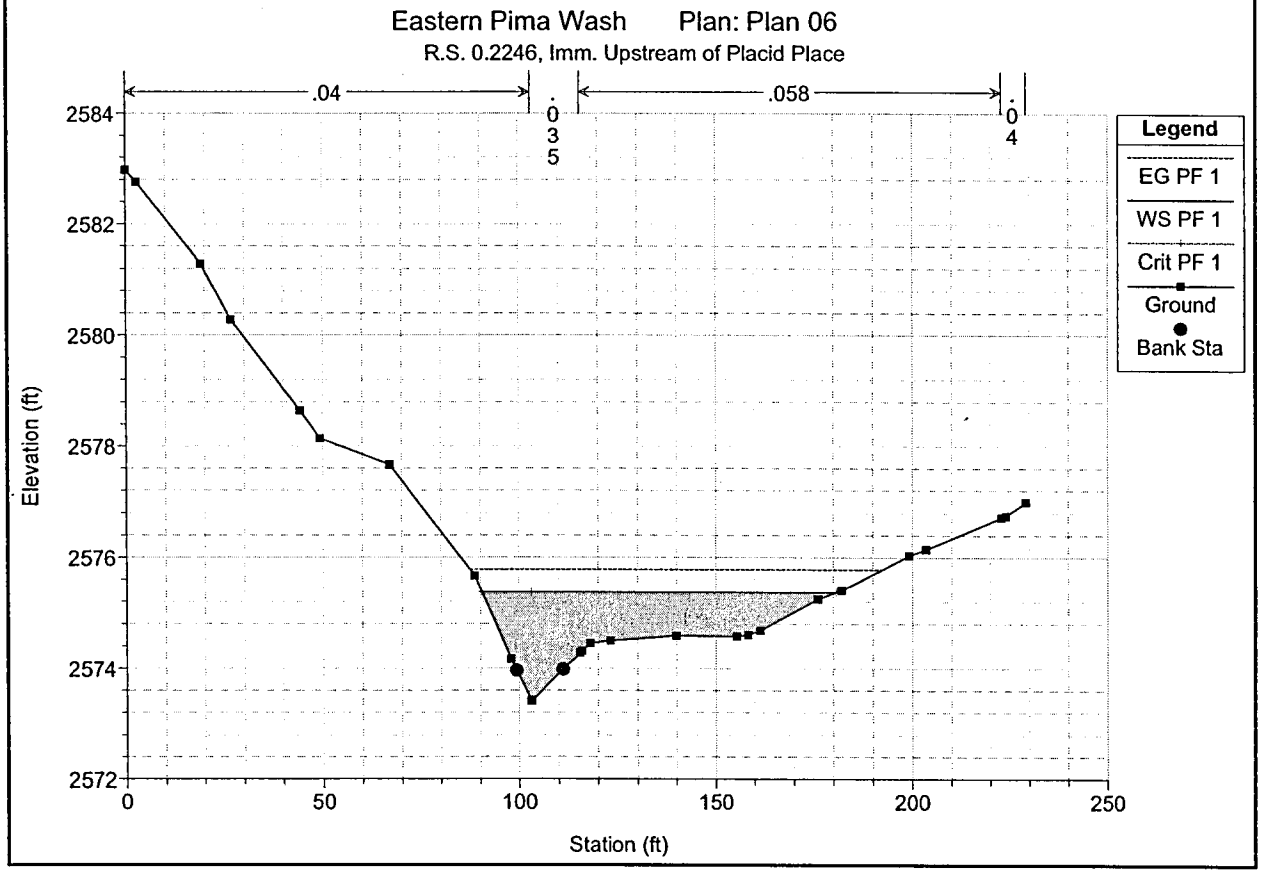

Eastern Pima Wash Plan: Plan 06
R.S. 0.3023
.058
.035
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2588
2587
2586
2585
2584
2583
2582
2581
2580
0
20
40
60
80
100
120
140
160
180

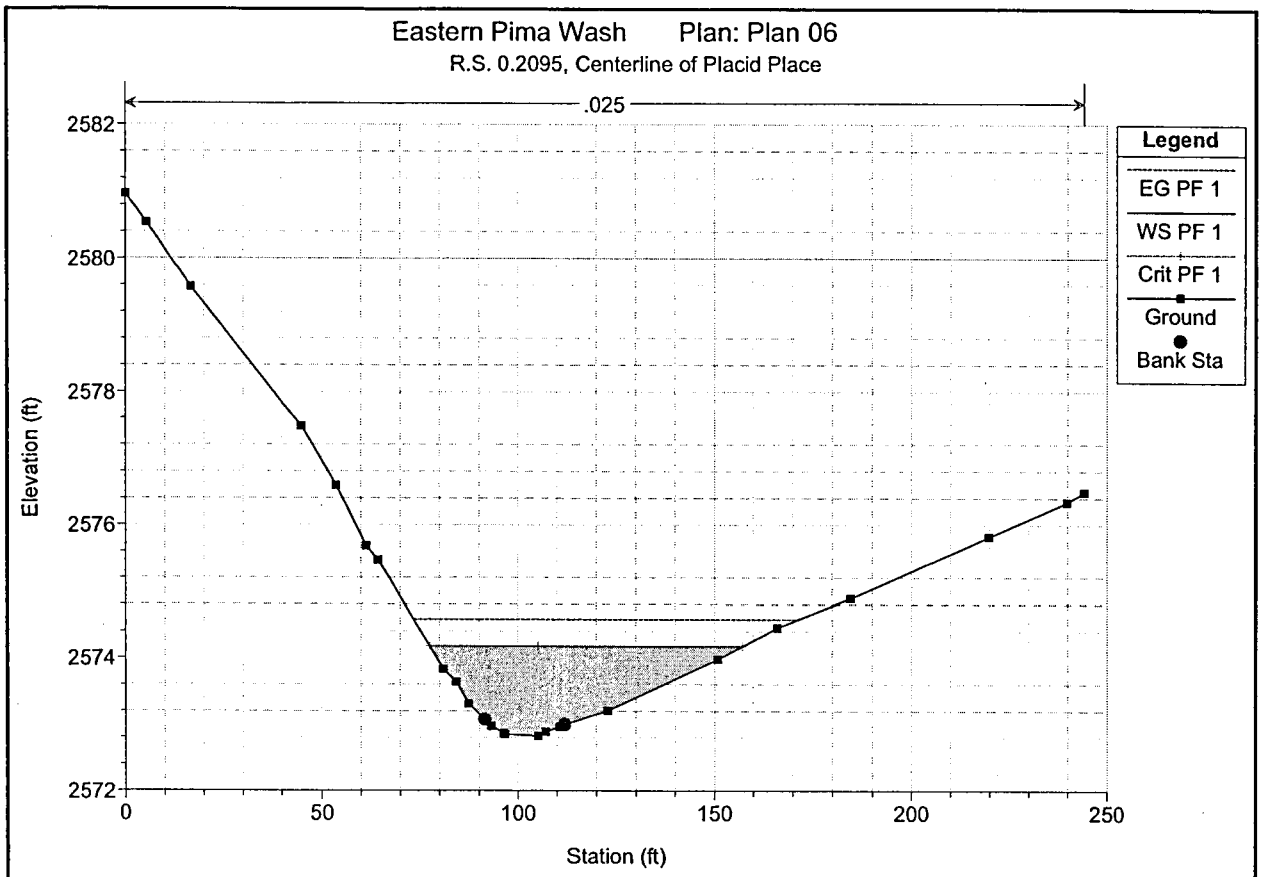

Eastern Pima Wash Plan: Plan 06
R.S. 0.2875, Imm. Upstream of Venus Drive
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2588
2586
2584
2582
2580
2578
0
50
100
150
200
250

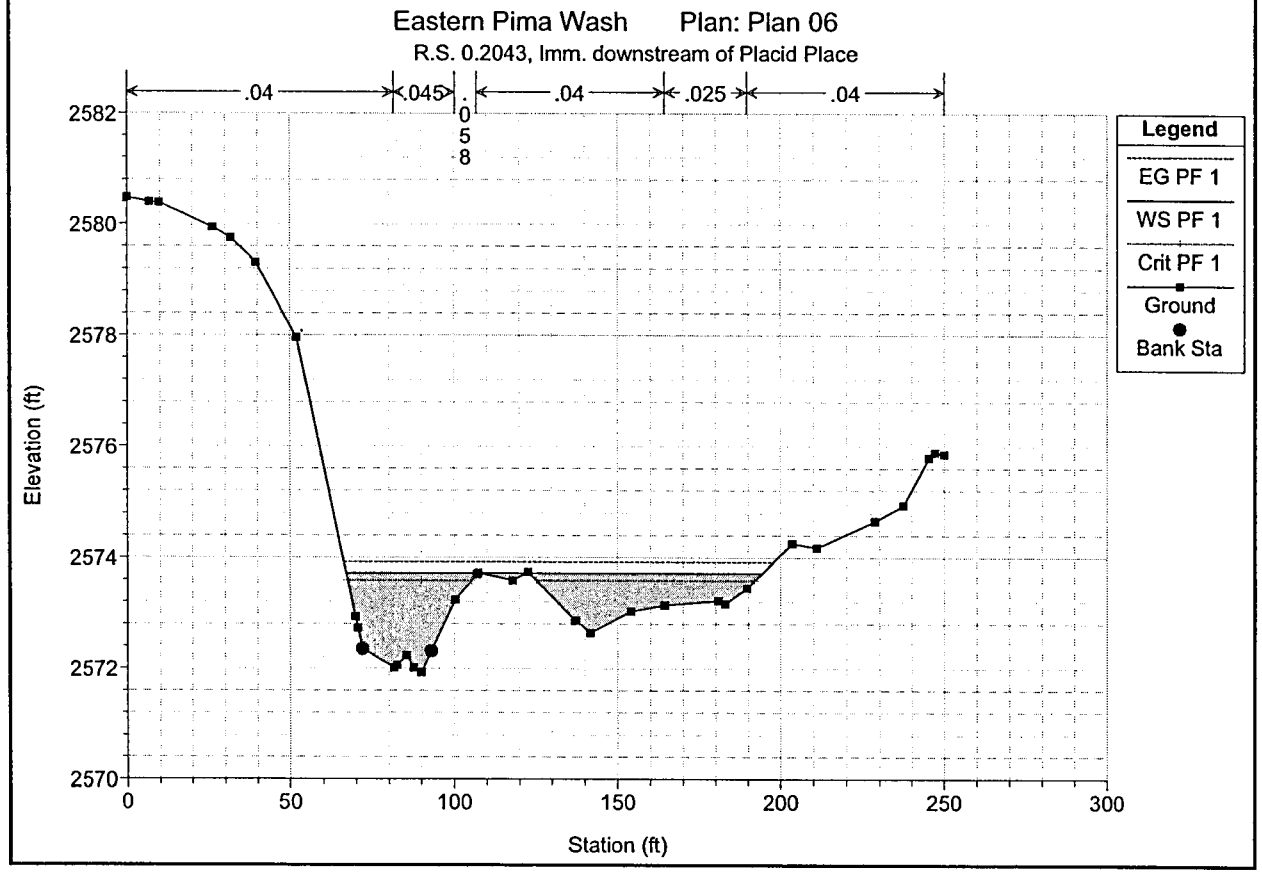

Eastern Pima Wash Plan: Plan 06
R.S. 0.2757, Centerline of Venus Drive
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2590
2588
2586
2584
2582
2580
2578
2576
0
50
100
150
200
250
300
Station (ft)

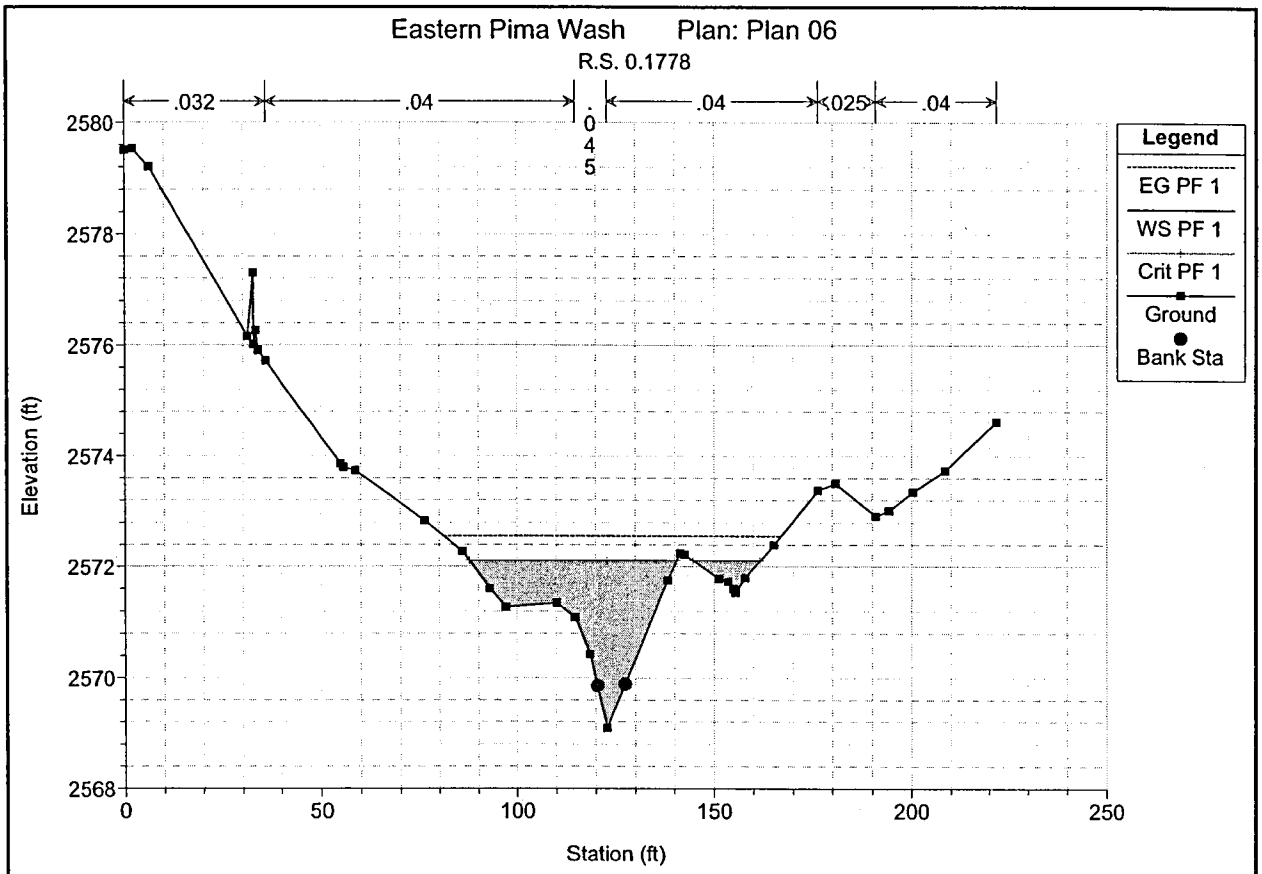

Eastern Pima Wash Plan: Plan 06
R.S. 0.2650, Imm. Downstream of Venus Drive
.058
.04
.035
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2590
2588
2586
2584
2582
2580
2578
2576
0
50
100
150
200
250
300
Station (ft)

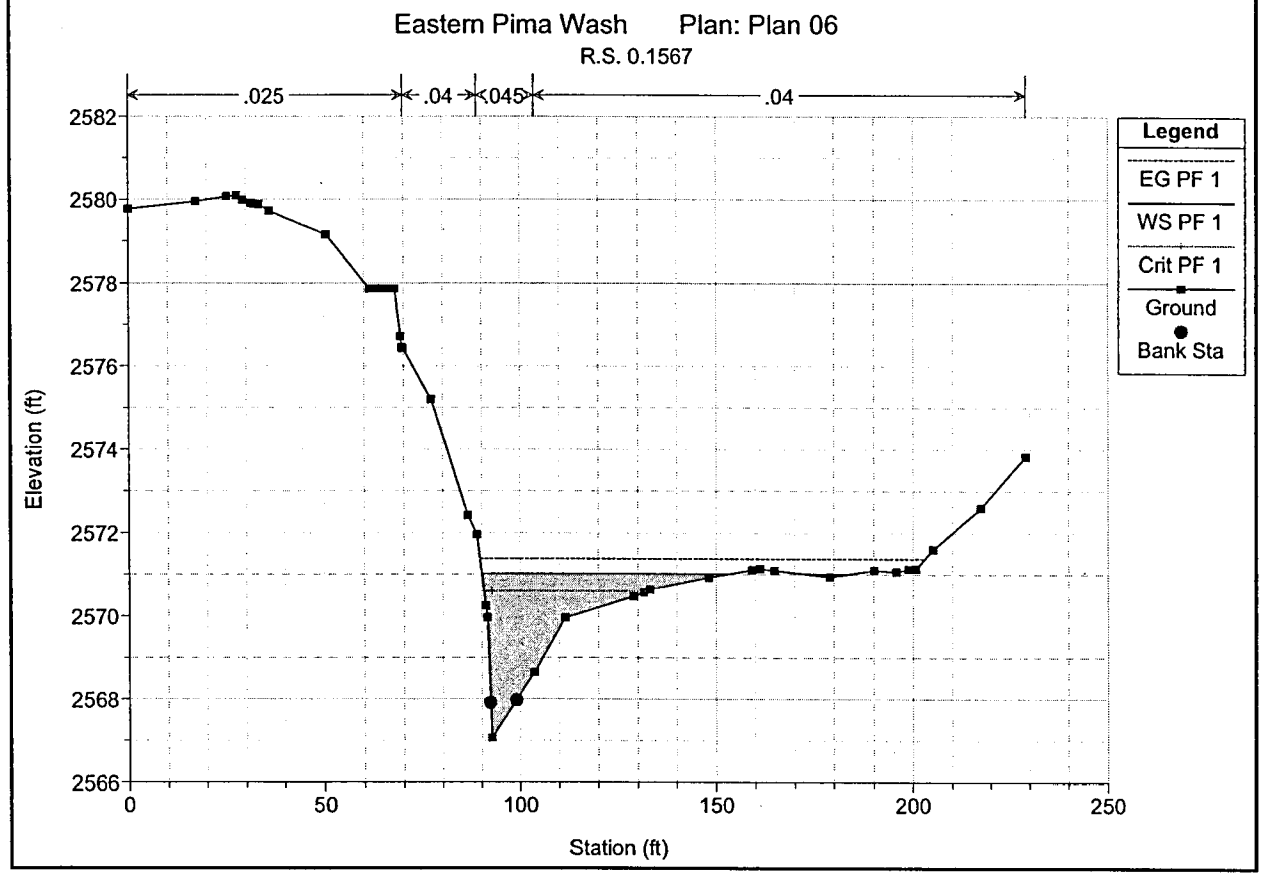

Eastern Pima Wash Plan: Plan 06
R.S. 0.2552
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2590
2588
2586
2584
2582
2580
2578
2576
0
50
100
150
200
Station (ft)

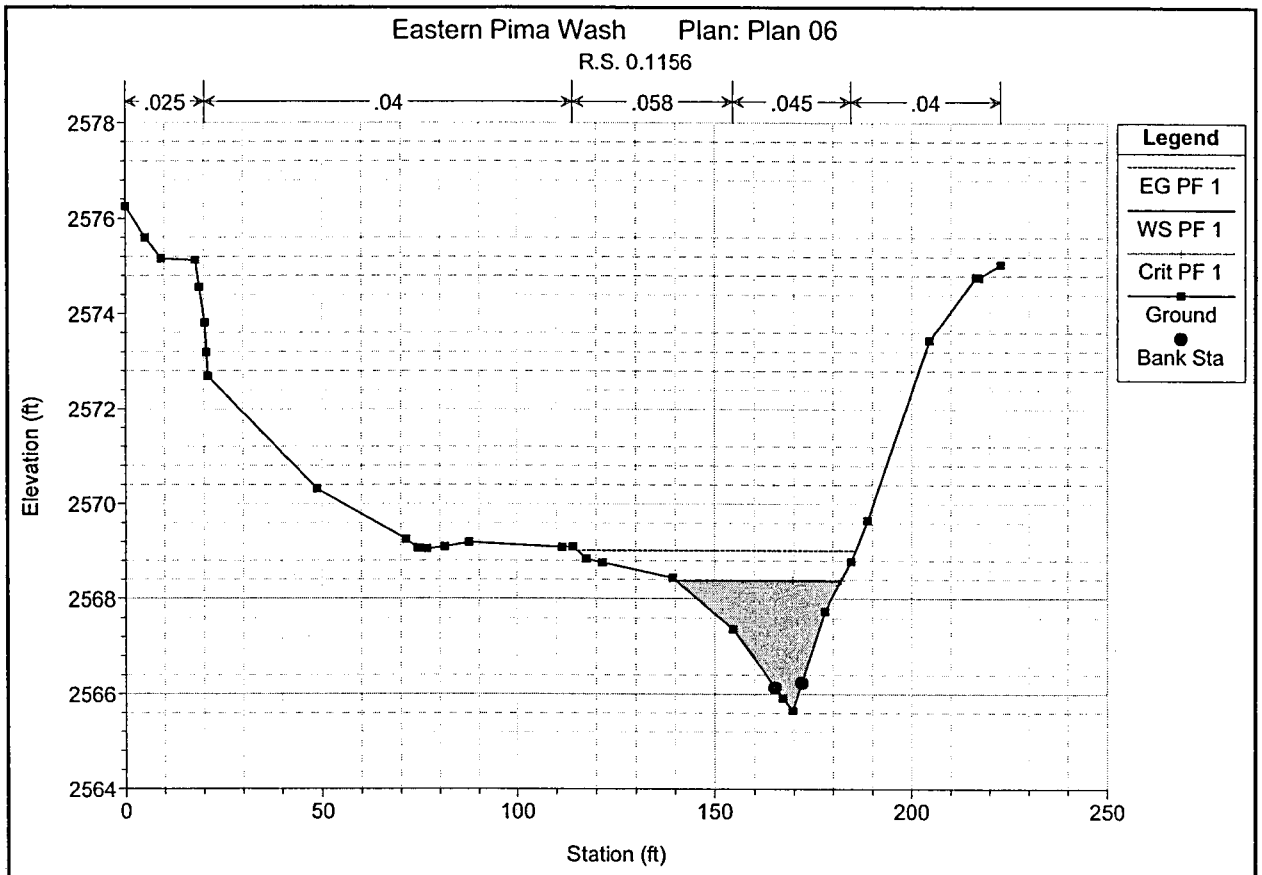

Eastern Pima Wash Plan: Plan 06
R.S. 0.2246, Imm. Upstream of Placid Place
.04
.035
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2584
2582
2580
2578
2576
2574
2572
0
50
100
150
200
250
Station (ft)

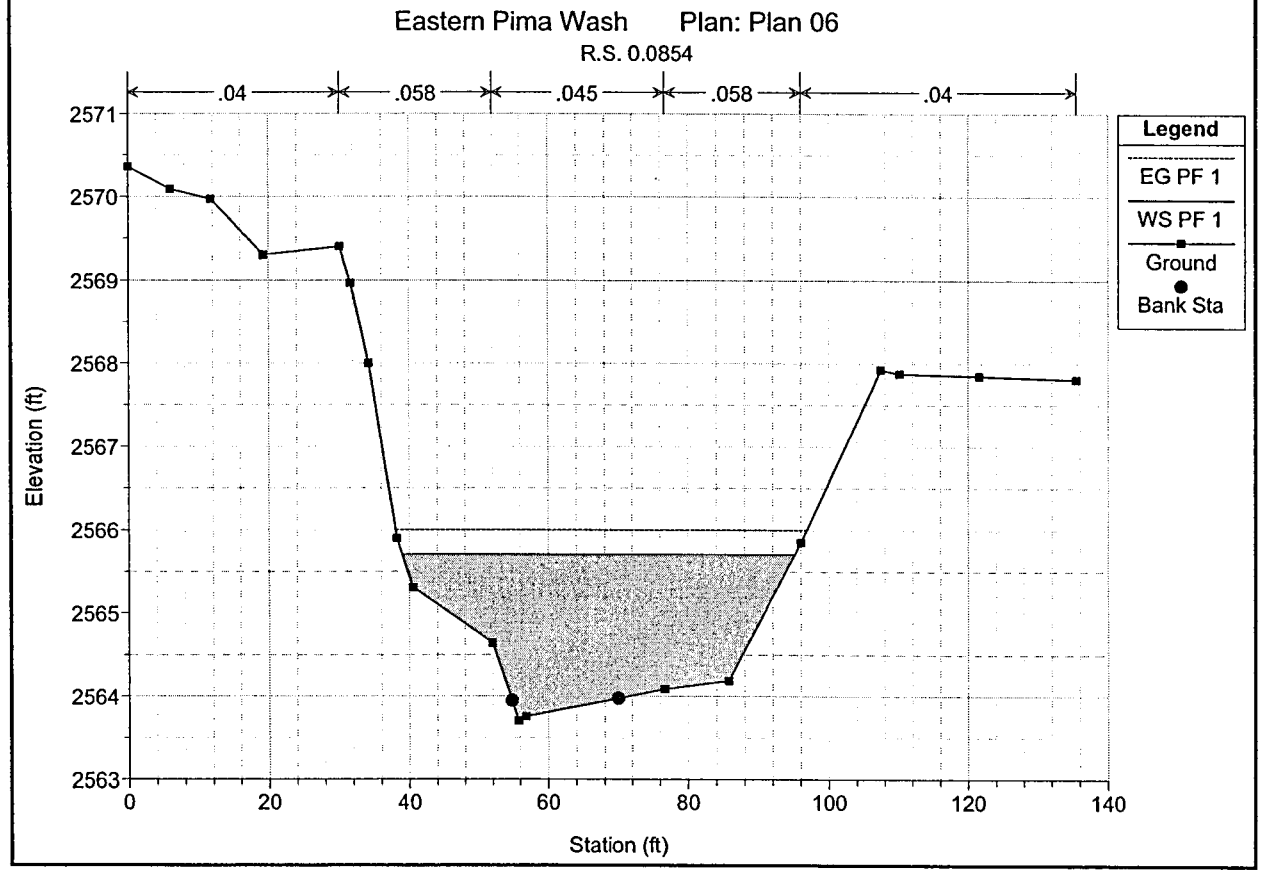

Eastern Pima Wash Plan: Plan 06
R.S. 0.2095, Centerline of Placid Place
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2582
2580
2578
2576
2574
2572
0
50
100
150
200
250

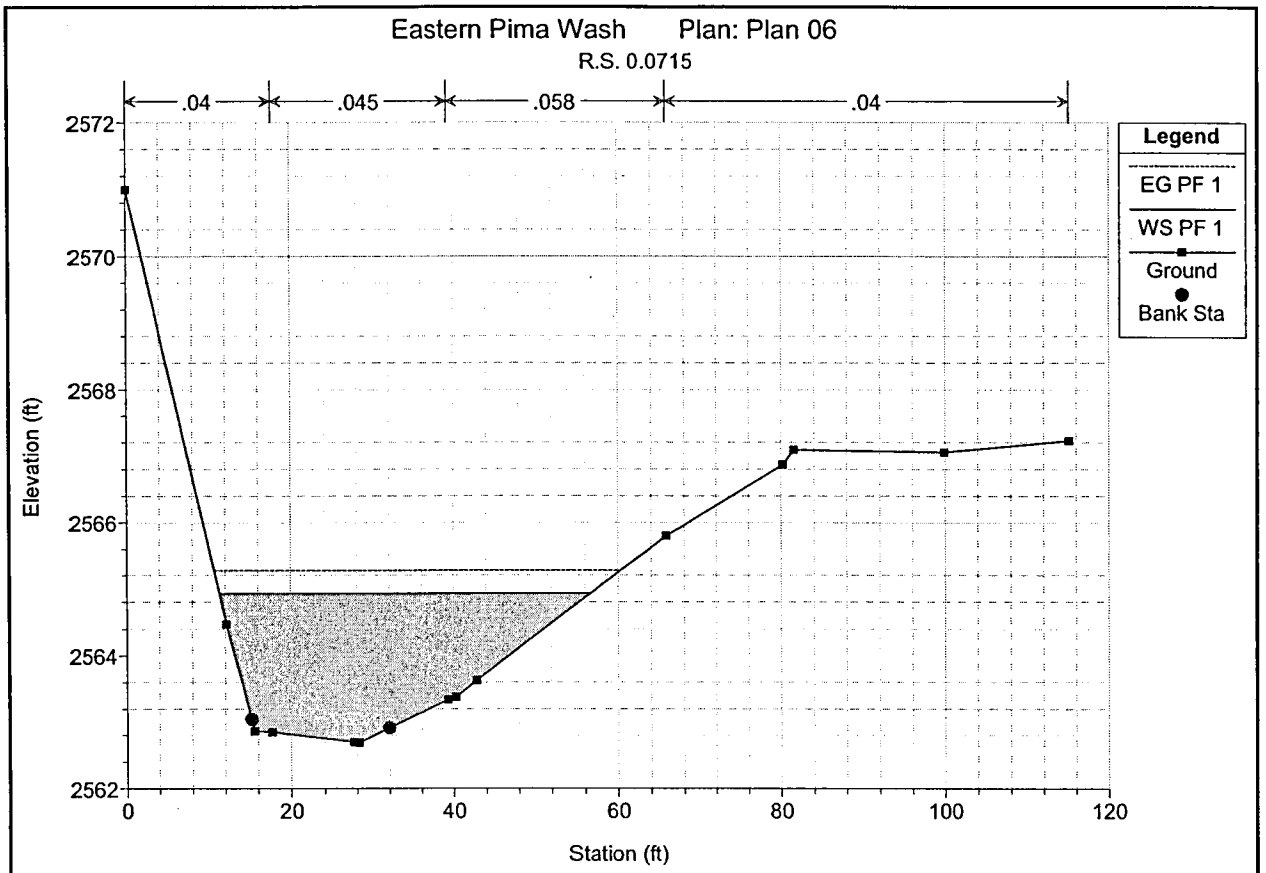

Eastern Pima Wash Plan: Plan 06
R.S. 0.2043, Imm. downstream of Placid Place
.04
.045
.058
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2582
2580
2578
2576
2574
2572
2570
0
50
100
150
200
250
300

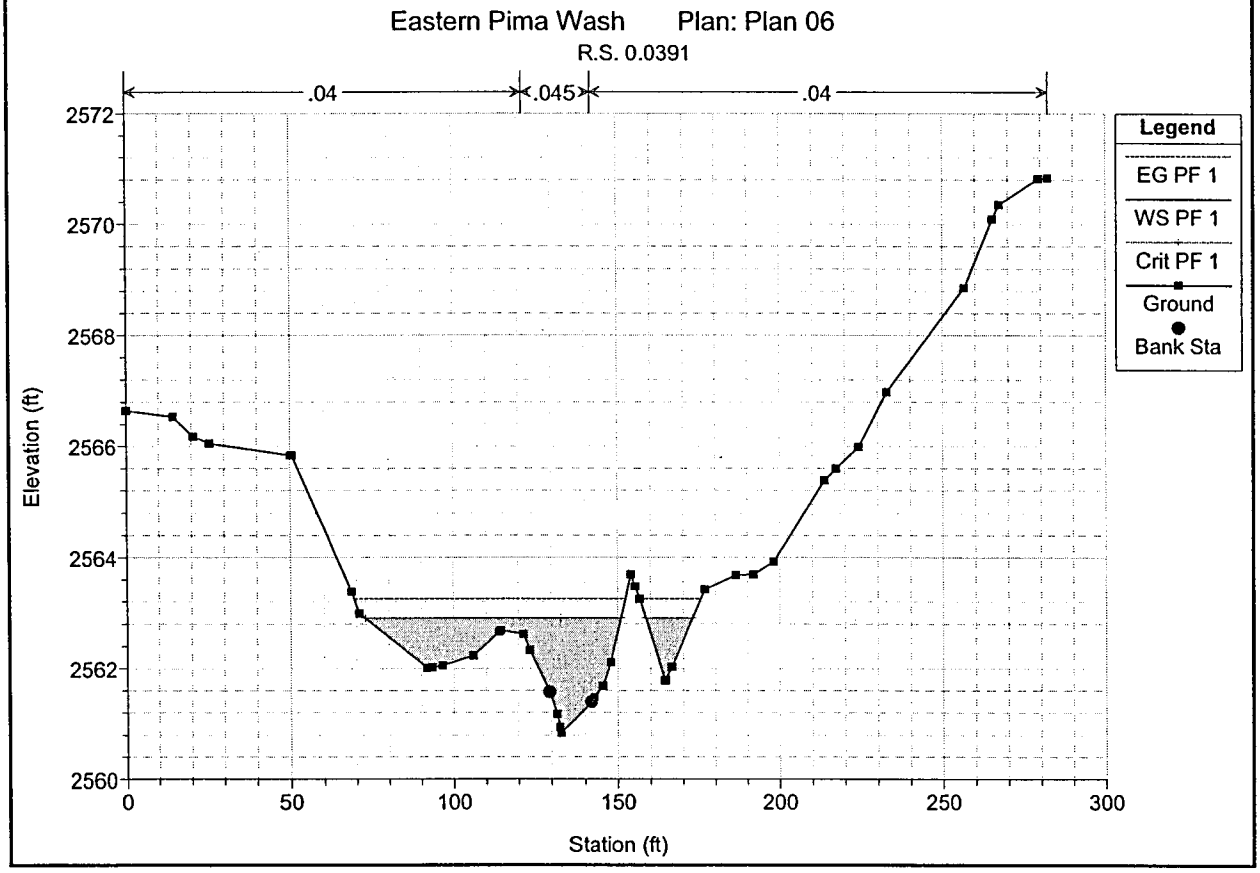

Eastern Pima Wash Plan: Plan 06
R.S. 0.1778
.032
.04
.045
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2580
2578
2576
2574
2572
2570
2568
0
50
100
150
200
250

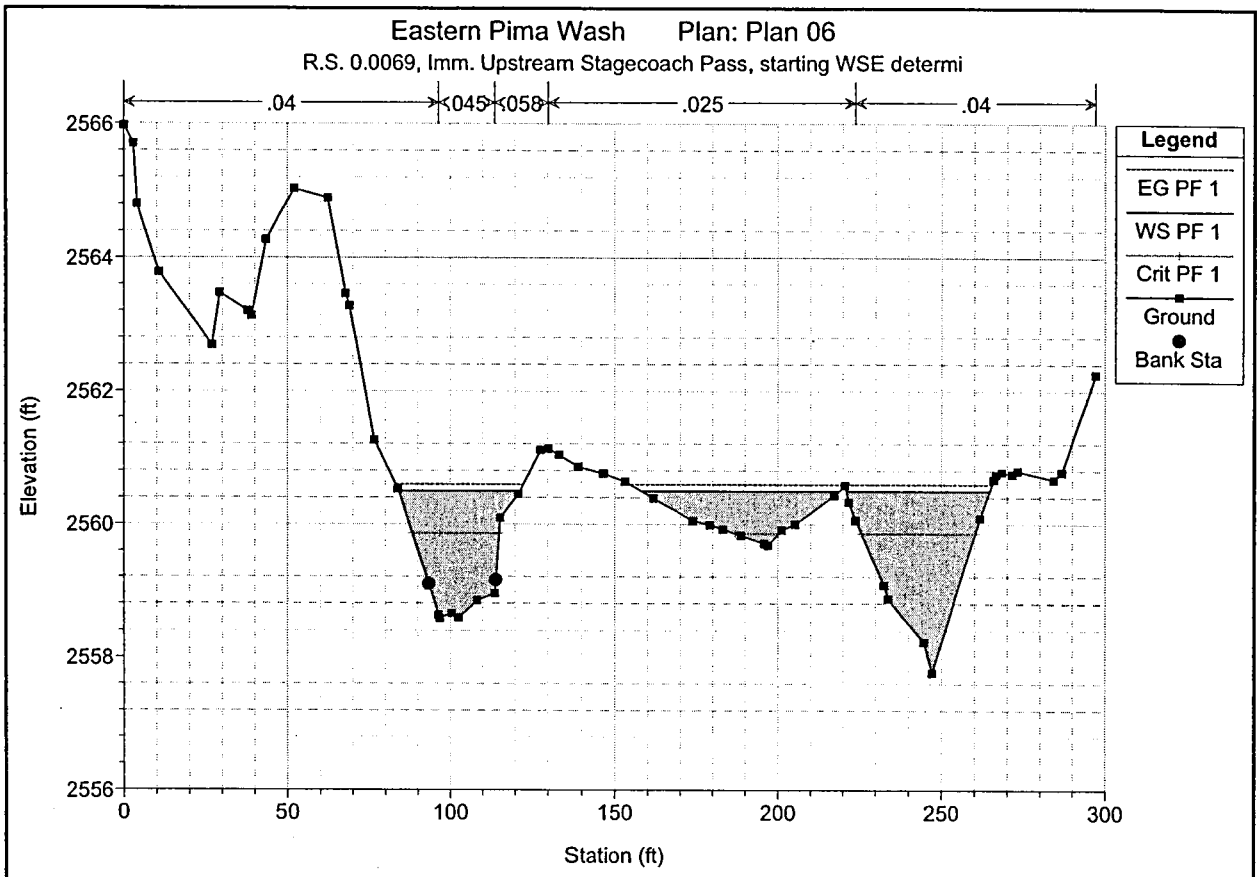

Eastern Pima Wash Plan: Plan 06
R.S. 0.1567
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2582
2580
2578
2576
2574
2572
2570
2568
2566
0
50
100
150
200
250


Eastern Pima Wash Plan: Plan 06
R.S. 0.1156
.025
.04
.058
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2578
2576
2574
2572
2570
2568
2566
2564
0
50
100
150
200
250

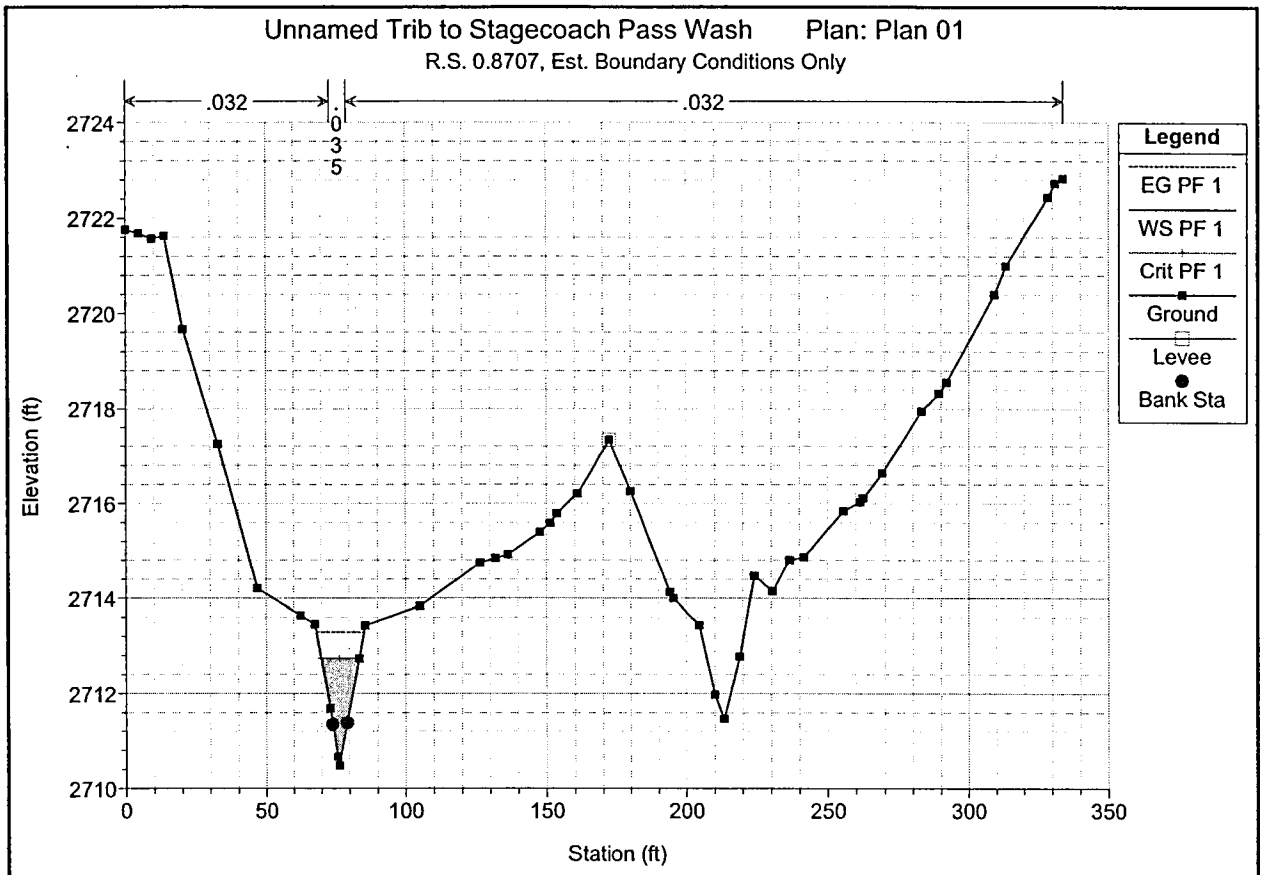

Eastern Pima Wash Plan: Plan 06
R.S. 0.0854
.04
.058
.045
.058
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2571
2570
2569
2568
2567
2566
2565
2564
2563
0
20
40
60
80
100
120
140

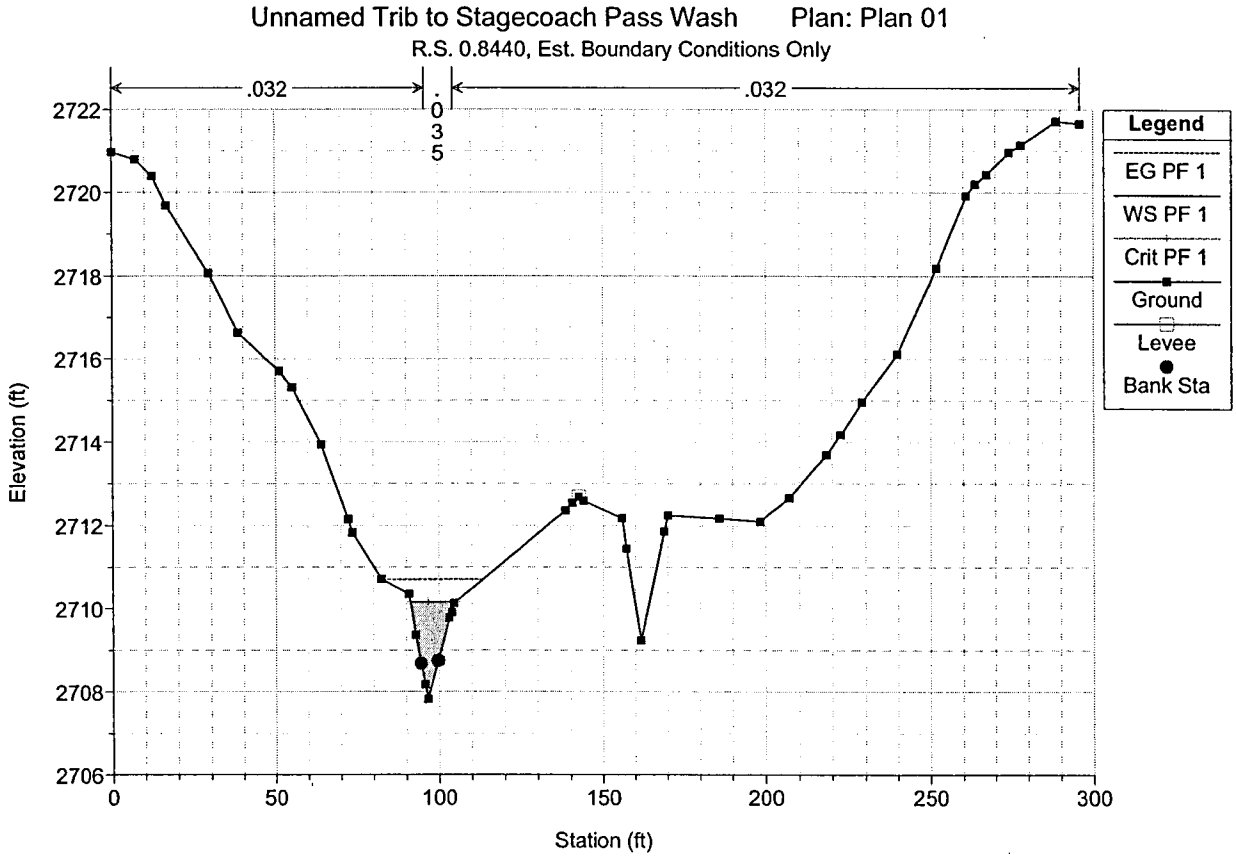

Eastern Pima Wash Plan: Plan 06
R.S. 0.0715
.04
.045
.058
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2572
2570
2568
2566
2564
2562
0
20
40
60
80
100
120
Station (ft)

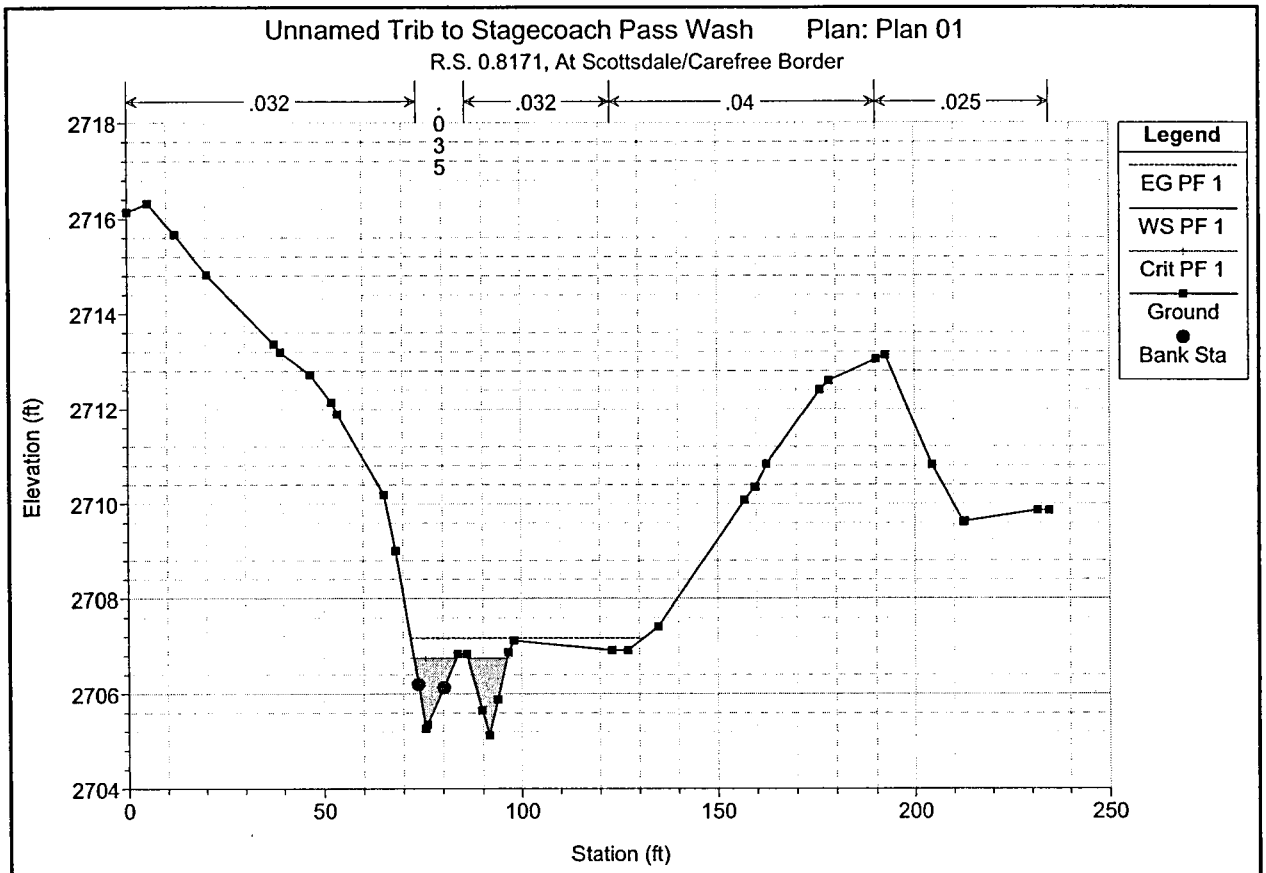

Eastern Pima Wash Plan: Plan 06
R.S. 0.0391
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2572
2570
2568
2566
2564
2562
2560
0
50
100
150
200
250
300
Station (ft)

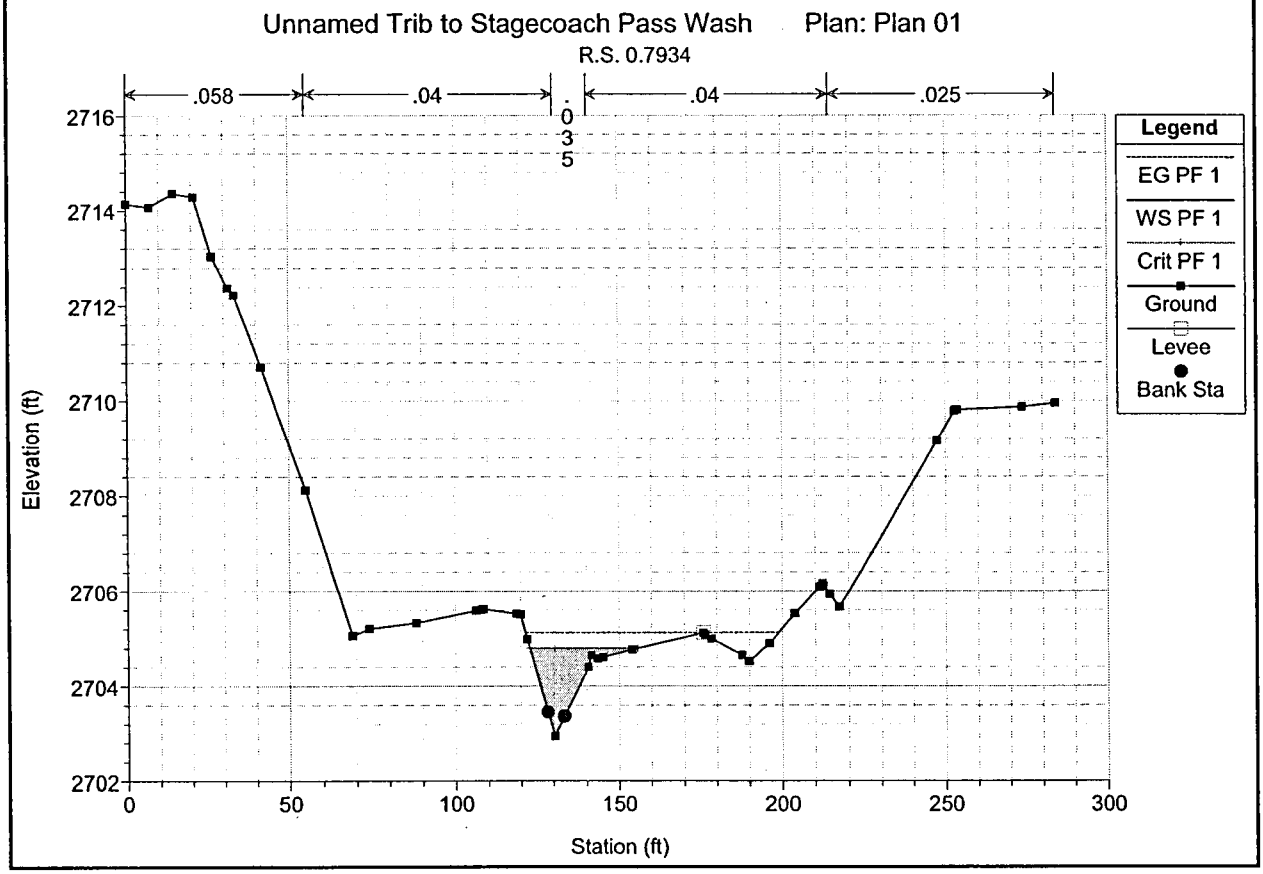

Eastern Pima Wash Plan: Plan 06
R.S. 0.0069, Imm. Upstream Stagecoach Pass, starting WSE determi
.04
.045
.058
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2566
2564
2562
2560
2558
2556
0
50
100
150
200
250
300
Station (ft)

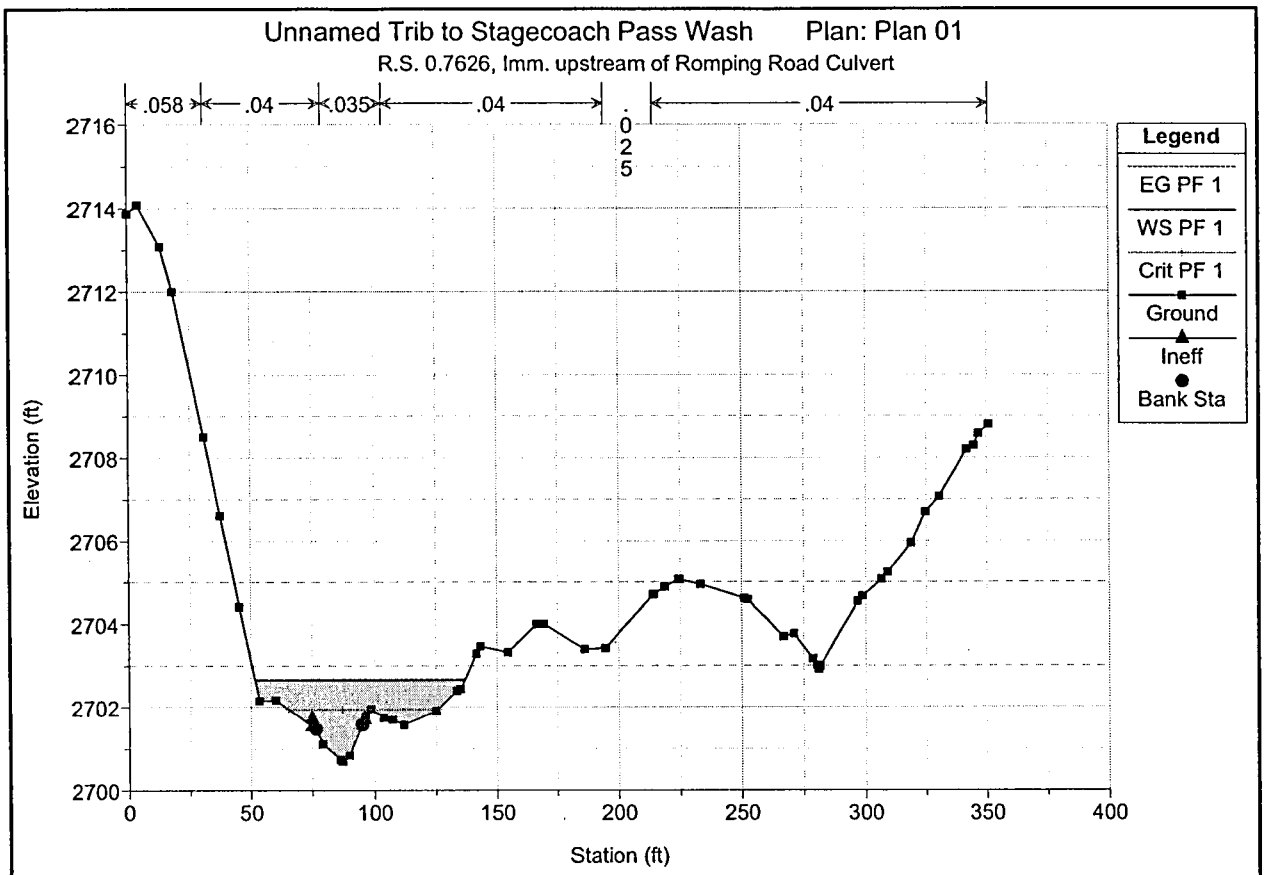
Unnamed Tributary to Stagecoach Pass Wash

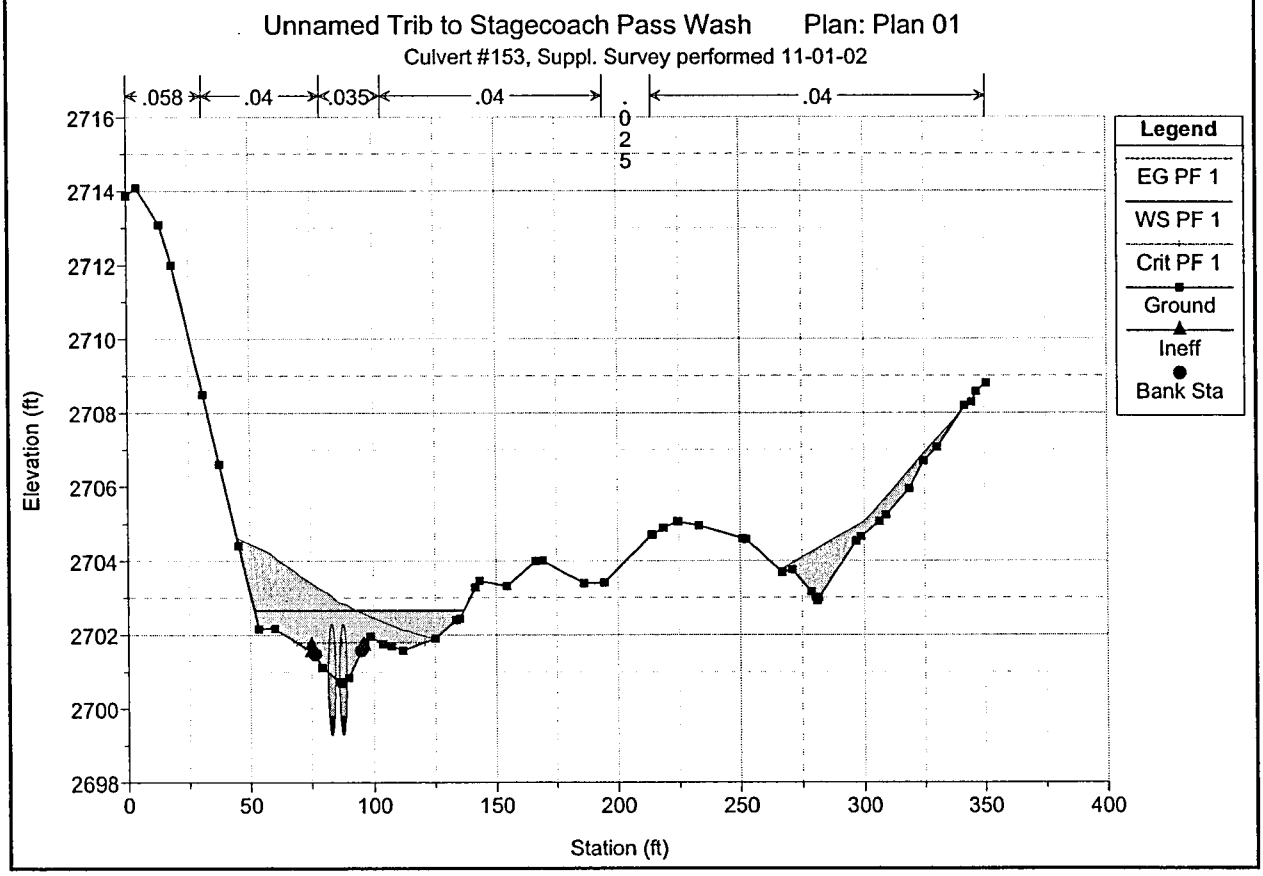

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.8707, Est. Boundary Conditions Only
.032
.035
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

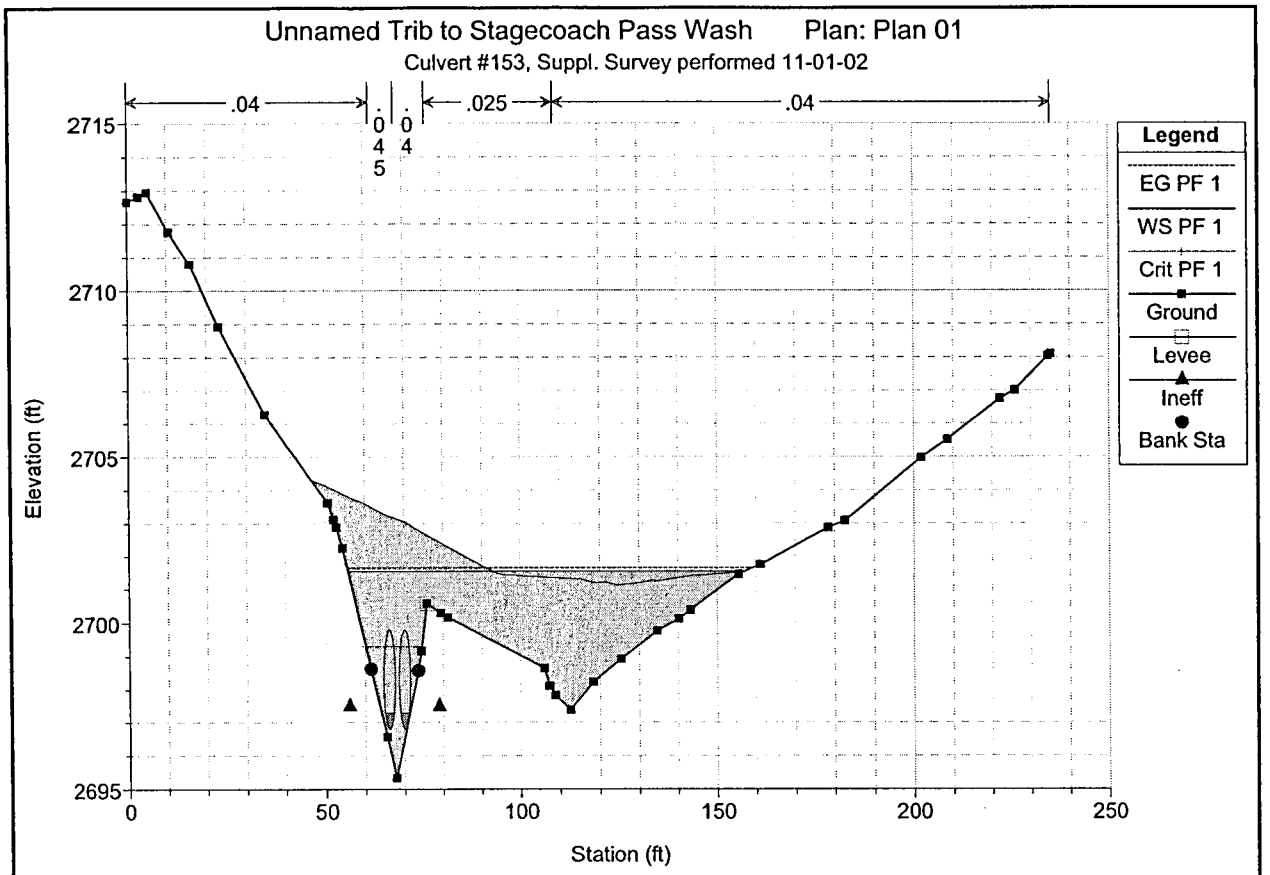

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.8440, Est. Boundary Conditions Only
.032
.035
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

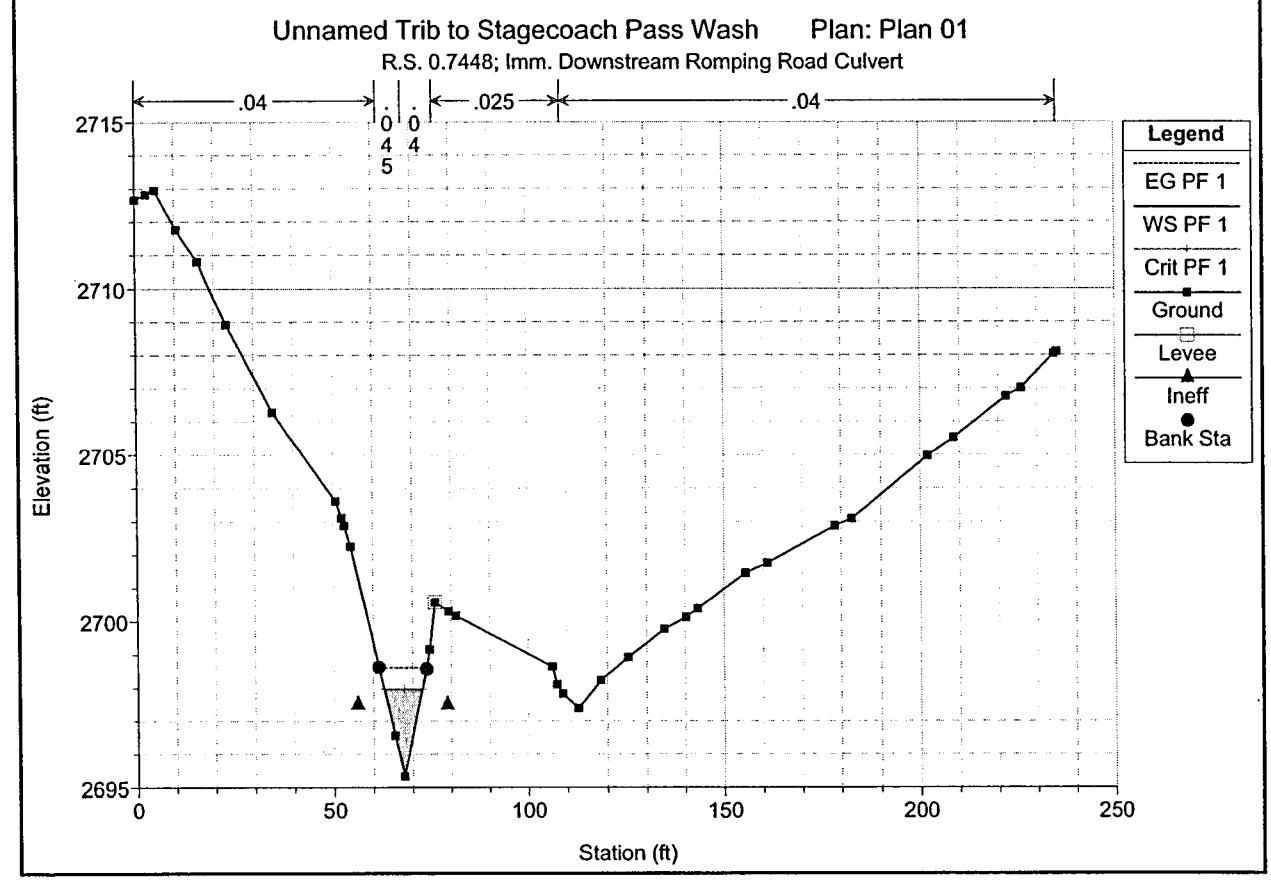

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.8171, At Scottsdale/Carefree Border
.032
.032
.04
.025
.035
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2718
2716
2714
2712
2710
2708
2706
2704
0
50
100
150
200
250

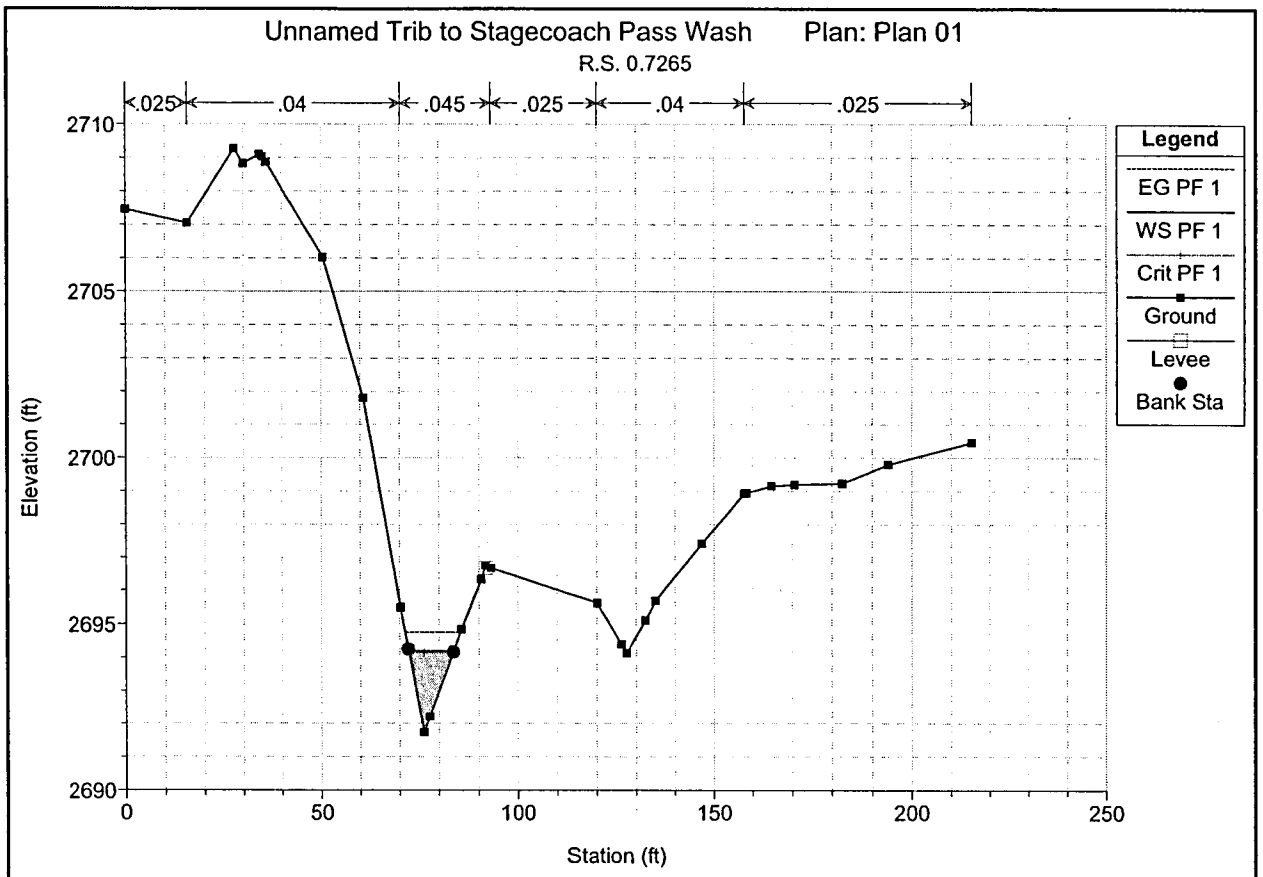

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.7934
.058
.04
.04
.025
.035
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2716
2714
2712
2710
2708
2706
2704
2702
0
50
100
150
200
250
300

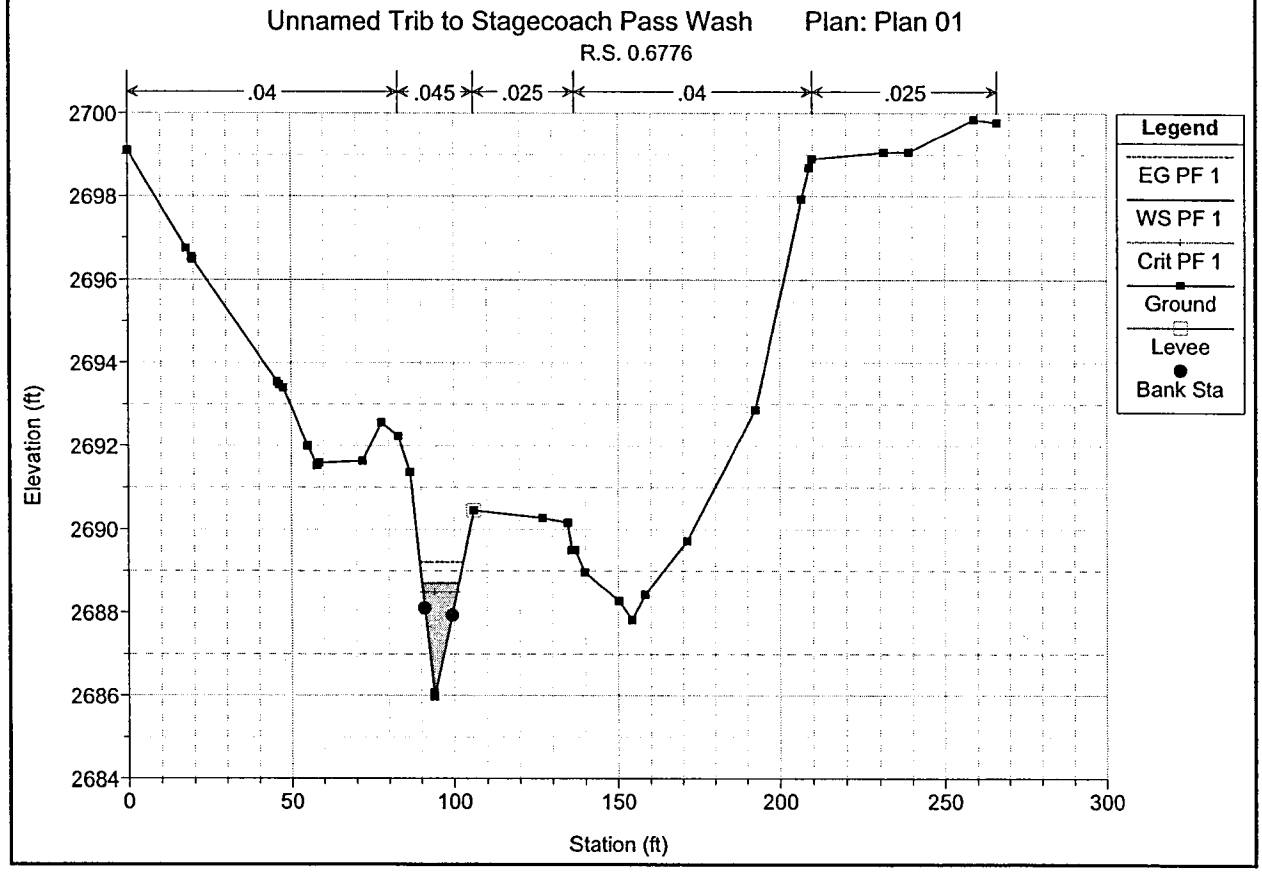

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.7626, Imm. upstream of Romping Road Culvert
.058
.04
.035
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

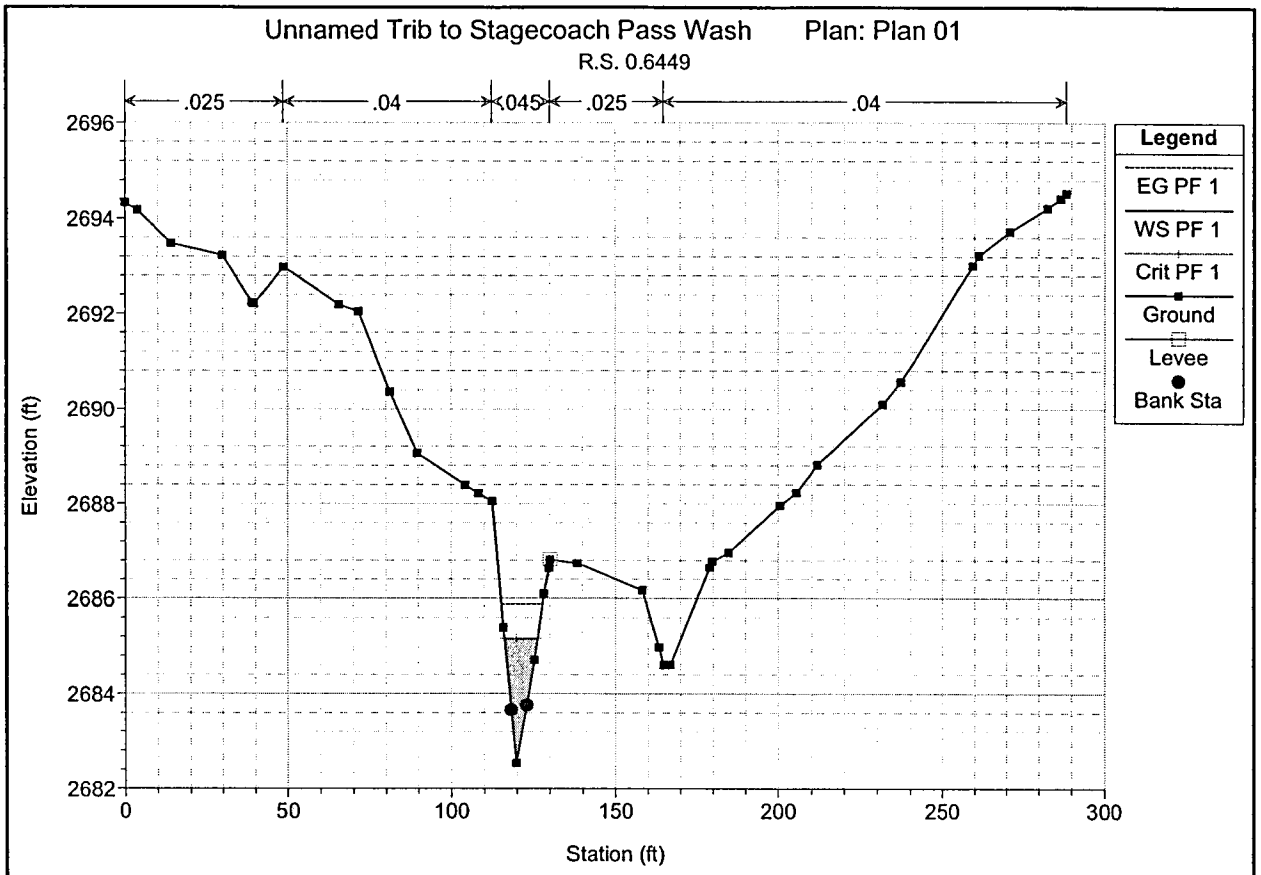

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Culvert #153, Suppl. Survey performed 11-01-02
.058
.04
.035
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

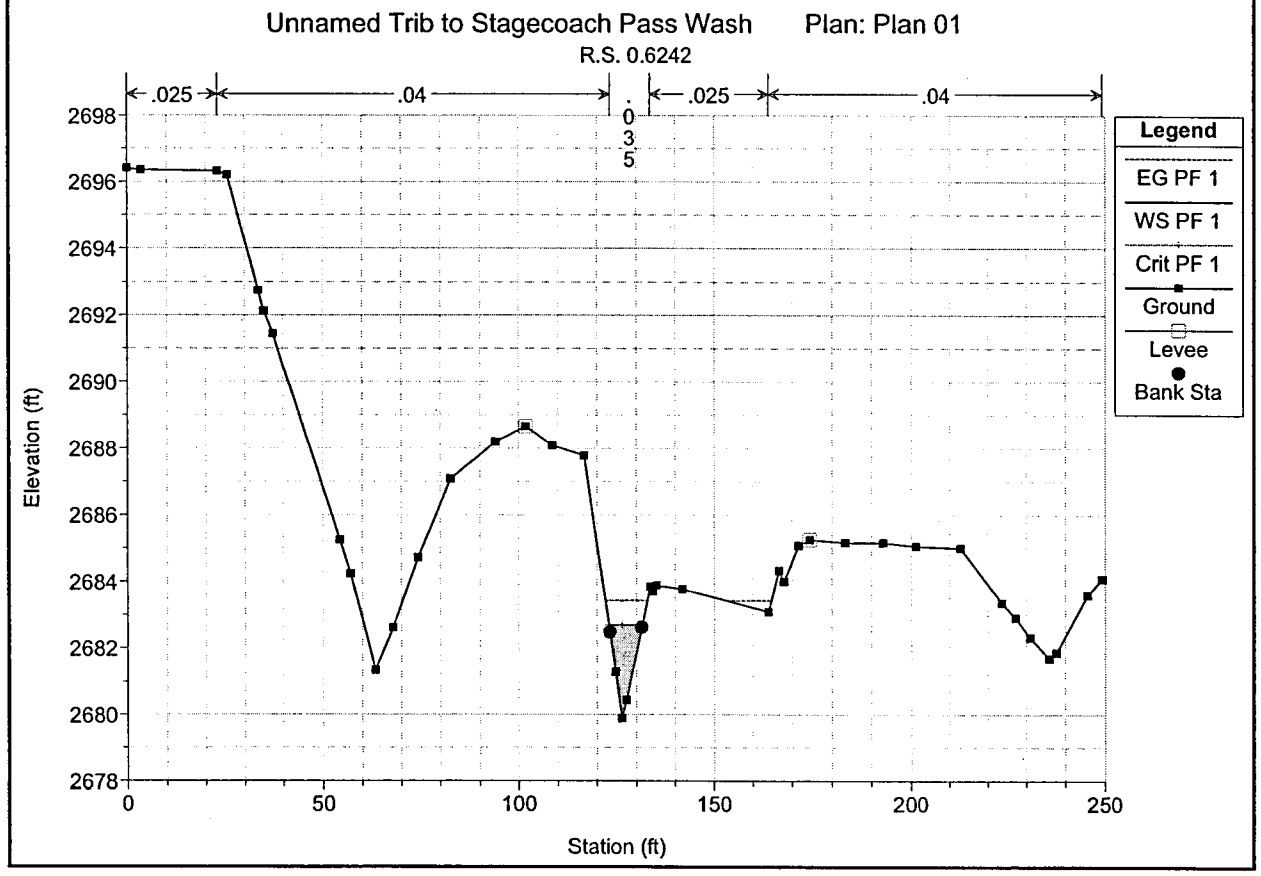

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Culvert #153, Suppl. Survey performed 11-01-02
.04
.045
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
2715
2710
2705
2700
2695
0
50
100
150
200
250
Station (ft)

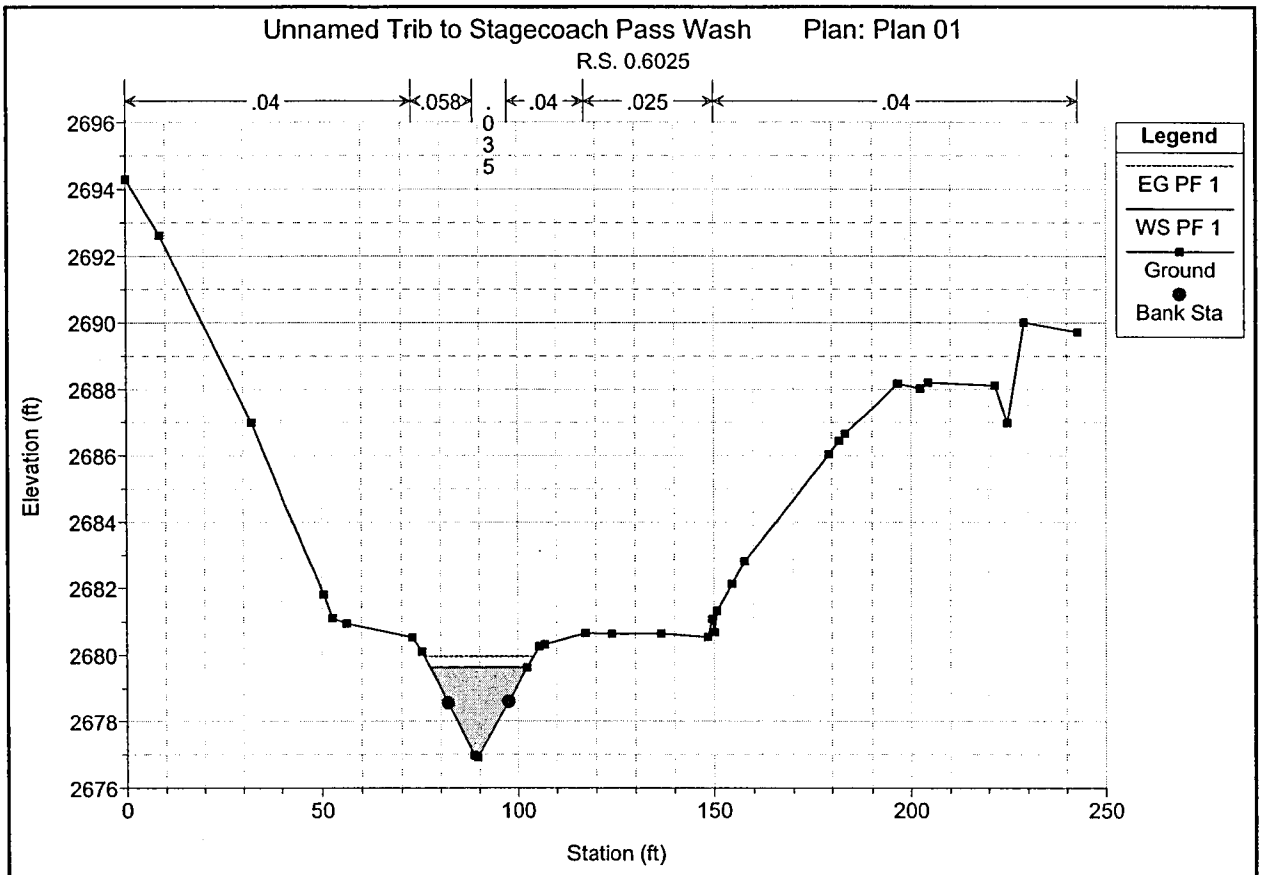

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.7448; Imm. Downstream Romping Road Culvert
.04
.045
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
2715
2710
2705
2700
2695
0
50
100
150
200
250
Station (ft)

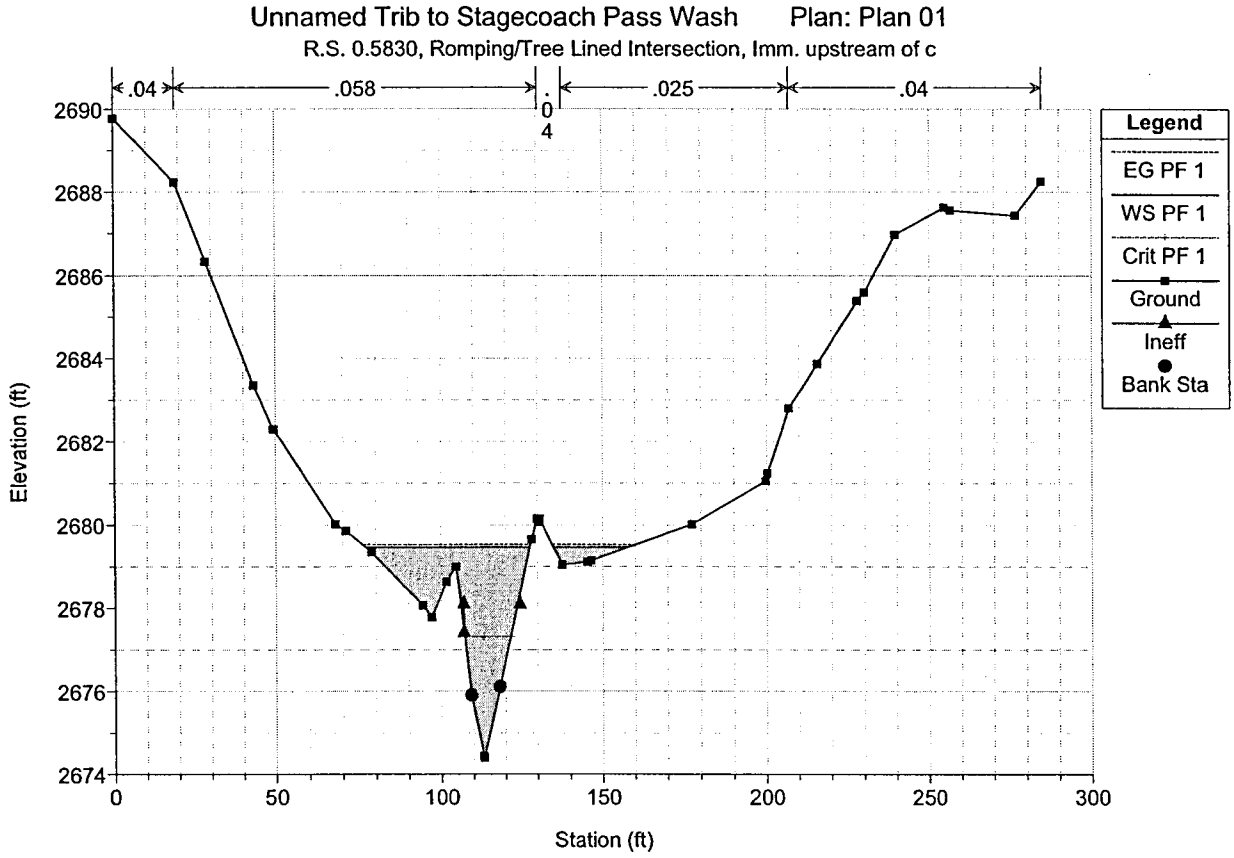

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.7265
.025
.04
.045
.025
.04
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

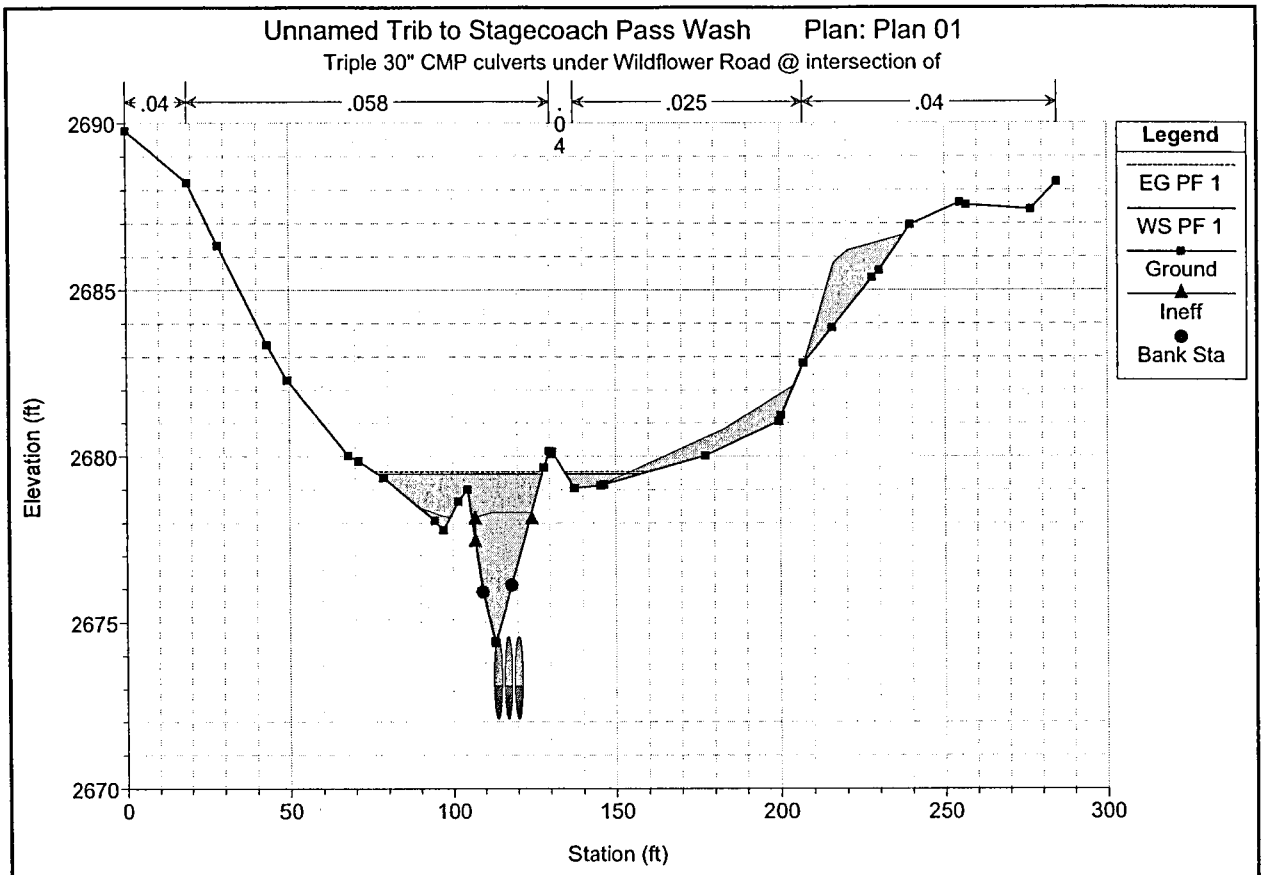

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.6776
.04
.045
.025
.04
.025
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta

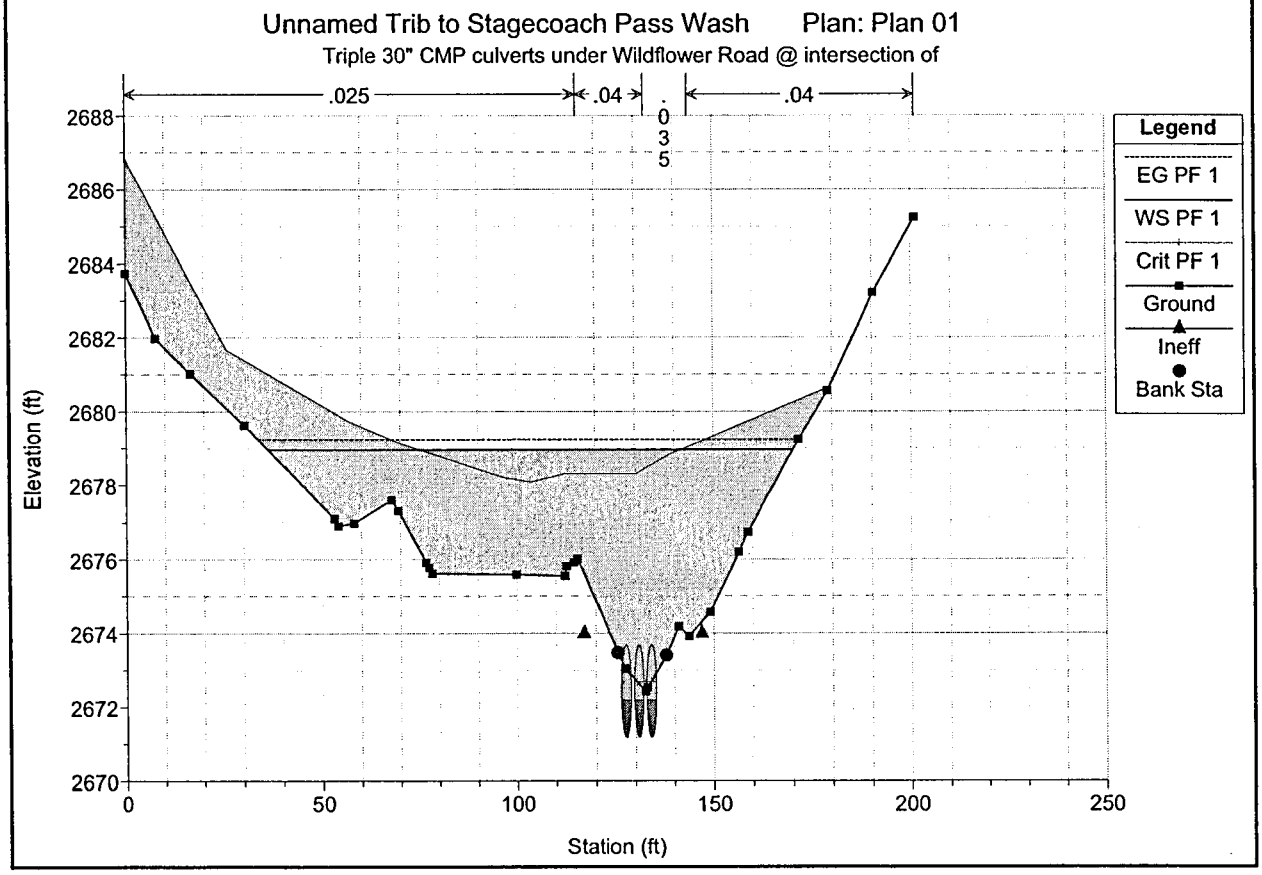

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.6449
.025
.04
.045
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

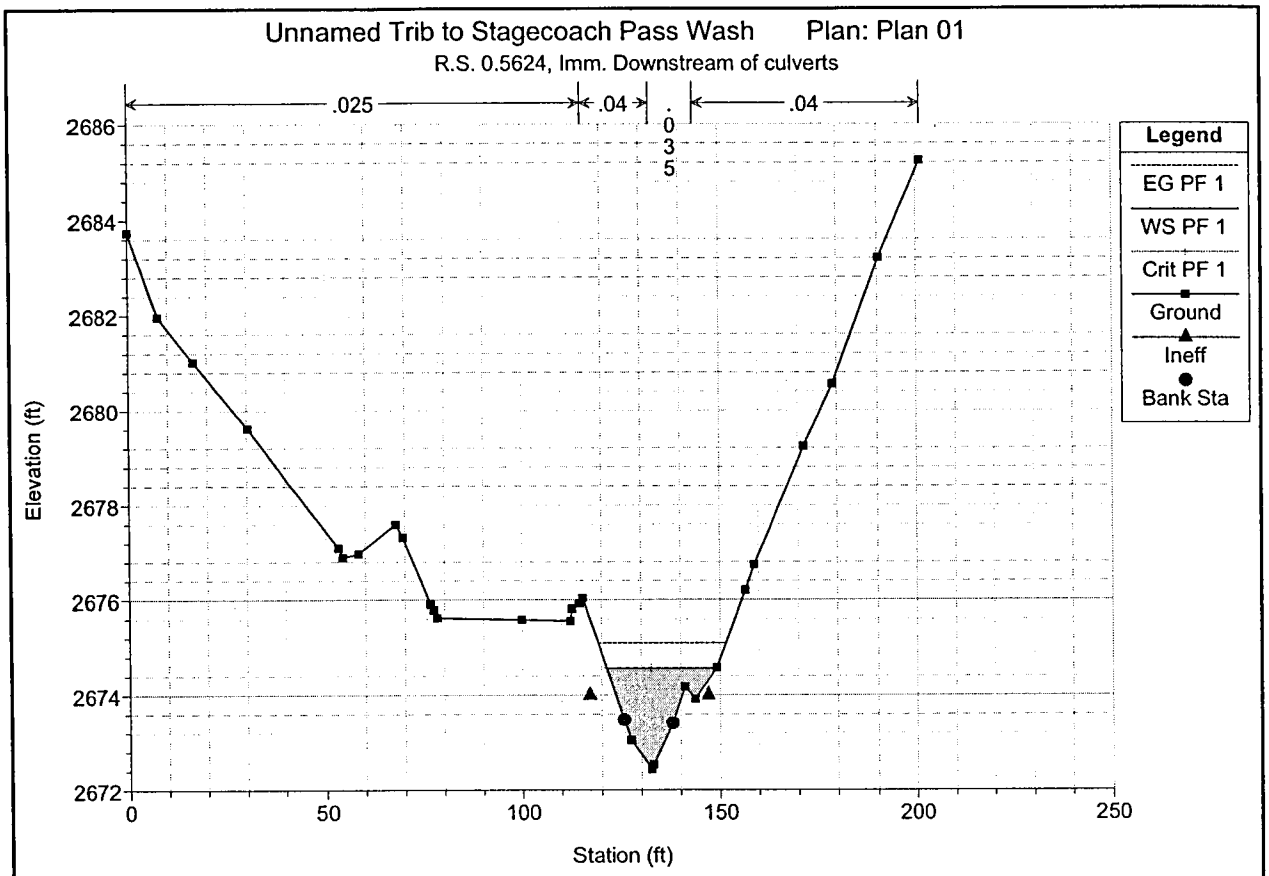

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.6242
.025
.04
.035
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

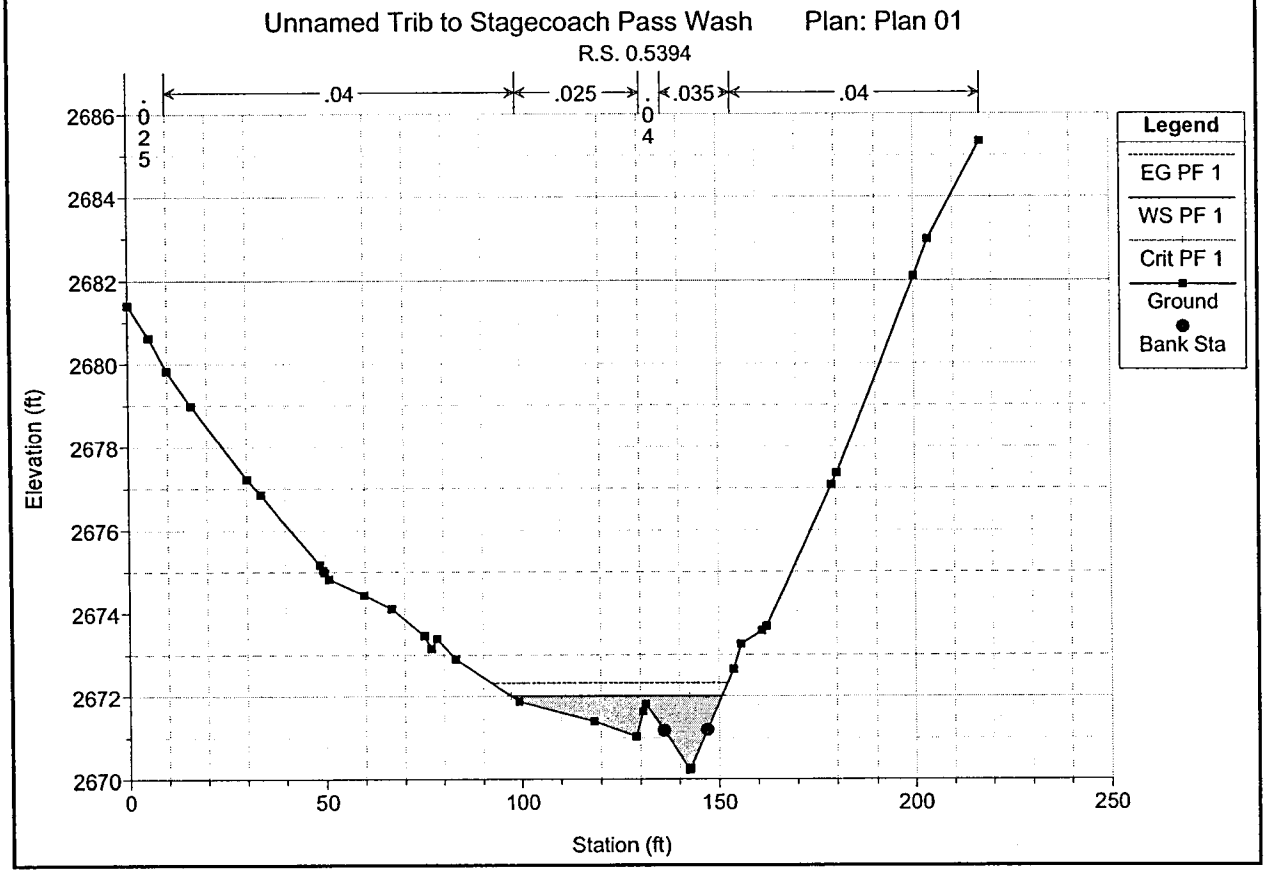

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.6025
.04
.058
.035
.04
.025
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

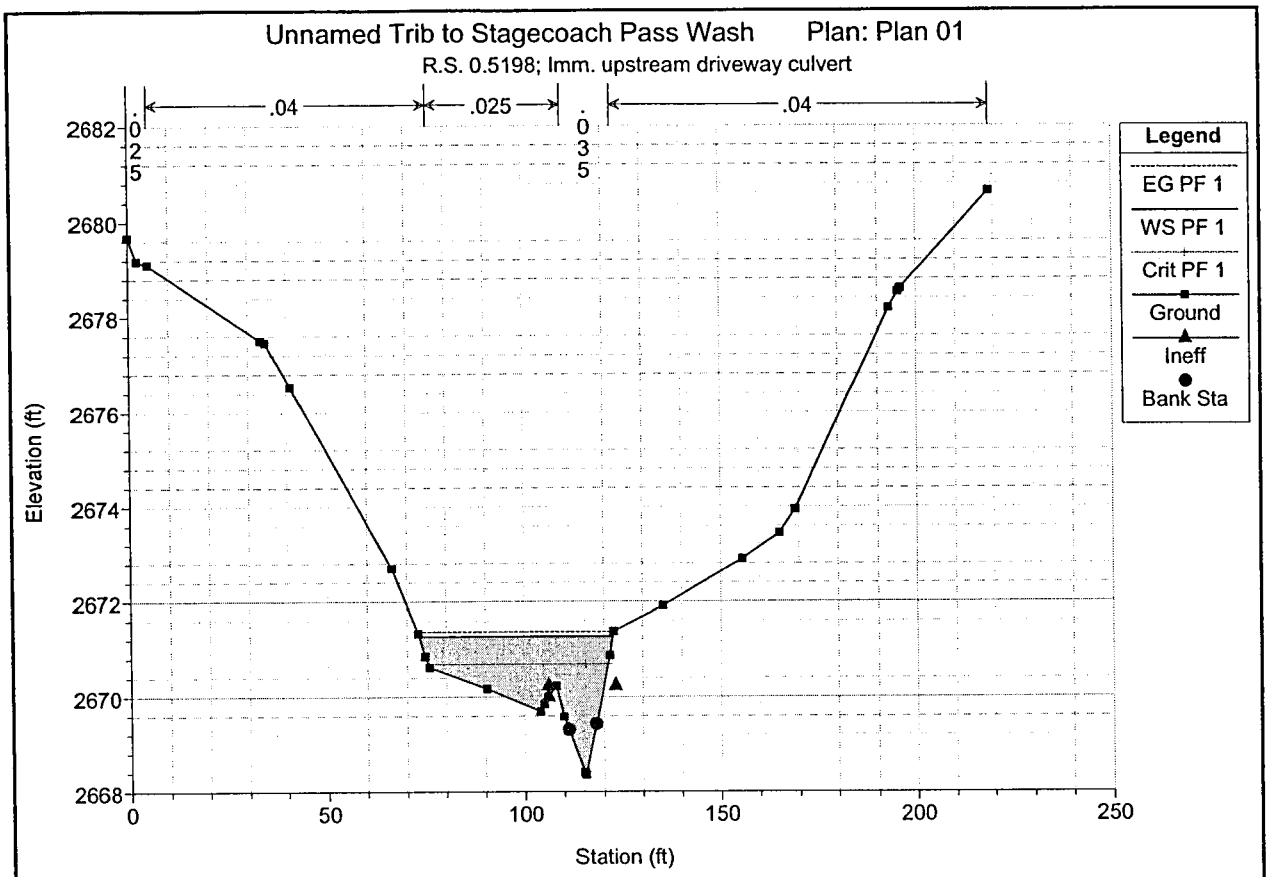

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.5830, Romping/Tree Lined Intersection, Imm. upstream of c
.04
.058
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

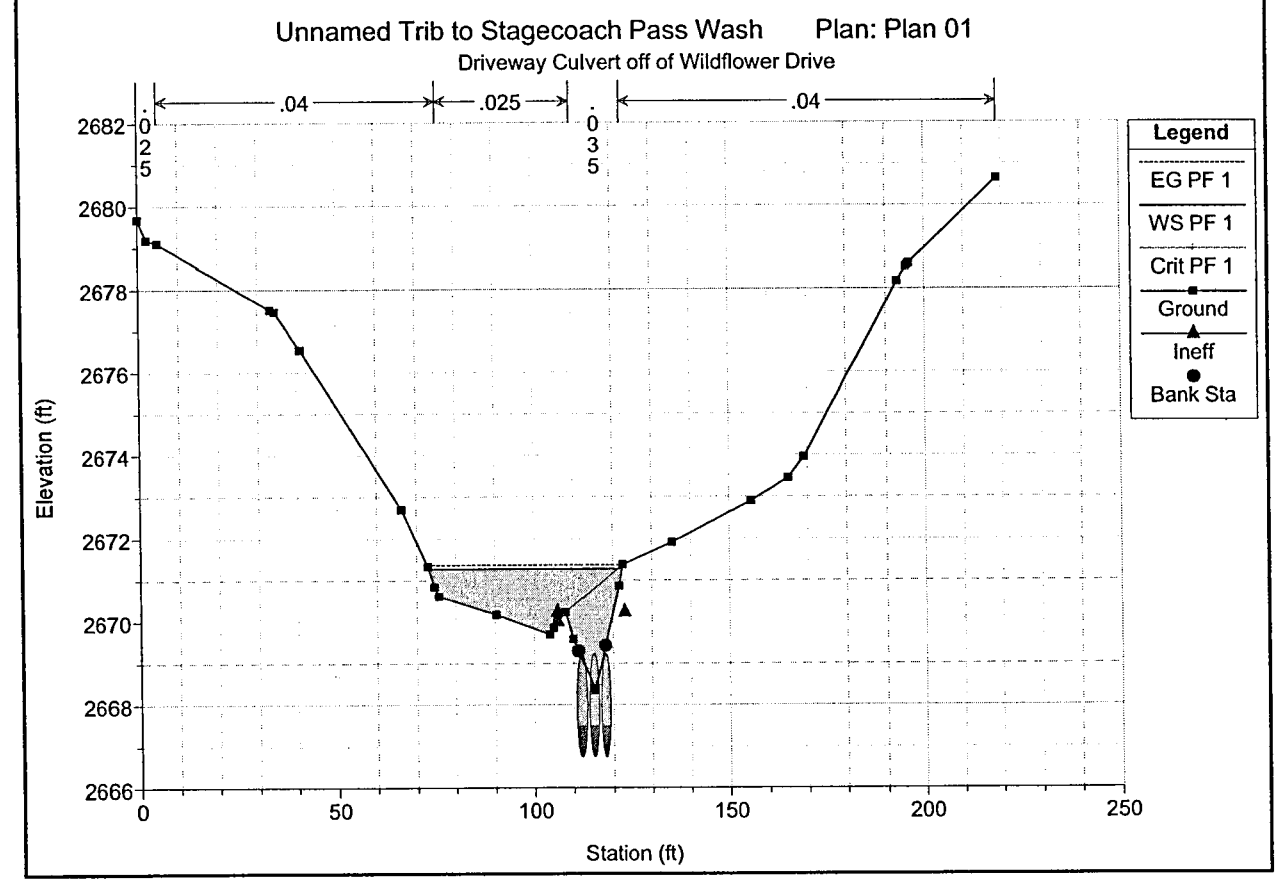

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Triple 30" CMP culverts under Wildflower Road @ intersection of
.04
.058
.04
.025
.04
Legend
EG PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2690
2685
2680
2675
2670
0
50
100
150
200
250
300

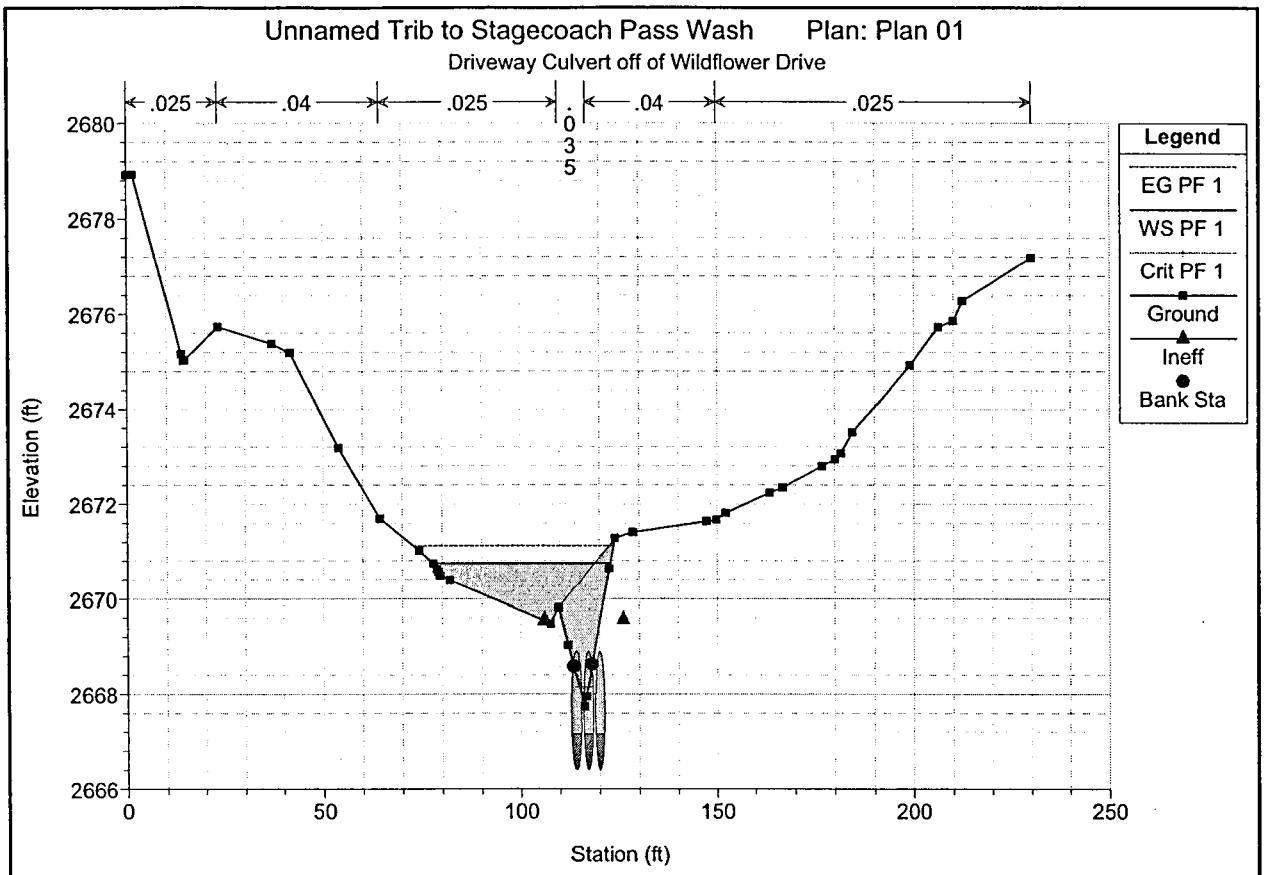

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Triple 30" CMP culverts under Wildflower Road @ intersection of
.025
.04
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2688
2686
2684
2682
2680
2678
2676
2674
2672
2670
0
50
100
150
200
250

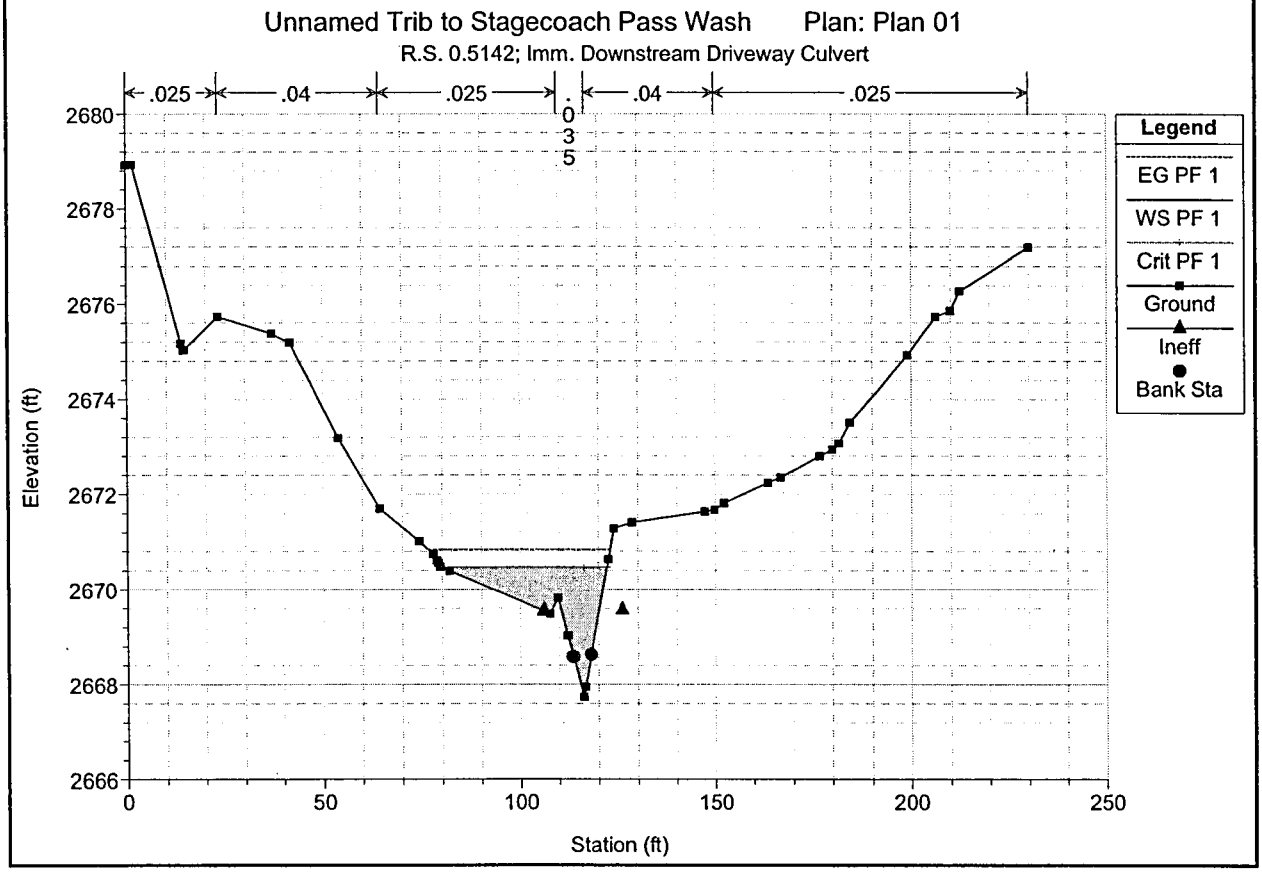

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.5624, Imm. Downstream of culverts
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2686
2684
2682
2680
2678
2676
2674
2672
0
50
100
150
200
250

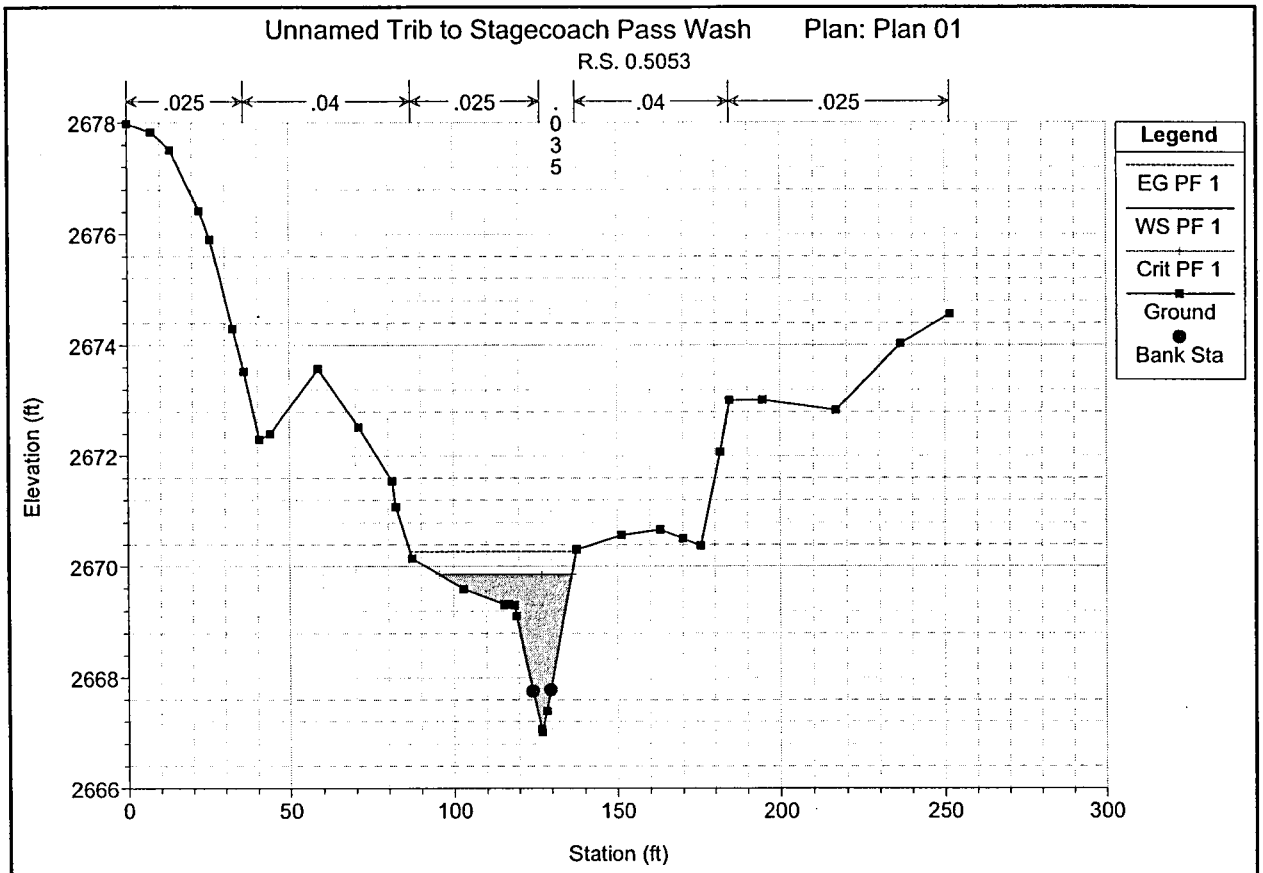

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.5394
.025
.04
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2686
2684
2682
2680
2678
2676
2674
2672
2670
0
50
100
150
200
250

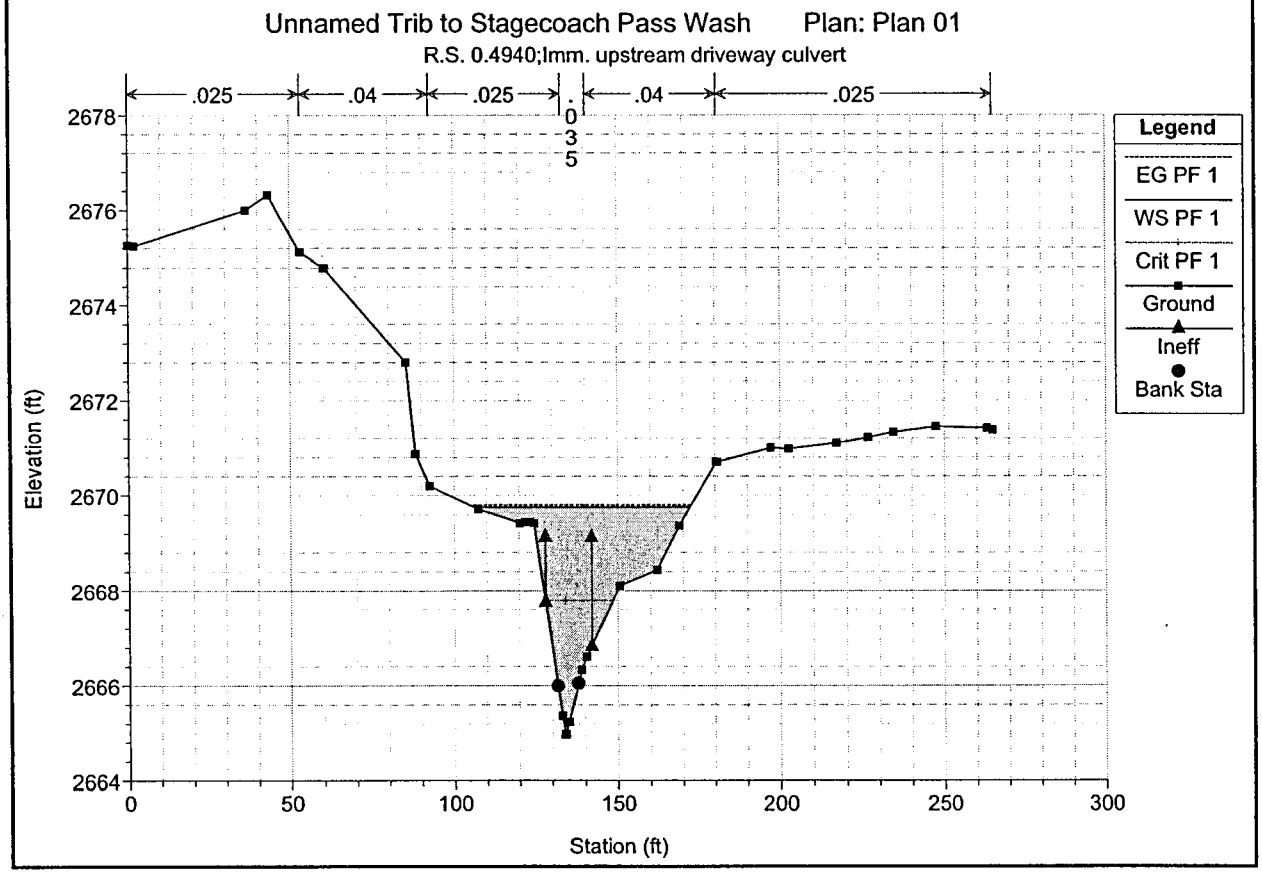

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.5198; Imm. upstream driveway culvert
.04
.025
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

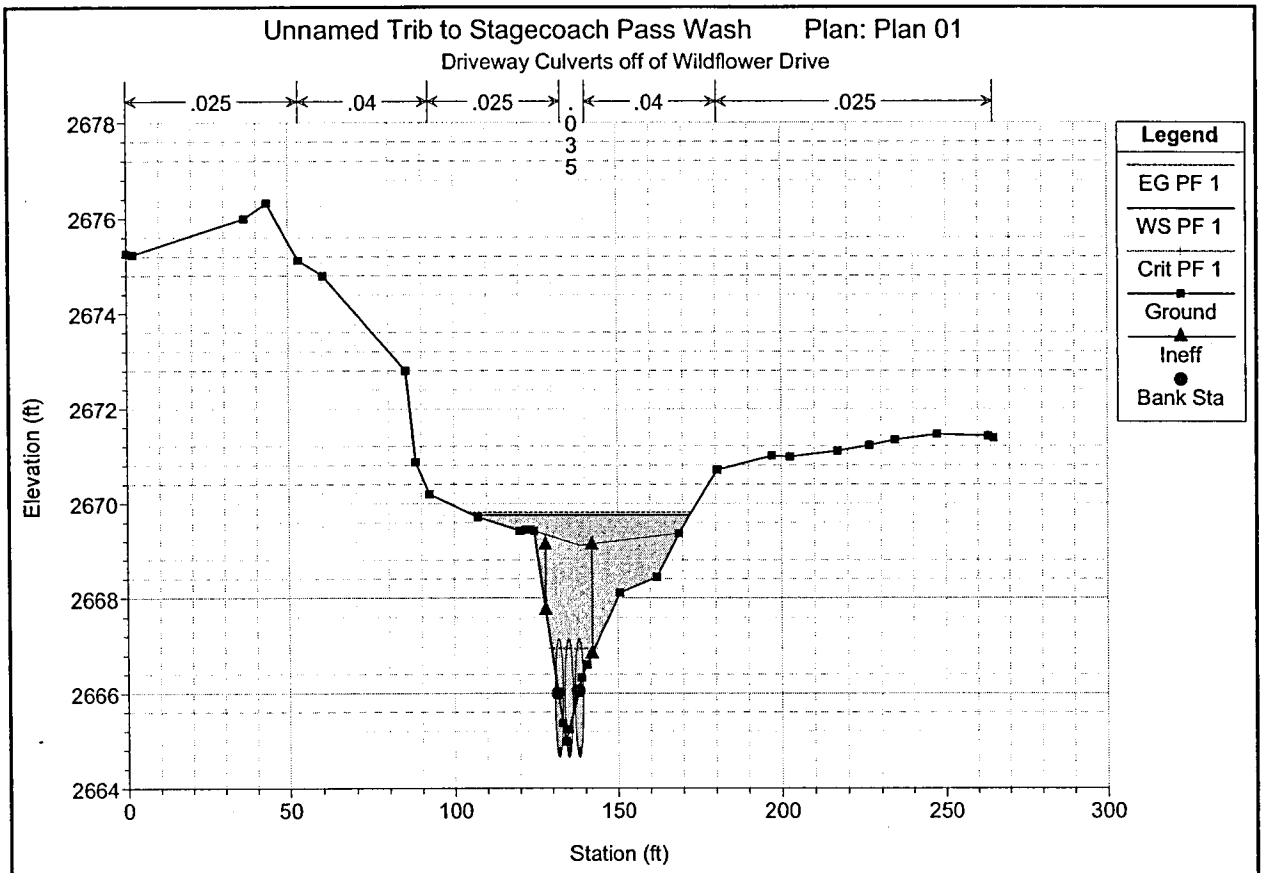

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Driveway Culvert off of Wildflower Drive
.04
.025
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

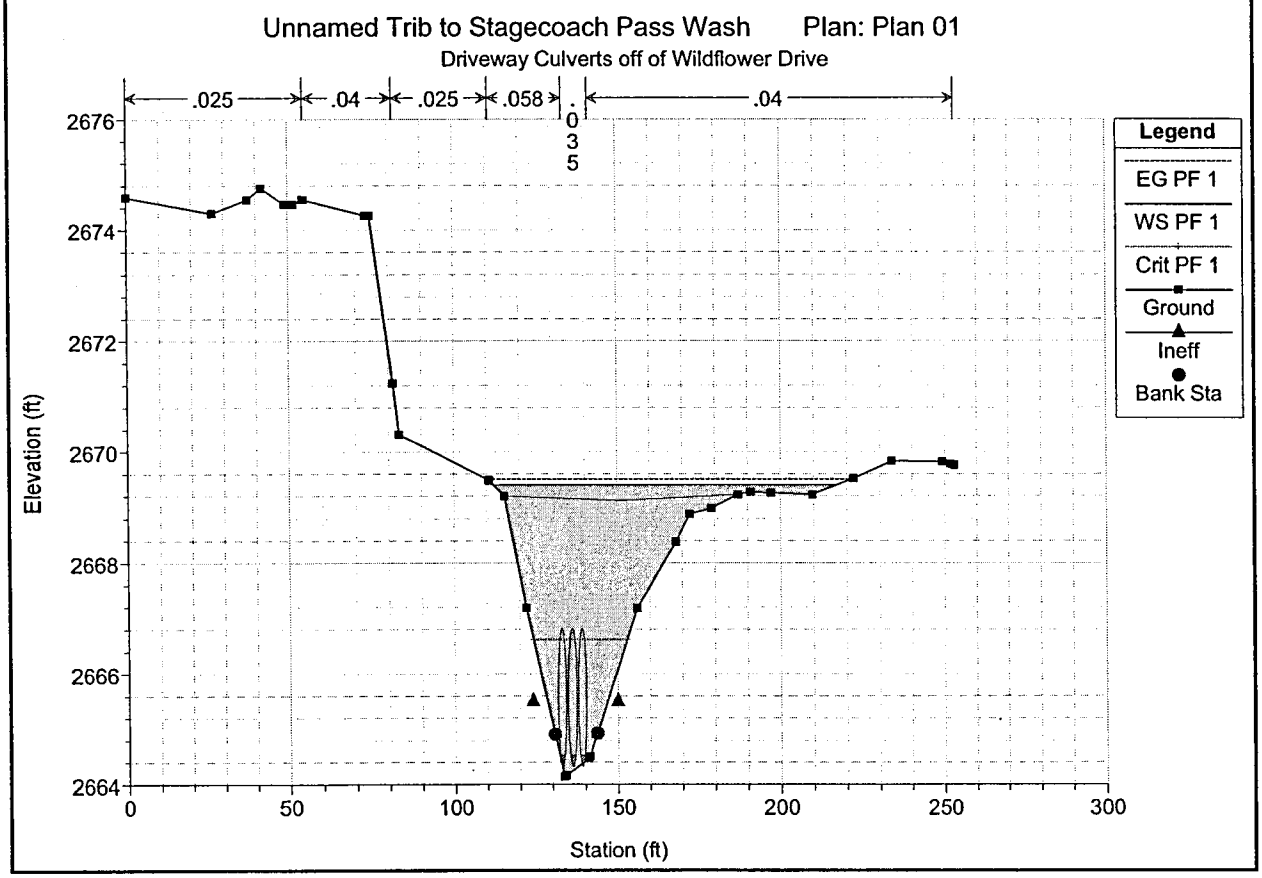

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Driveway Culvert off of Wildflower Drive
.025
.04
.025
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2680
2678
2676
2674
2672
2670
2668
2666
0
50
100
150
200
250

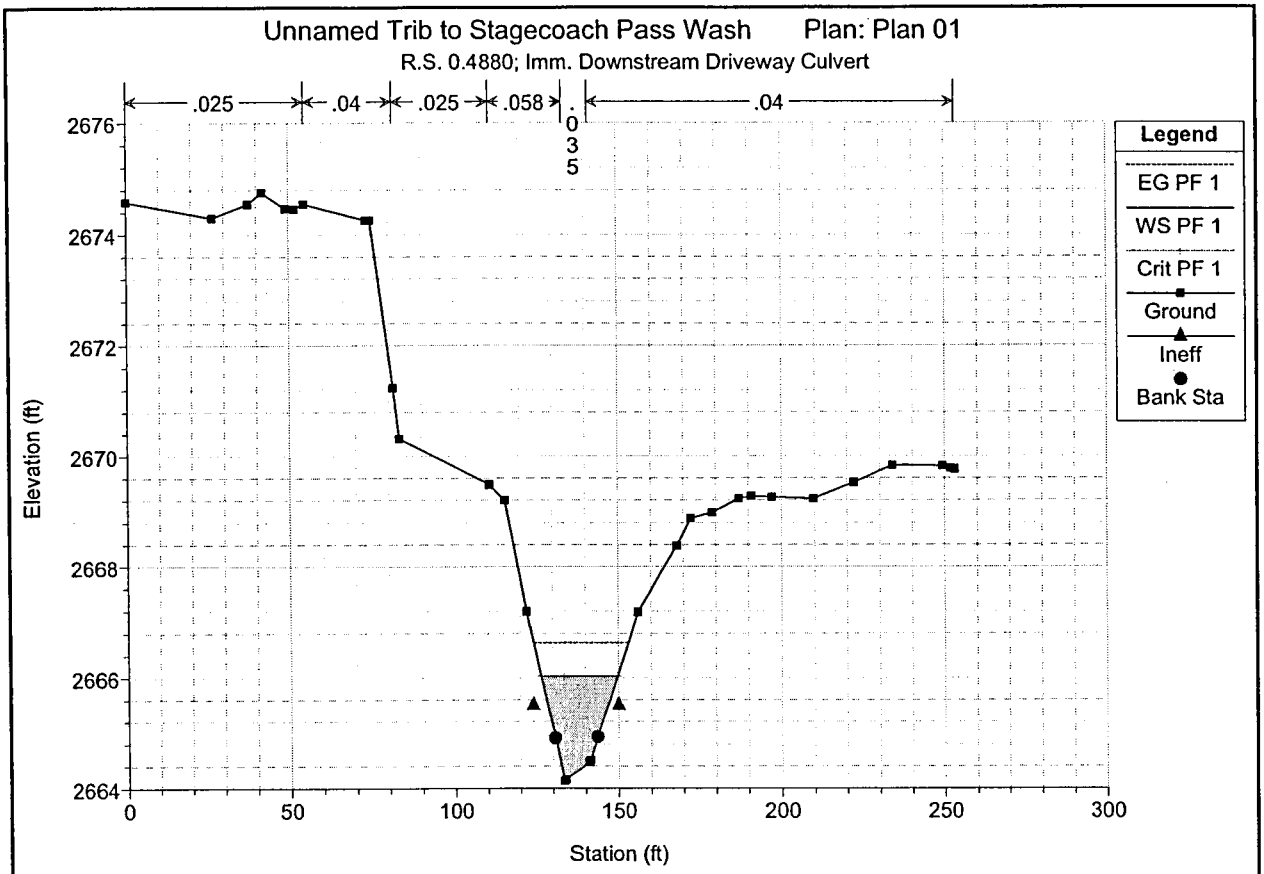

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.5142; Imm. Downstream Driveway Culvert
.025
.04
.025
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2680
2678
2676
2674
2672
2670
2668
2666
0
50
100
150
200
250

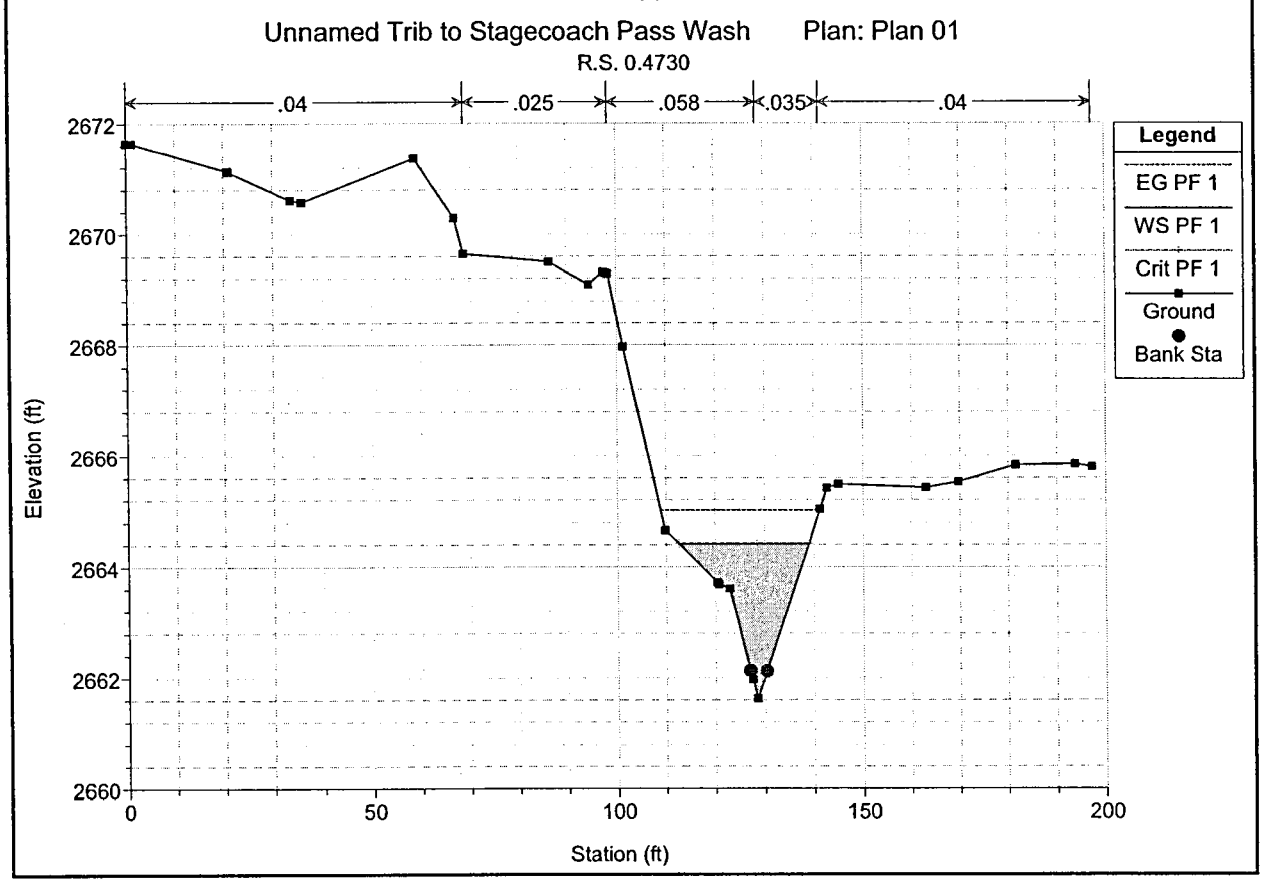

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.5053
.025
.04
.025
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

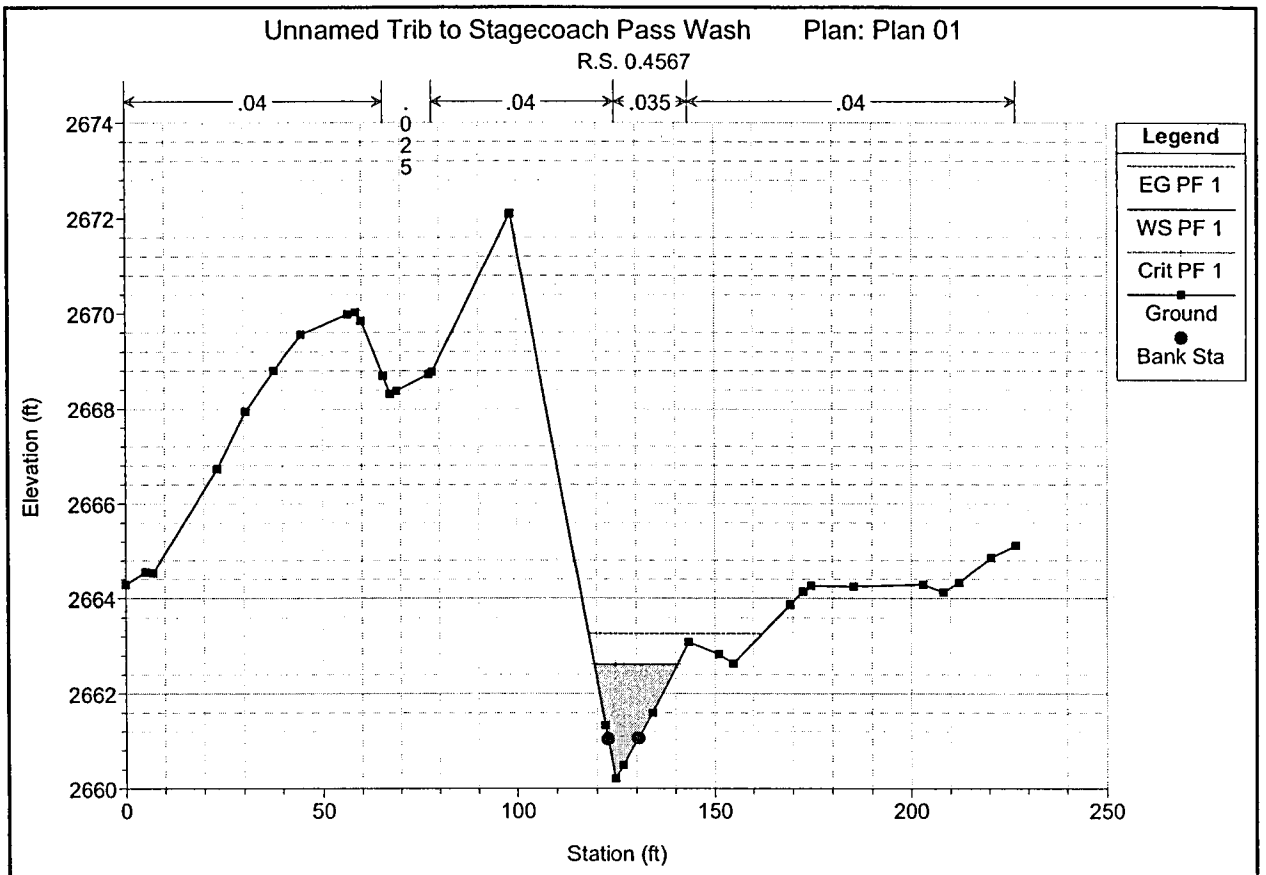

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4940;Imm. upstream driveway culvert
.025
.04
.025
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

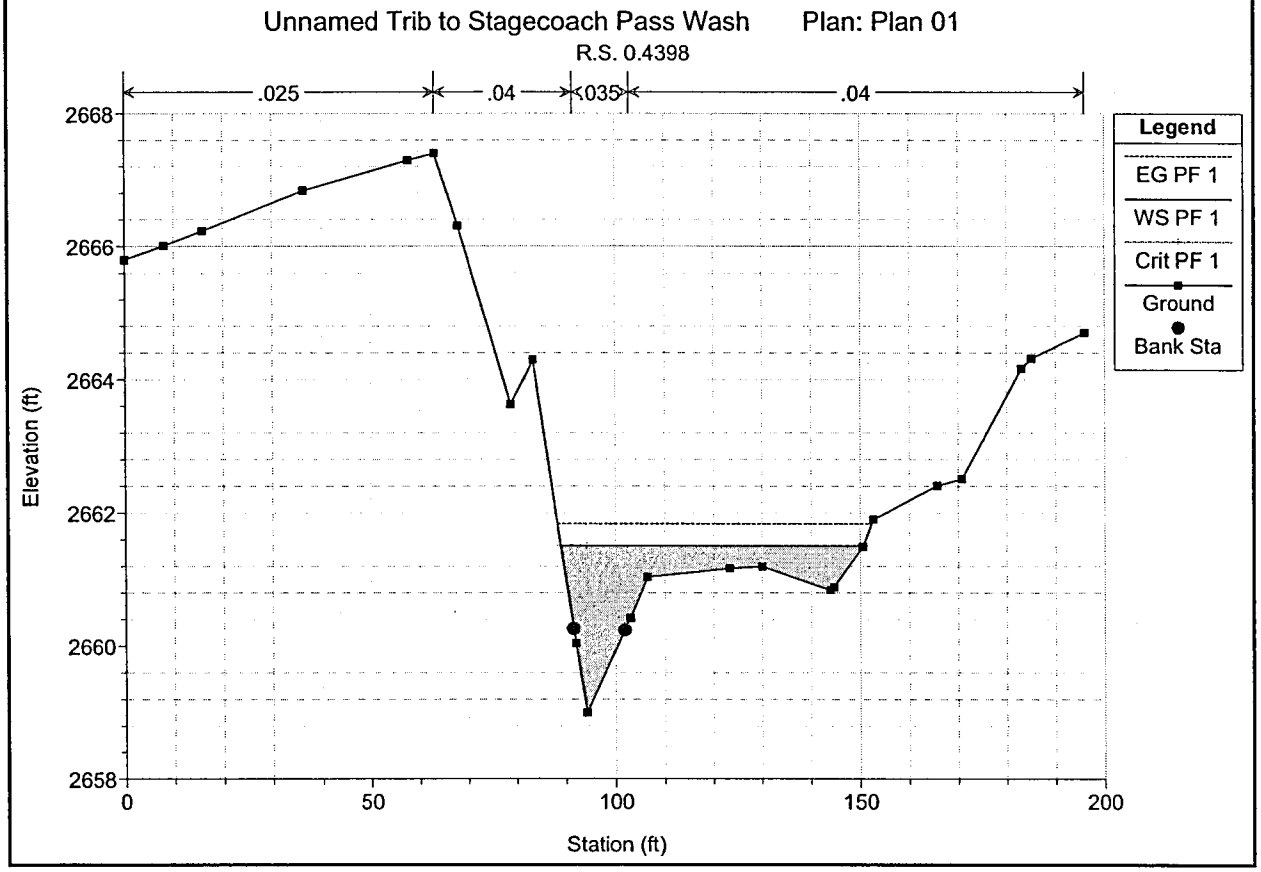

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Driveway Culverts off of Wildflower Drive
.025
.04
.025
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2678
2676
2674
2672
2670
2668
2666
2664
0
50
100
150
200
250
300
Station (ft)

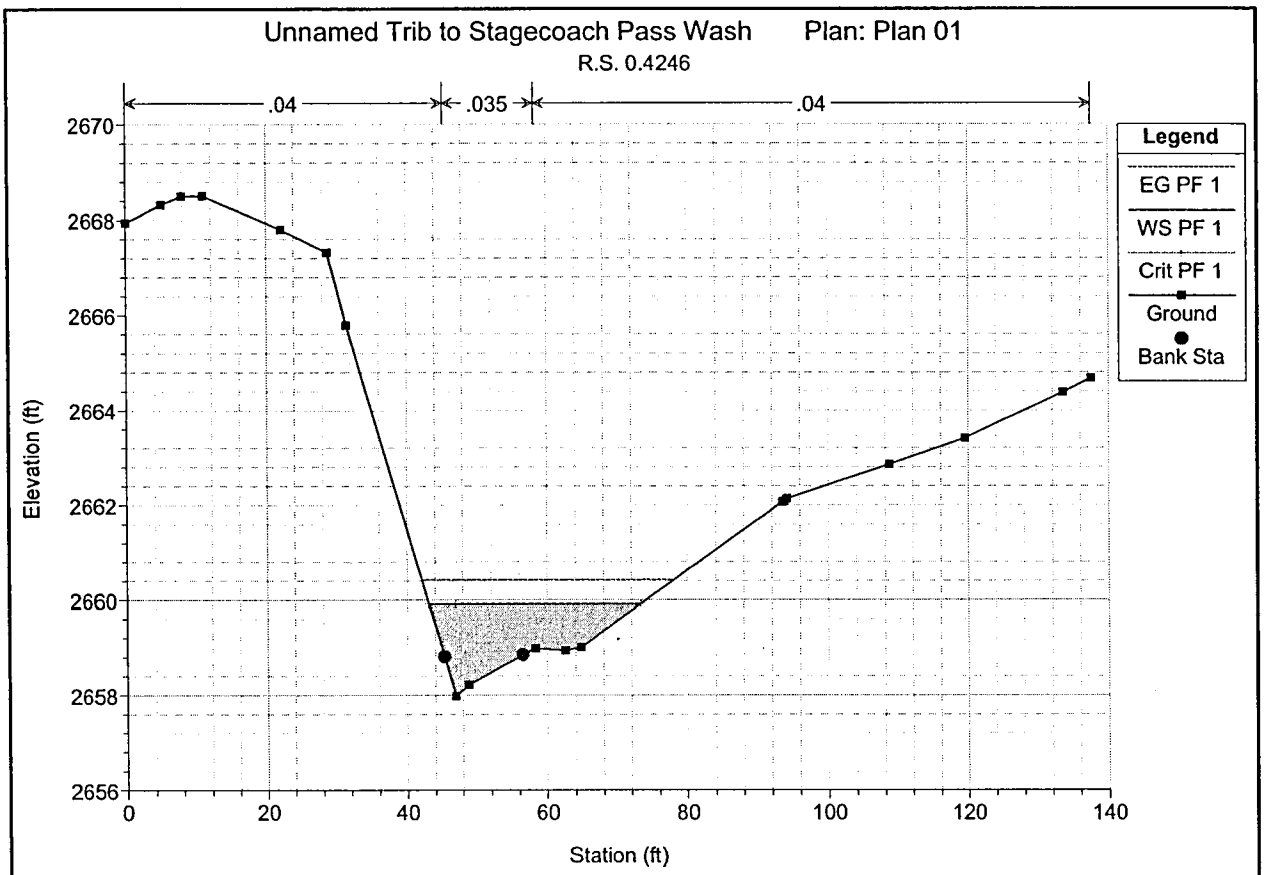

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Driveway Culverts off of Wildflower Drive
.025
.04
.025
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2676
2674
2672
2670
2668
2666
2664
0
50
100
150
200
250
300
Station (ft)

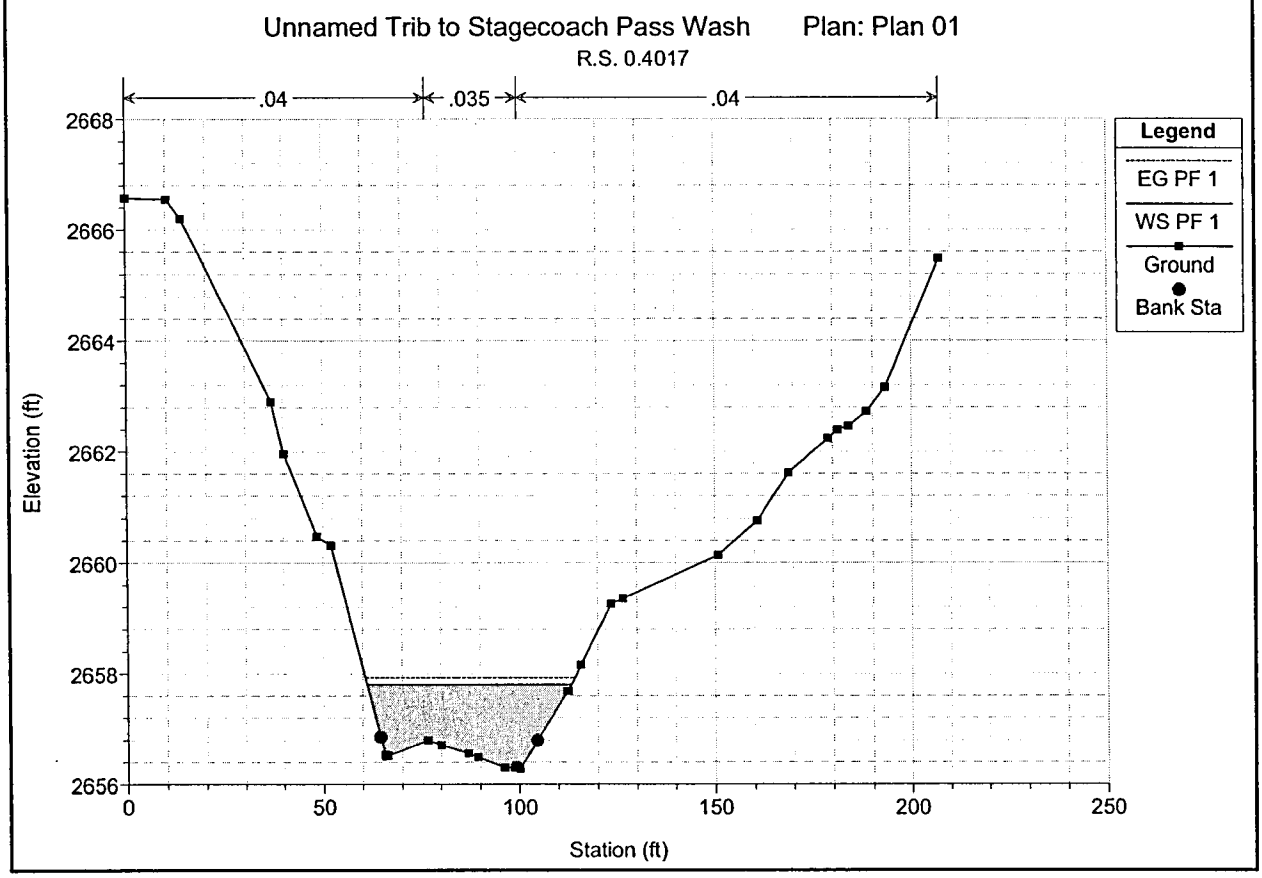

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4880; Imm. Downstream Driveway Culvert
.025
.04
.025
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

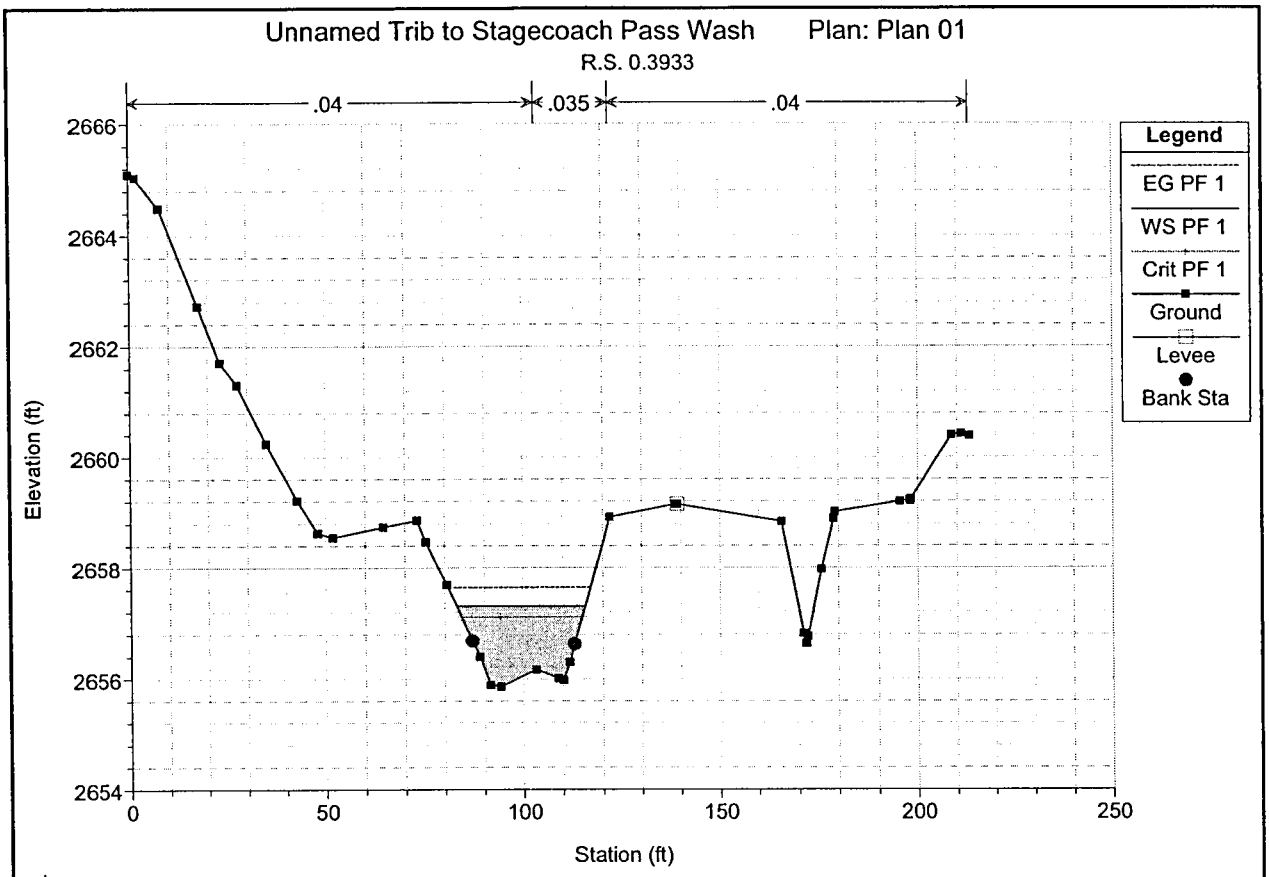

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4730
.04
.025
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

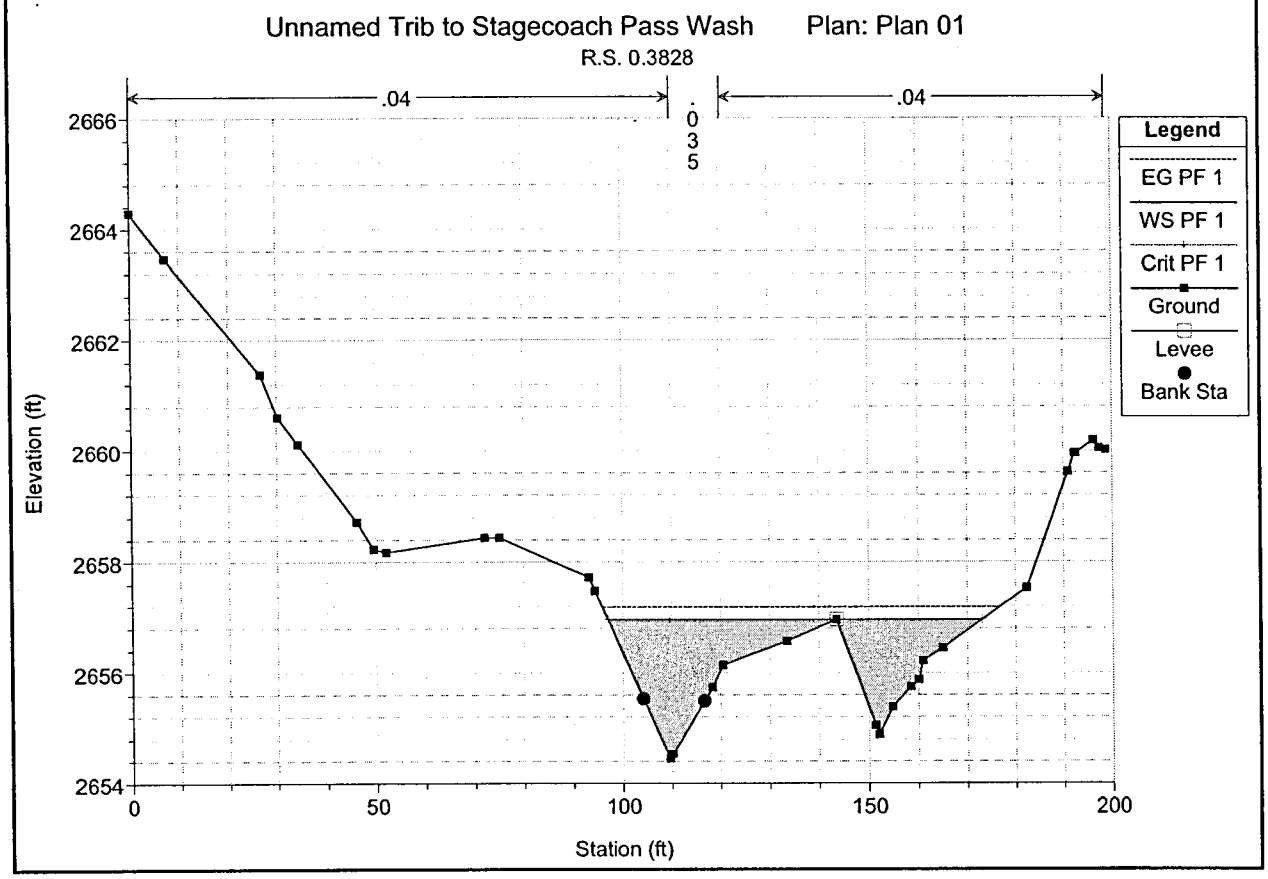

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4567
.04
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

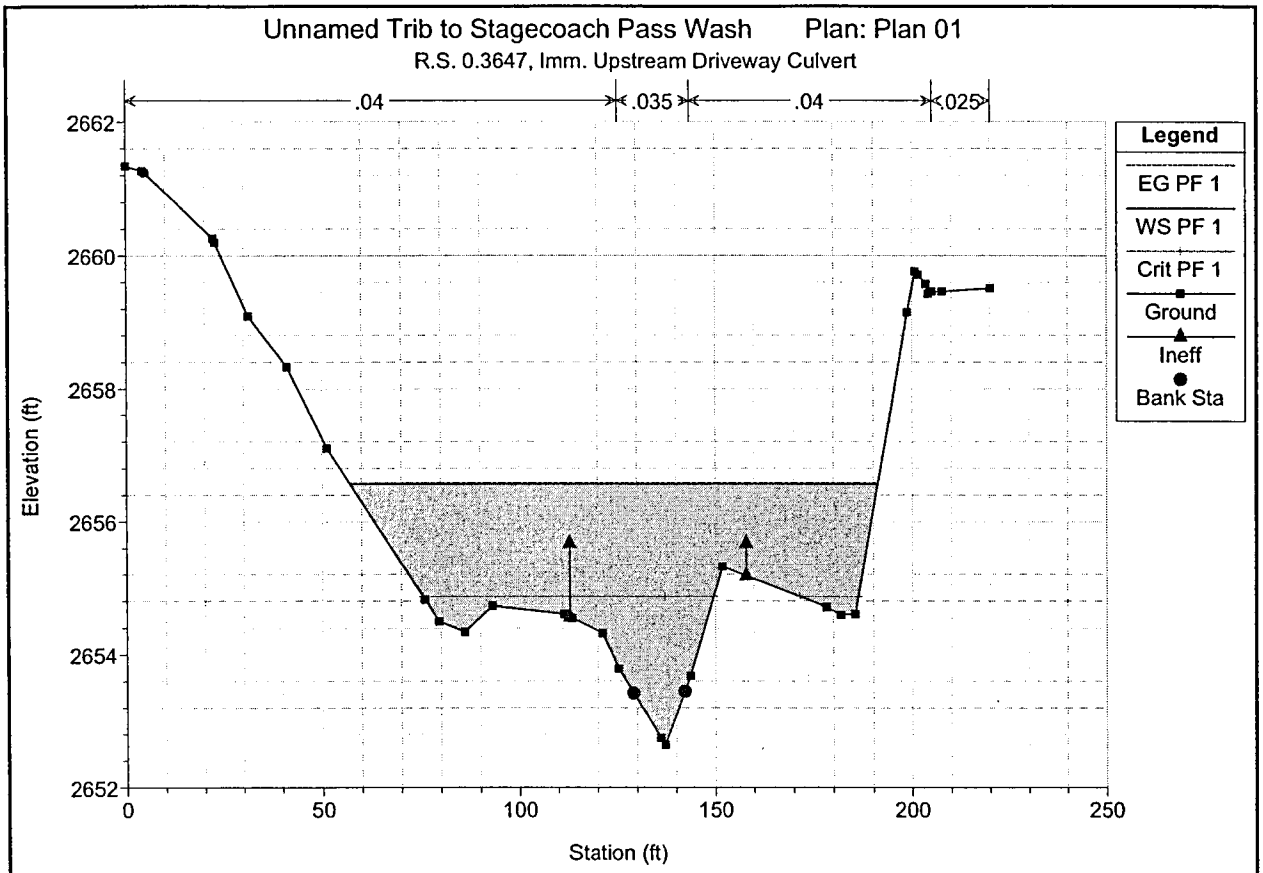

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4398
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

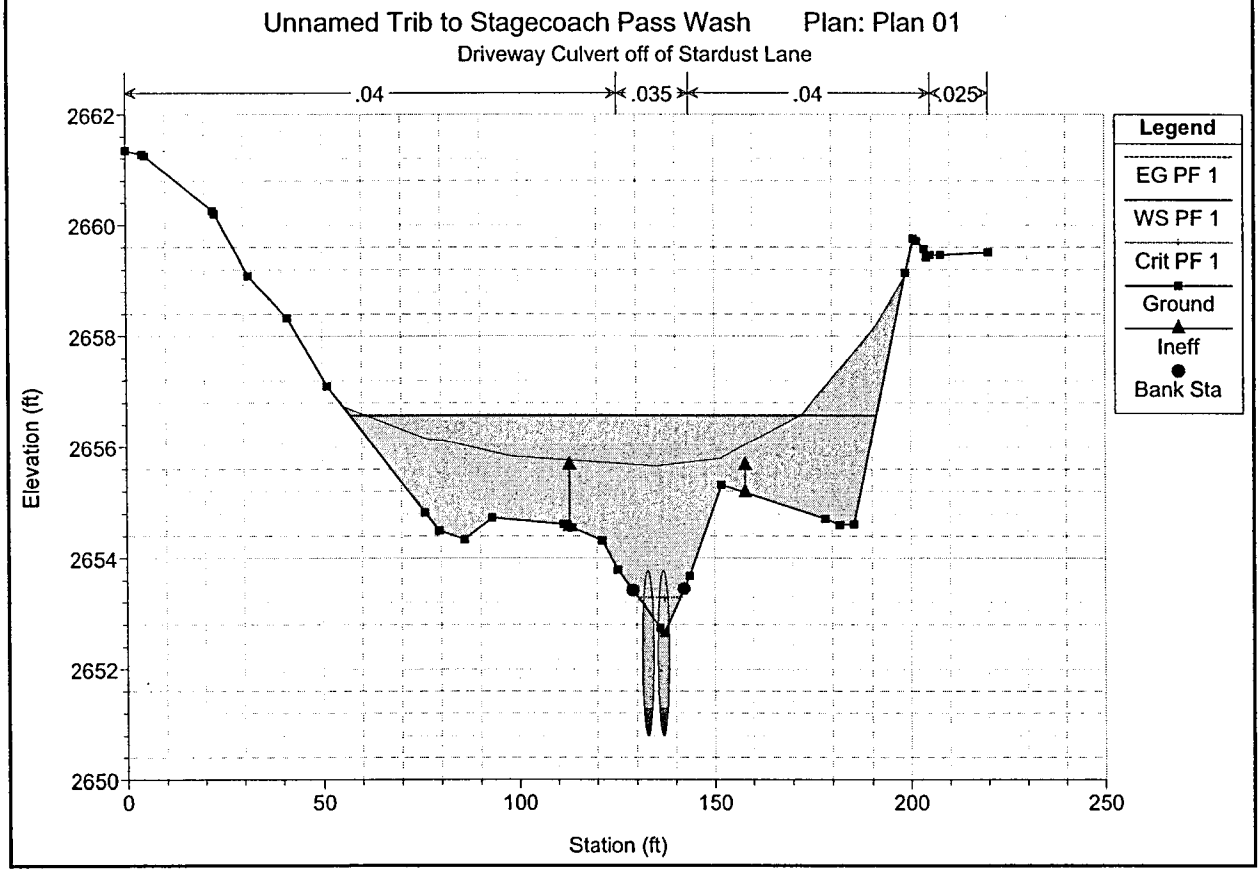

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4246
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2670
2668
2666
2664
2662
2660
2658
2656
0
20
40
60
80
100
120
140
Station (ft)

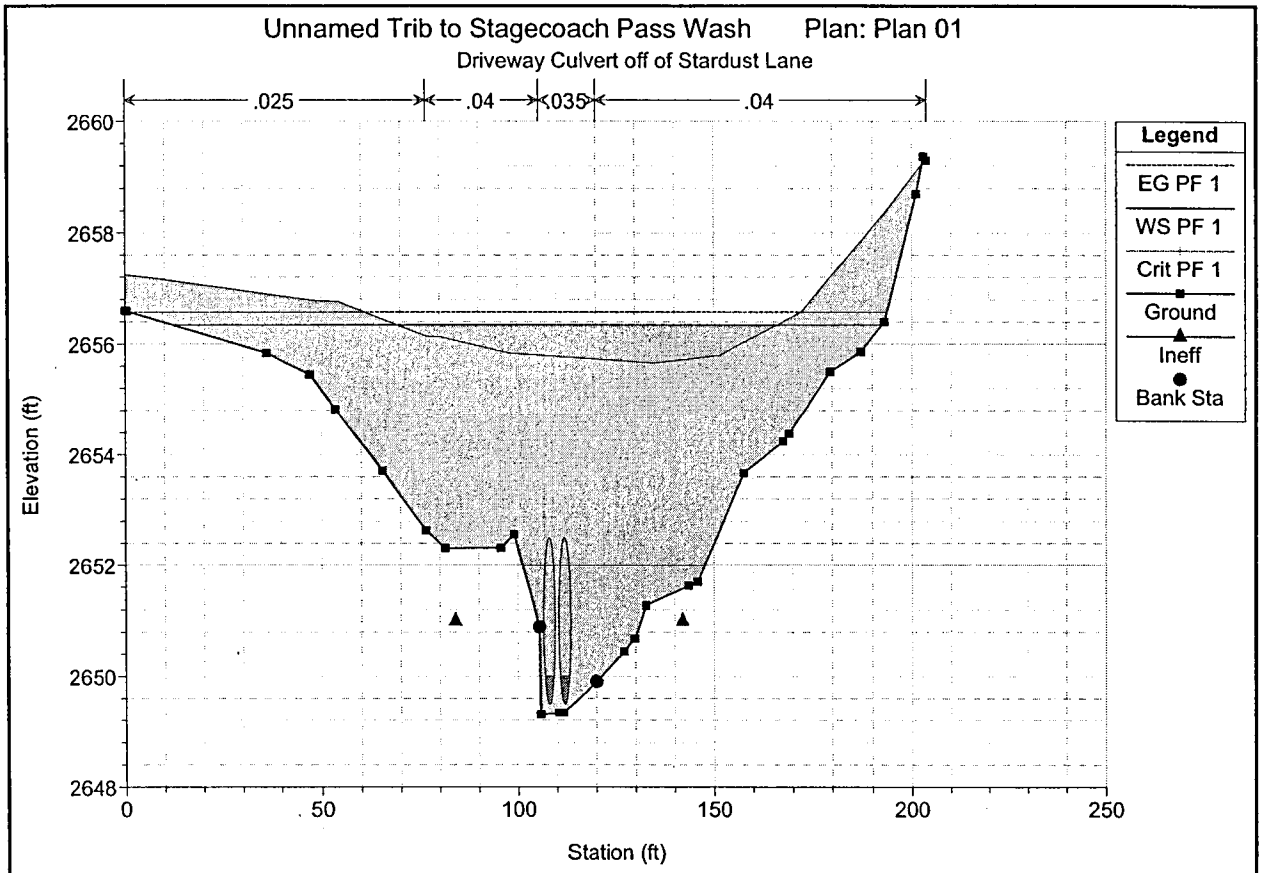

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.4017
.04
.035
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2668
2666
2664
2662
2660
2658
2656
0
50
100
150
200
250
Station (ft)

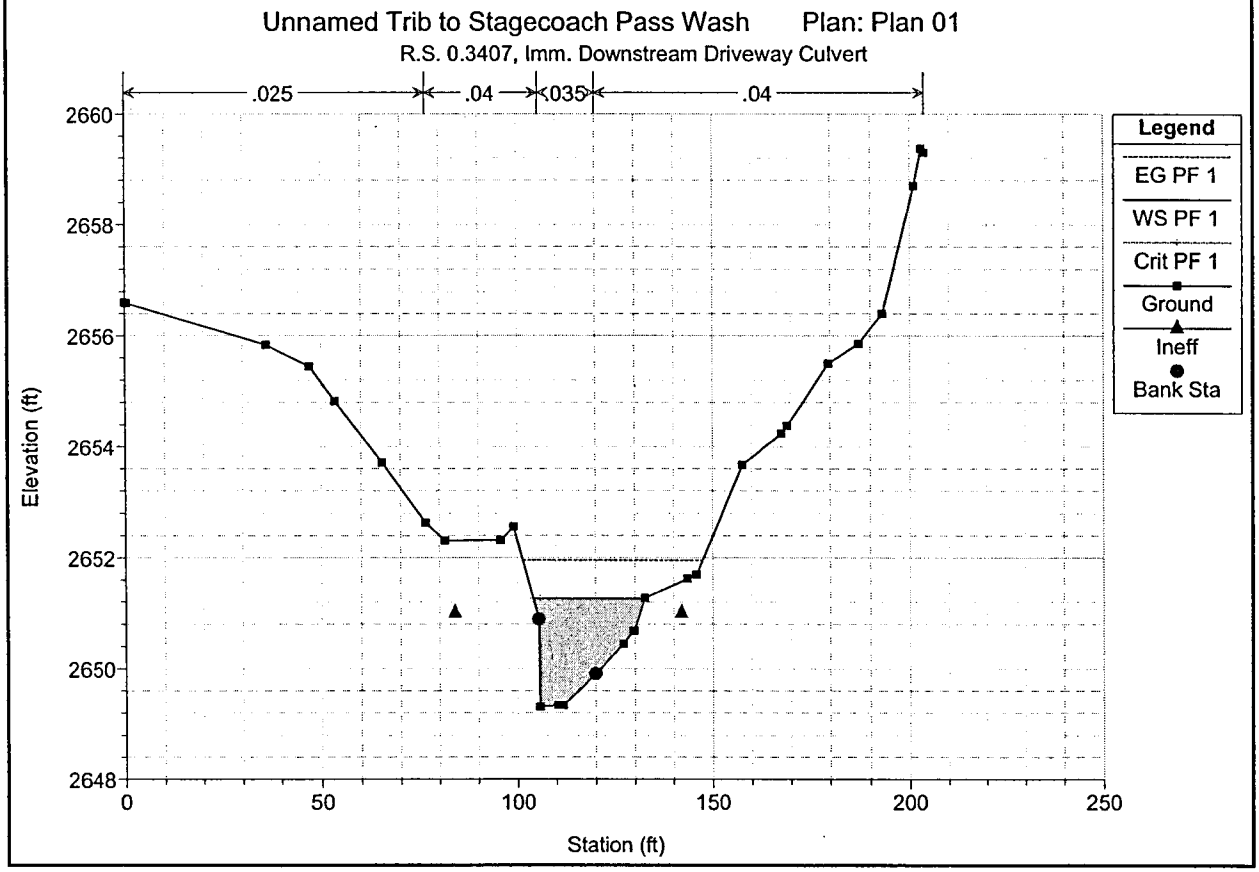

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.3933
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2654
2656
2658
2660
2662
2664
2666
0
50
100
150
200
250
Station (ft)

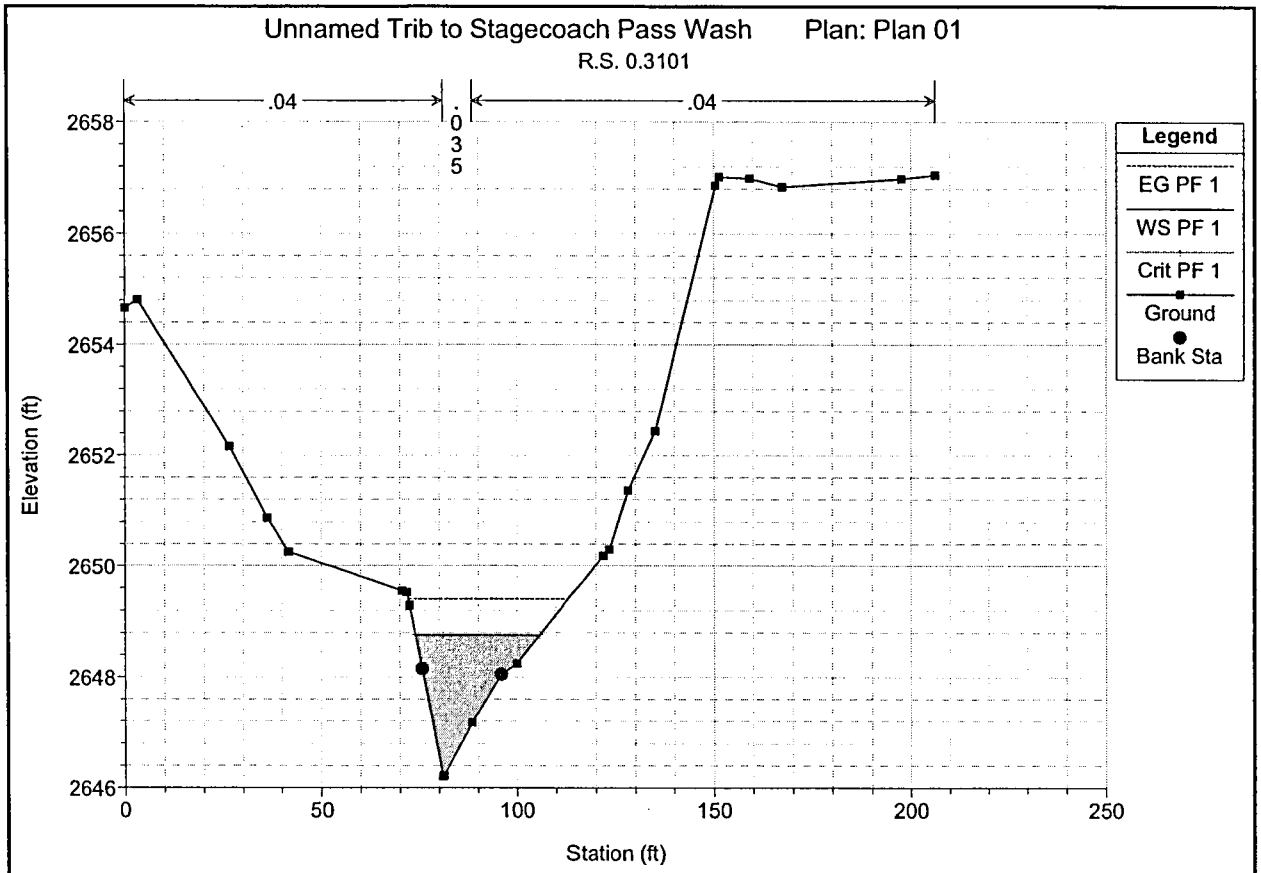

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.3828
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2654
2656
2658
2660
2662
2664
2666
0
50
100
150
200
Station (ft)

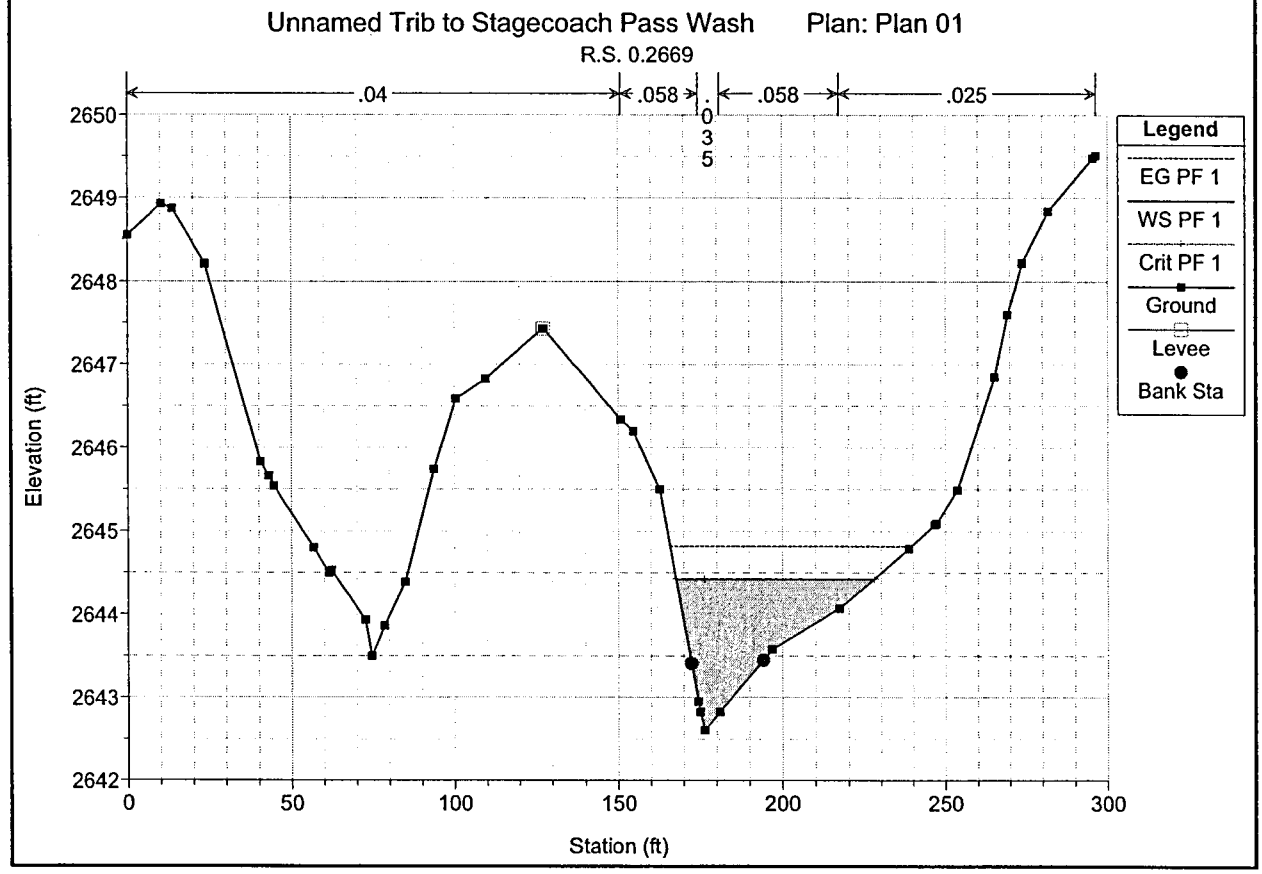

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.3647, Imm. Upstream Driveway Culvert
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2662
2660
2658
2656
2654
2652
0
50
100
150
200
250

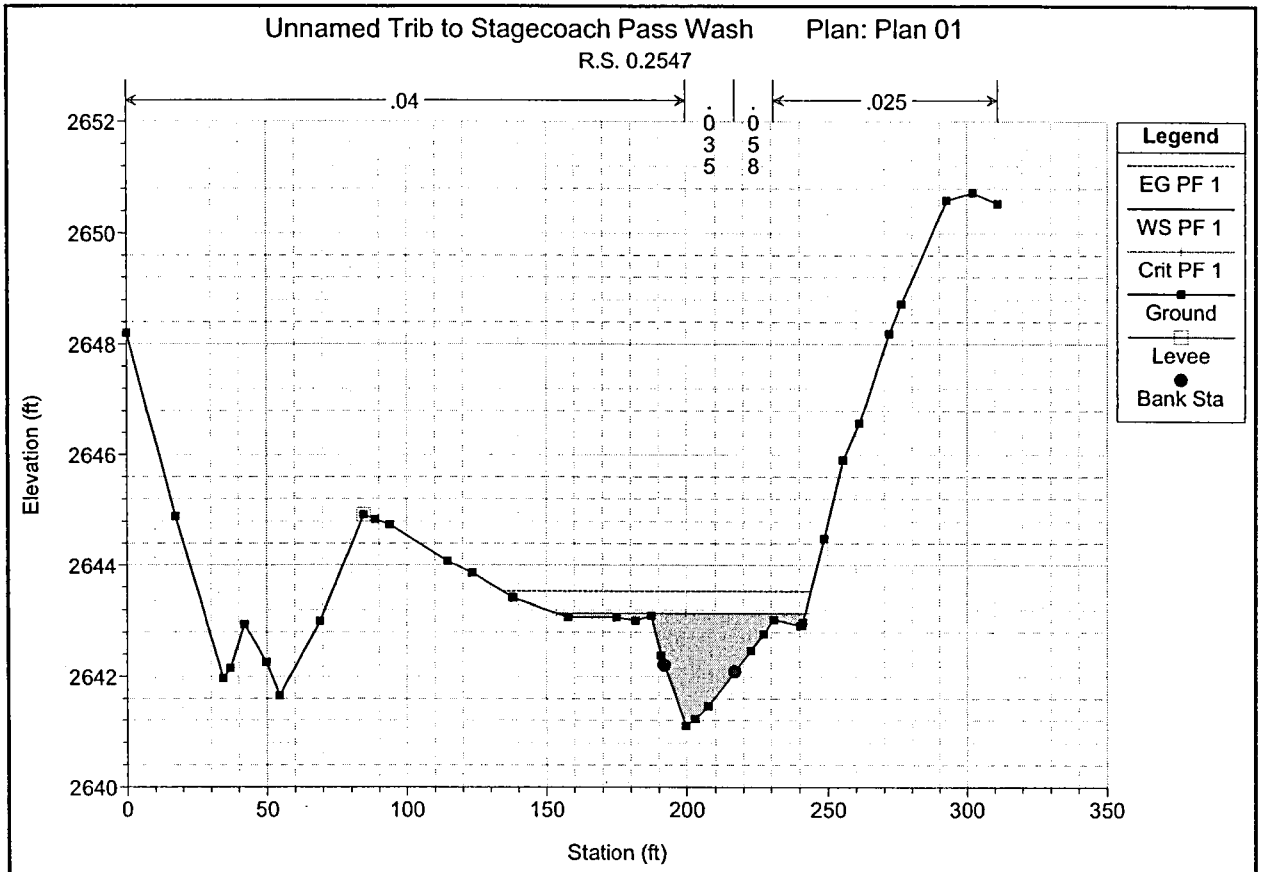

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Driveway Culvert off of Stardust Lane
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2662
2660
2658
2656
2654
2652
2650
0
50
100
150
200
250

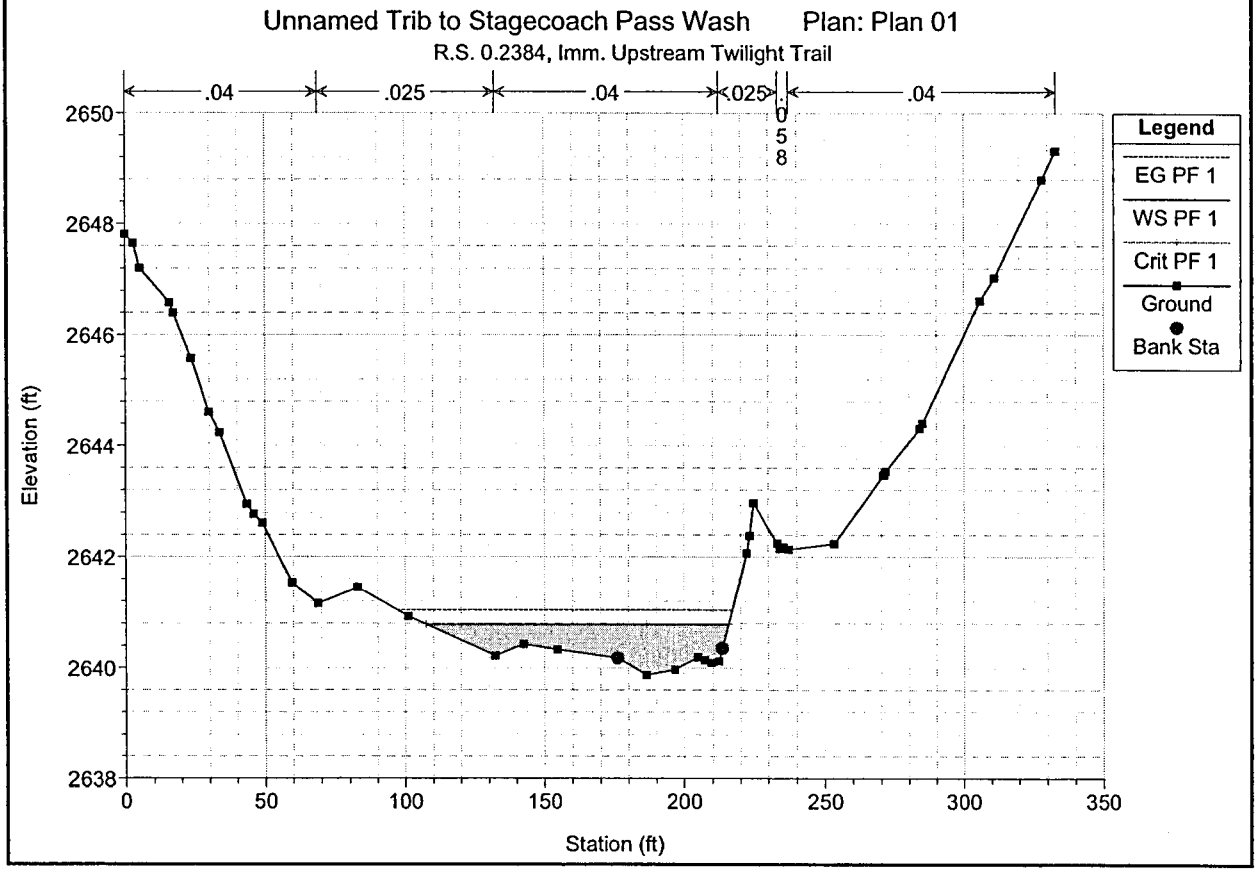

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
Driveway Culvert off of Stardust Lane
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2660
2658
2656
2654
2652
2650
2648
0
50
100
150
200
250
Station (ft)

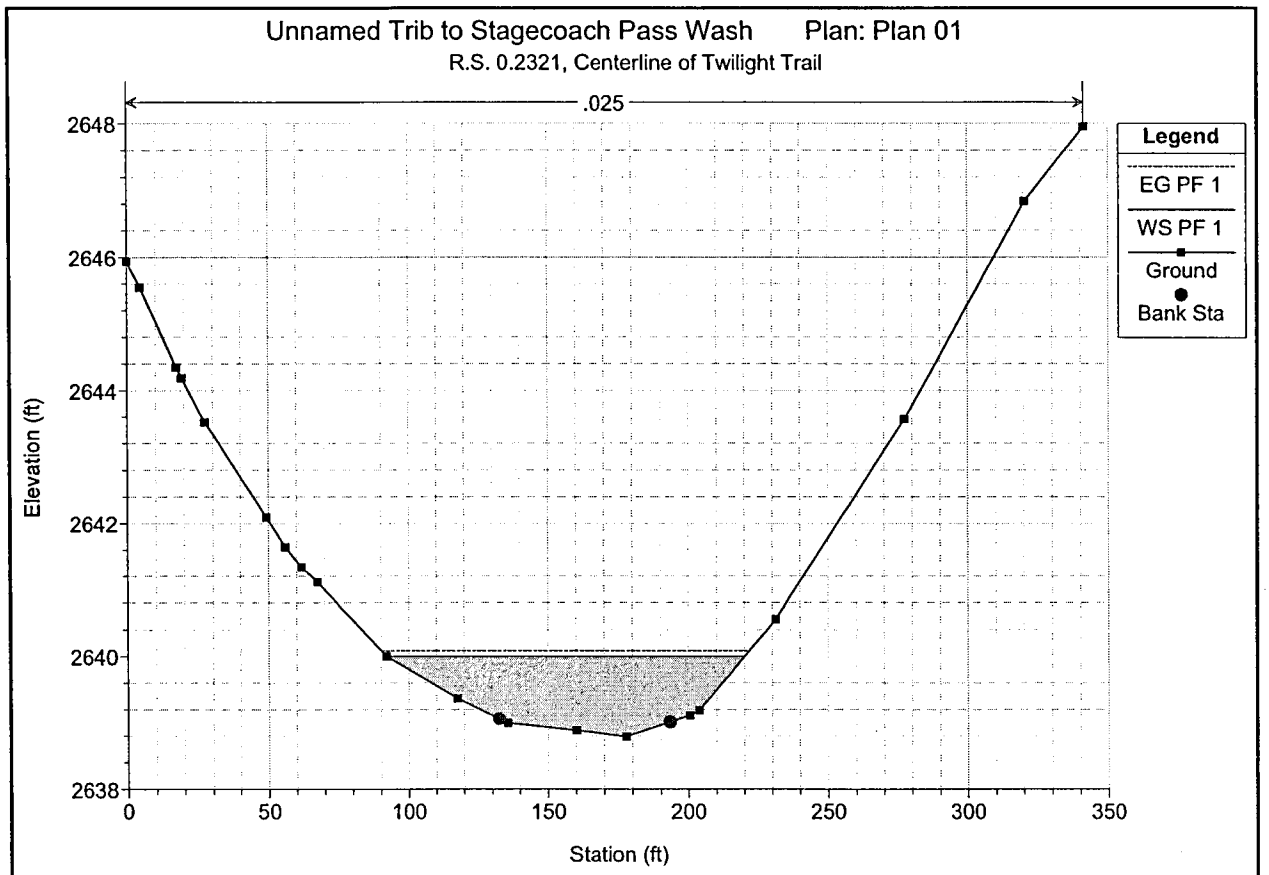

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.3407, Imm. Downstream Driveway Culvert
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2660
2658
2656
2654
2652
2650
2648
0
50
100
150
200
250
Station (ft)

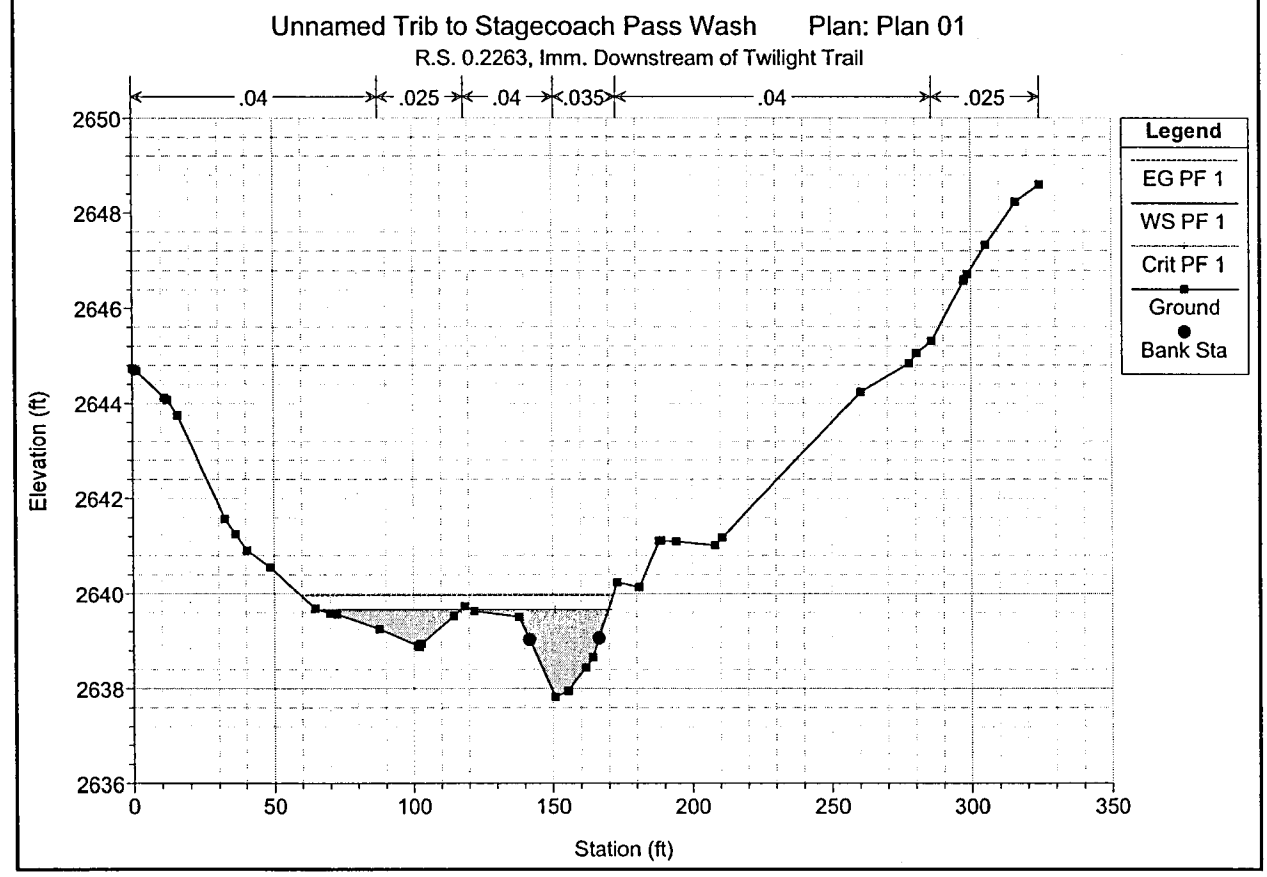

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.3101
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2658
2656
2654
2652
2650
2648
2646
0
50
100
150
200
250

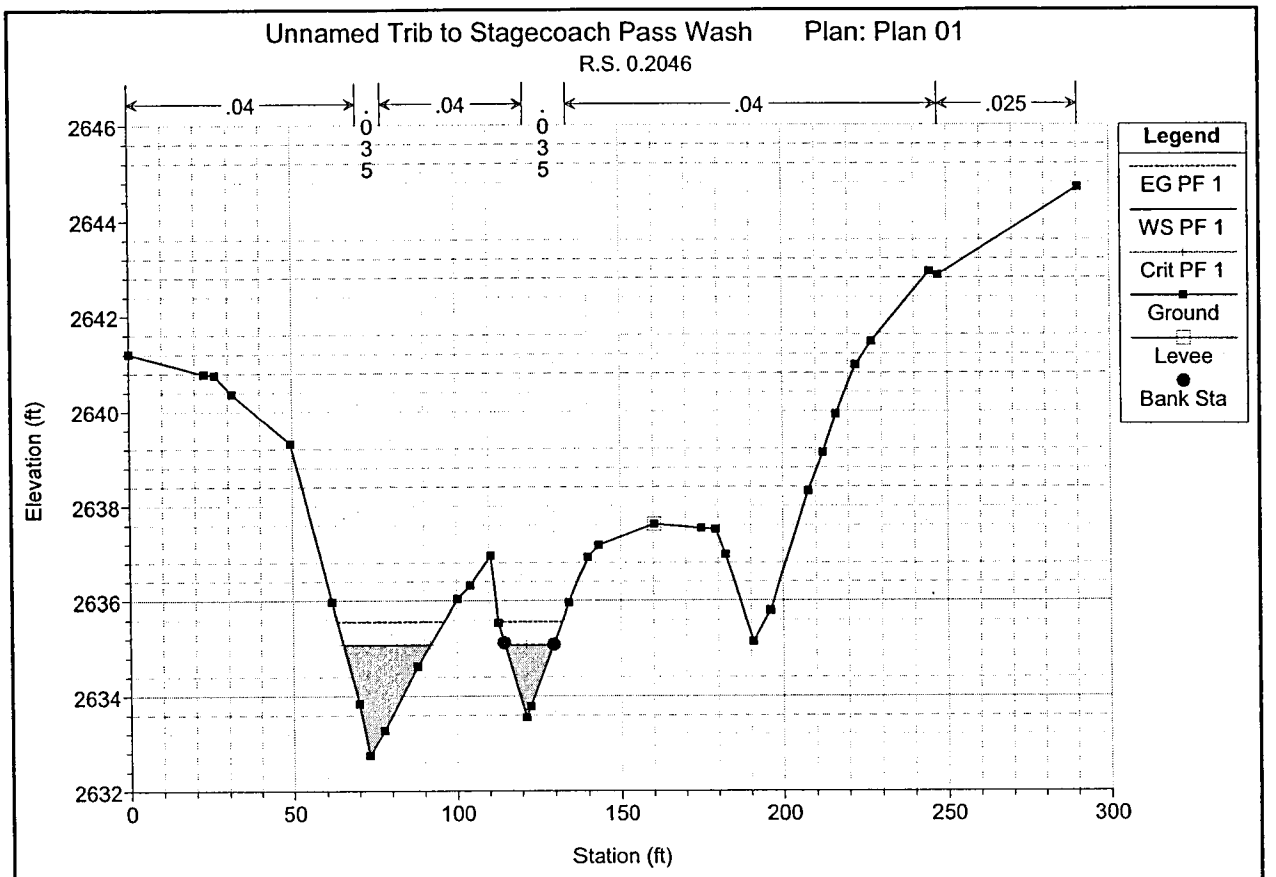

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.2669
.04
.058
.035
.058
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2650
2649
2648
2647
2646
2645
2644
2643
2642
0
50
100
150
200
250
300

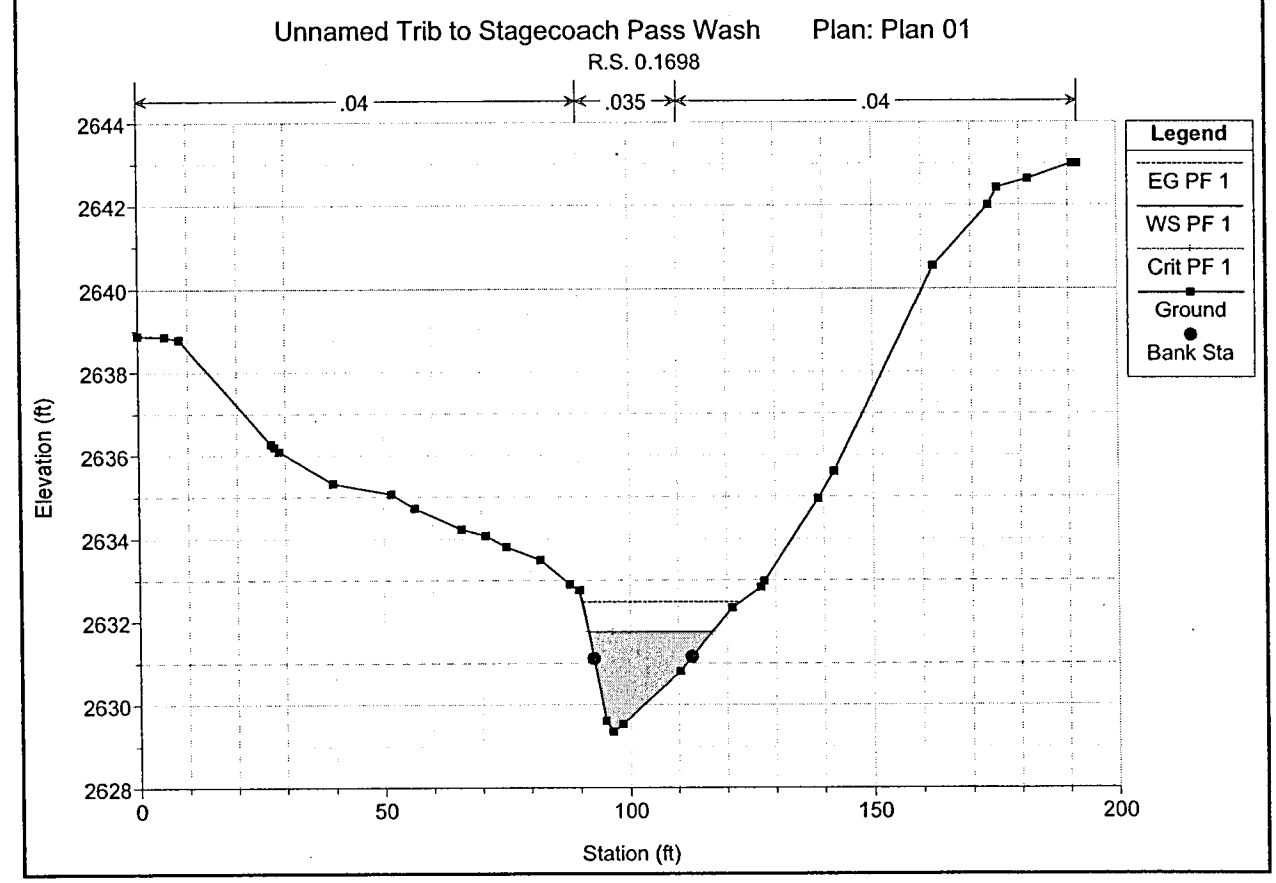

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.2547
.04
.035
.058
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

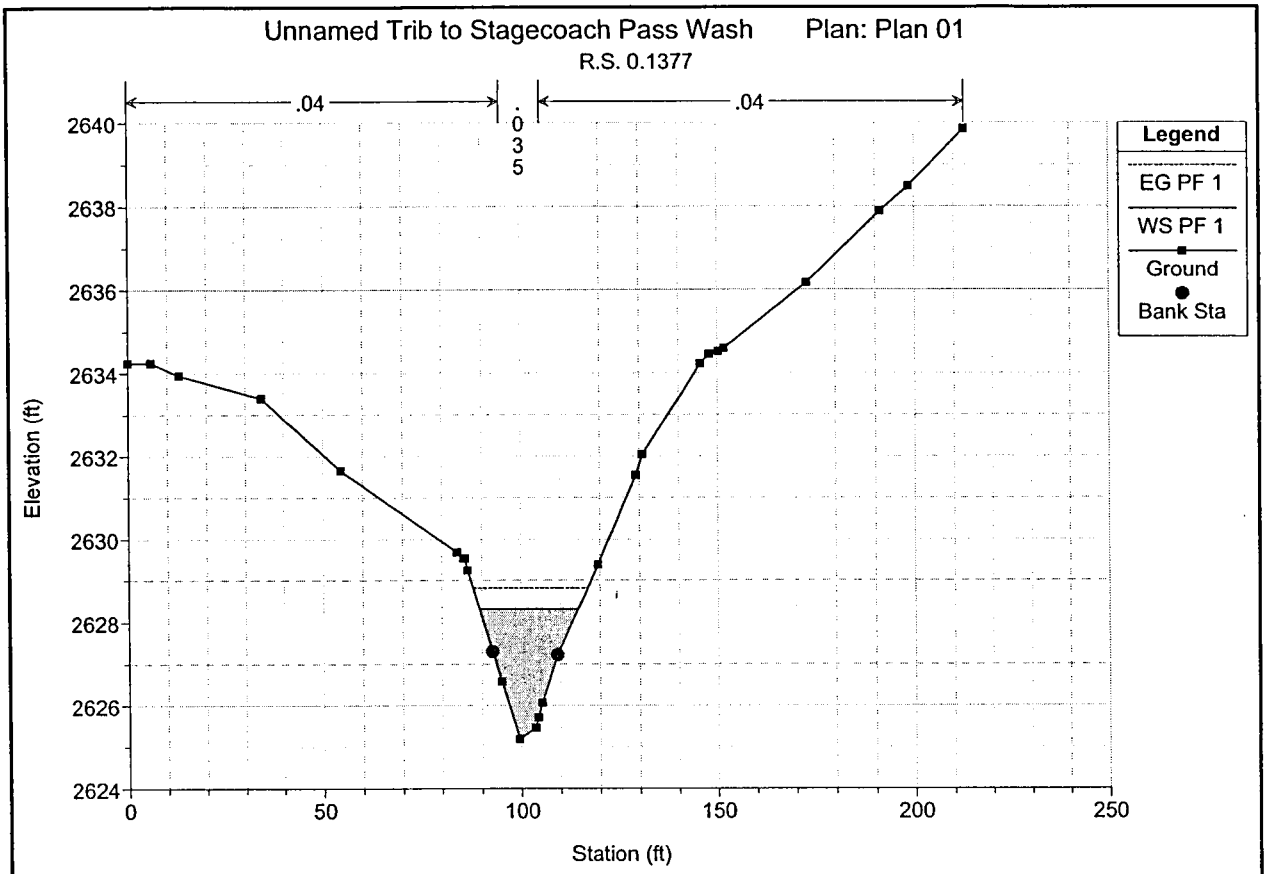

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.2384, Imm. Upstream Twilight Trail
.04
.025
.04
.025
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

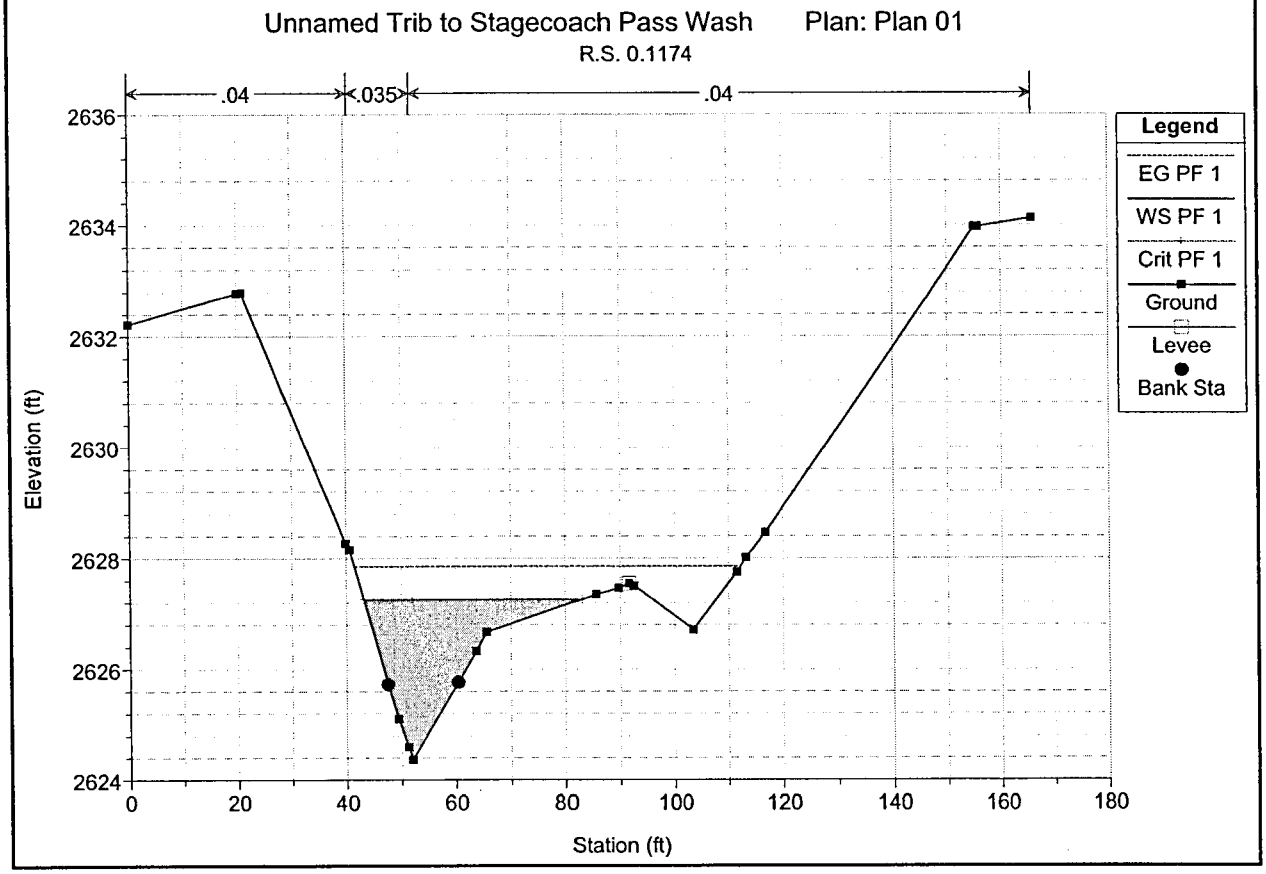

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.2321, Centerline of Twilight Trail
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2648
2646
2644
2642
2640
2638
0
50
100
150
200
250
300
350
Station (ft)

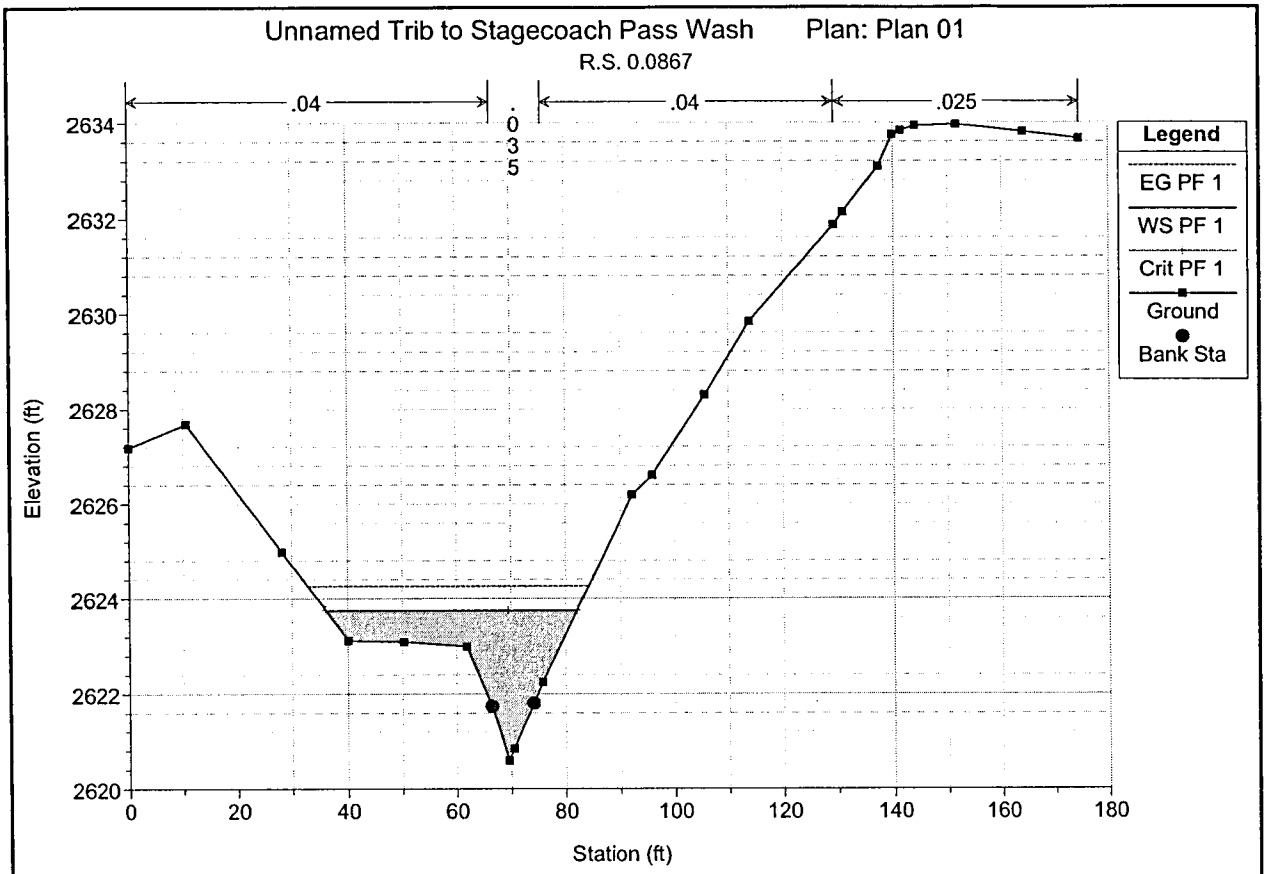

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.2263, Imm. Downstream of Twilight Trail
.04
.025
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2650
2648
2646
2644
2642
2640
2638
2636
0
50
100
150
200
250
300
350
Station (ft)

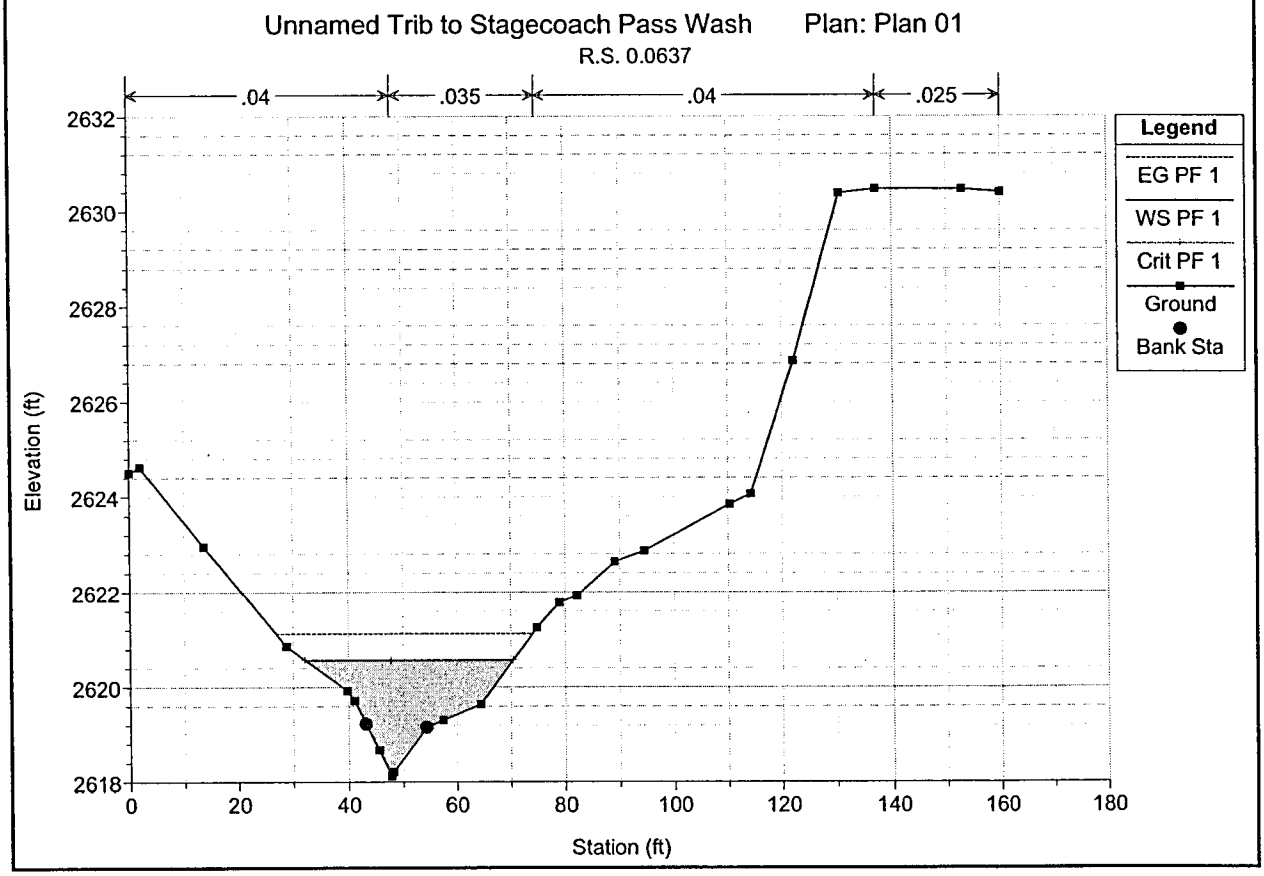

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.2046
.04
.035
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

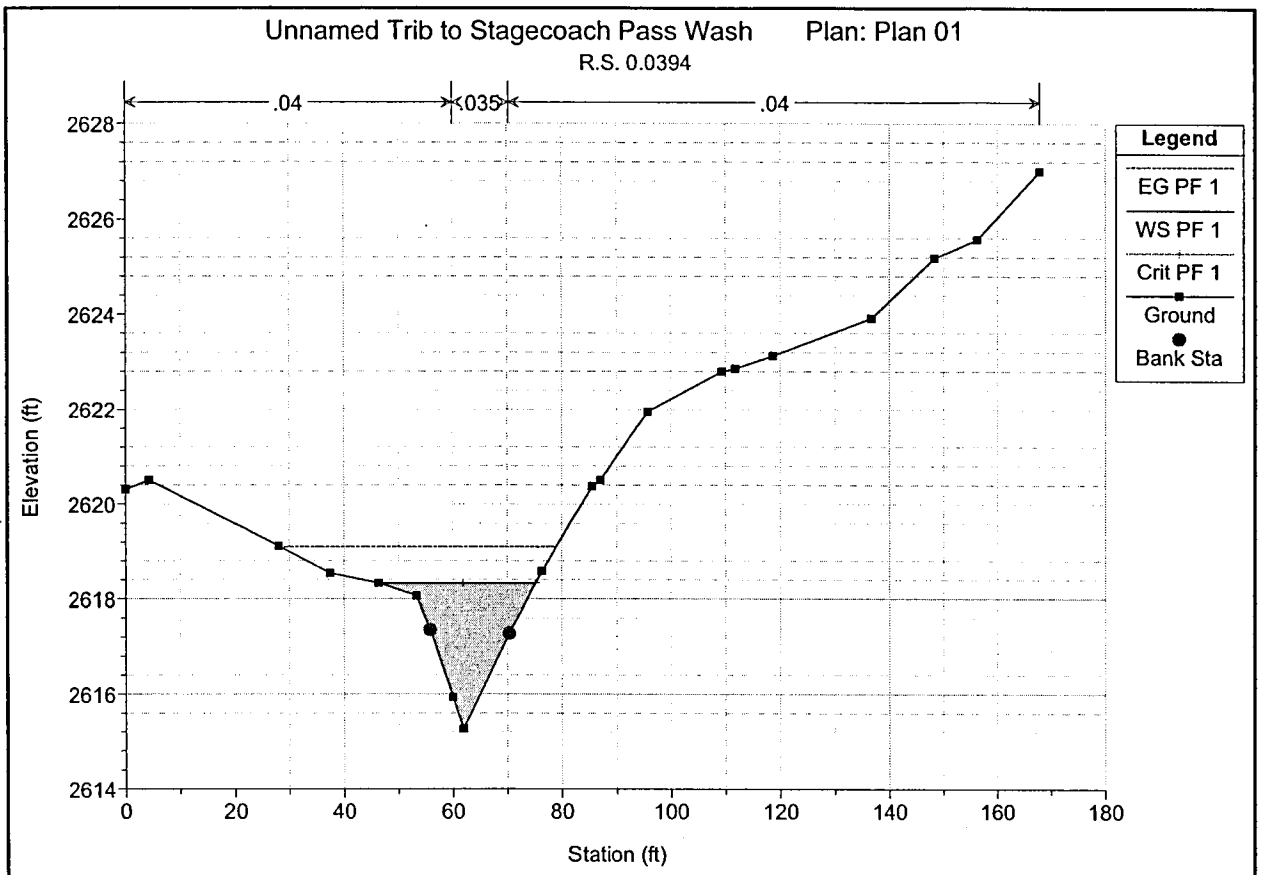

Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.1698
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.1377
.04
.035
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2640
2638
2636
2634
2632
2630
2628
2626
2624
0
50
100
150
200
250


Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.1174
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2636
2634
2632
2630
2628
2626
2624
0
20
40
60
80
100
120
140
160
180


Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.0867
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.0637
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
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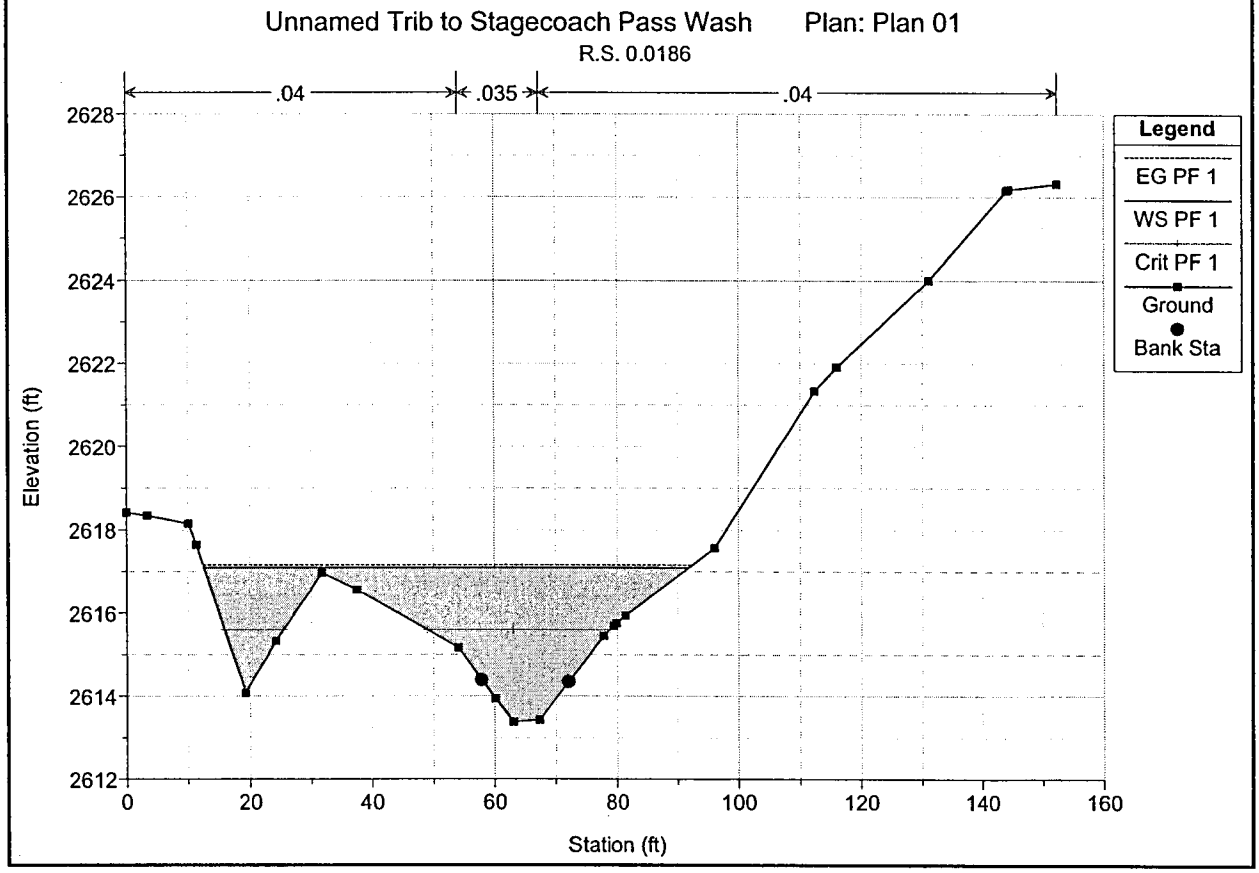
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Unnamed Trib to Stagecoach Pass Wash Plan: Plan 01
R.S. 0.0186
.04
.035
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Legend
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WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

Unnamed Central Tributary to Cave Creek

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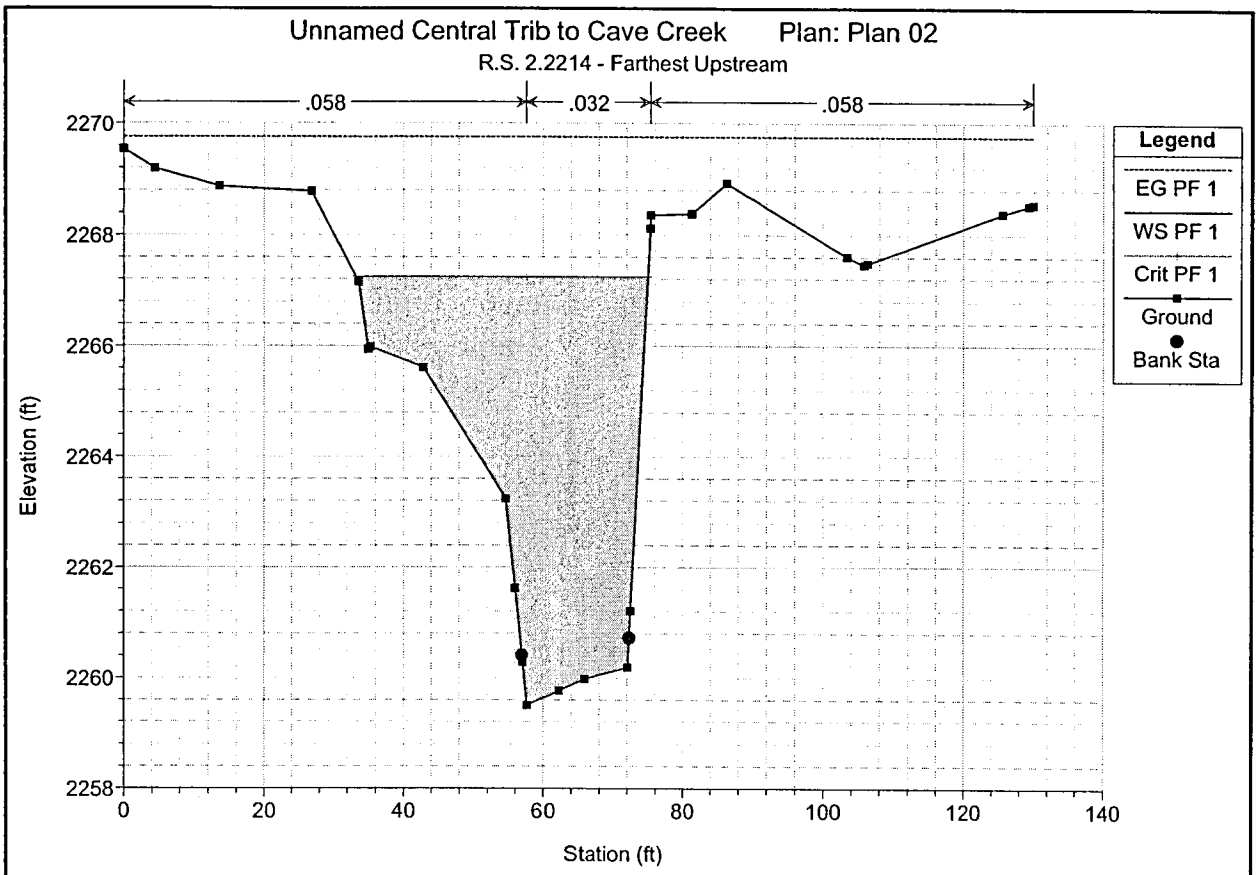
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R.S. 2.2214 - Farthest Upstream
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Crit PF 1
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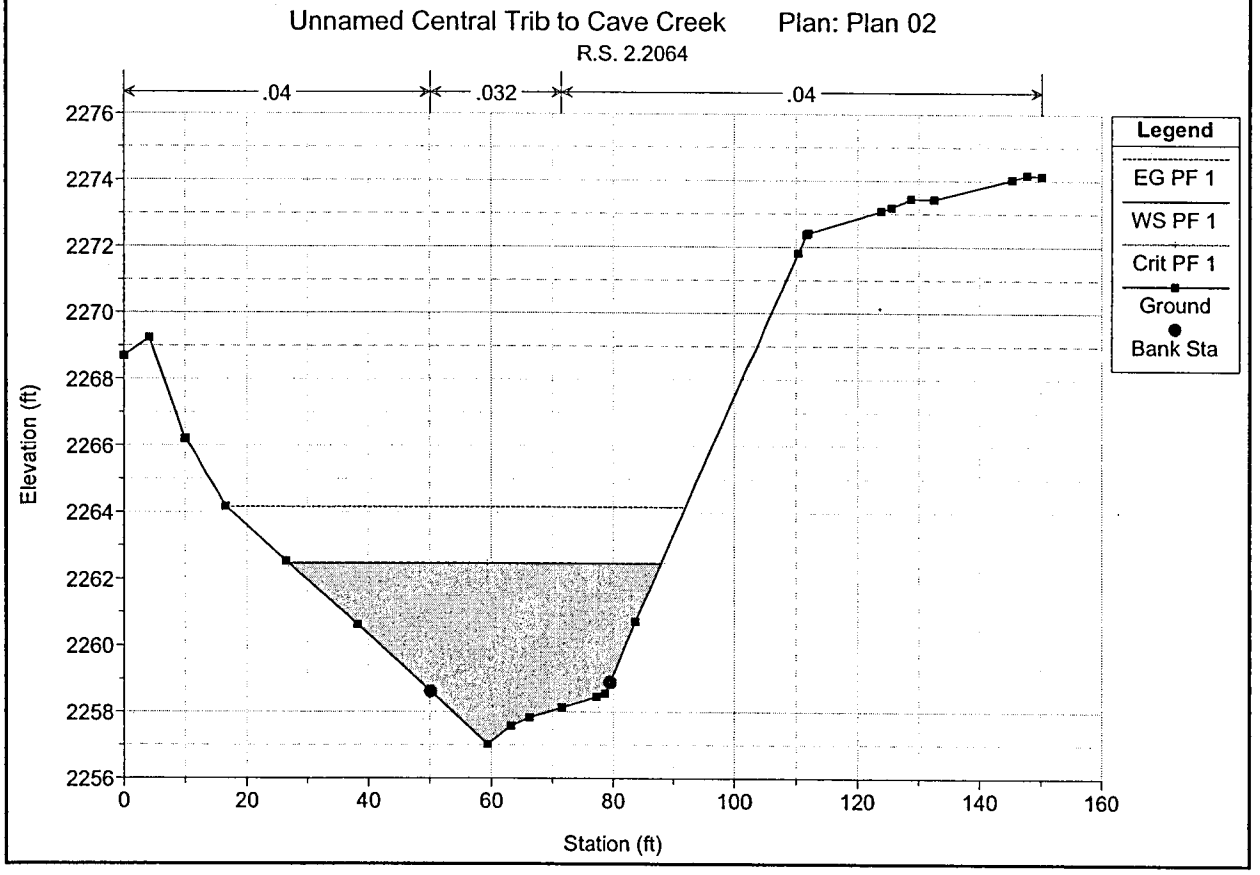
Bank Sta
Elevation (ft)
Station (ft)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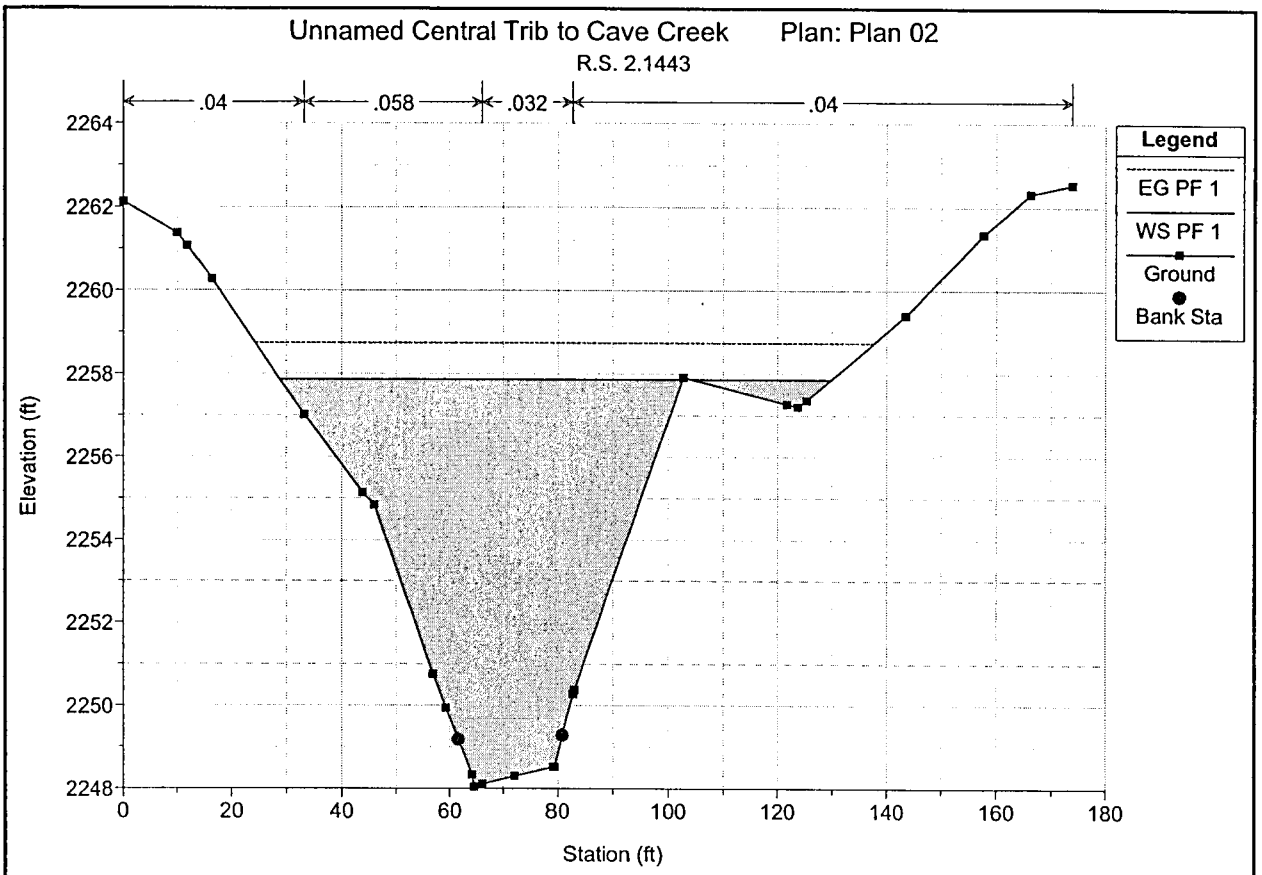
Station (ft)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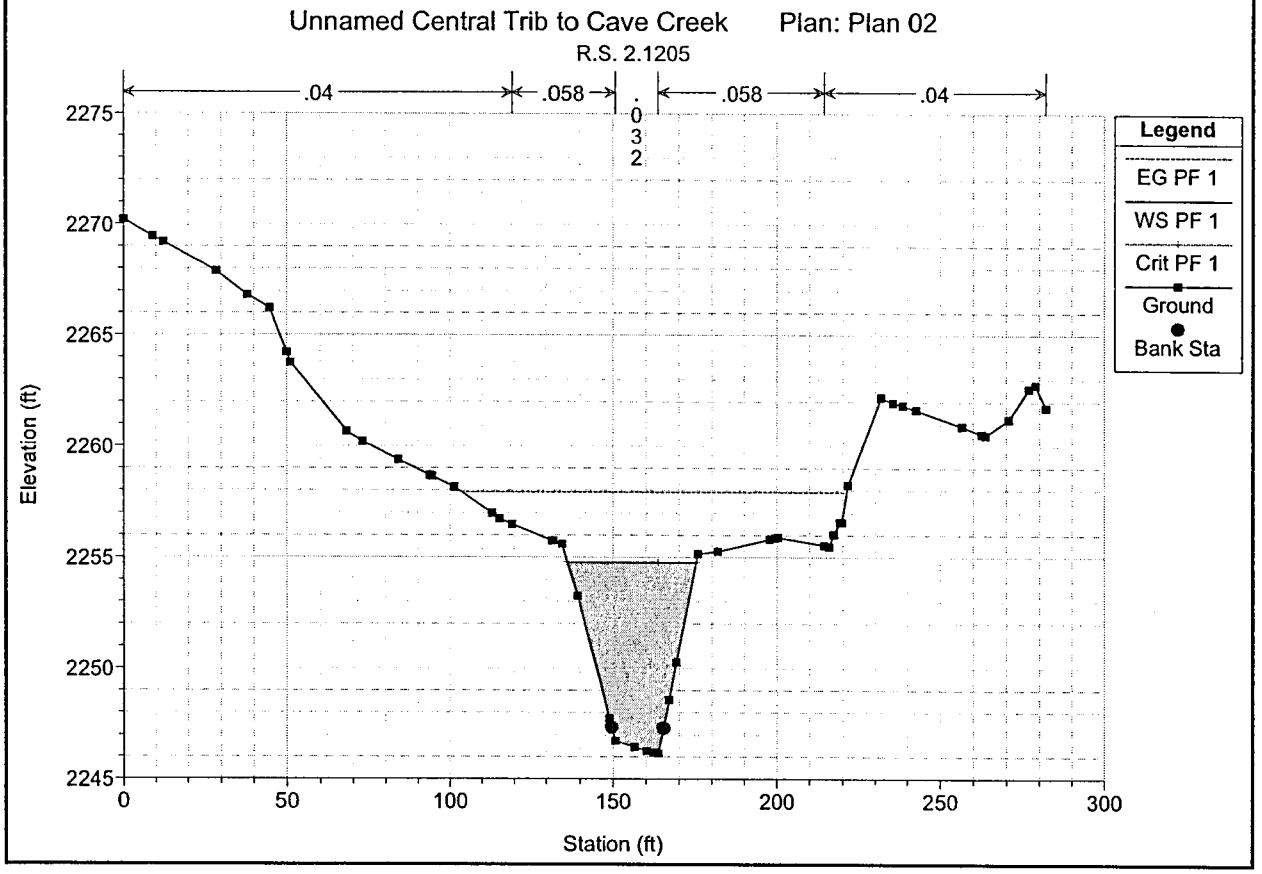
Bank Sta
Elevation (ft)
Station (ft)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R.S. 2.1205
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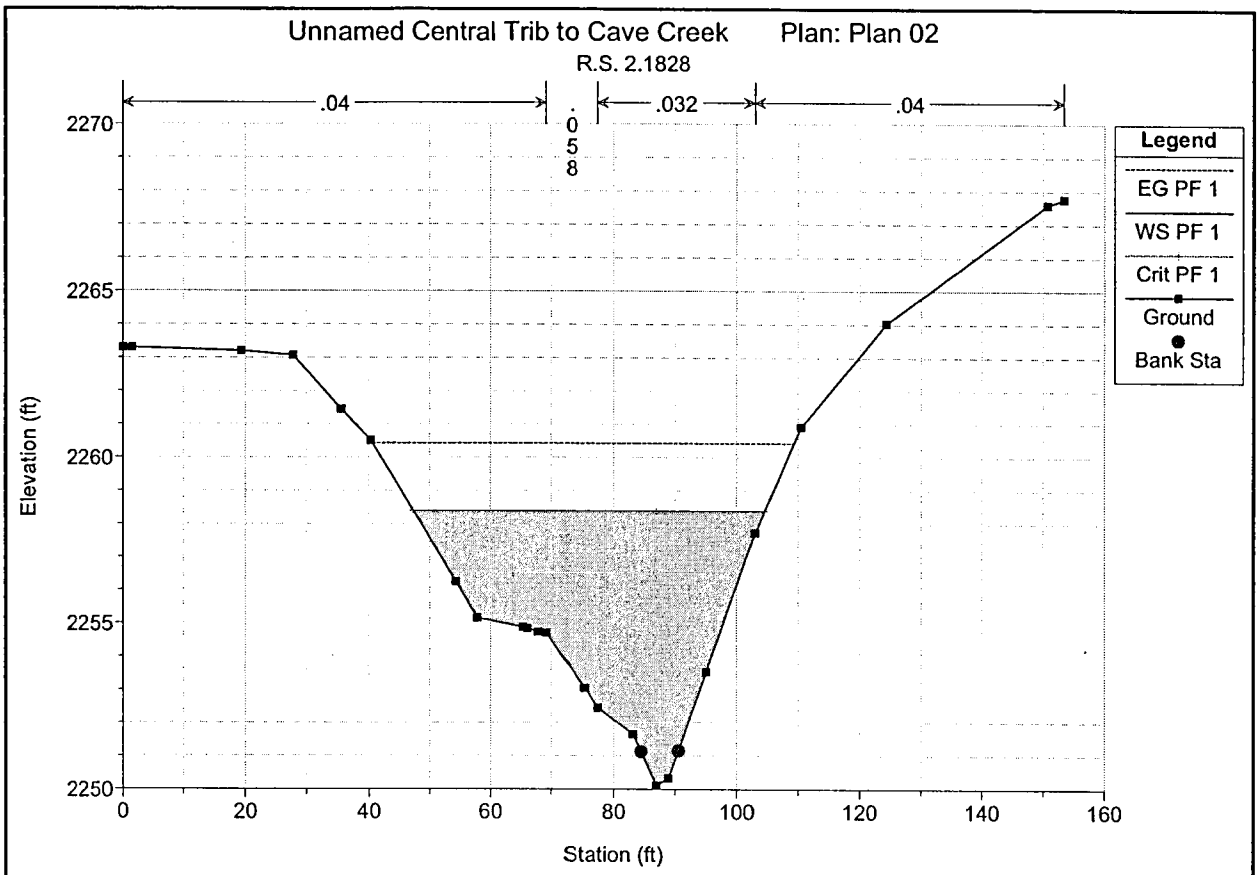
Bank Sta
Elevation (ft)
Station (ft)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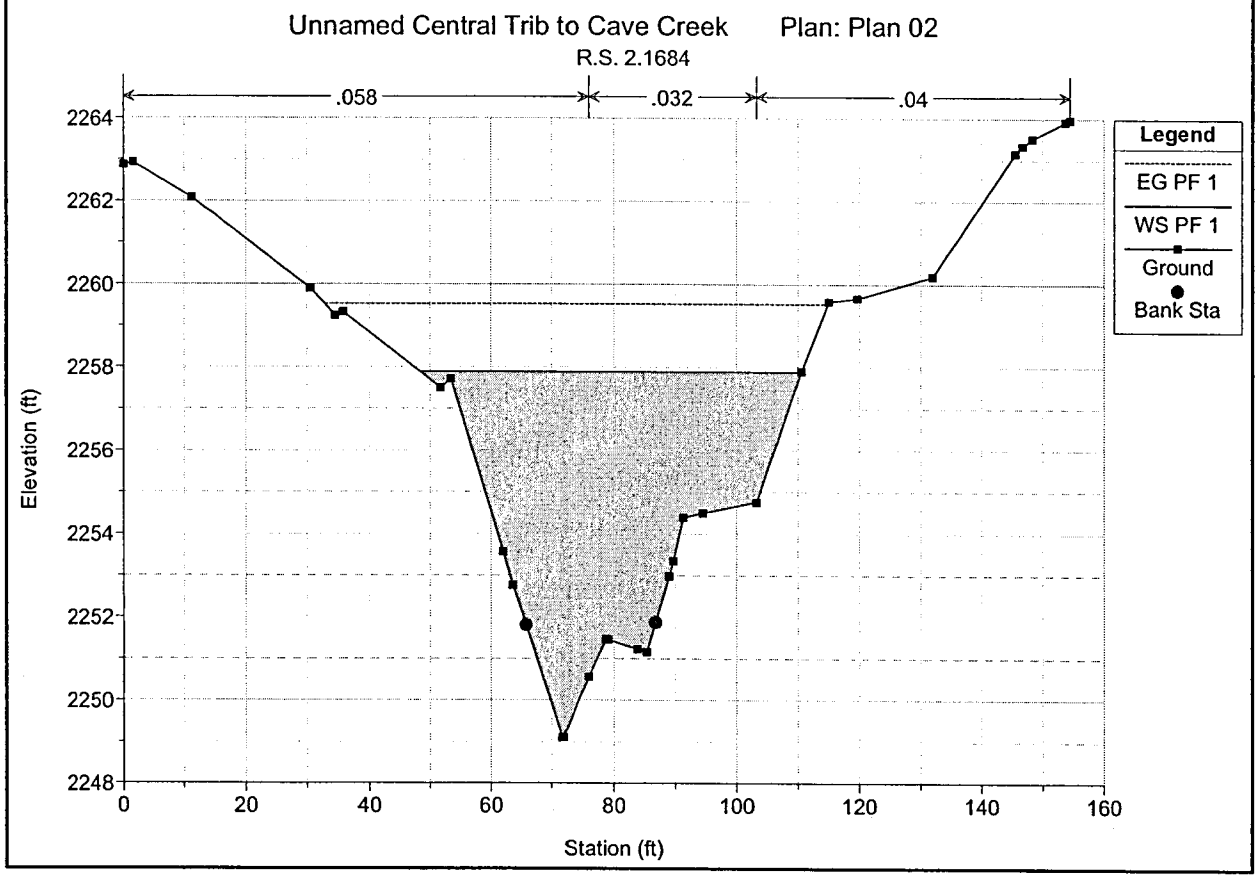
Bank Sta
Elevation (ft)
Station (ft)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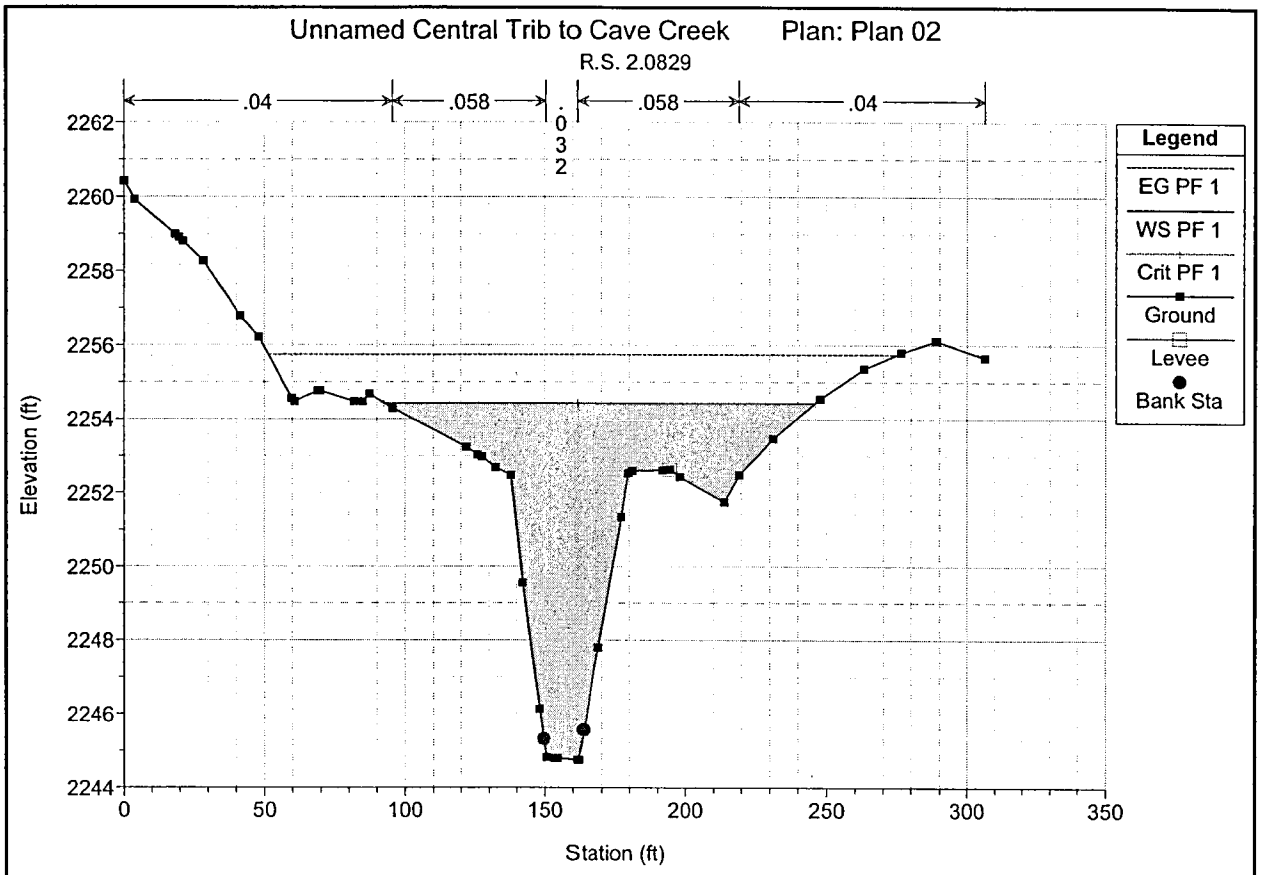
Bank Sta
Elevation (ft)
Station (ft)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R.S. 2.0829
.04
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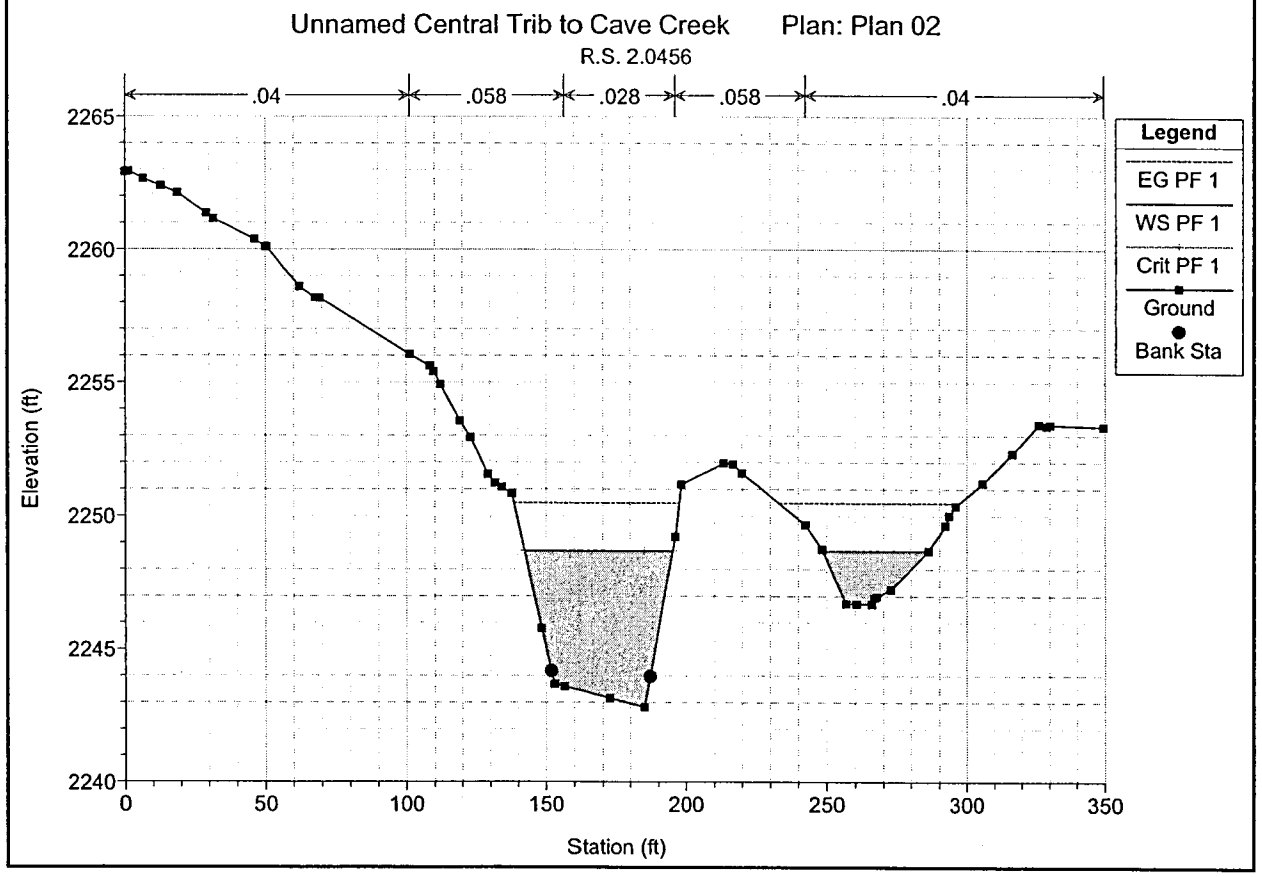
Levee
Bank Sta
Elevation (ft)
Station (ft)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R.S. 2.0456
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Crit PF 1
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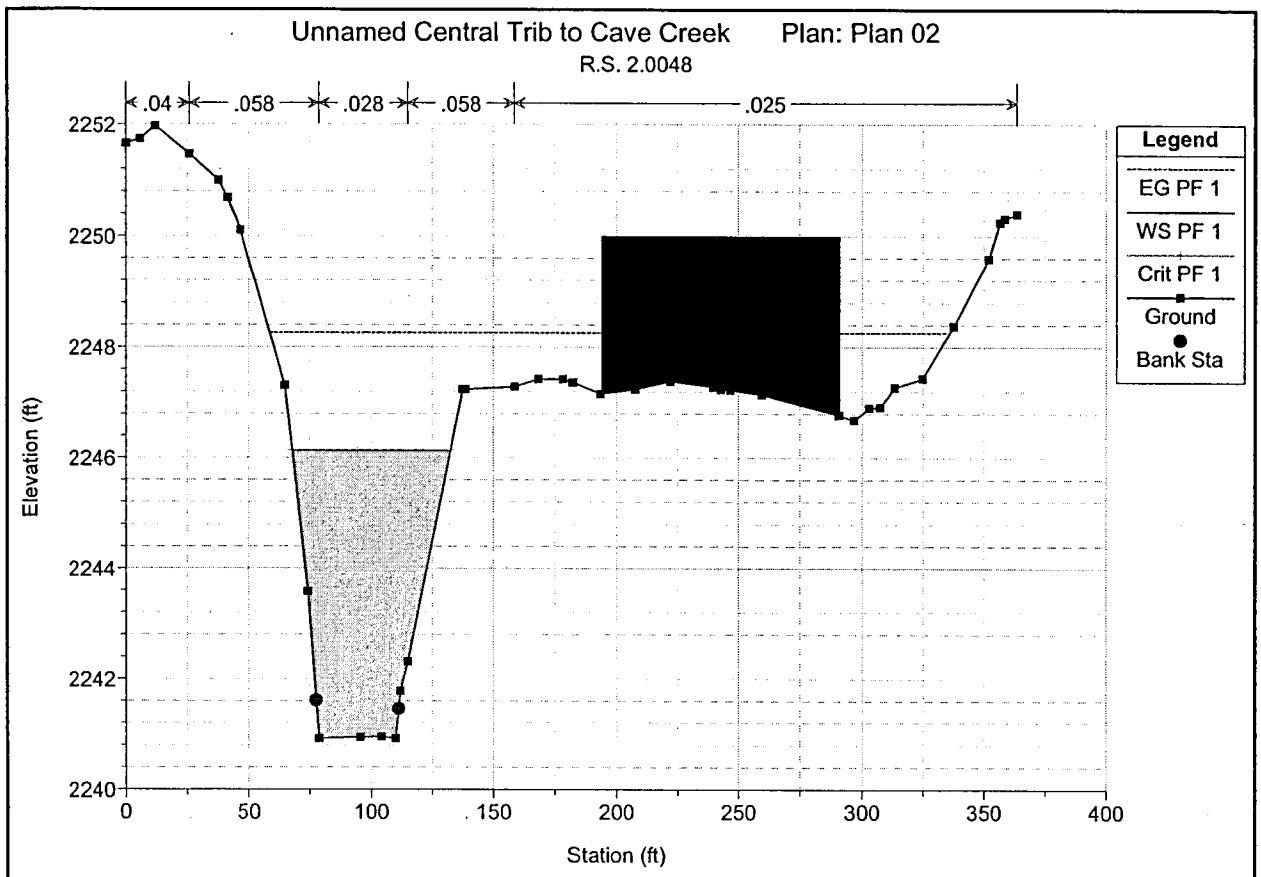
Bank Sta
Elevation (ft)
Station (ft)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R.S. 2.0048
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.058
.025
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Crit PF 1
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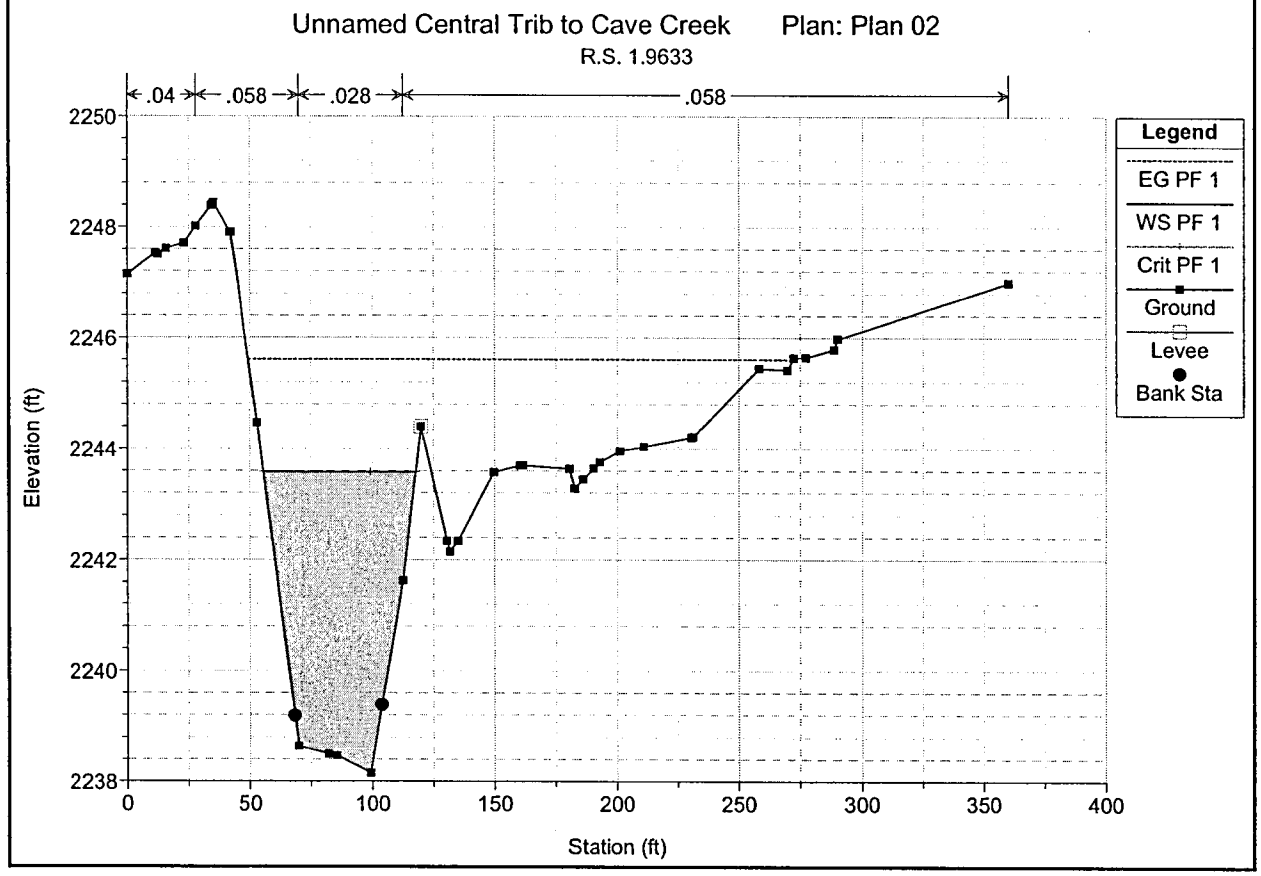
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.9633
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.028
.058
Legend
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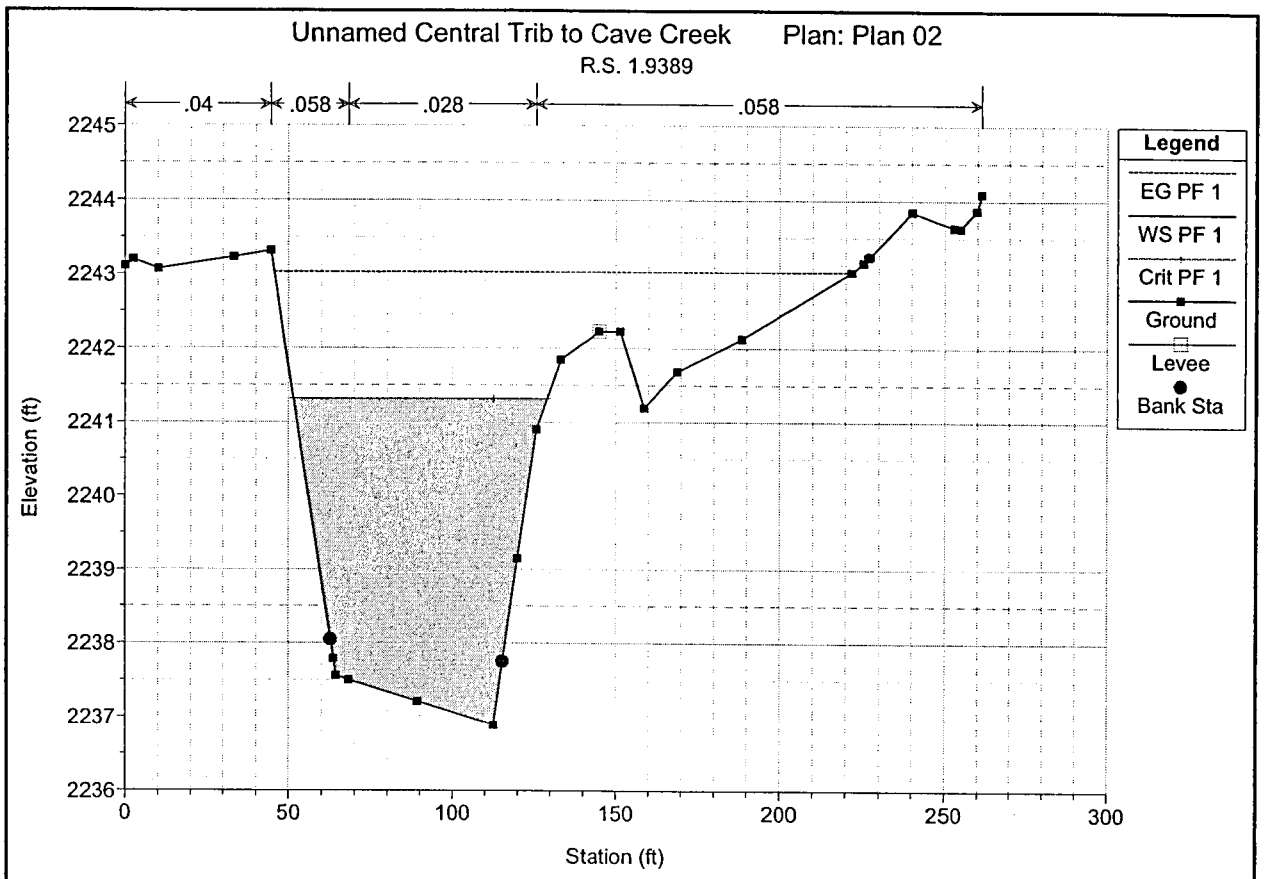
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.9389
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Crit PF 1
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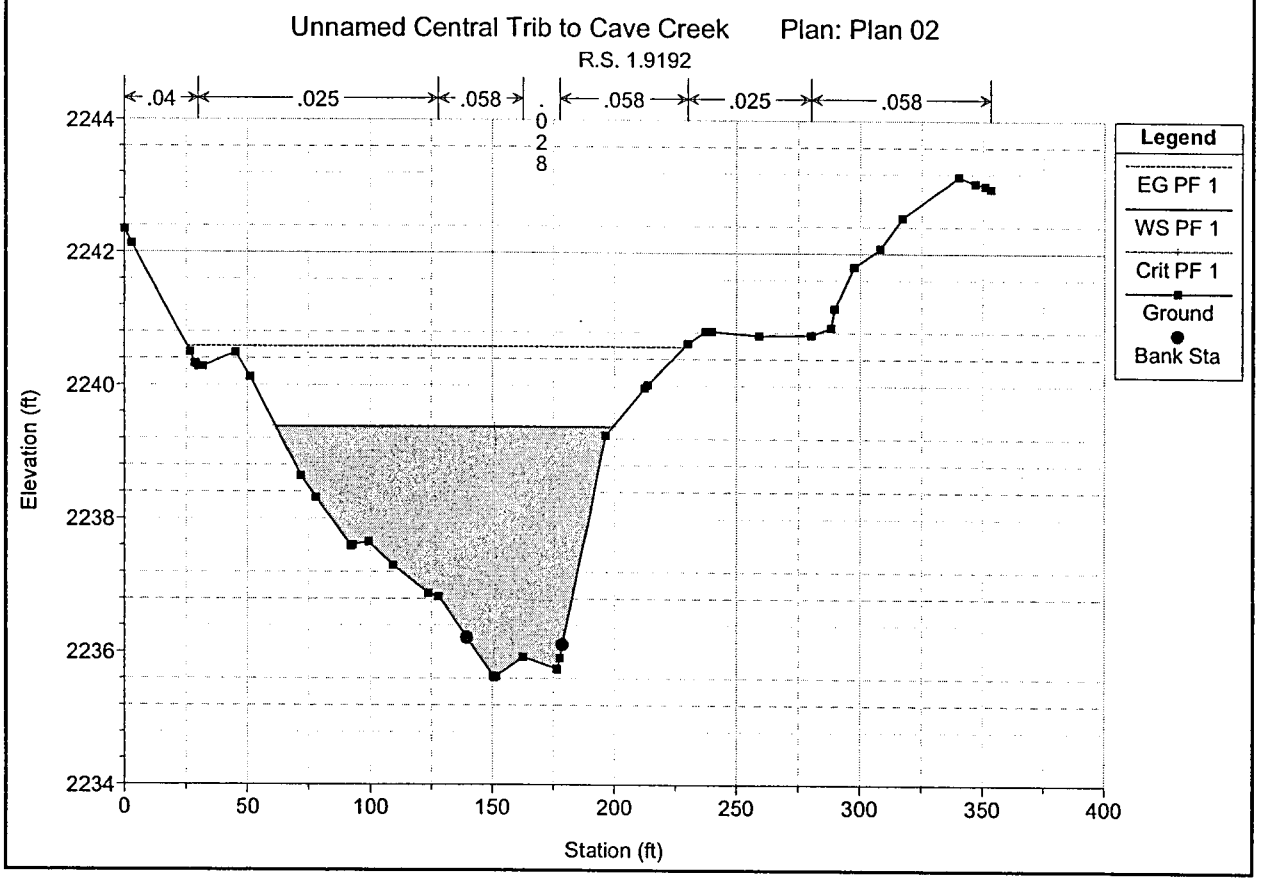
Levee
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.9192
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.025
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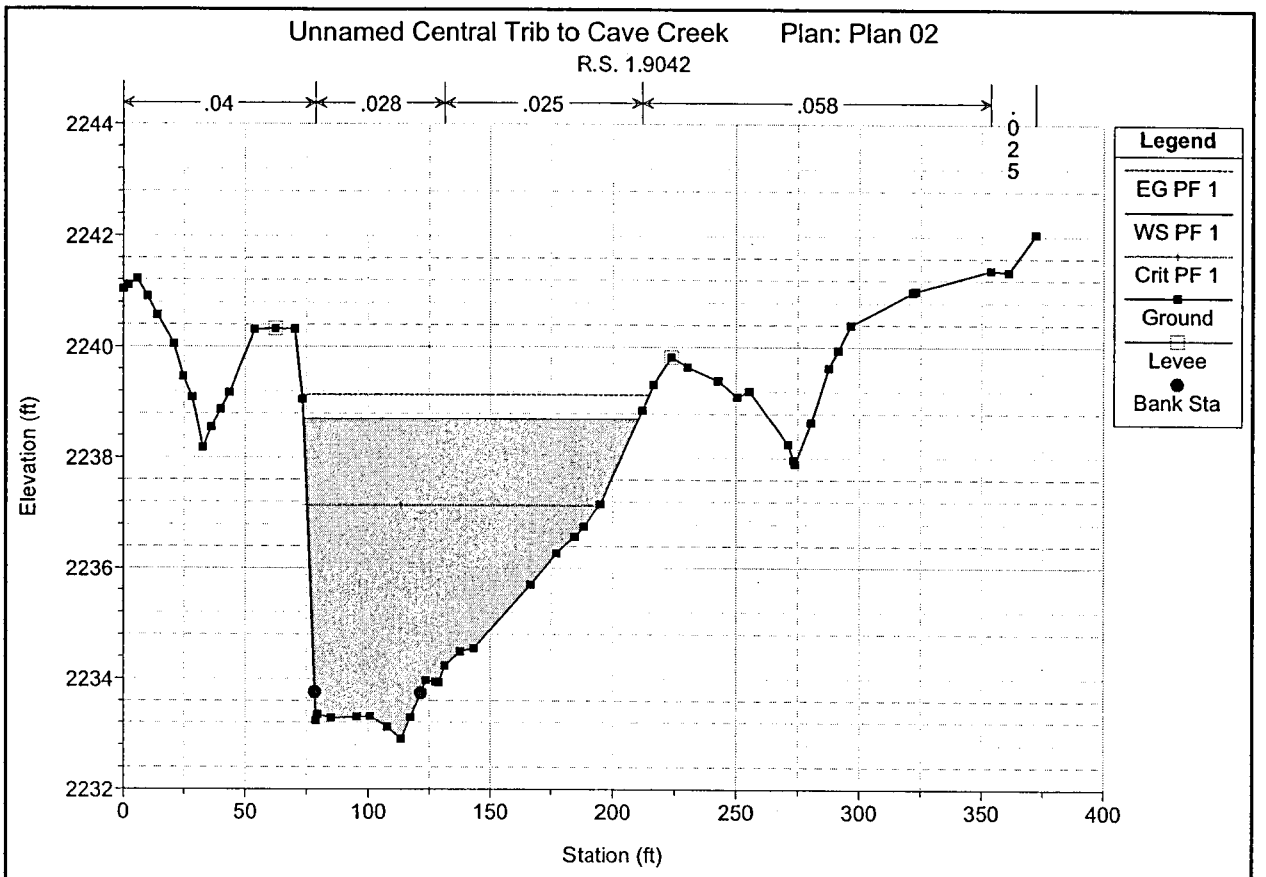
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.9042
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.028
.025
.058
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2232
2234
2236
2238
2240
2242
2244
0
50
100
150
200
250
300
350
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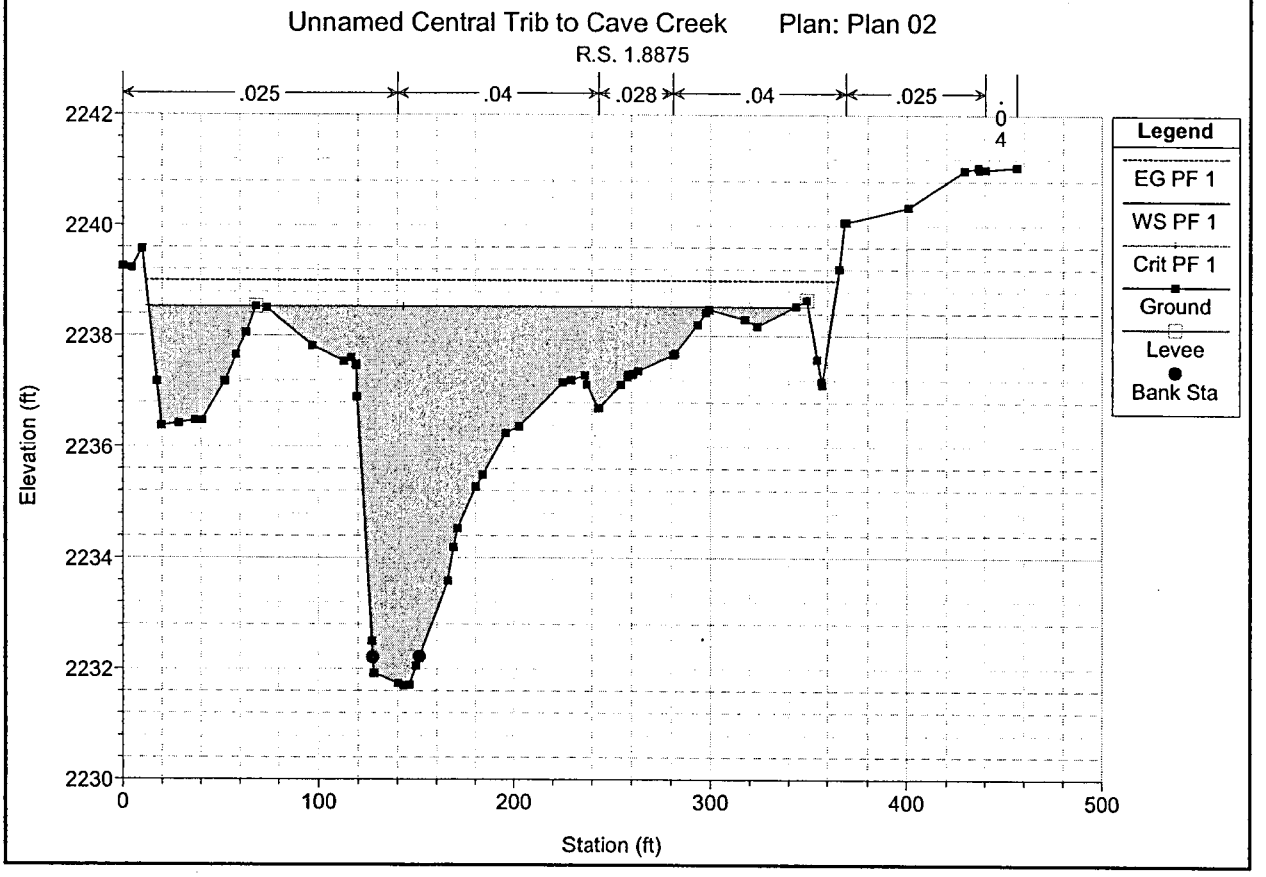
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R.S. 1.8875
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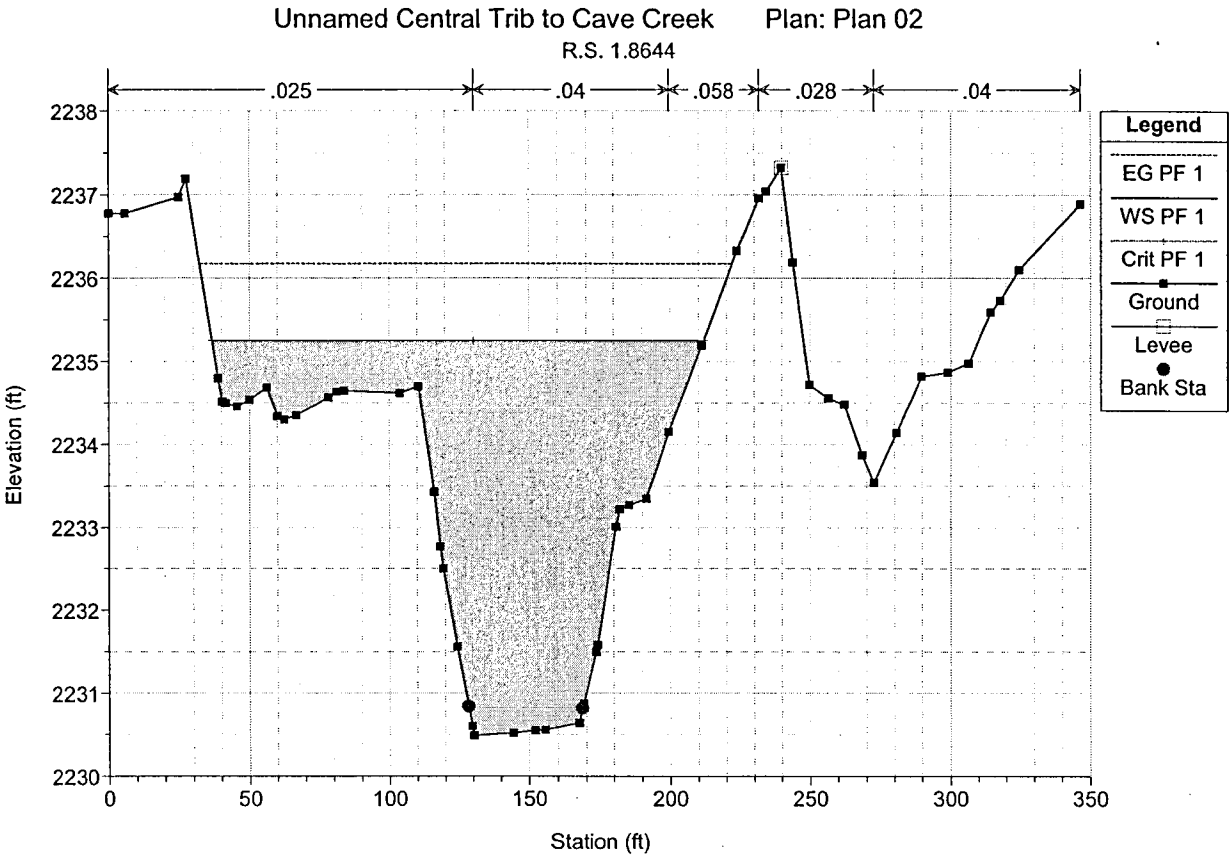
.04
.028
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2230
2232
2234
2236
2238
2240
2242
0
100
200
300
400
500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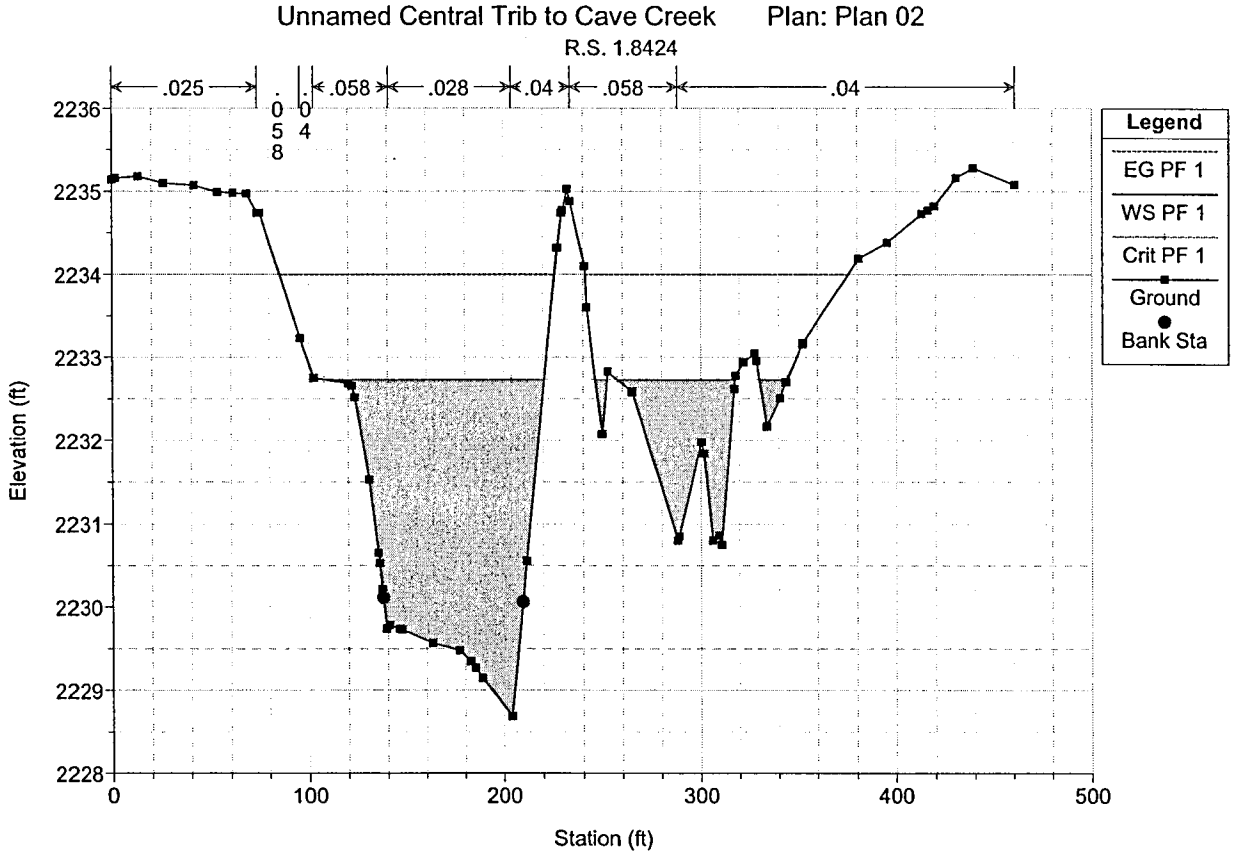
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)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Legend
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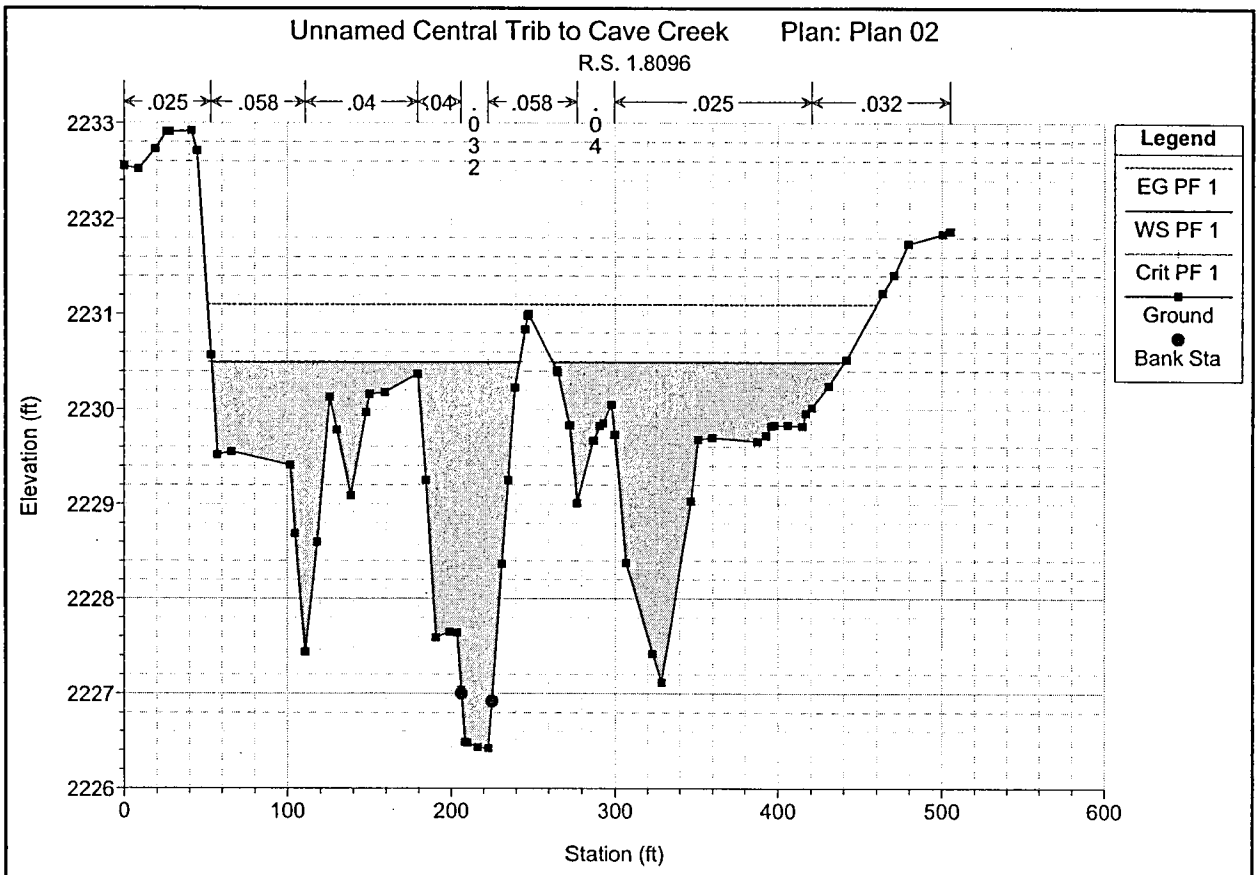
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
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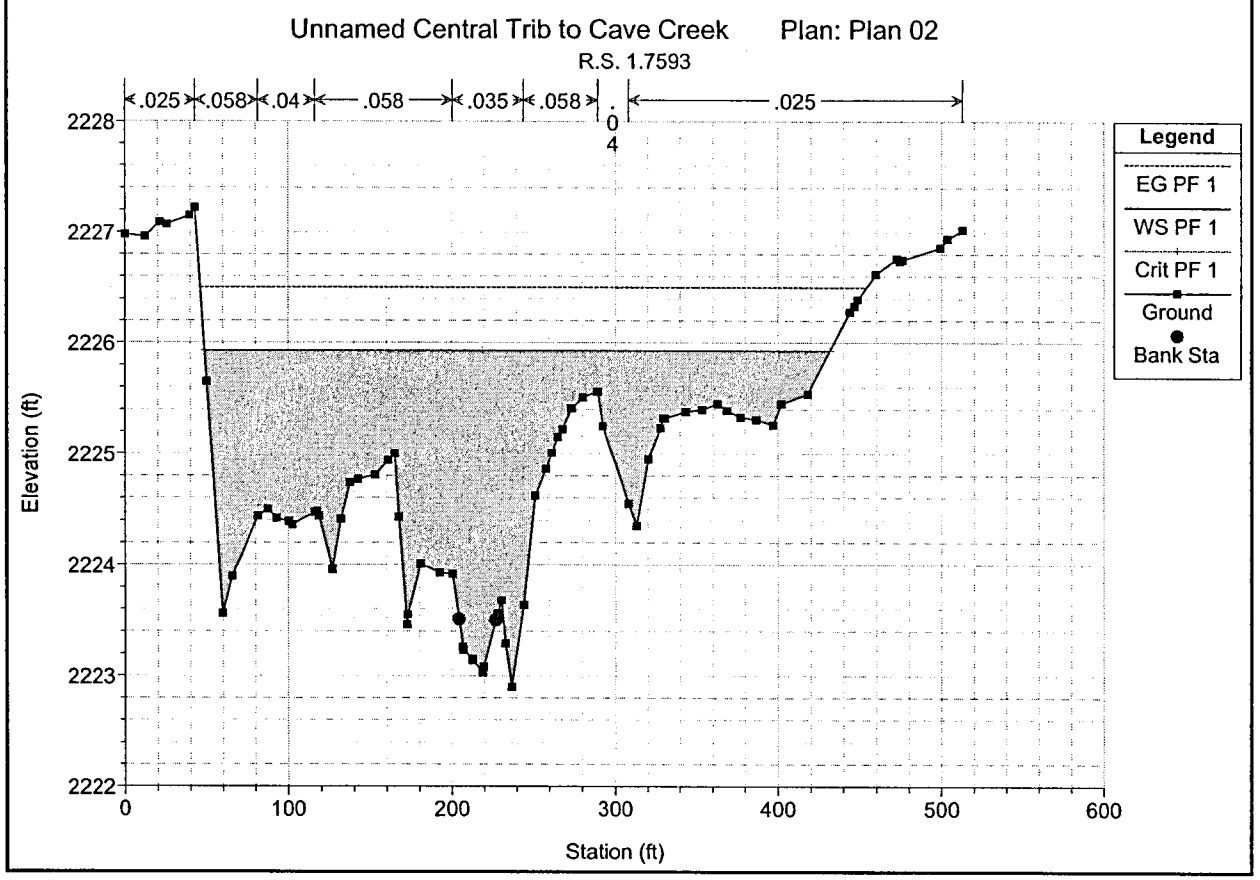
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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.058
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Legend
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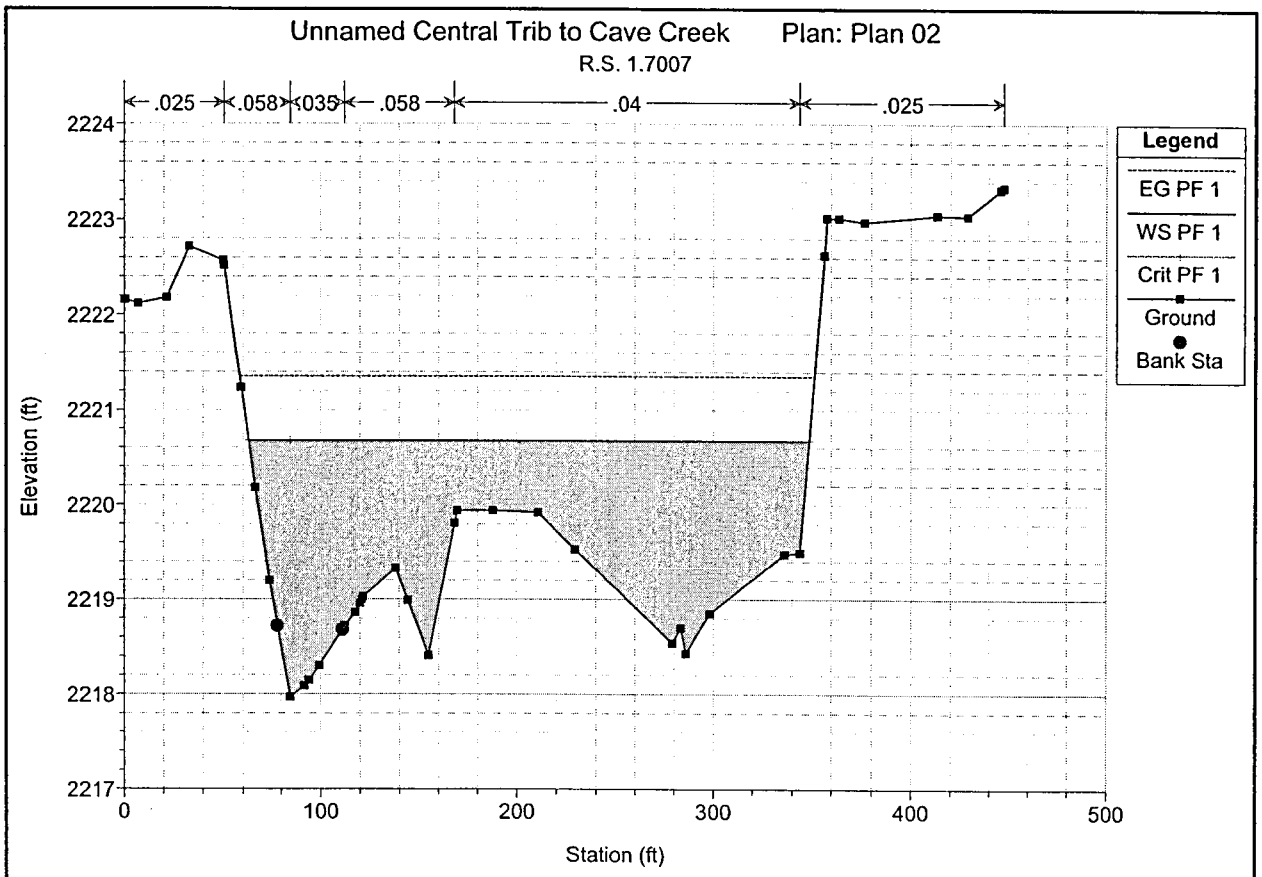
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.7007
.025
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Legend
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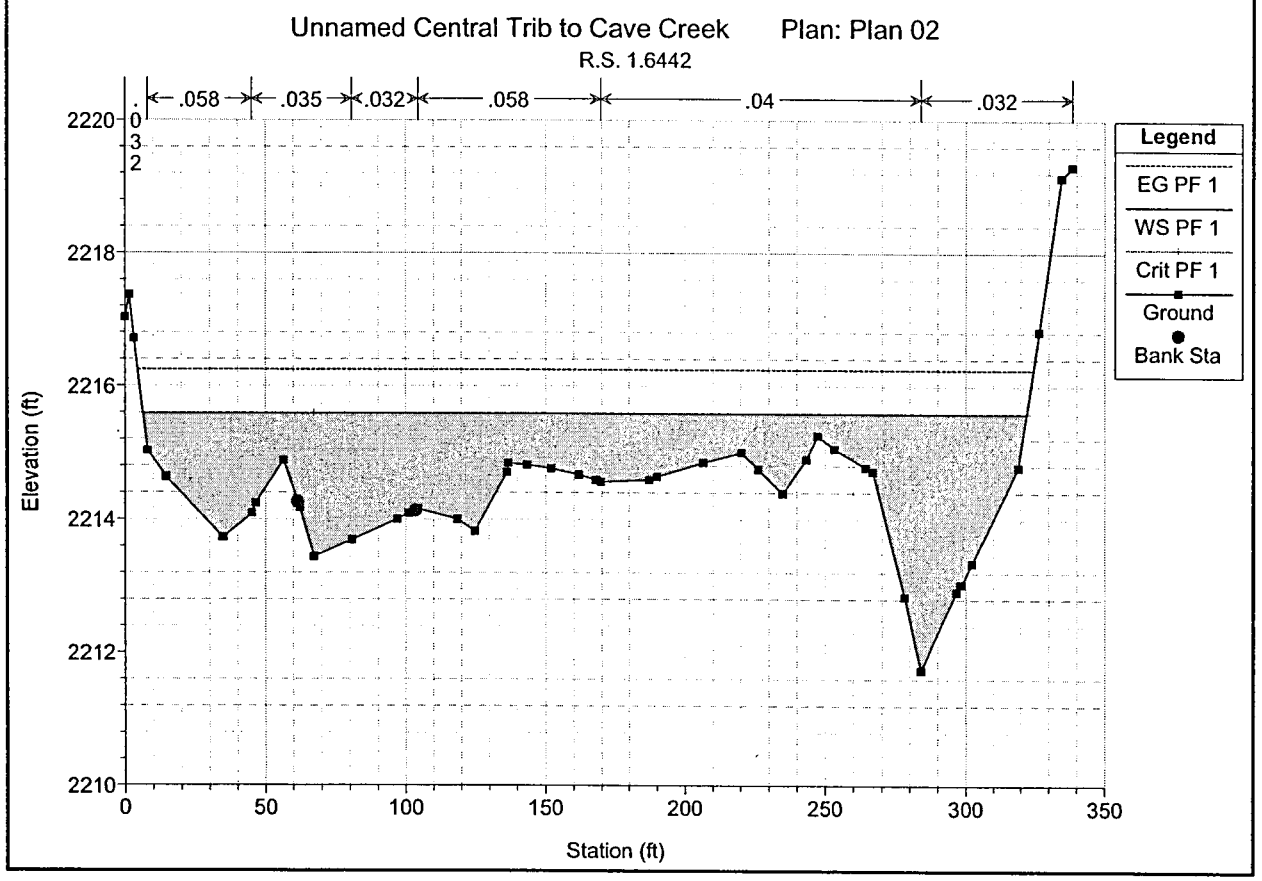
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.6442
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Legend
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Crit PF 1
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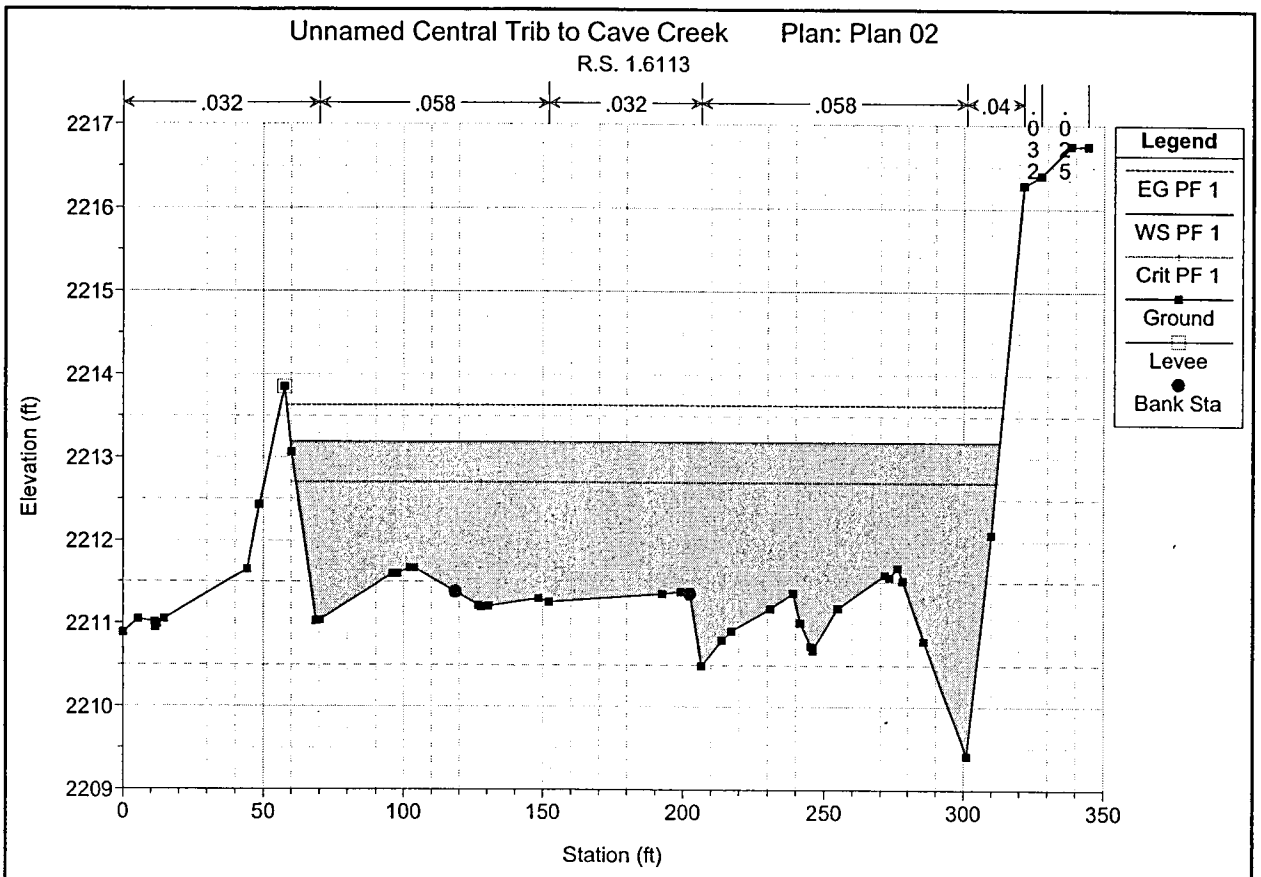
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.6113
.032
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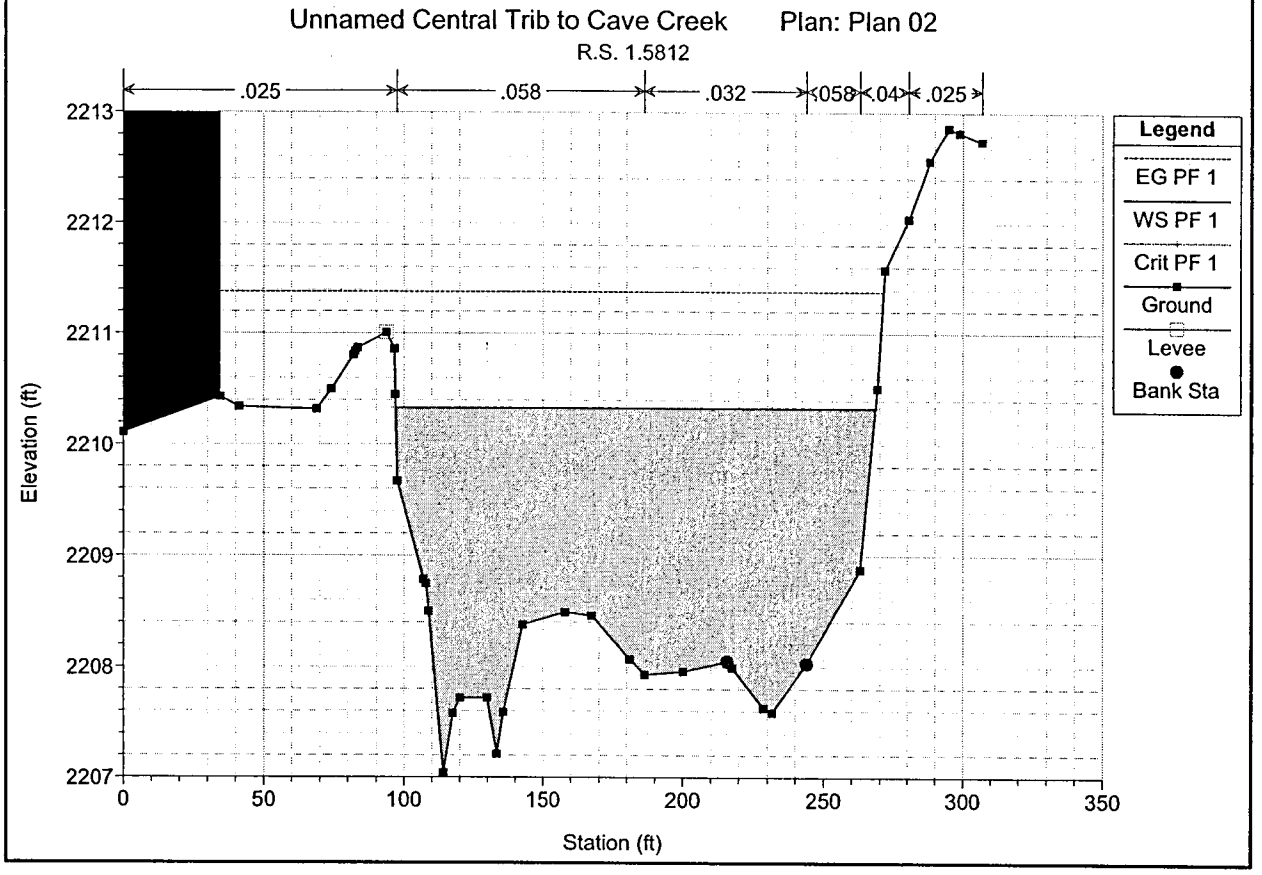
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.5812
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Legend
EG PF 1
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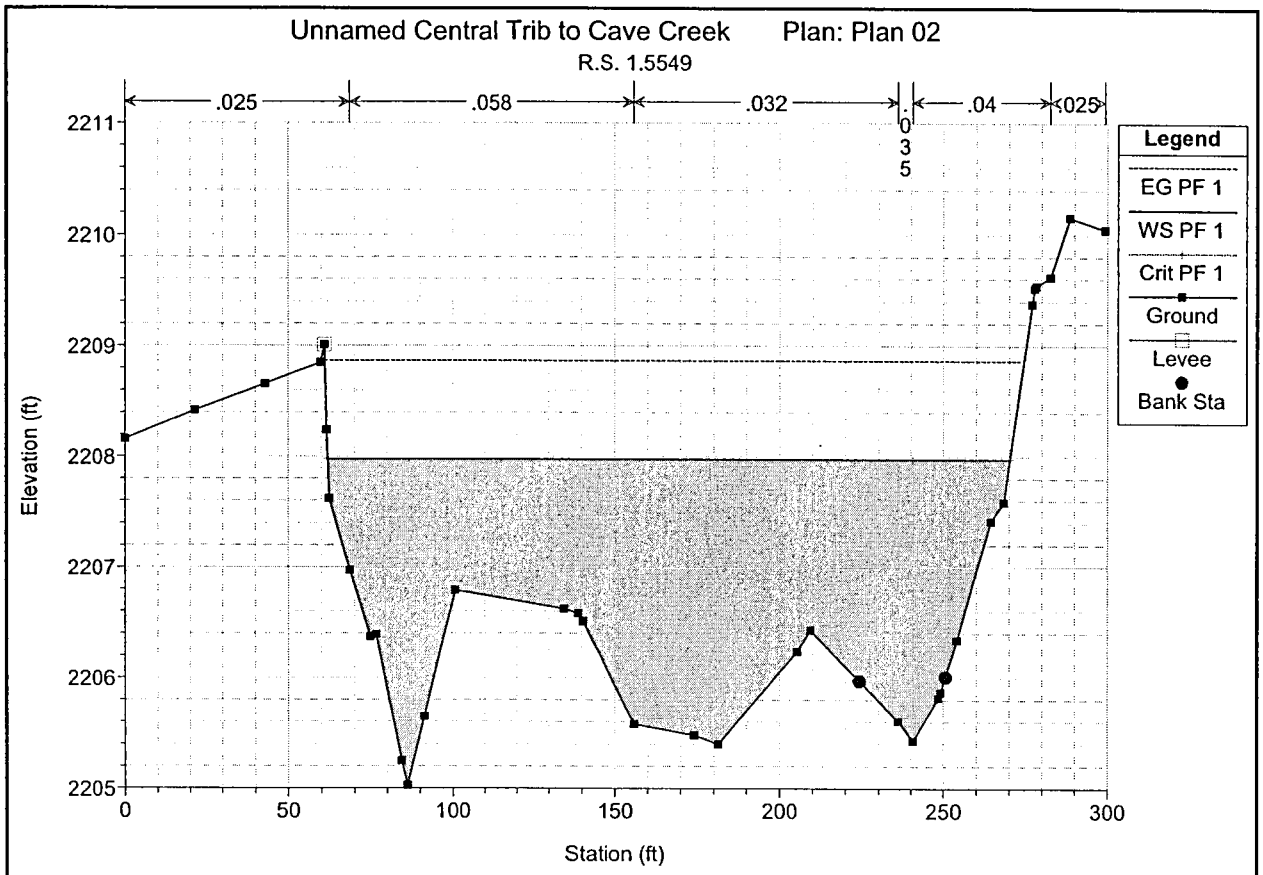
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.5549
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.025
Legend
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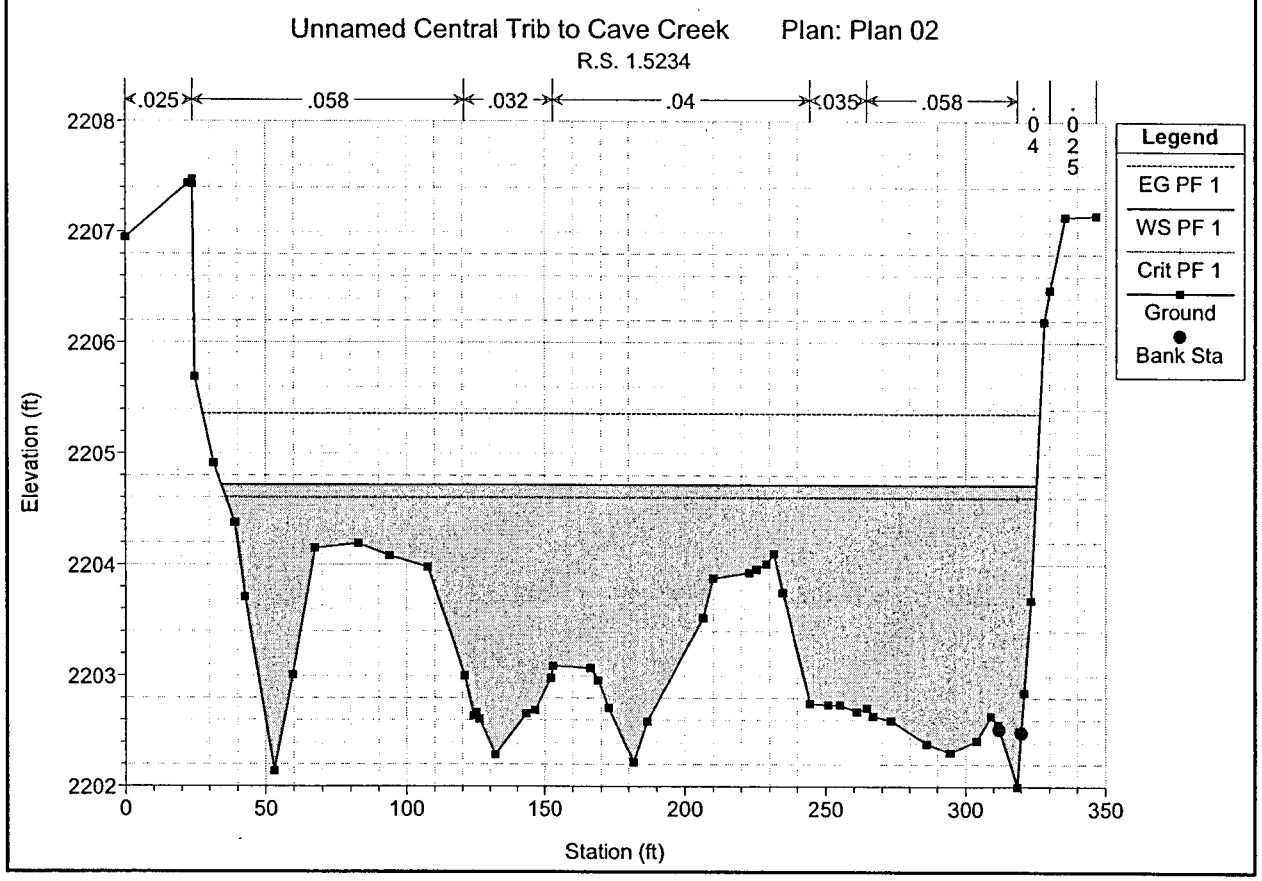
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)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Crit PF 1
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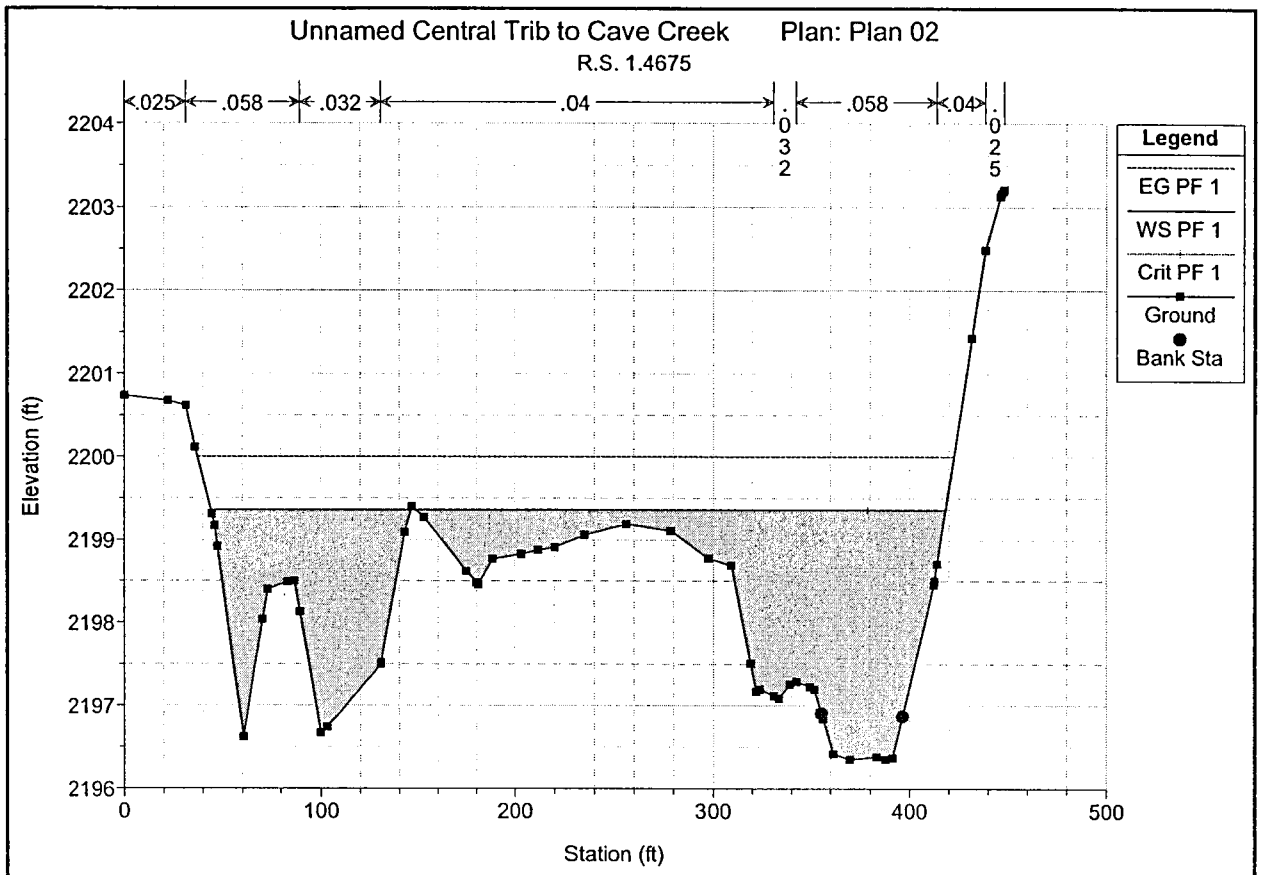
Bank Sta
Elevation (ft)
Station (ft)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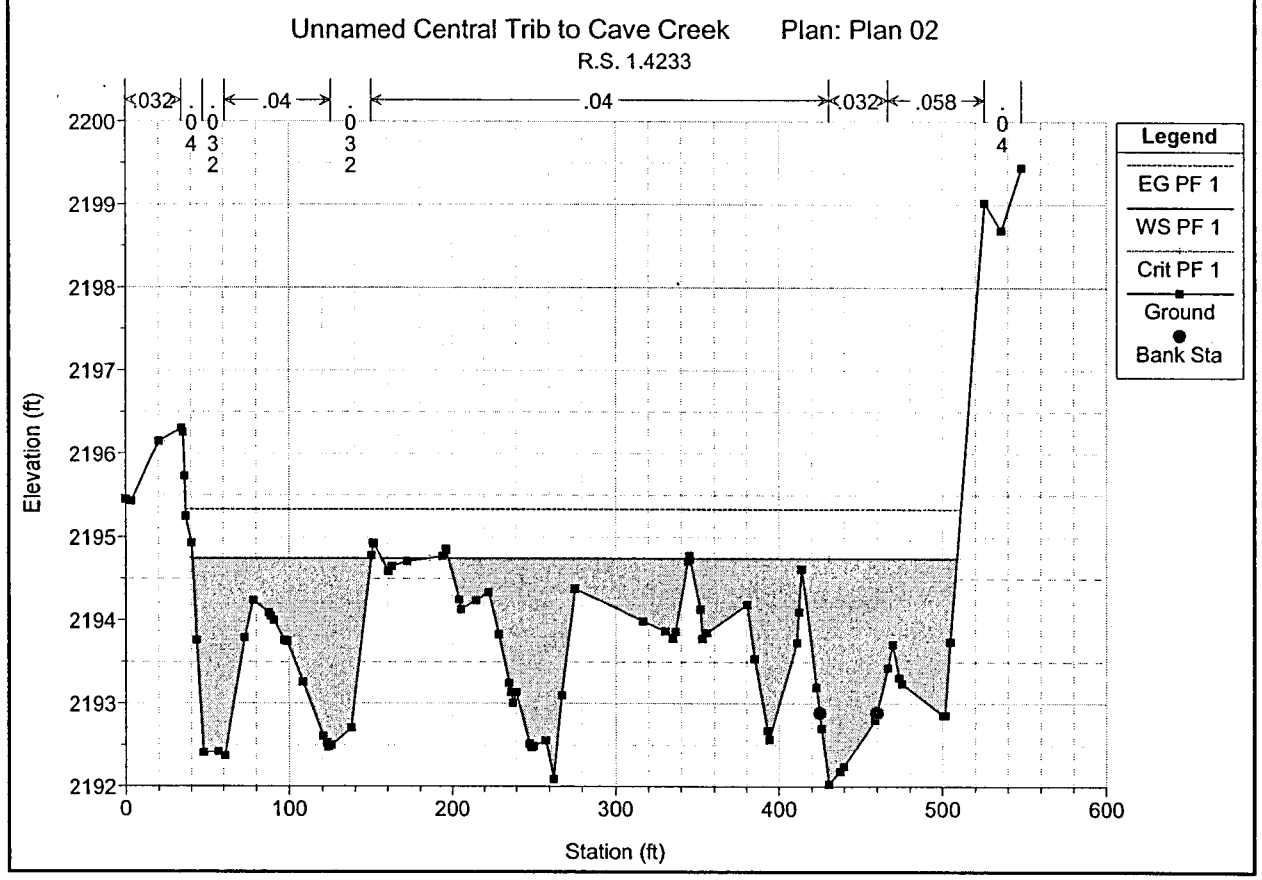
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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.04
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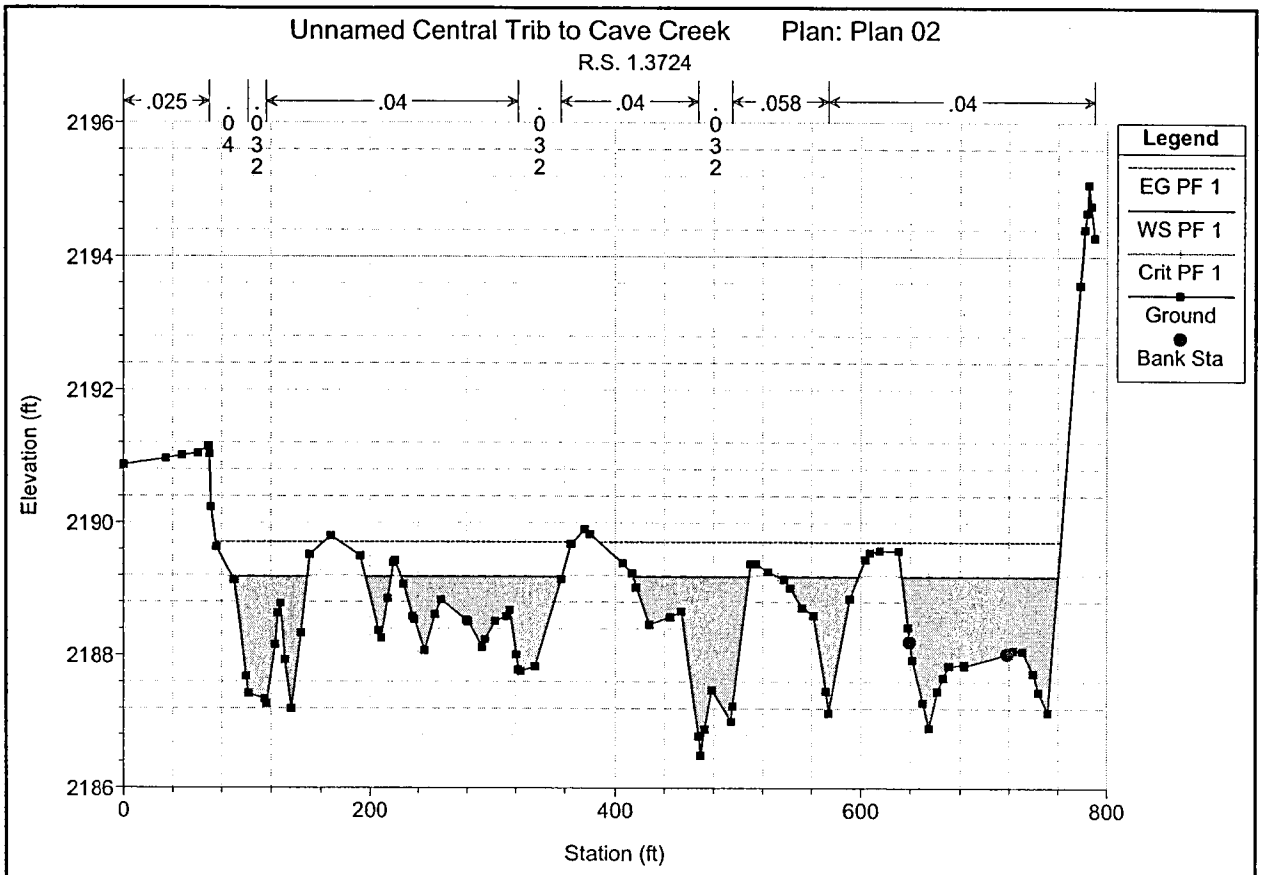
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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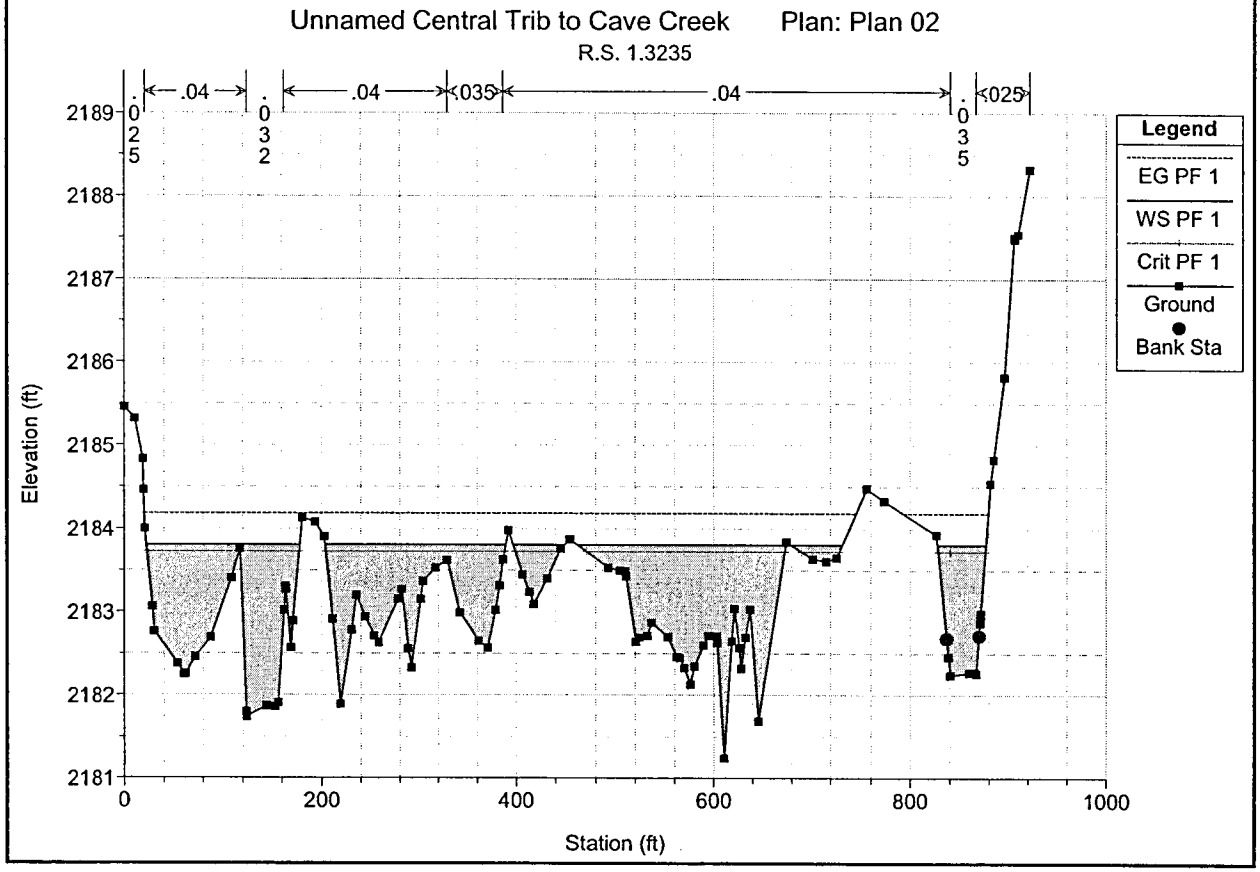
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
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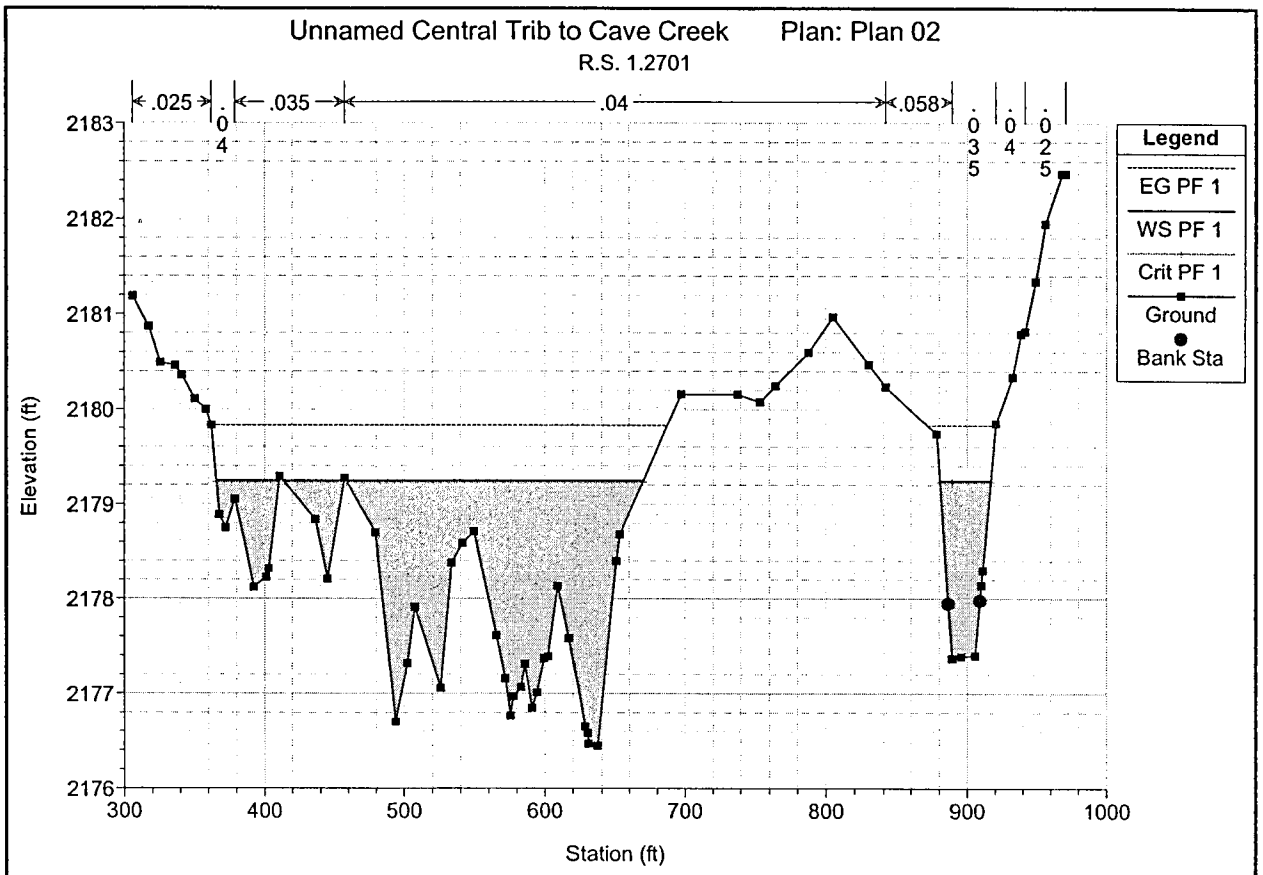
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.2701
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.04
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Legend
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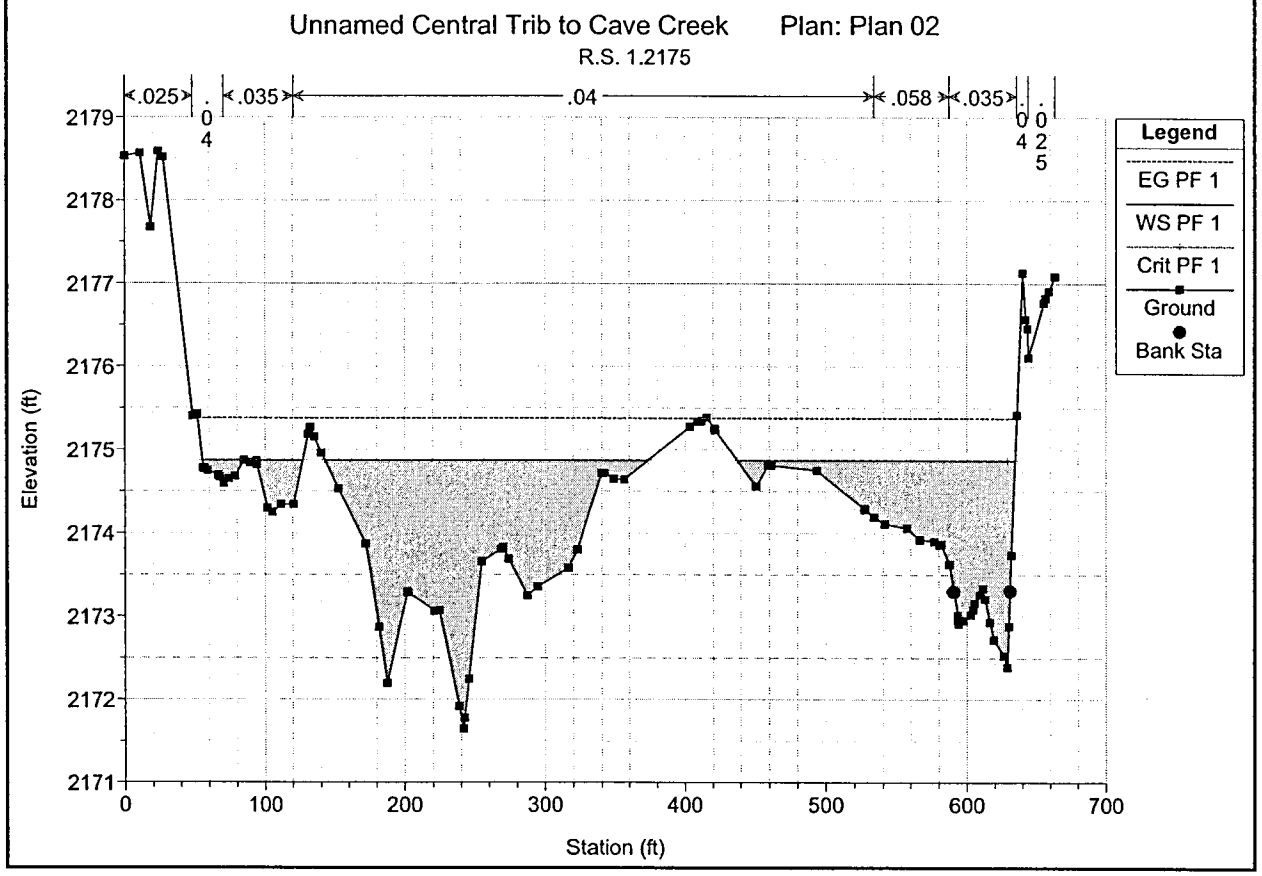
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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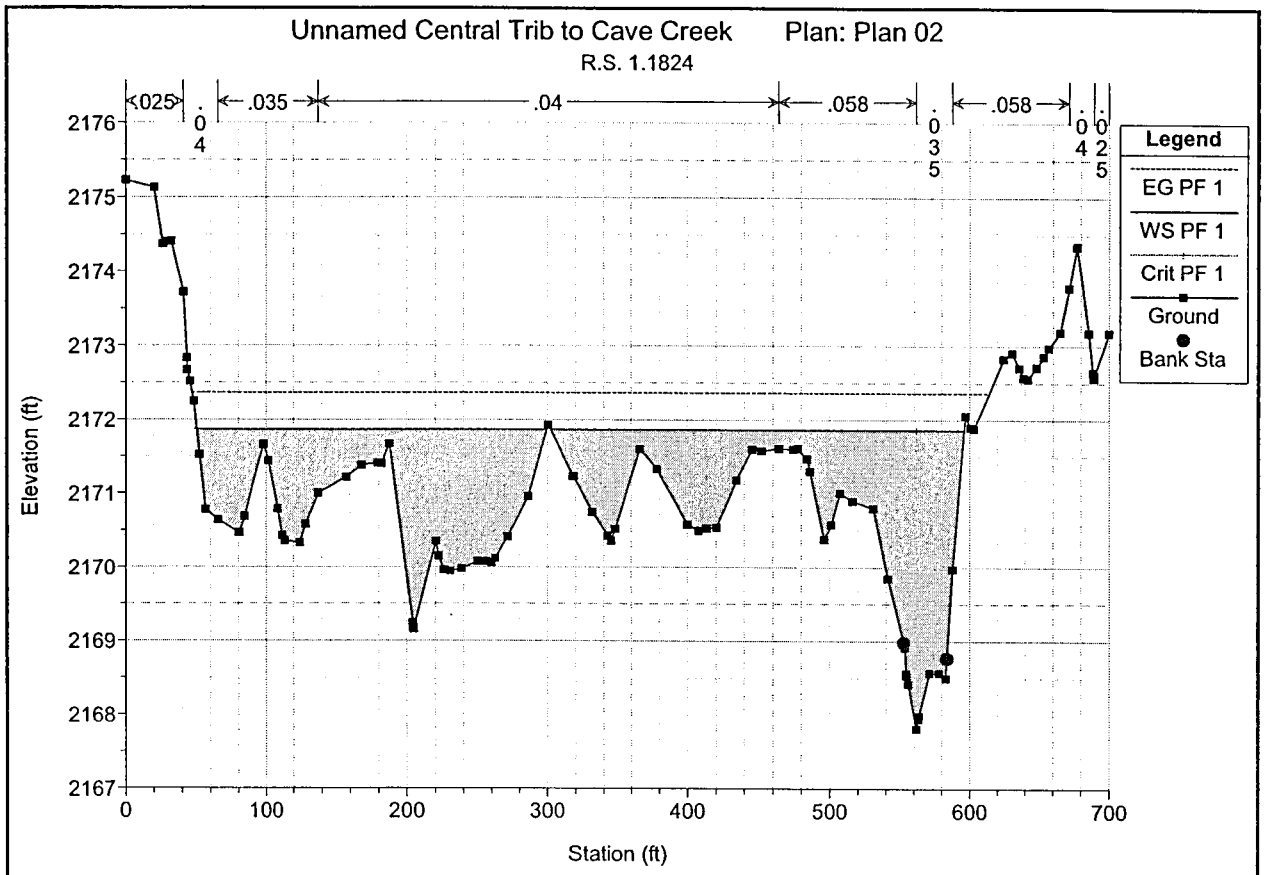
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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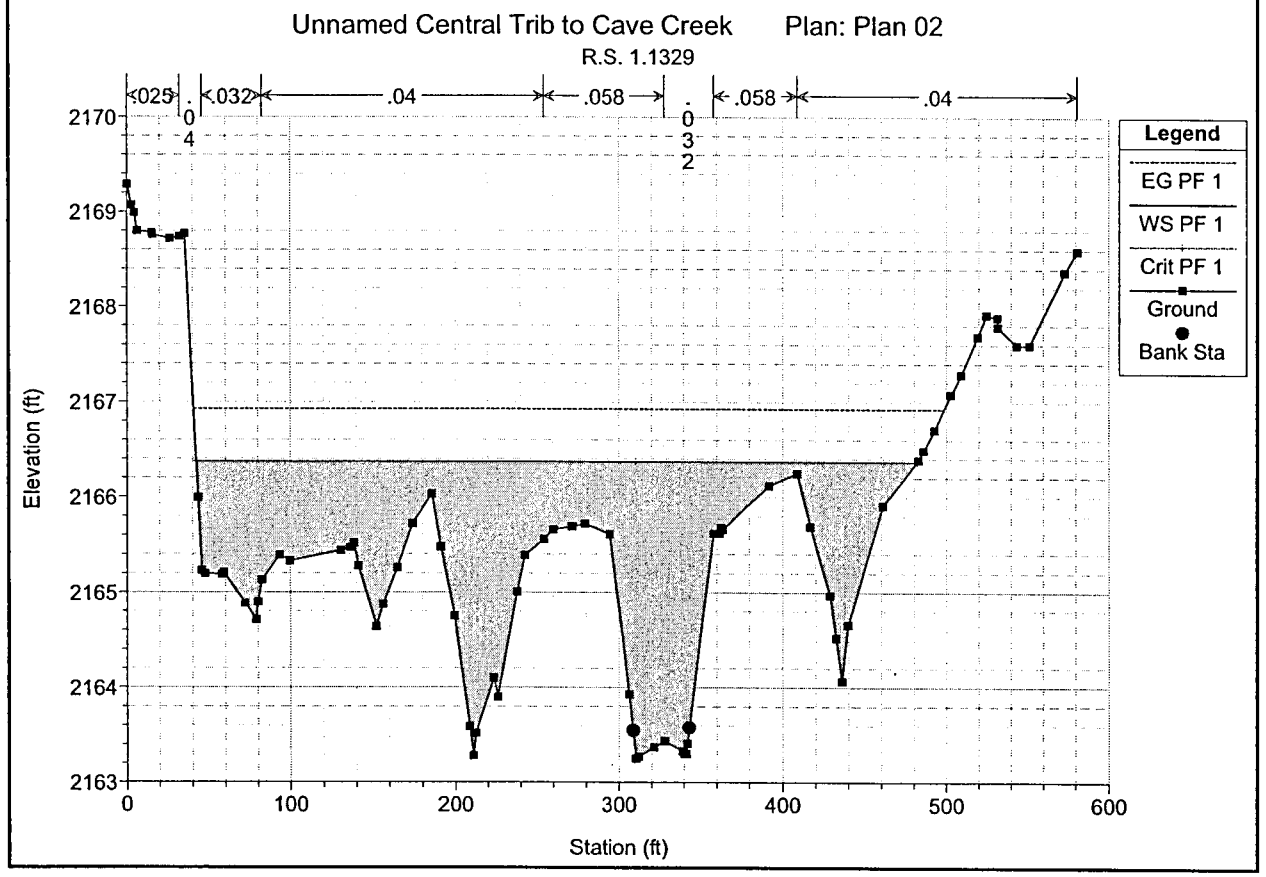
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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R.S. 1.1329
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.032
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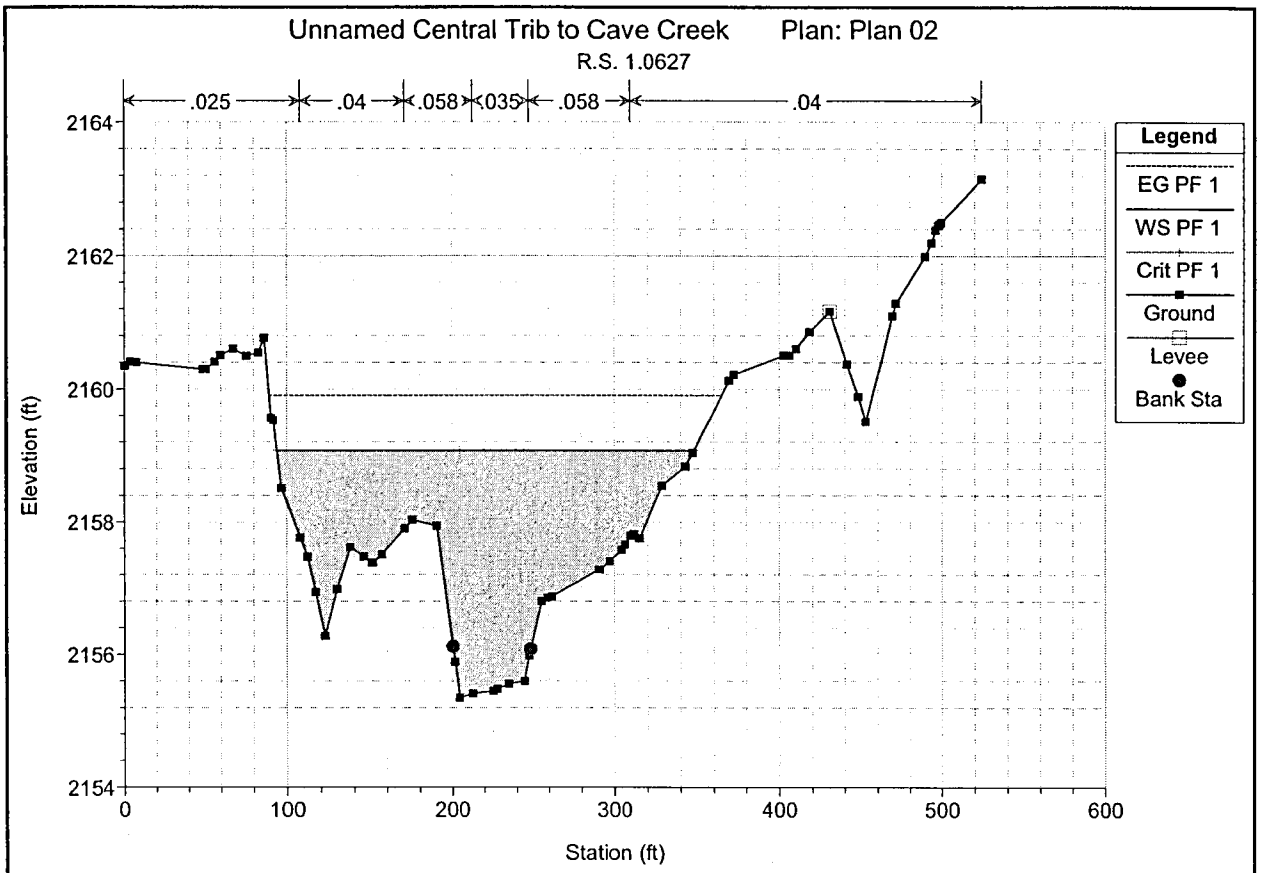
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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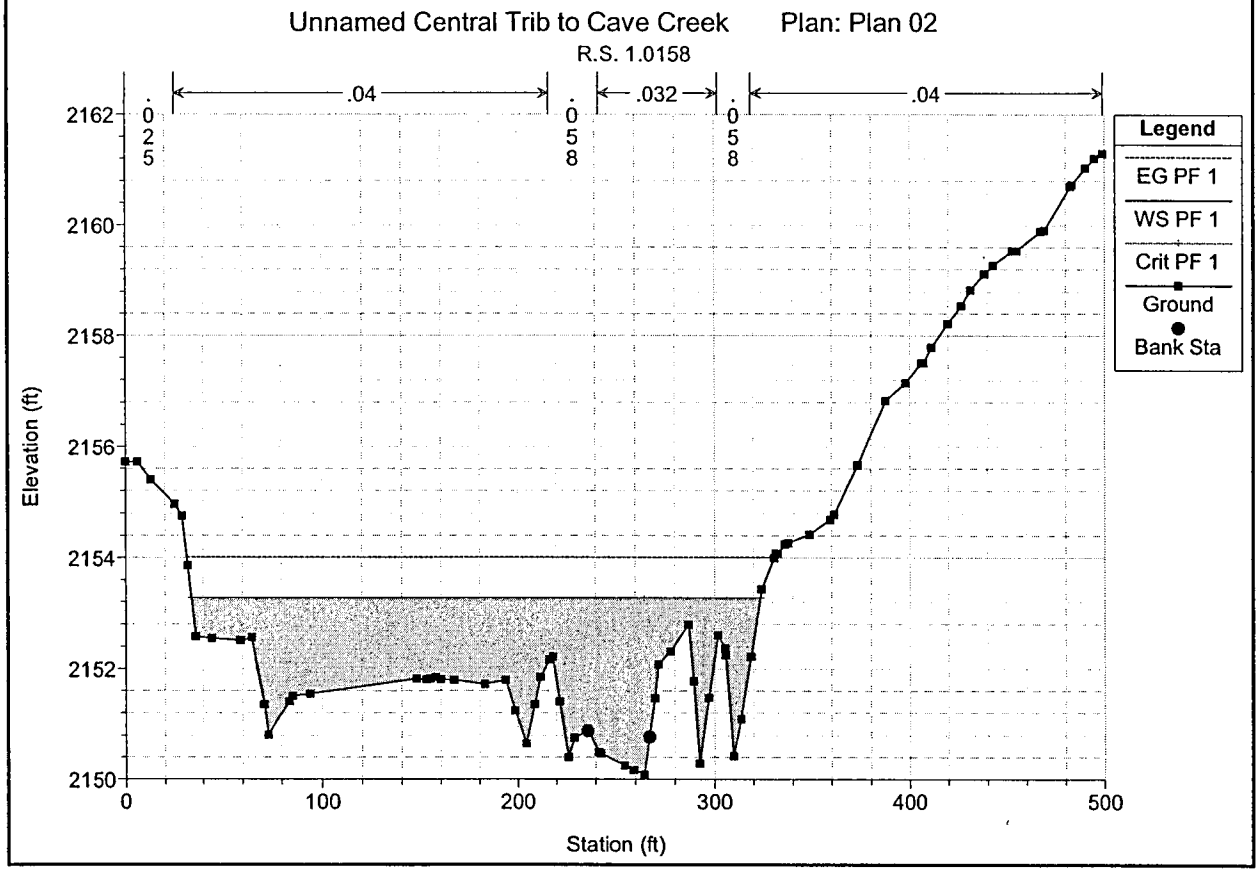
R.S. 1.0627
.025
.04
.058
.035
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2154
2156
2158
2160
2162
2164
0
100
200
300
400
500
600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.04
.058
.032
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2150
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2160
2162
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400
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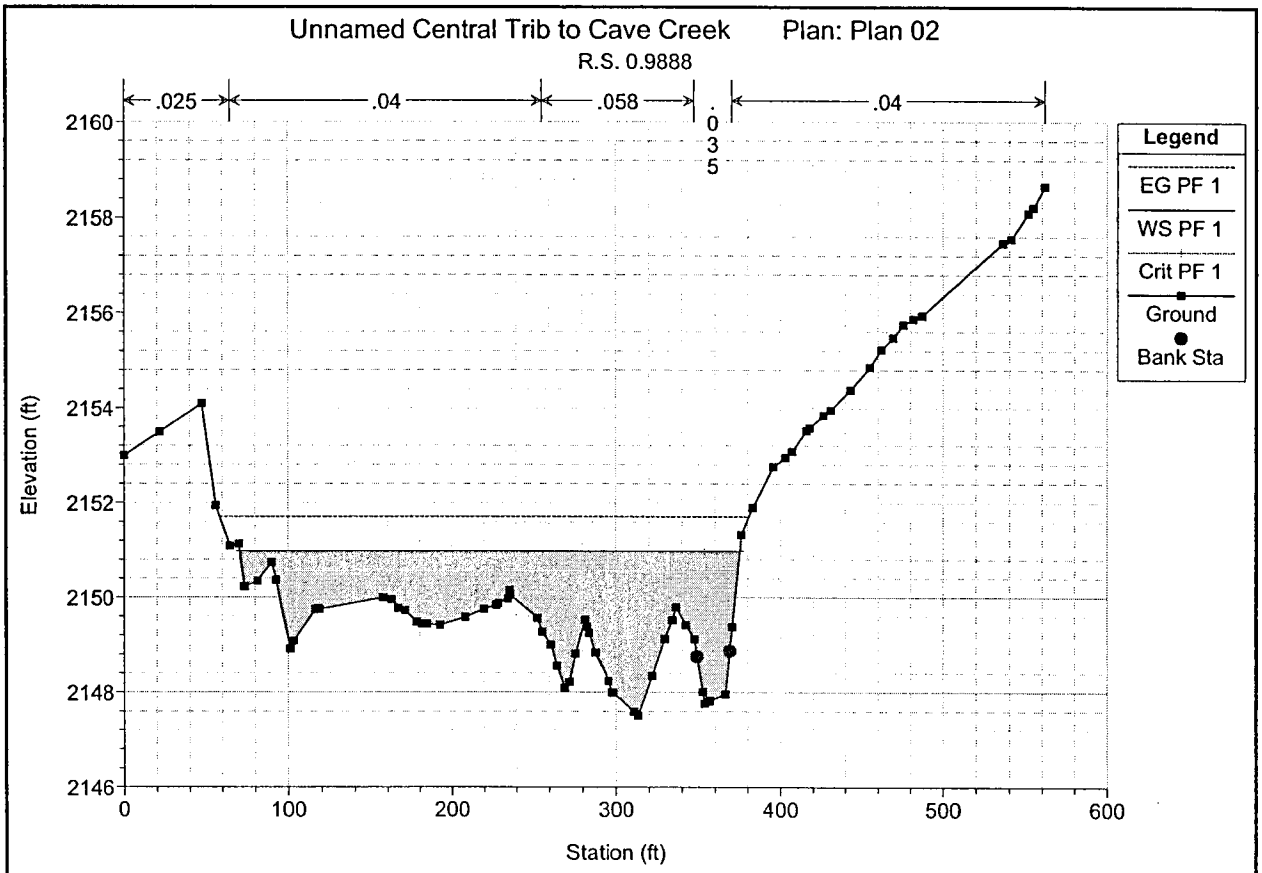
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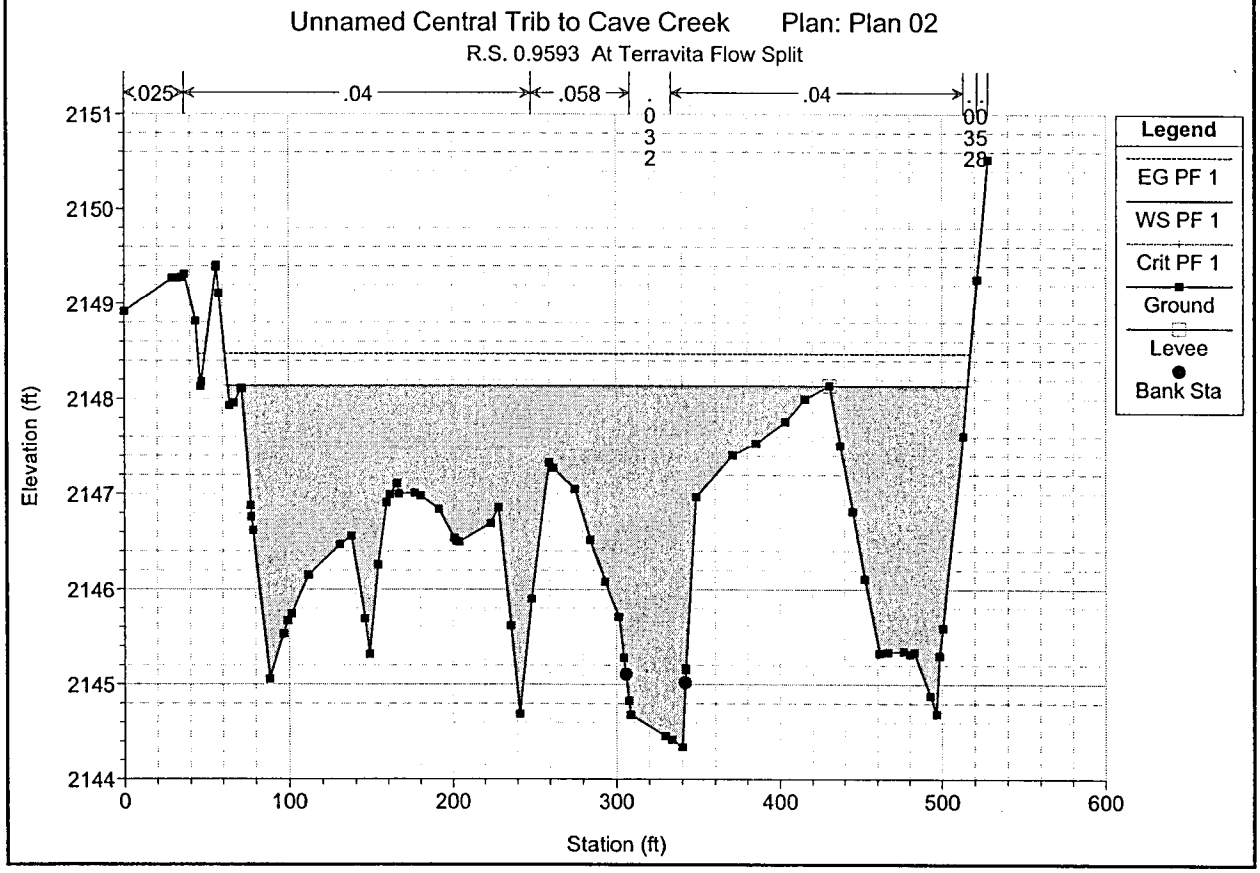
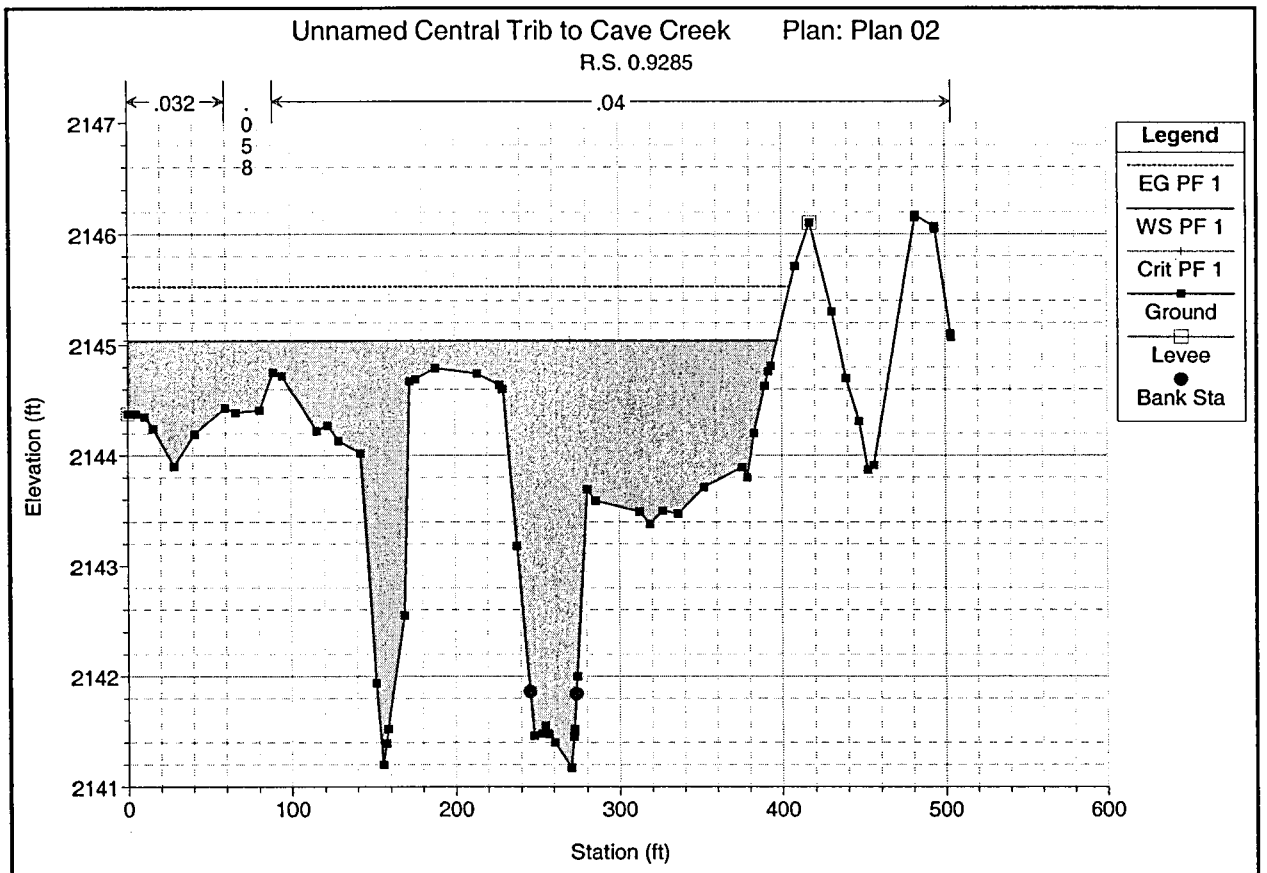
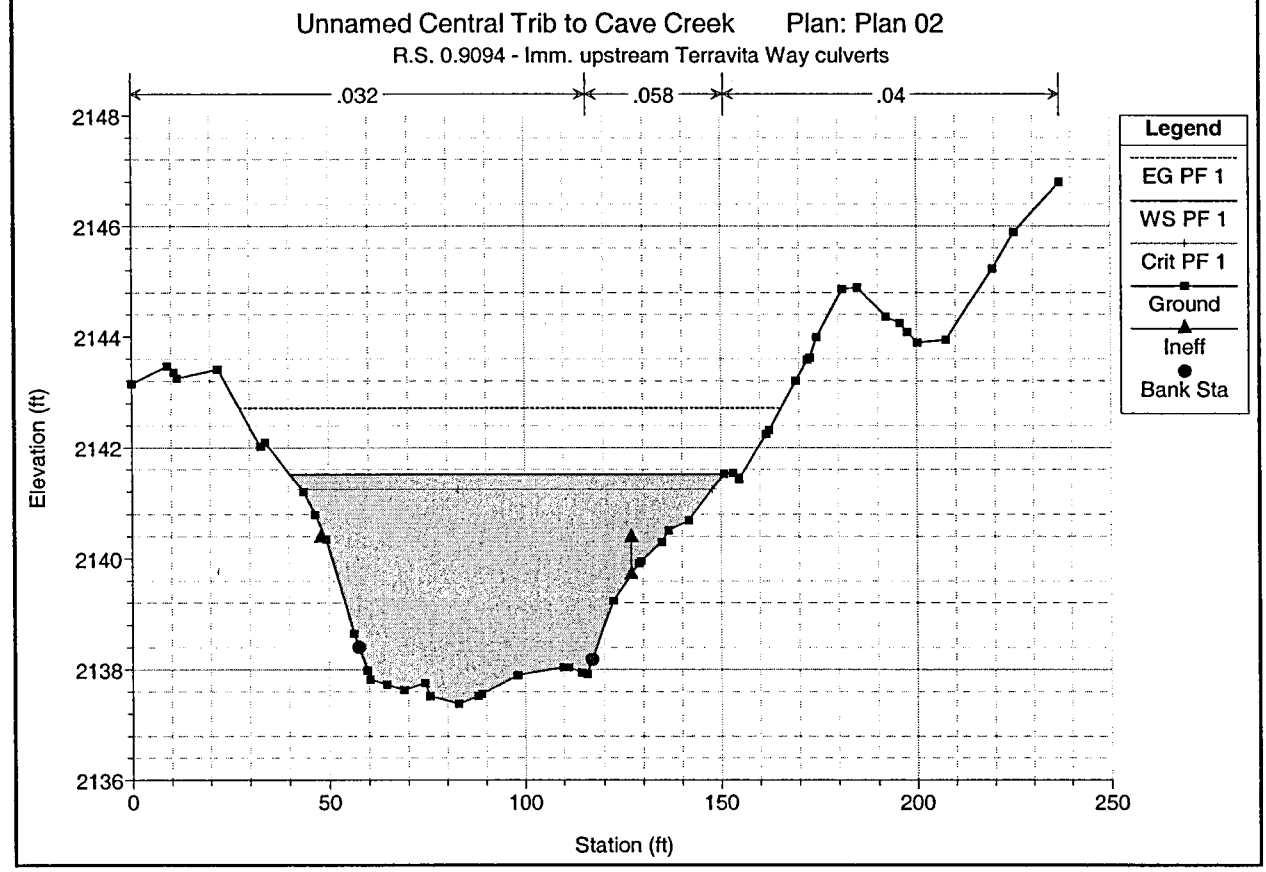
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Unnamed Central Trib to Cave Creek Plan: Plan 02
R.S. 0.9593 At Terravita Flow Split
.025
.04
.058
.032
.04
.0035
.0028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

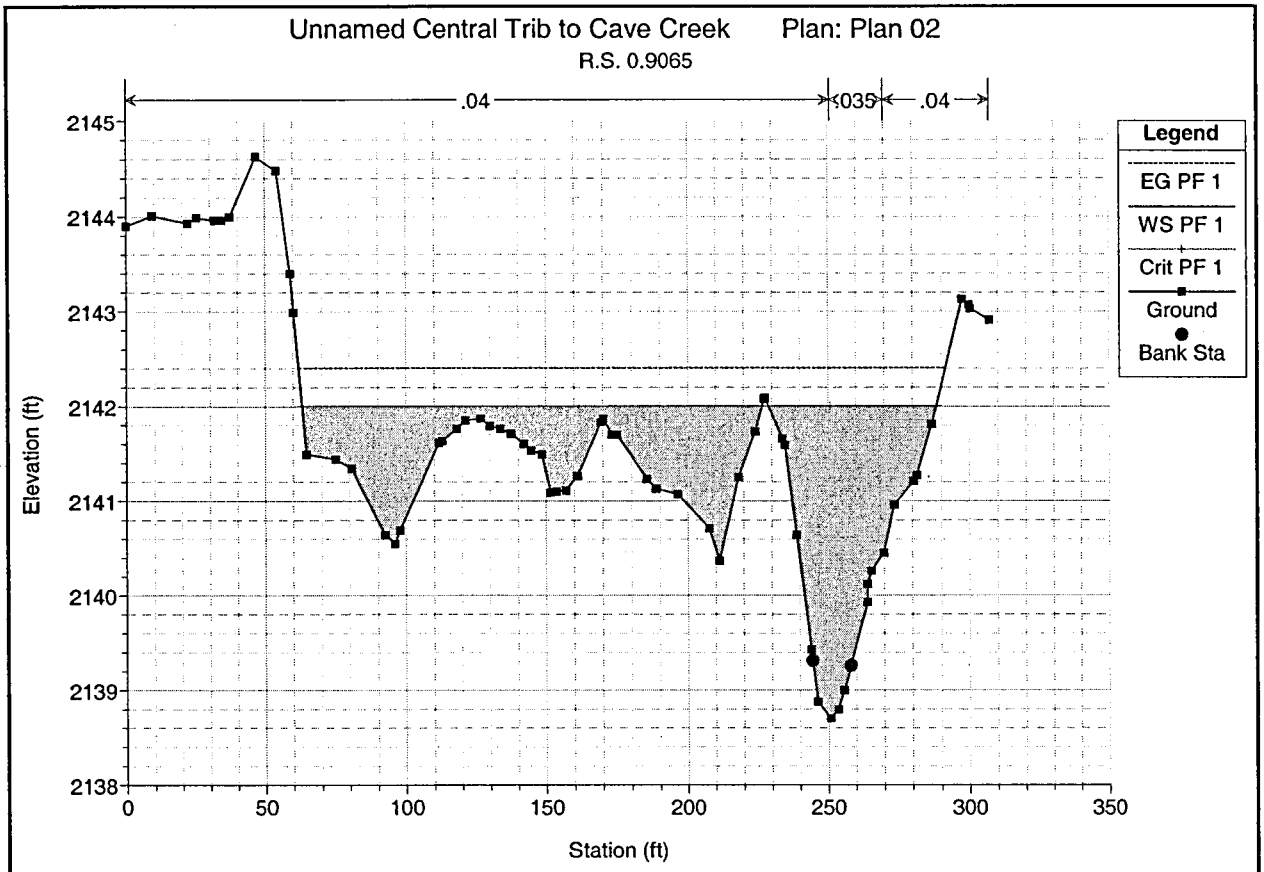
Unnamed Central Tributary to Cave Creek – North Branch

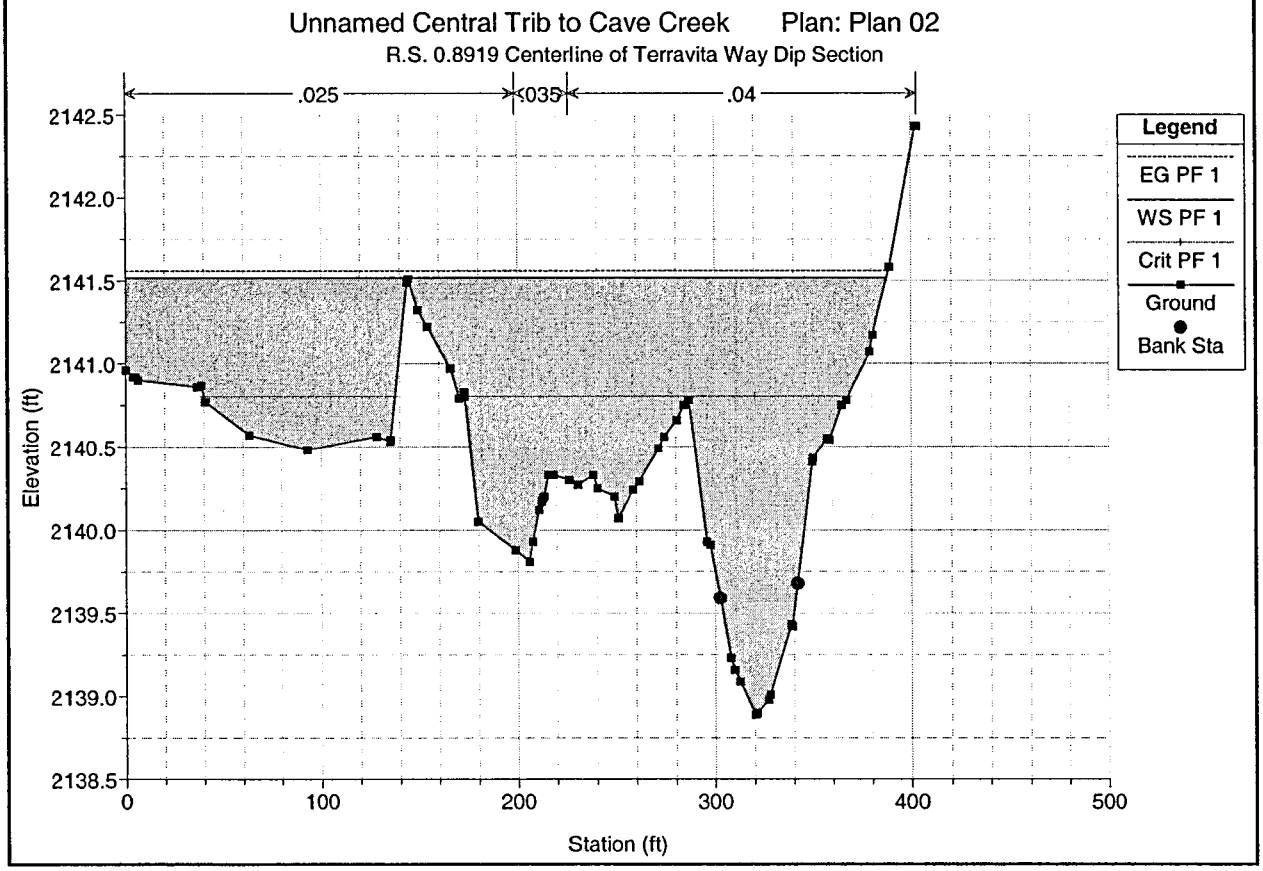
P:\162944\FLOODPLAIN MAPPING\HEC-RAS FILES\REPORT AND X-SECTION TITLE PAGES\TEMP\UC-TITLE.DOC


Unnamed Central Trib to Cave Creek Plan: Plan 02
R.S. 0.9285
.032
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

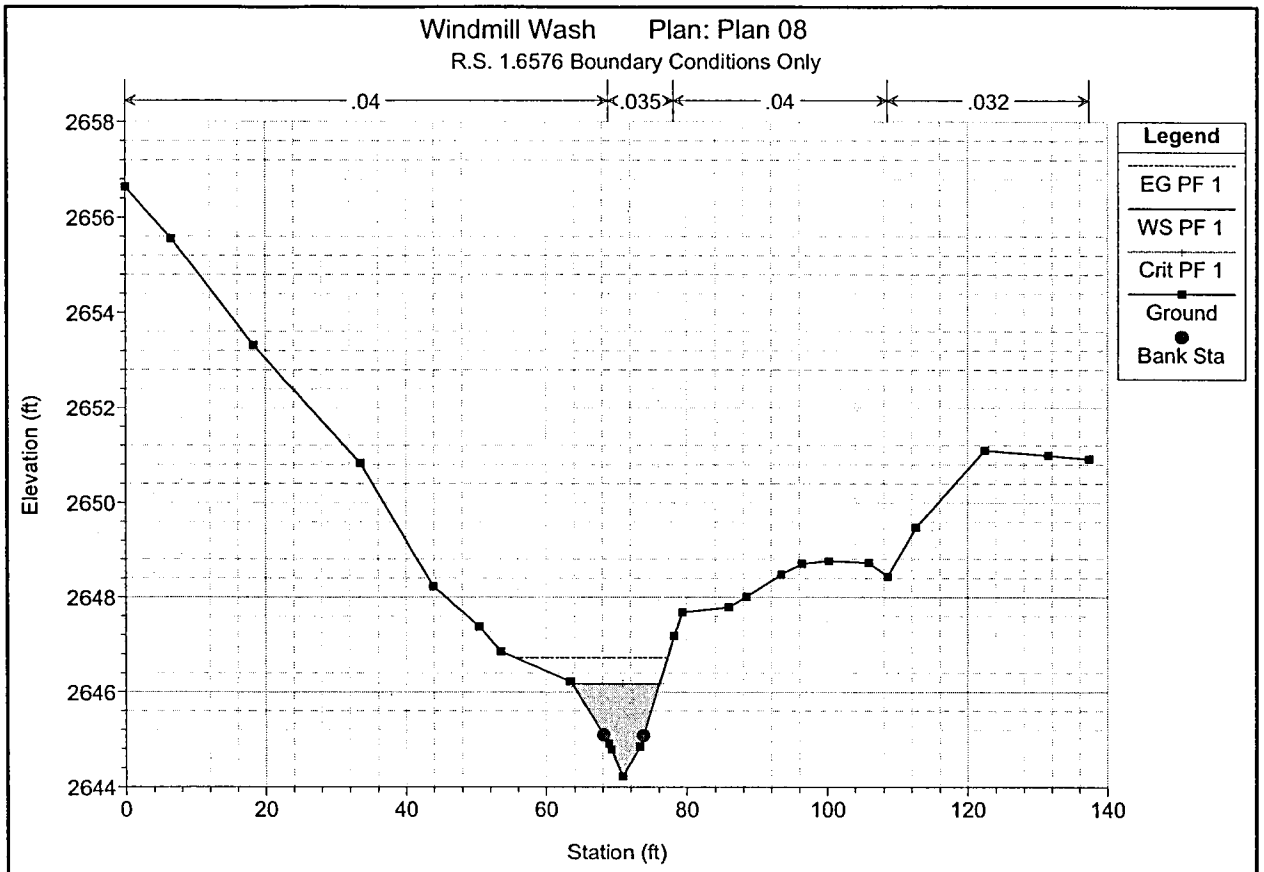

Unnamed Central Trib to Cave Creek Plan: Plan 02
R.S. 0.9094 - Imm. upstream Terravita Way culverts
.032
.058
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

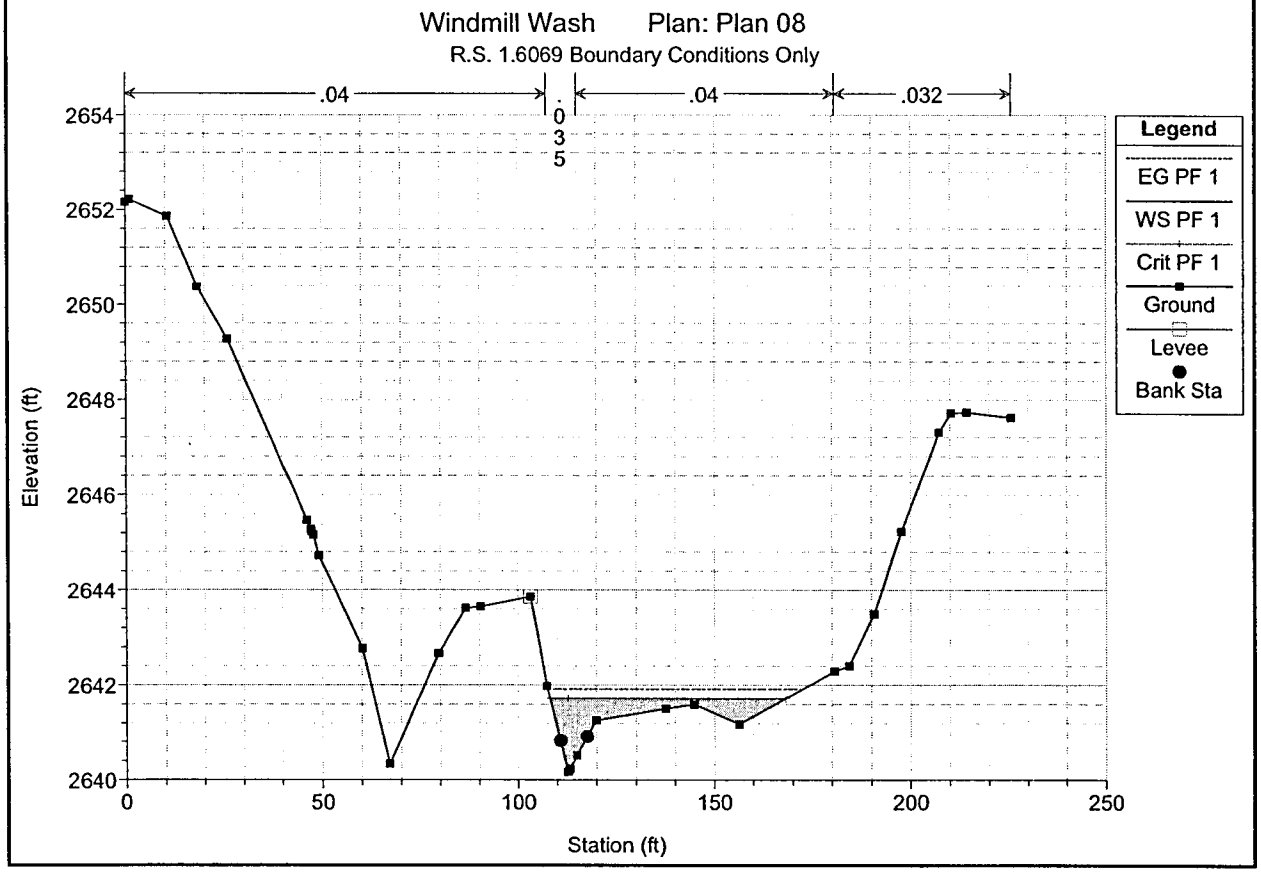
Unnamed Central Tributary to Cave Creek – South Branch

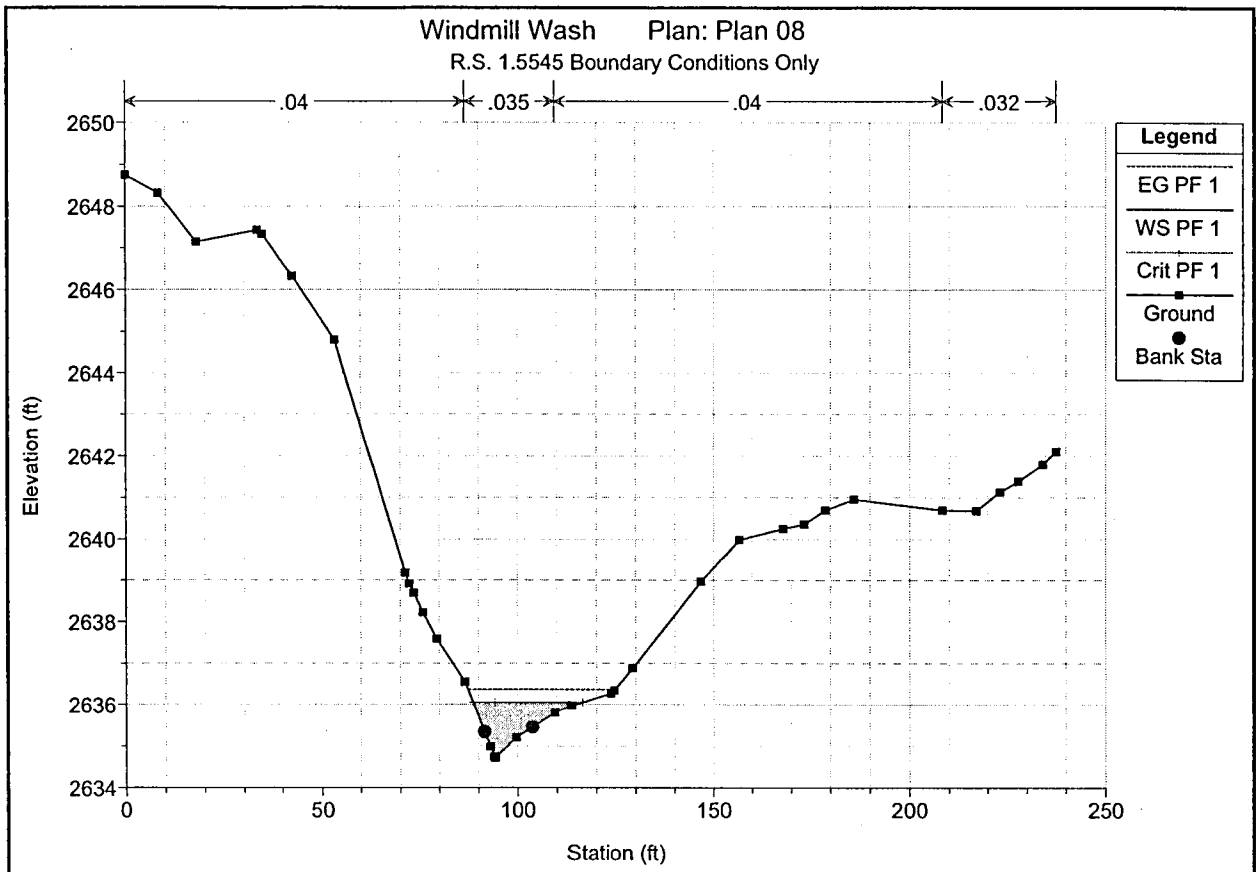

Unnamed Central Trib to Cave Creek Plan: Plan 02
R.S. 0.9065
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

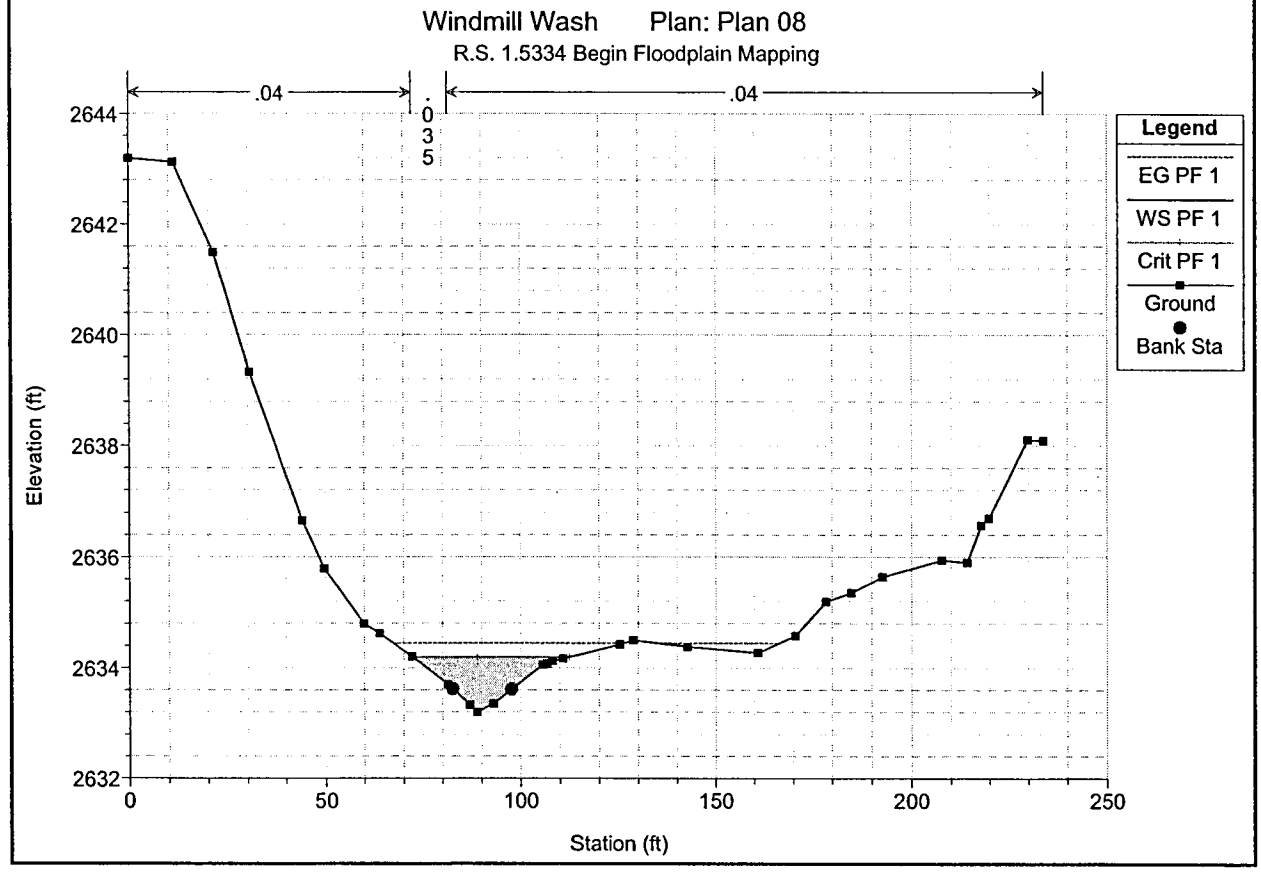

Unnamed Central Trib to Cave Creek Plan: Plan 02
R.S. 0.8919 Centerline of Terravita Way Dip Section
.025
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

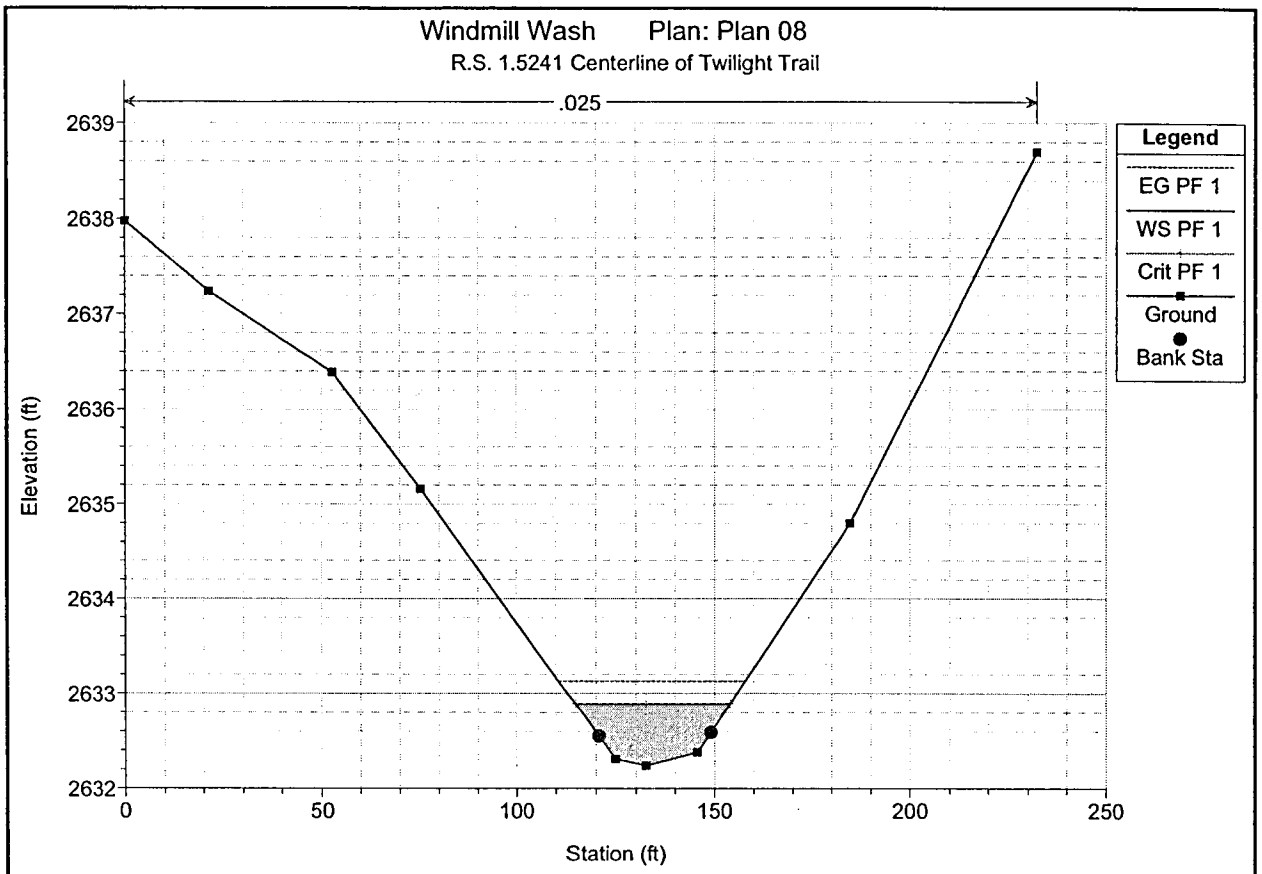
Windmill Wash – North Branch

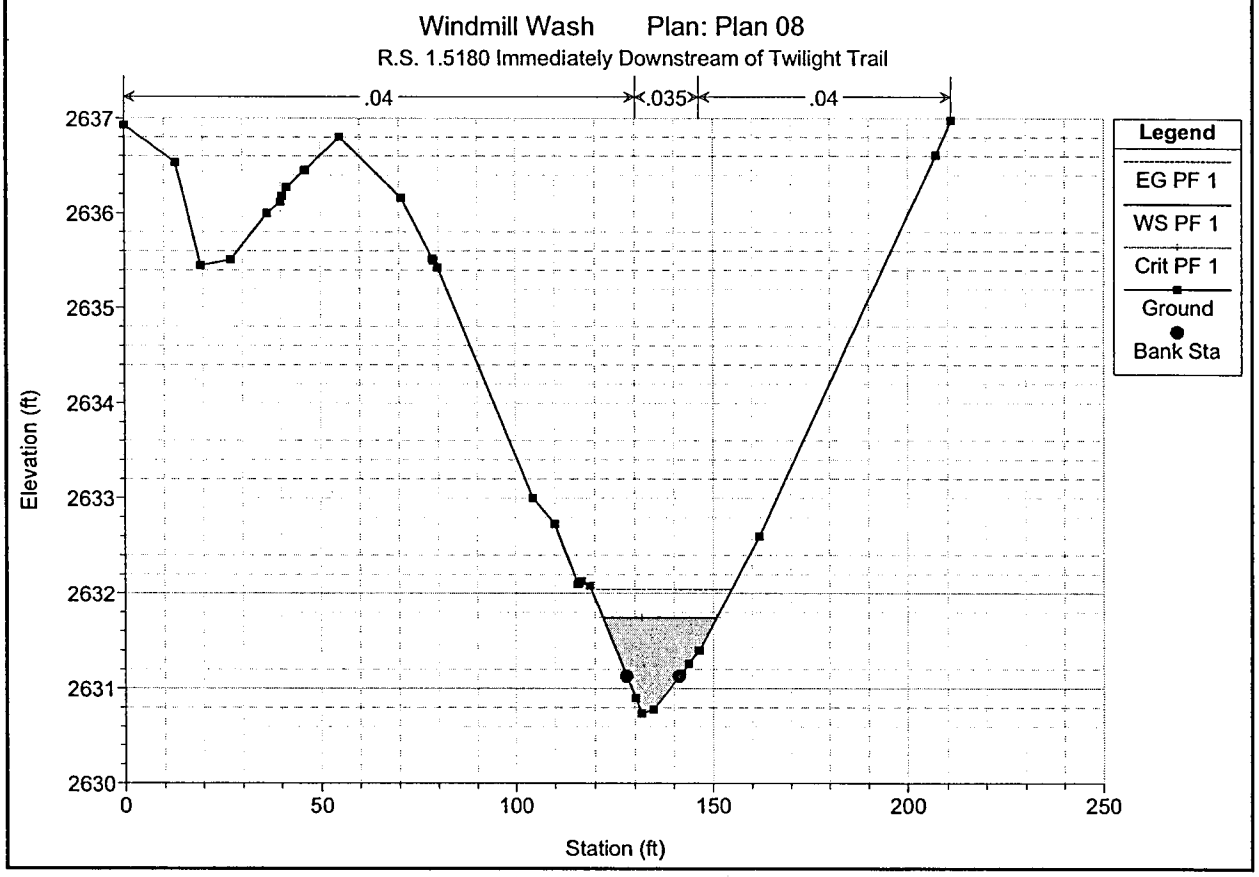

Windmill Wash Plan: Plan 08
R.S. 1.6576 Boundary Conditions Only
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

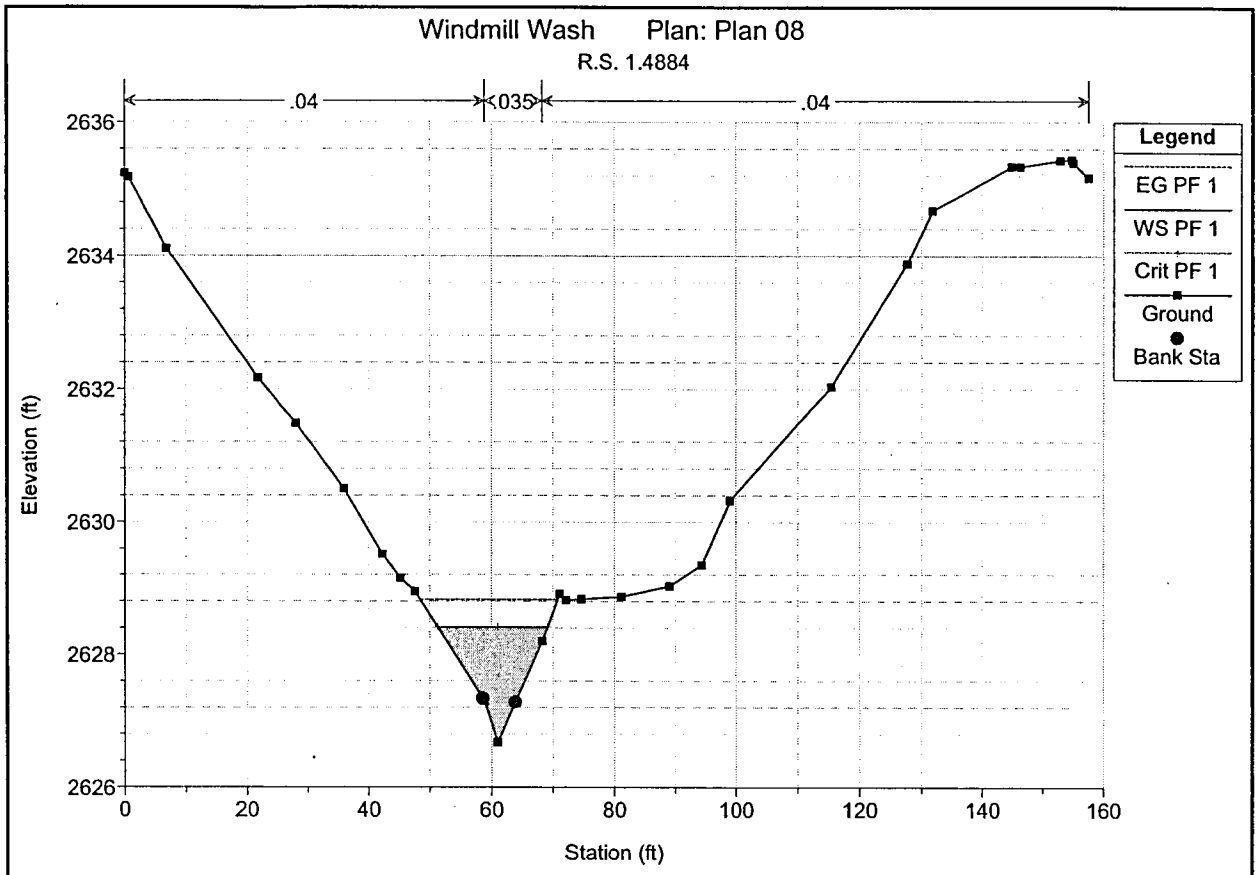

Windmill Wash Plan: Plan 08
R.S. 1.6069 Boundary Conditions Only
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

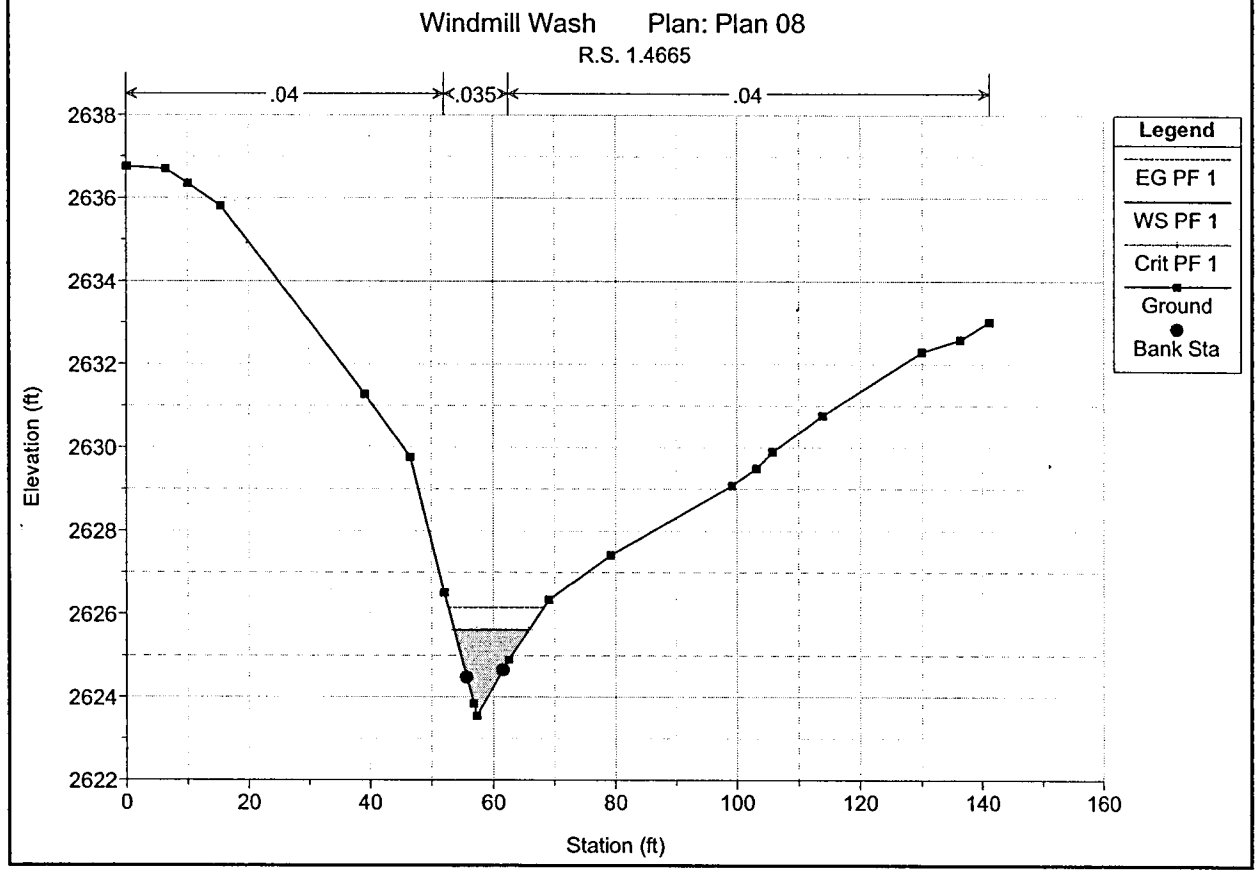

Windmill Wash Plan: Plan 08
R.S. 1.5545 Boundary Conditions Only
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

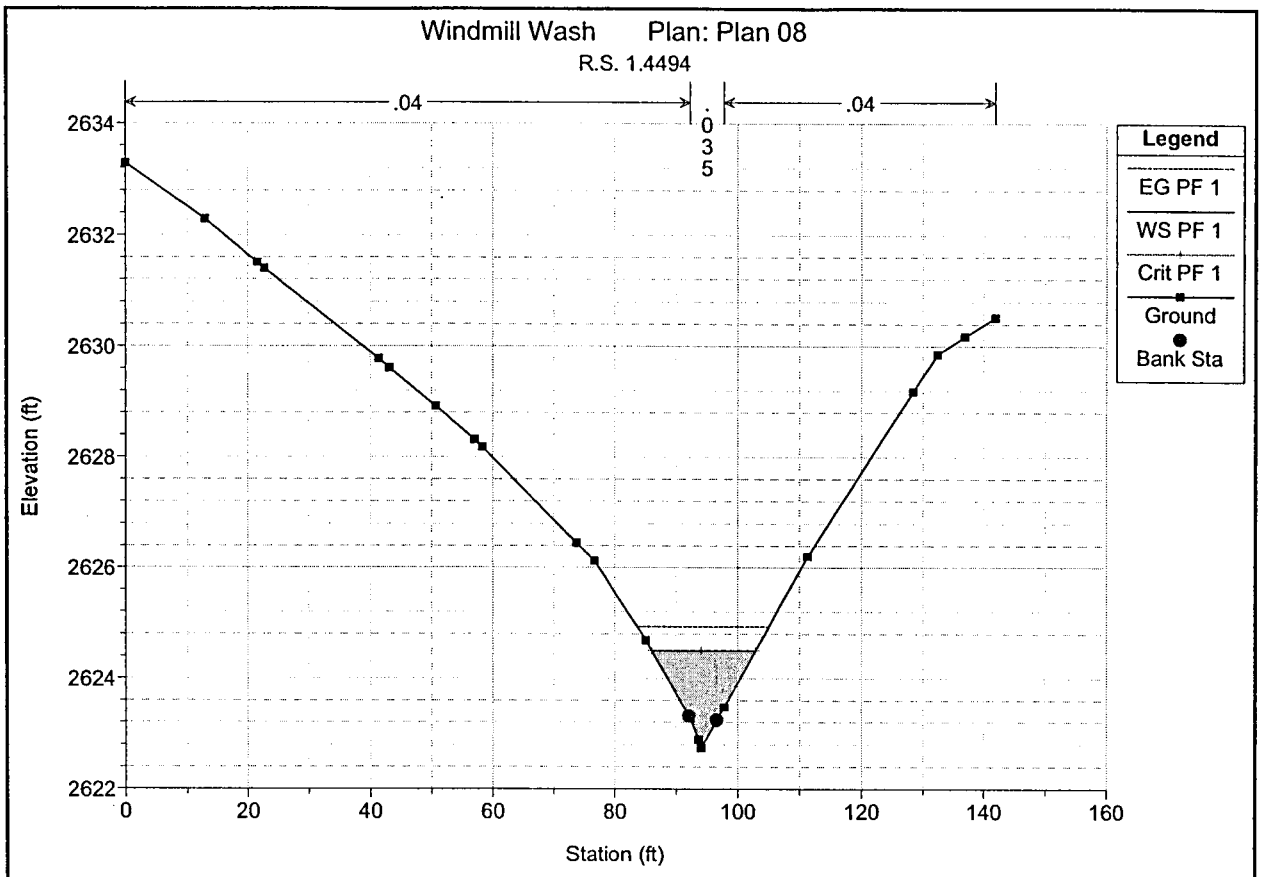

Windmill Wash Plan: Plan 08
R.S. 1.5334 Begin Floodplain Mapping
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

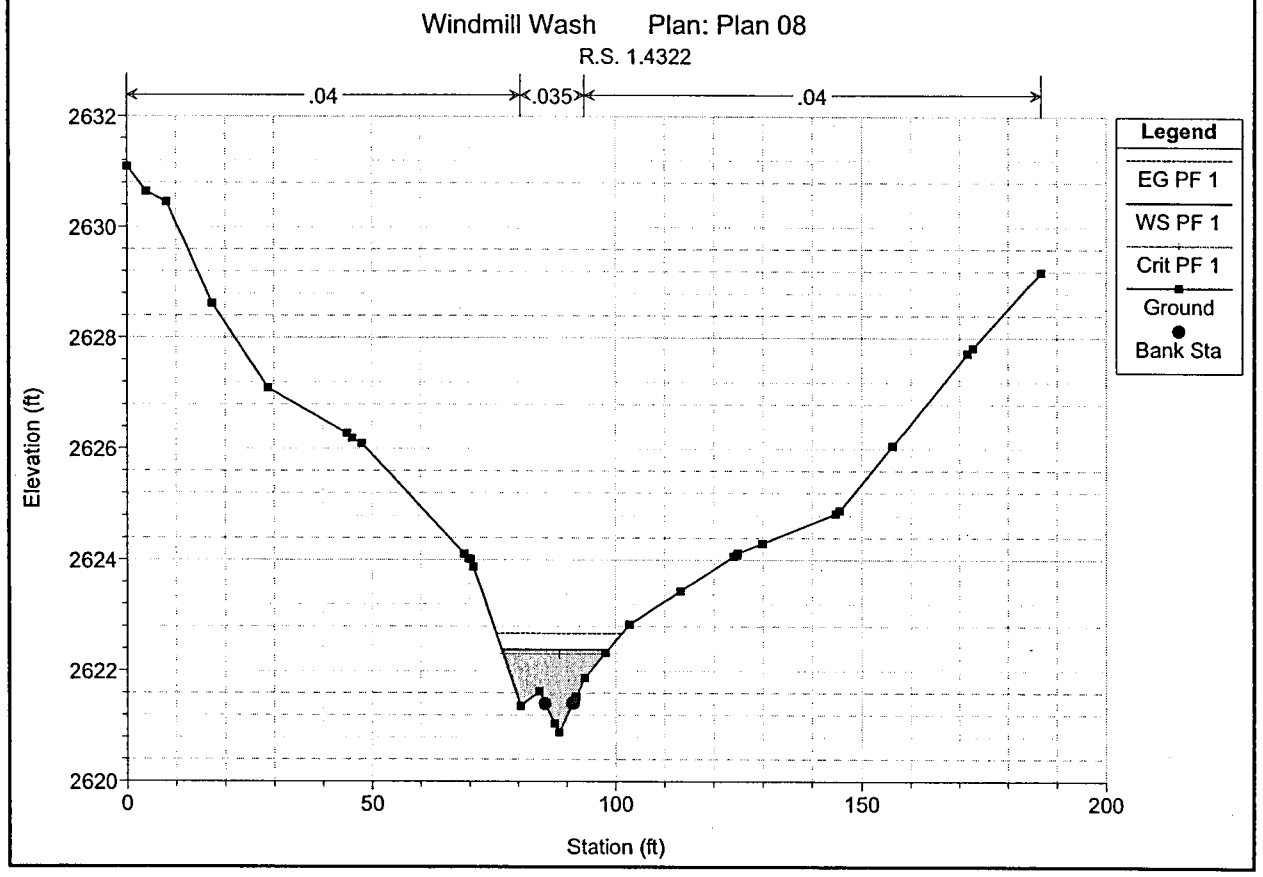

Windmill Wash Plan: Plan 08
R.S. 1.5241 Centerline of Twilight Trail
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2639
2638
2637
2636
2635
2634
2633
2632
0
50
100
150
200
250
Station (ft)

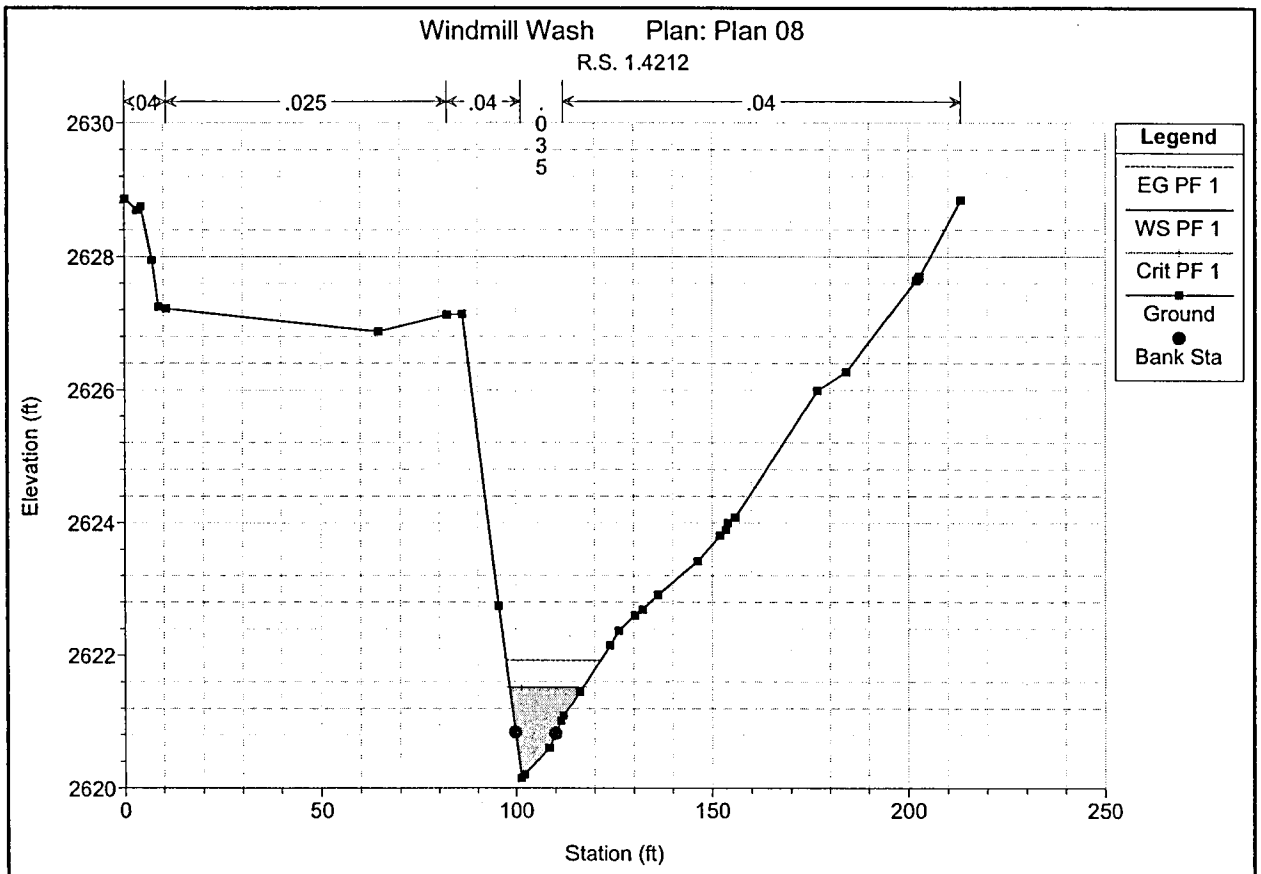

Windmill Wash Plan: Plan 08
R.S. 1.5180 Immediately Downstream of Twilight Trail
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2637
2636
2635
2634
2633
2632
2631
2630
0
50
100
150
200
250
Station (ft)

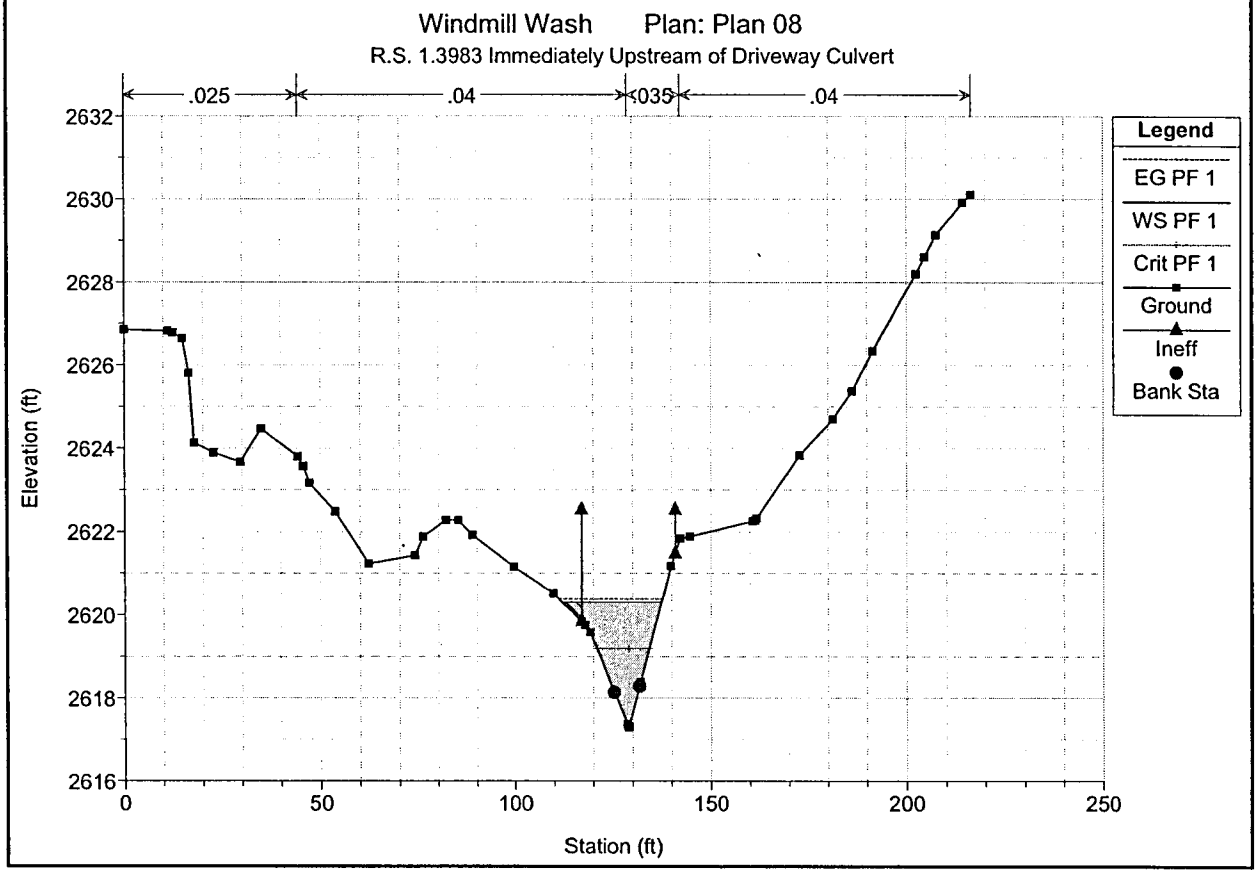

Windmill Wash Plan: Plan 08
R.S. 1.4884
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

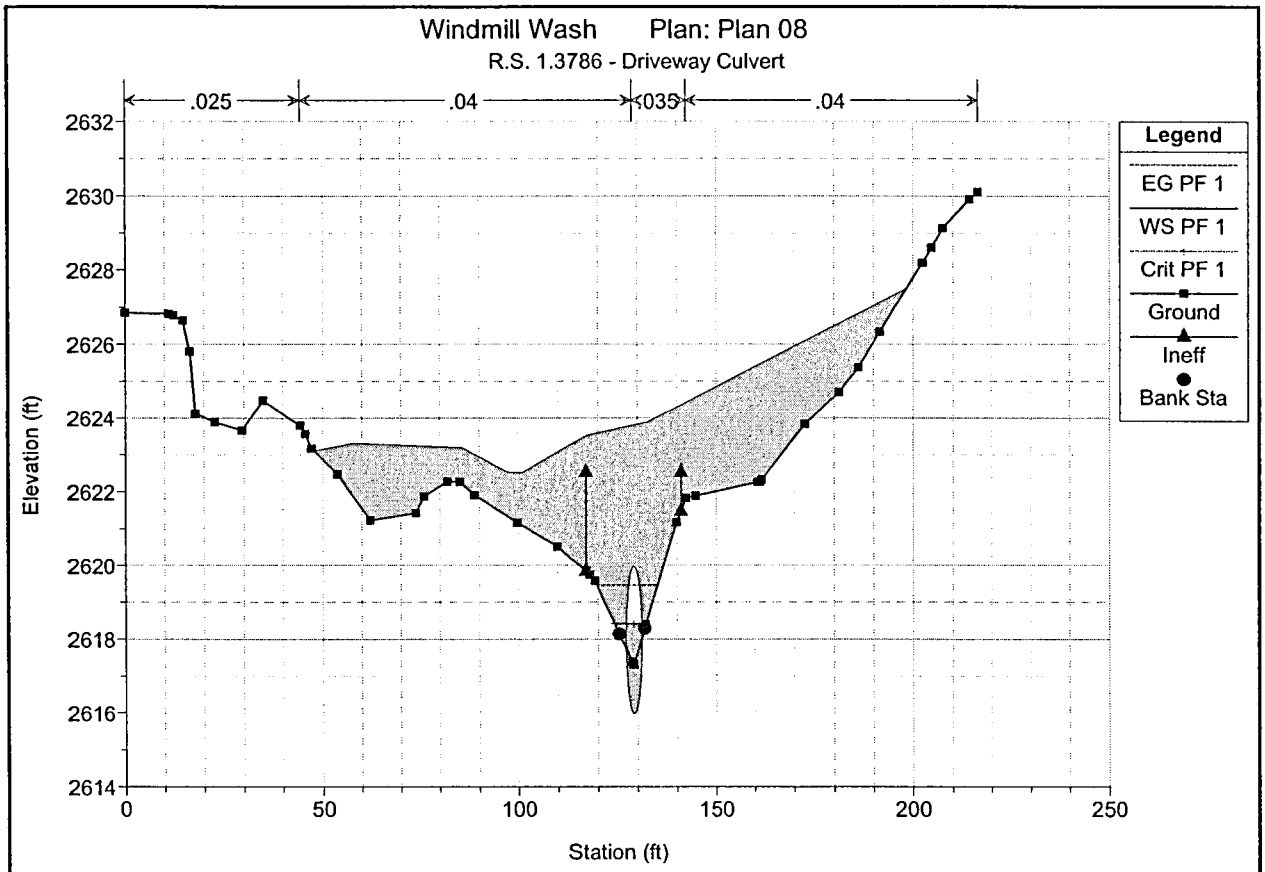

Windmill Wash Plan: Plan 08
R.S. 1.4665
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

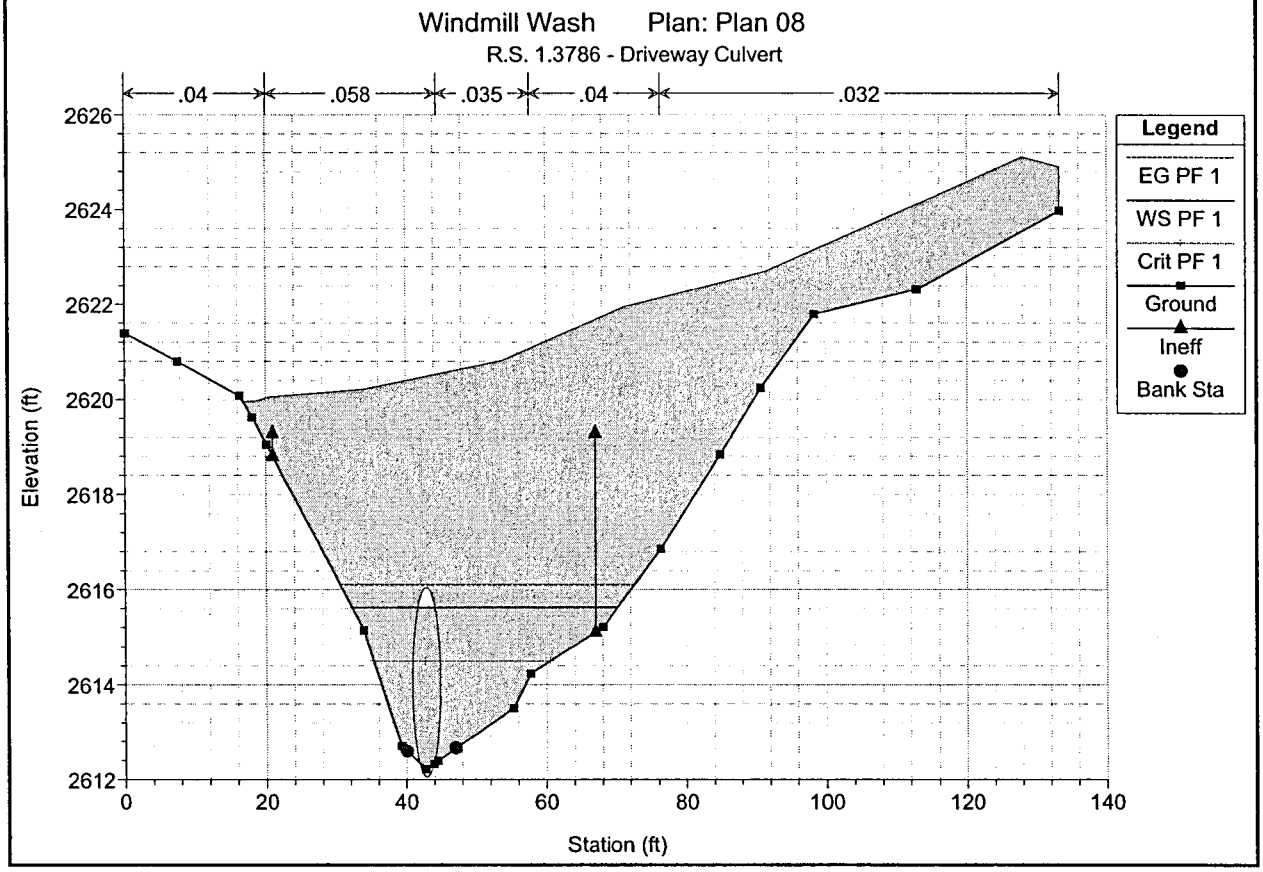

Windmill Wash Plan: Plan 08
R.S. 1.4494
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2634
2632
2630
2628
2626
2624
2622
0
20
40
60
80
100
120
140
160

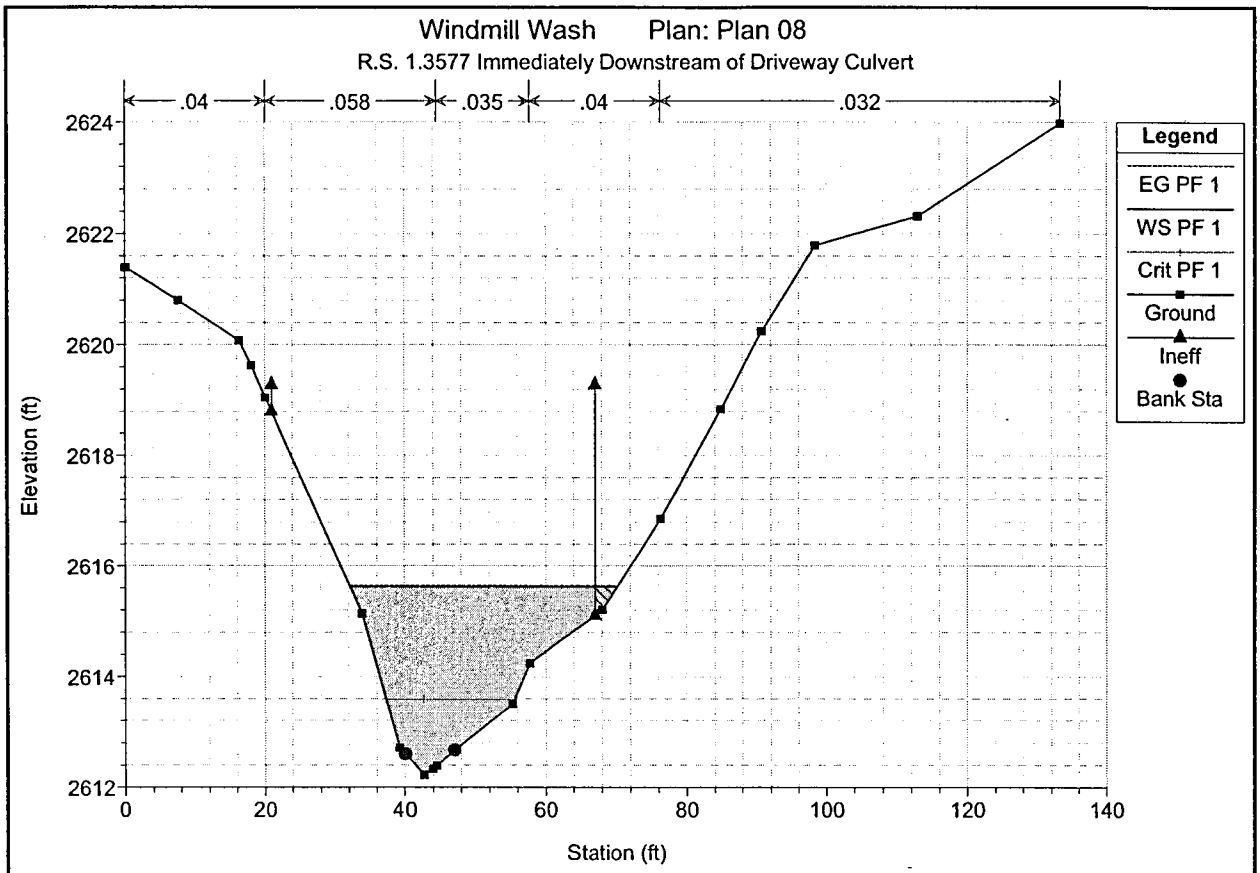

Windmill Wash Plan: Plan 08
R.S. 1.4322
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2632
2630
2628
2626
2624
2622
2620
0
50
100
150
200

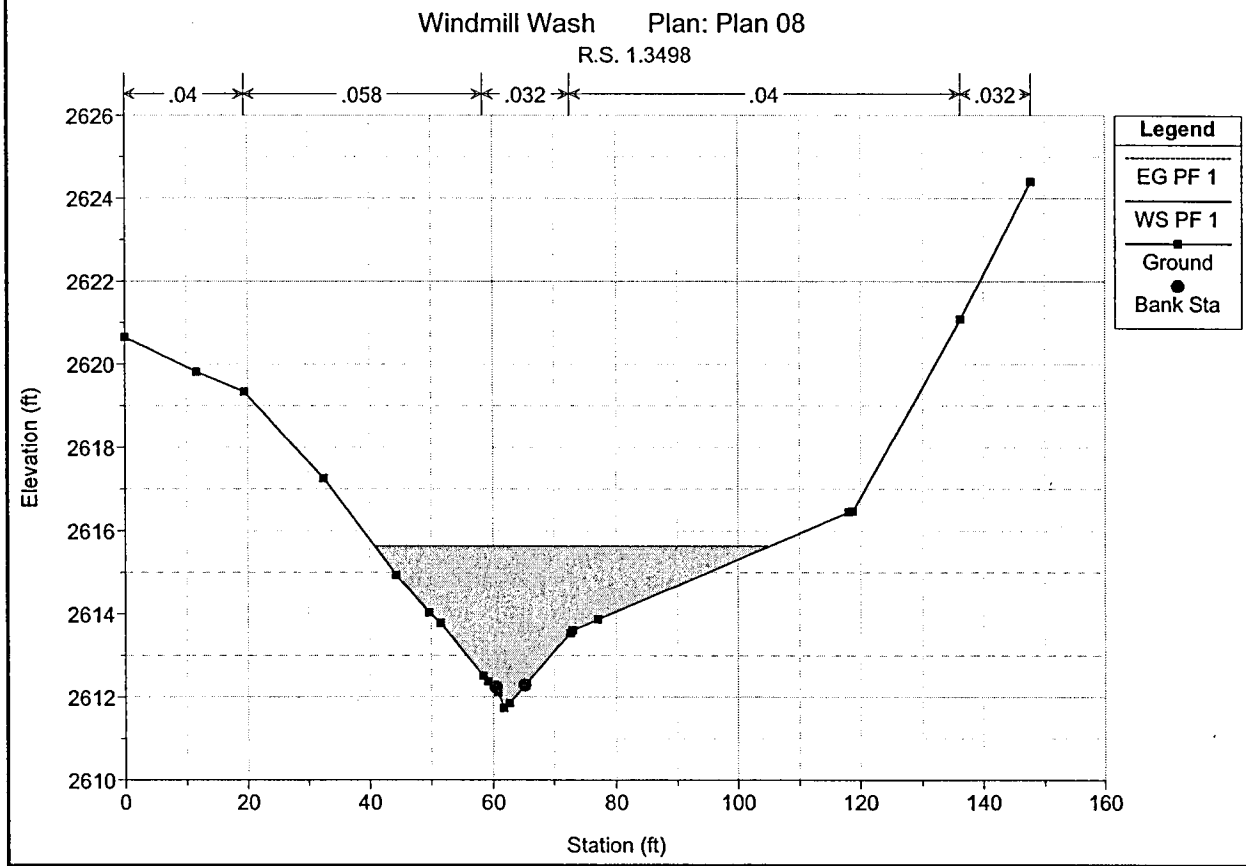

Windmill Wash Plan: Plan 08
R.S. 1.4212
.04
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2630
2628
2626
2624
2622
2620
0
50
100
150
200
250

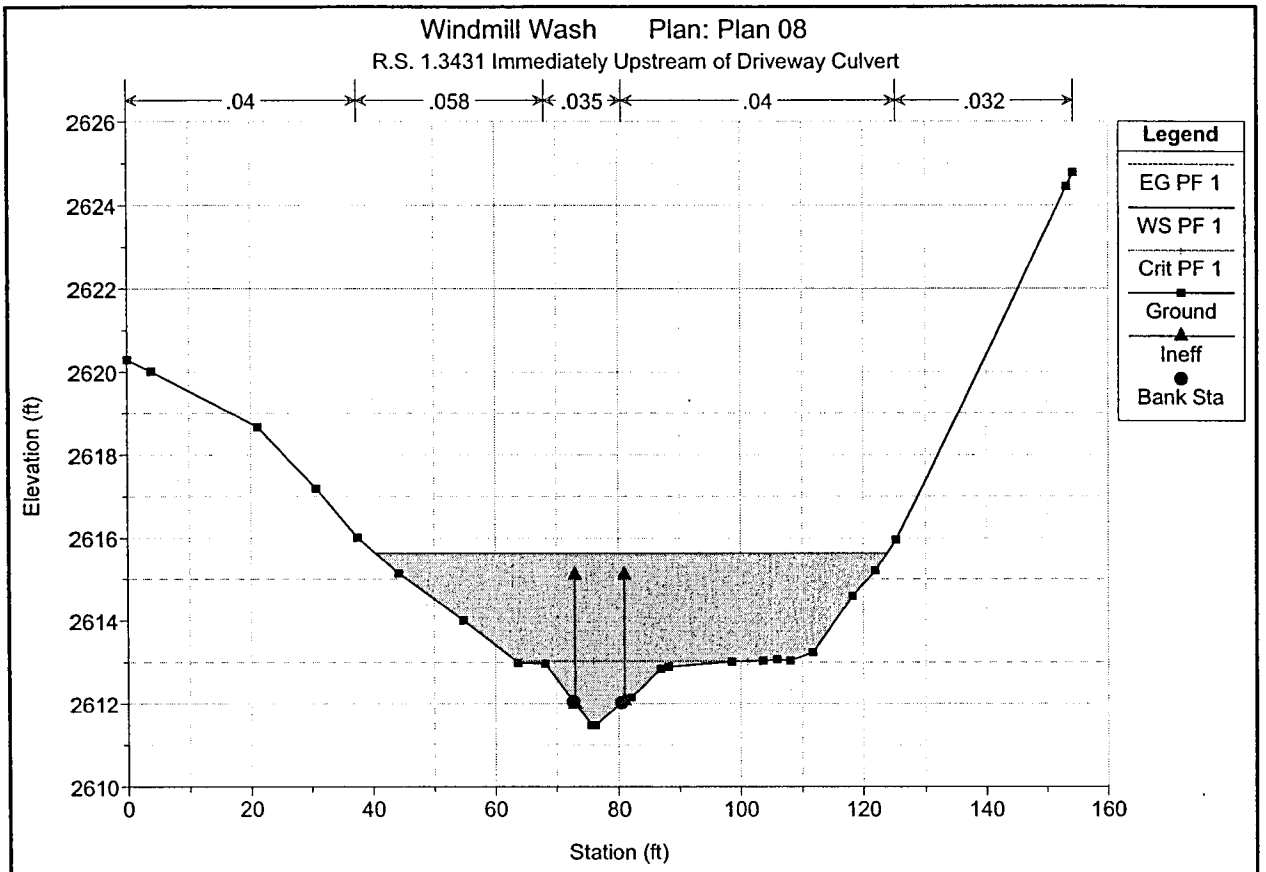

Windmill Wash Plan: Plan 08
R.S. 1.3983 Immediately Upstream of Driveway Culvert
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2632
2630
2628
2626
2624
2622
2620
2618
2616
0
50
100
150
200
250

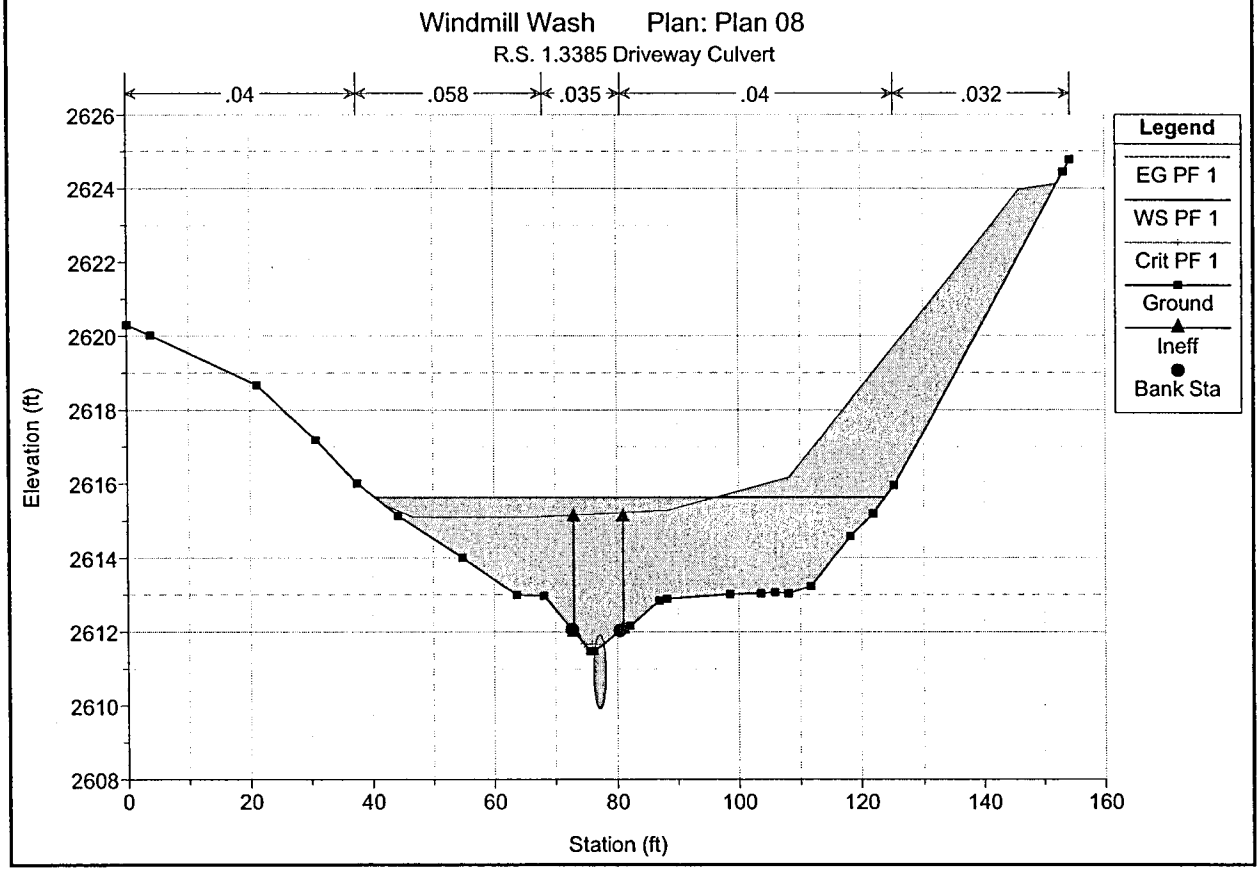

Windmill Wash Plan: Plan 08
R.S. 1.3786 - Driveway Culvert
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

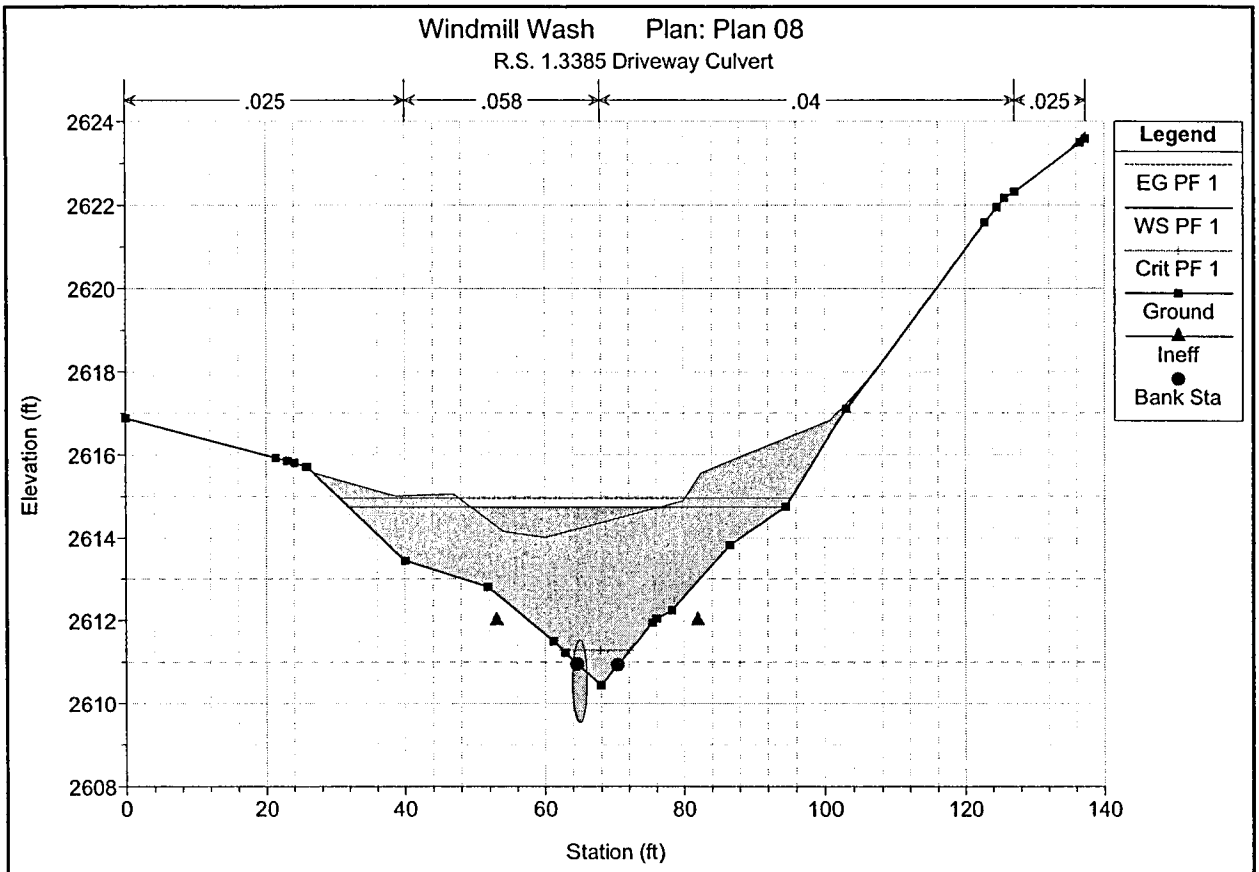

Windmill Wash Plan: Plan 08
R.S. 1.3786 - Driveway Culvert
.04
.058
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

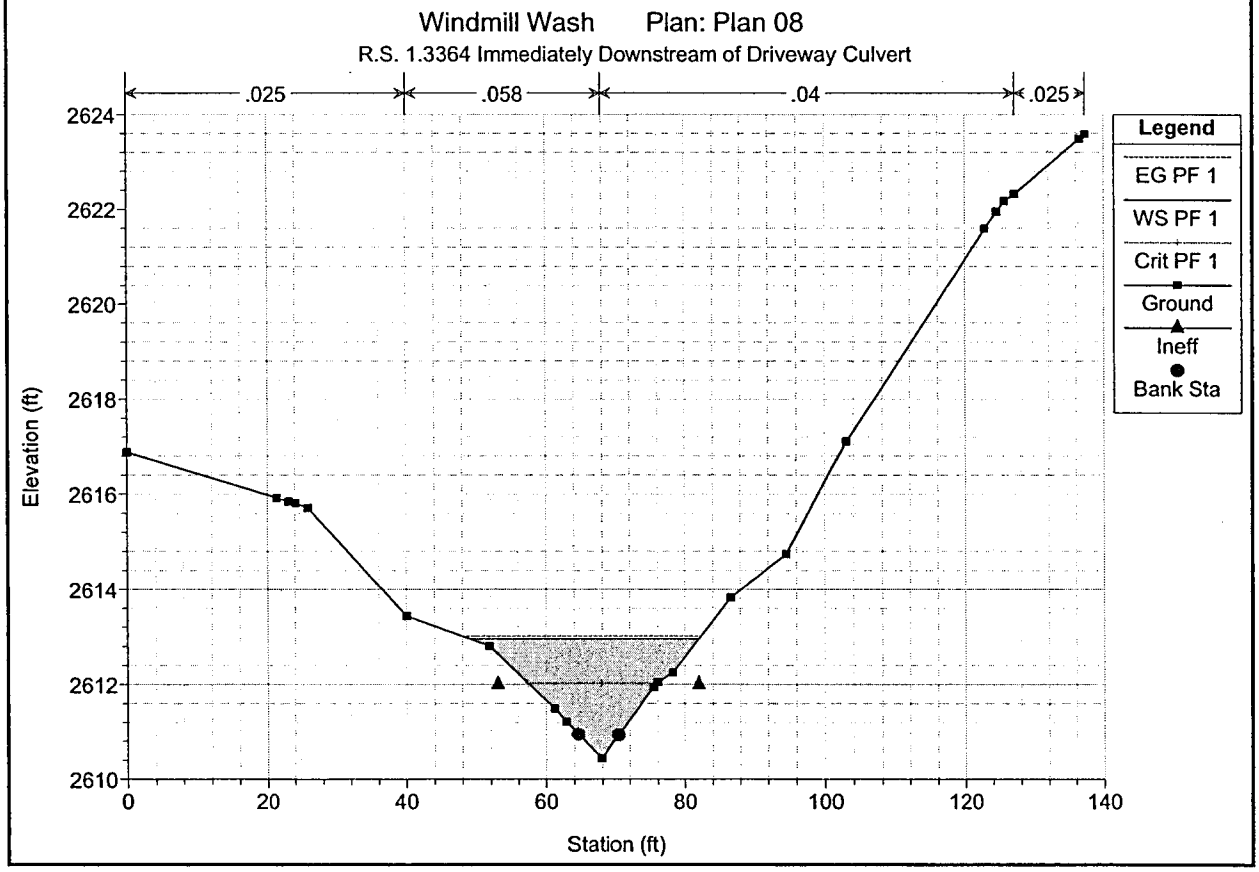

Windmill Wash Plan: Plan 08
R.S. 1.3577 Immediately Downstream of Driveway Culvert
.04
.058
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

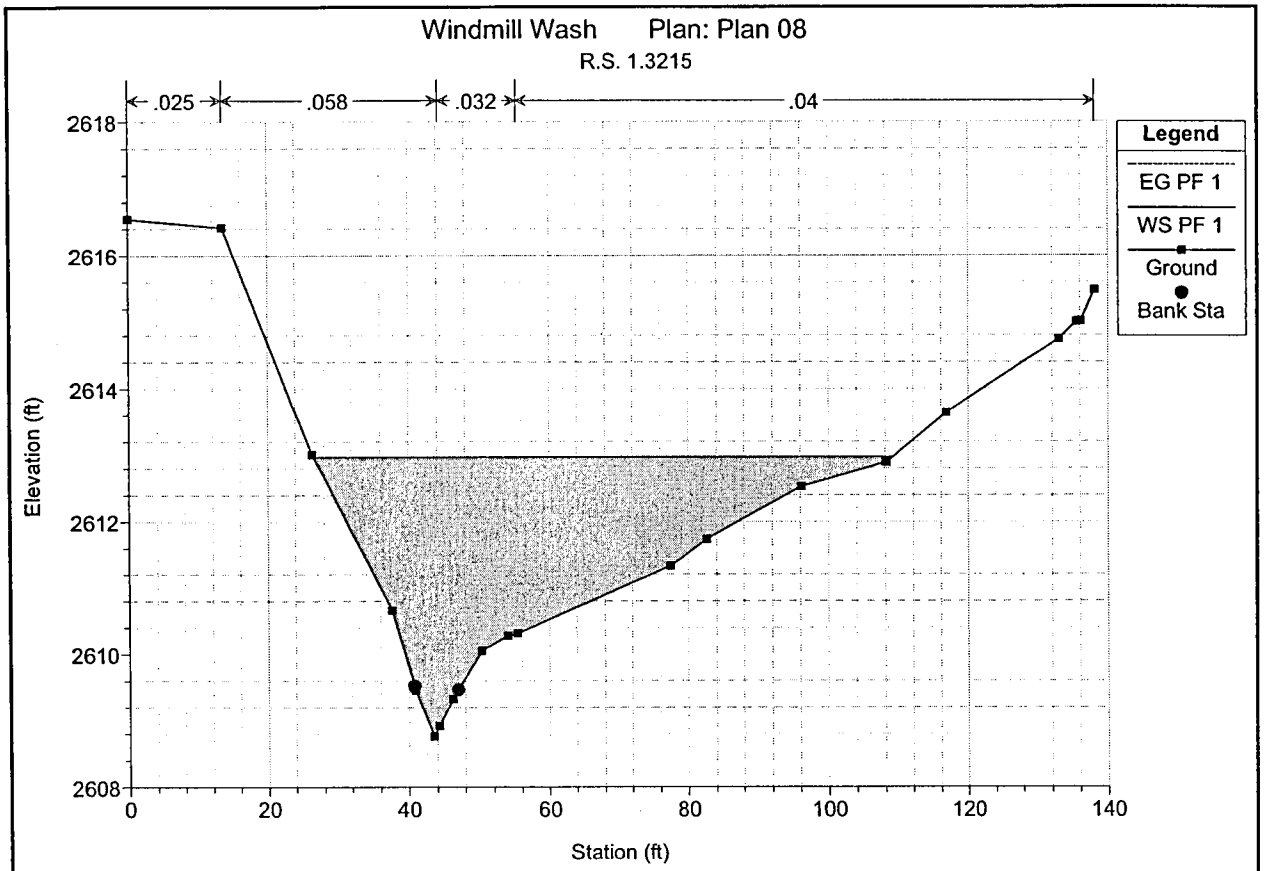

Windmill Wash Plan: Plan 08
R.S. 1.3498
.04
.058
.032
.04
.032
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

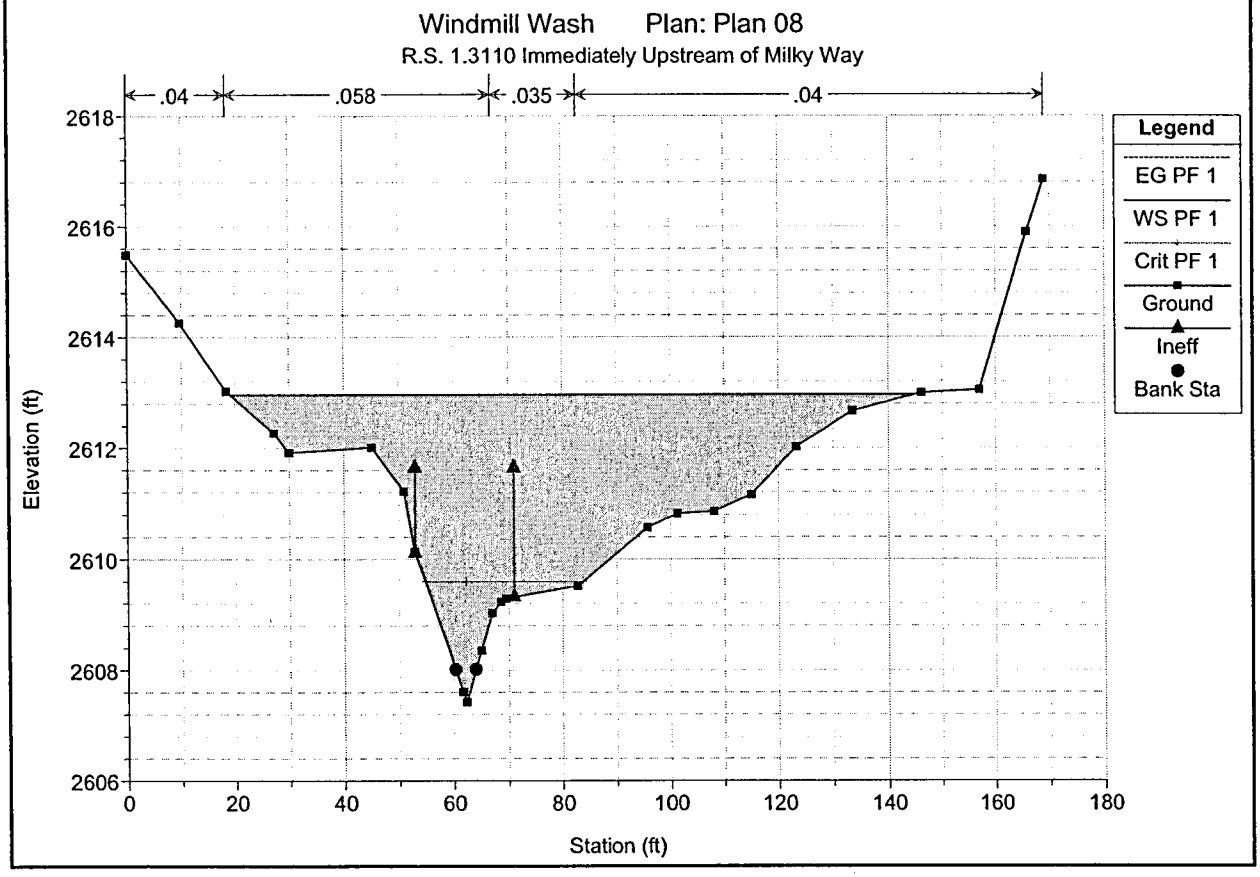

Windmill Wash Plan: Plan 08
R.S. 1.3431 Immediately Upstream of Driveway Culvert
.04
.058
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

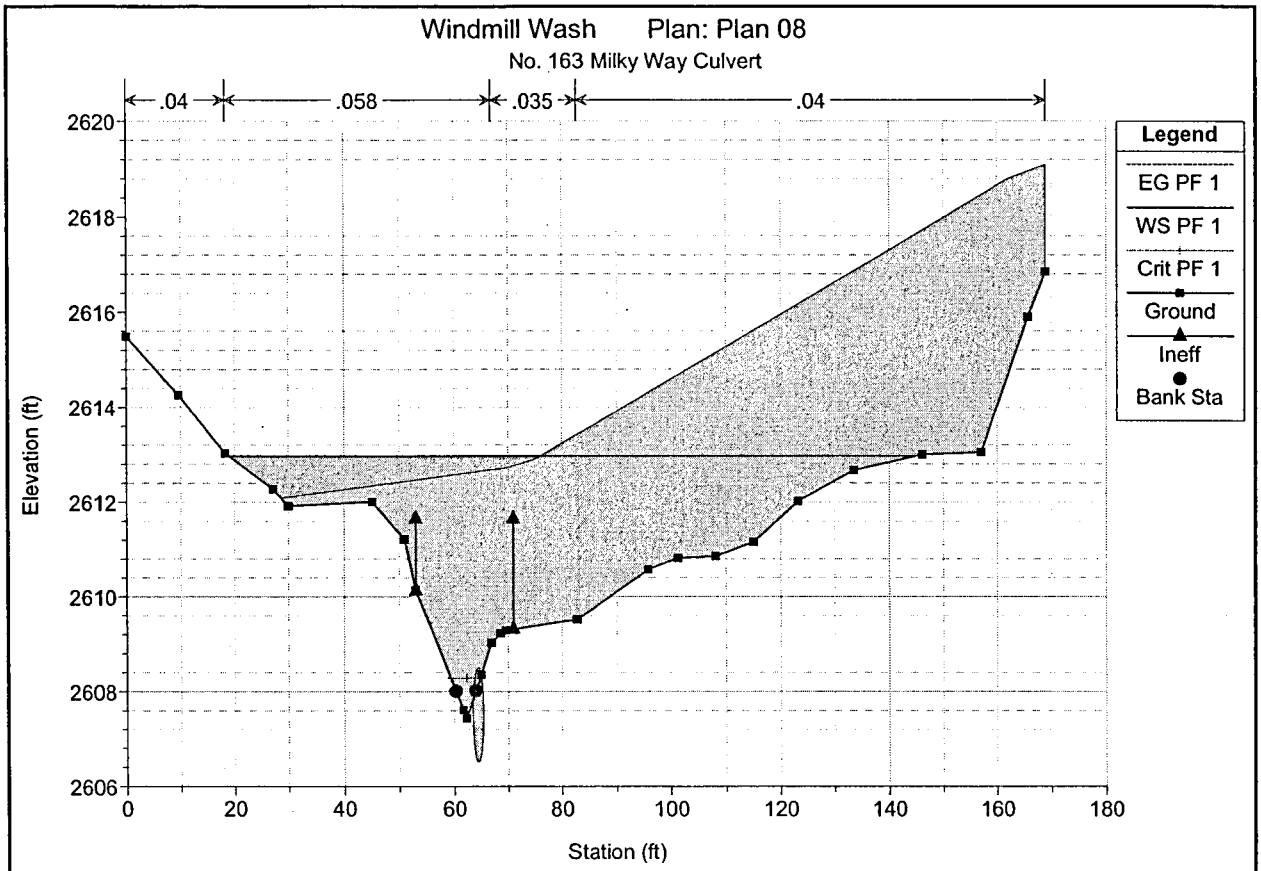

Windmill Wash Plan: Plan 08
R.S. 1.3385 Driveway Culvert
.04
.058
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

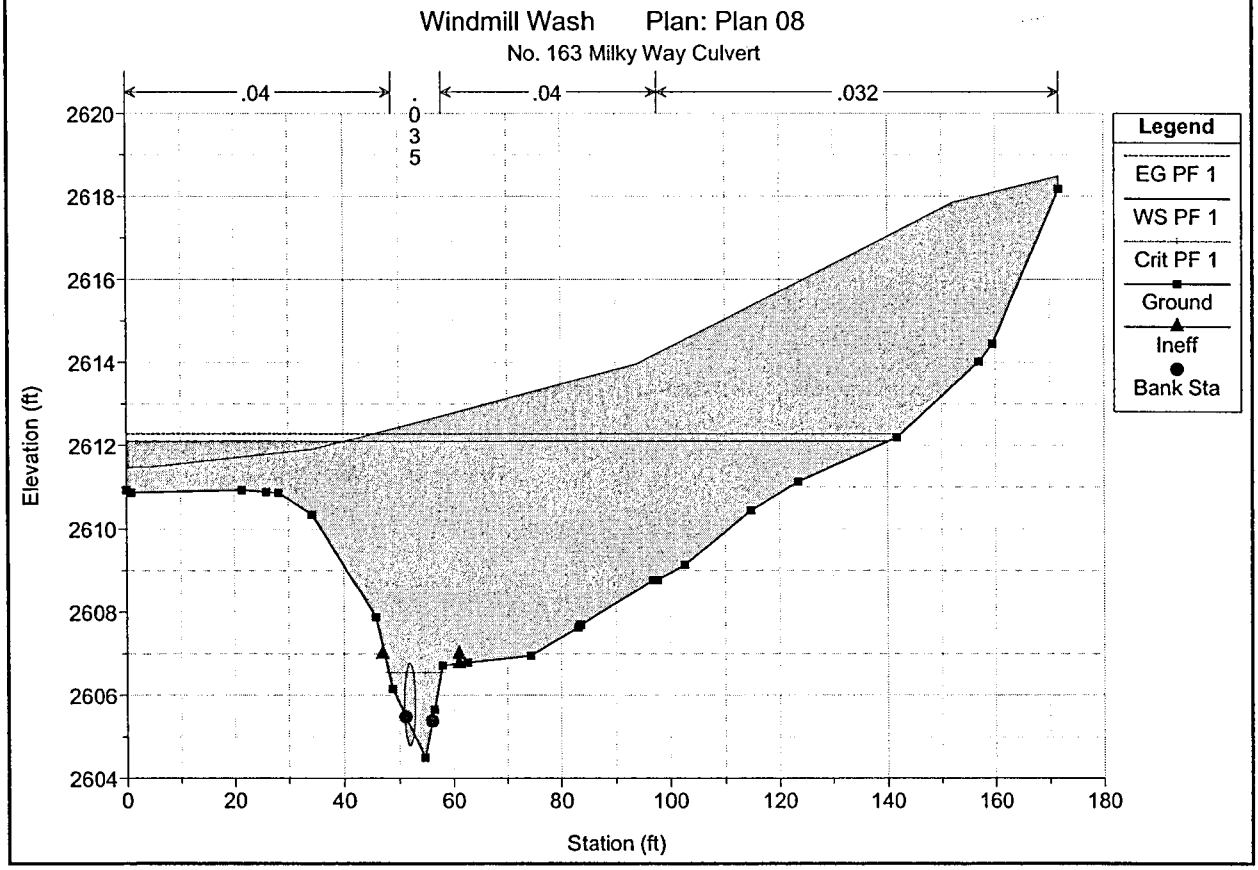

Windmill Wash Plan: Plan 08
R.S. 1.3385 Driveway Culvert
.025
.058
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

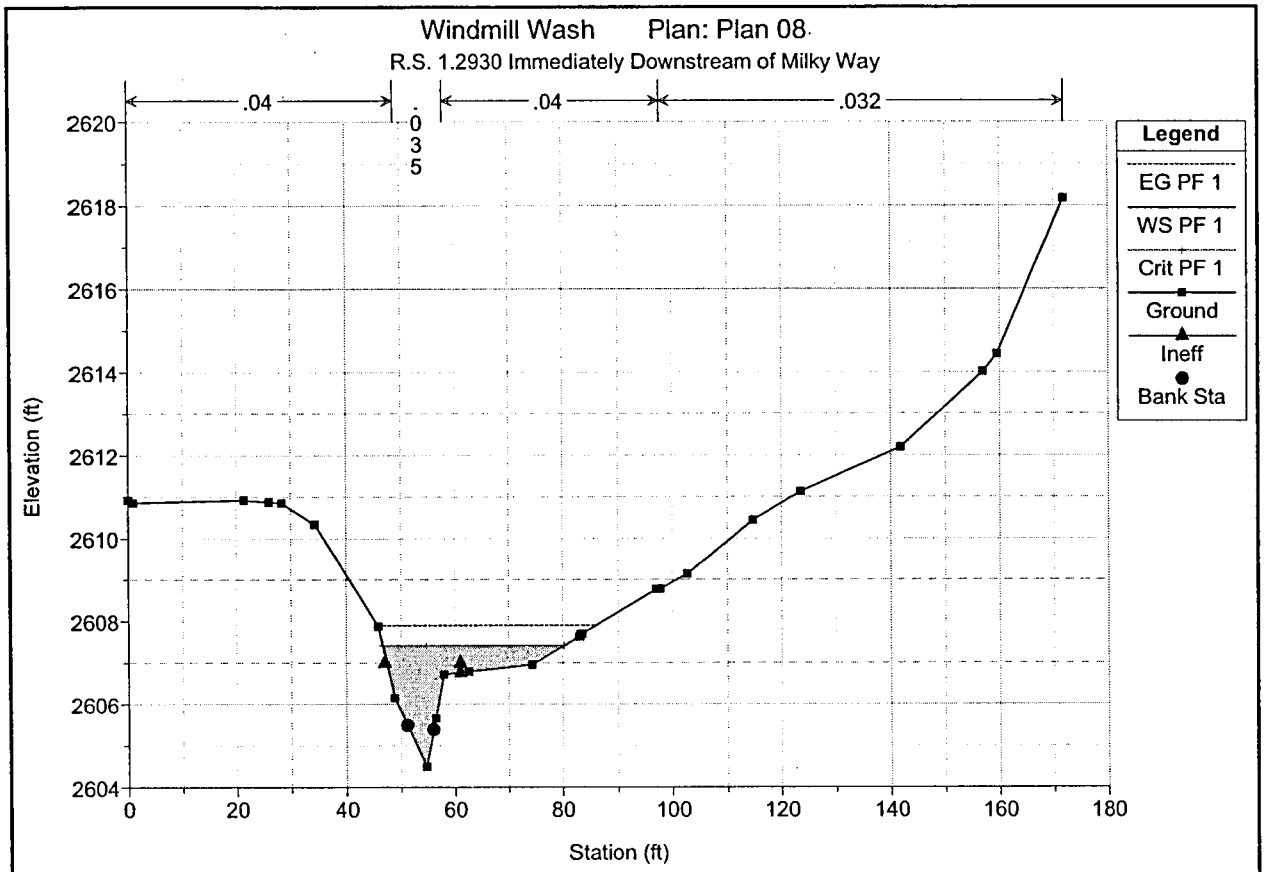

Windmill Wash Plan: Plan 08
R.S. 1.3364 Immediately Downstream of Driveway Culvert
.025
.058
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

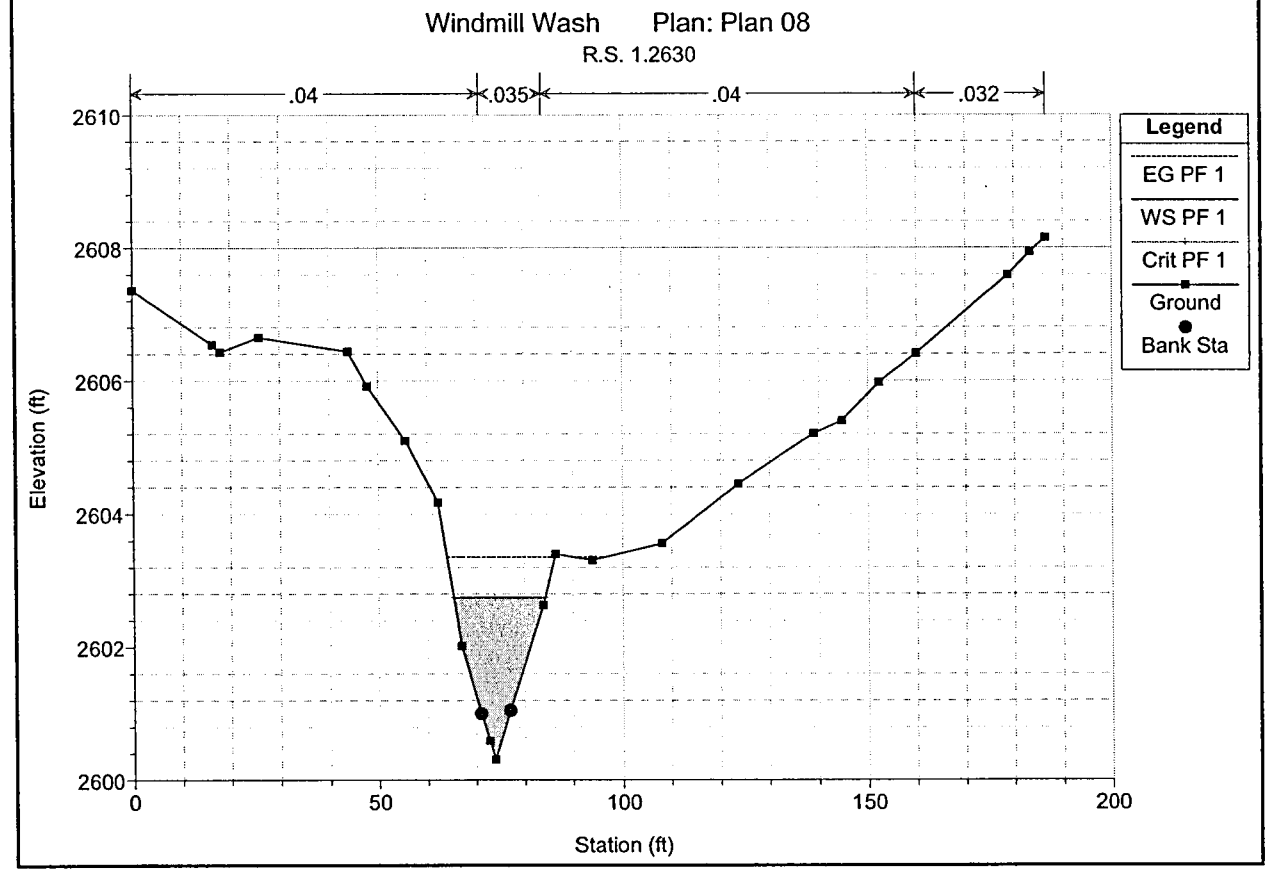

Windmill Wash Plan: Plan 08
R.S. 1.3215
.025
.058
.032
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2618
2616
2614
2612
2610
2608
0
20
40
60
80
100
120
140
Station (ft)

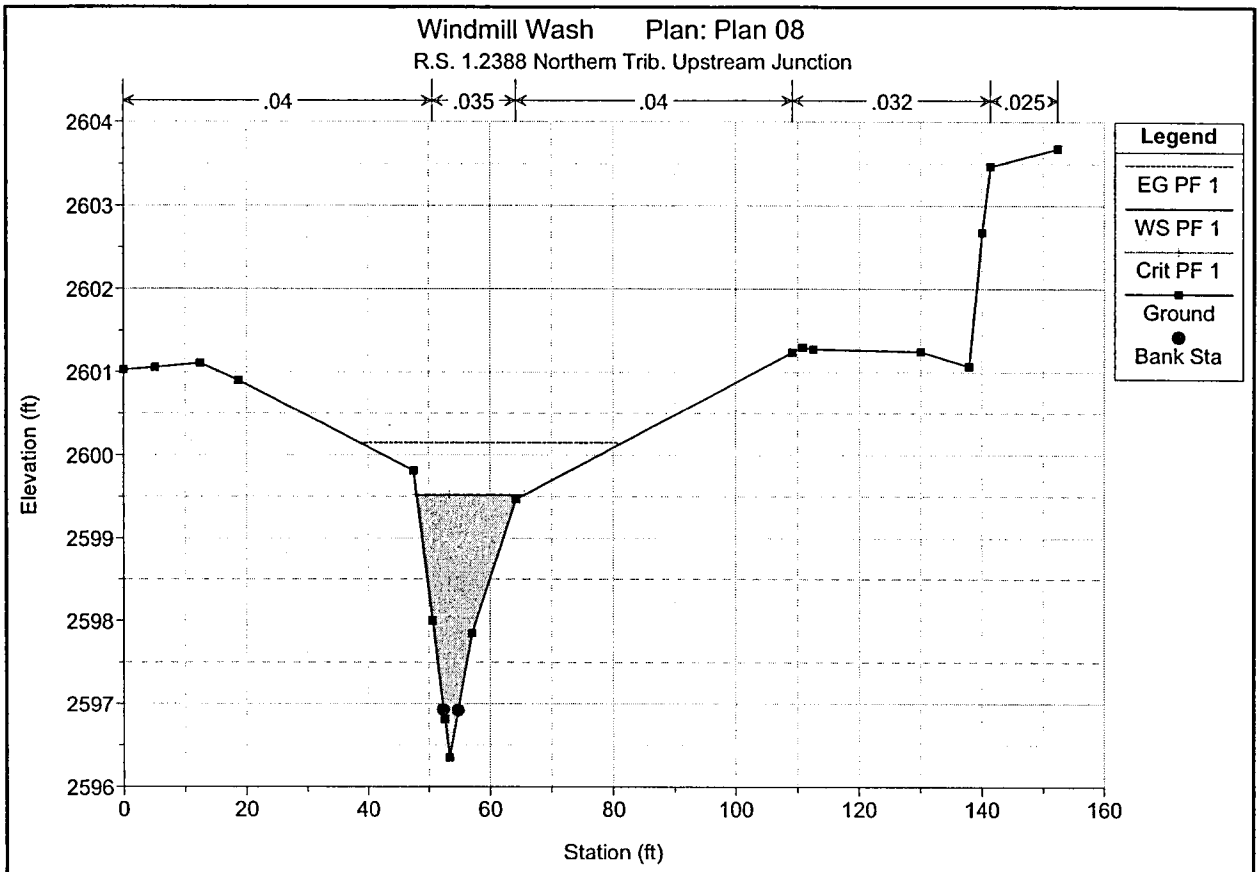

Windmill Wash Plan: Plan 08
R.S. 1.3110 Immediately Upstream of Milky Way
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2618
2616
2614
2612
2610
2608
2606
0
20
40
60
80
100
120
140
160
180
Station (ft)


Windmill Wash Plan: Plan 08
No. 163 Milky Way Culvert
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

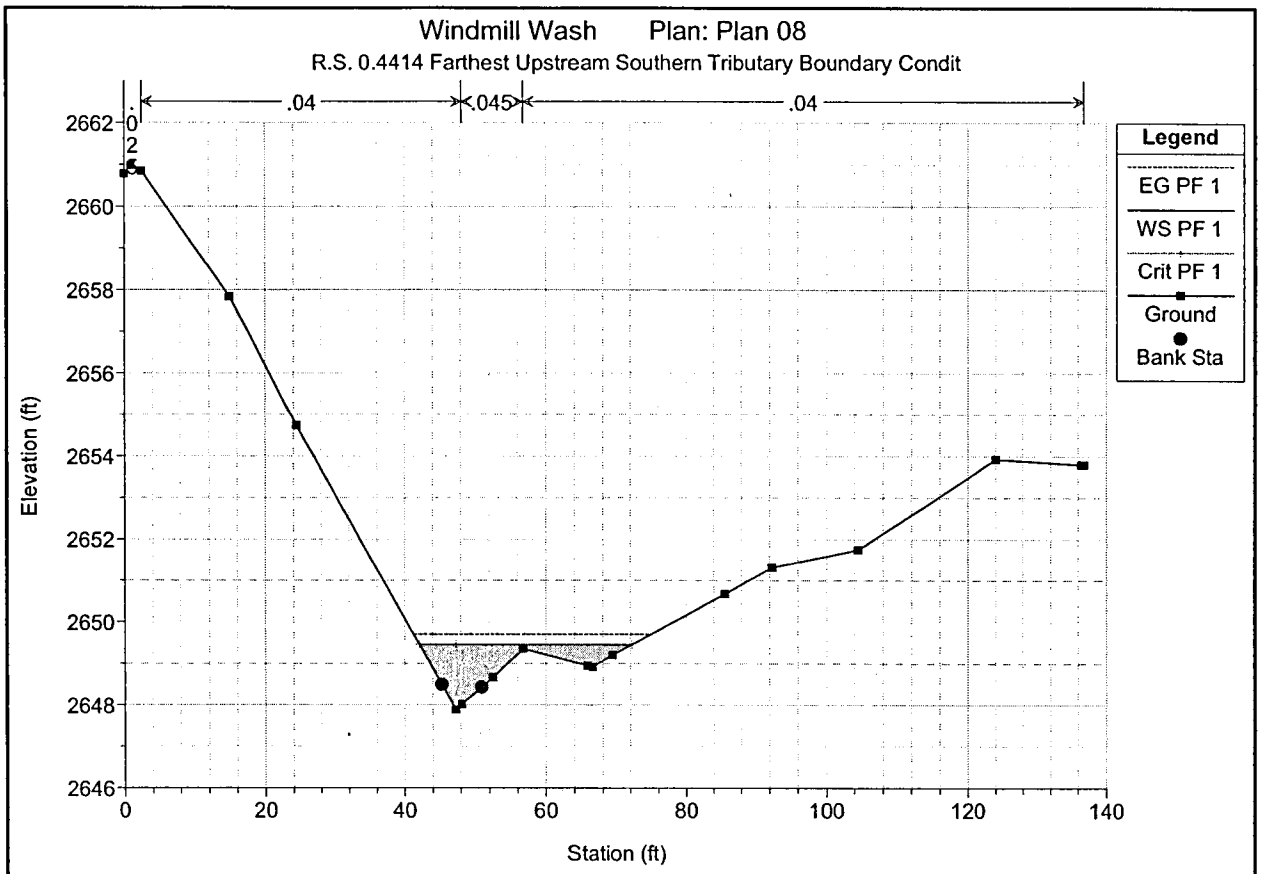

Windmill Wash Plan: Plan 08
No. 163 Milky Way Culvert
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

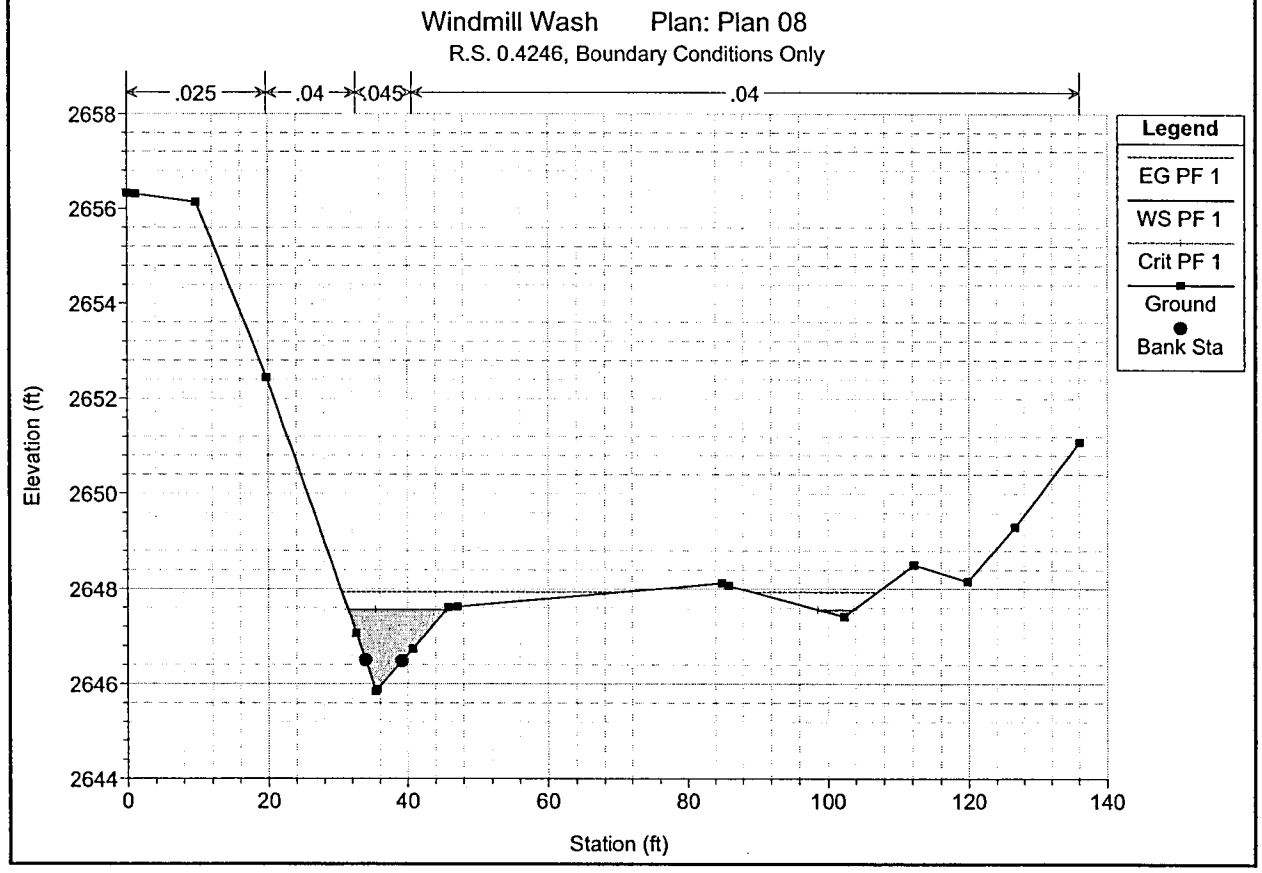

Windmill Wash Plan: Plan 08
R.S. 1.2930 Immediately Downstream of Milky Way
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

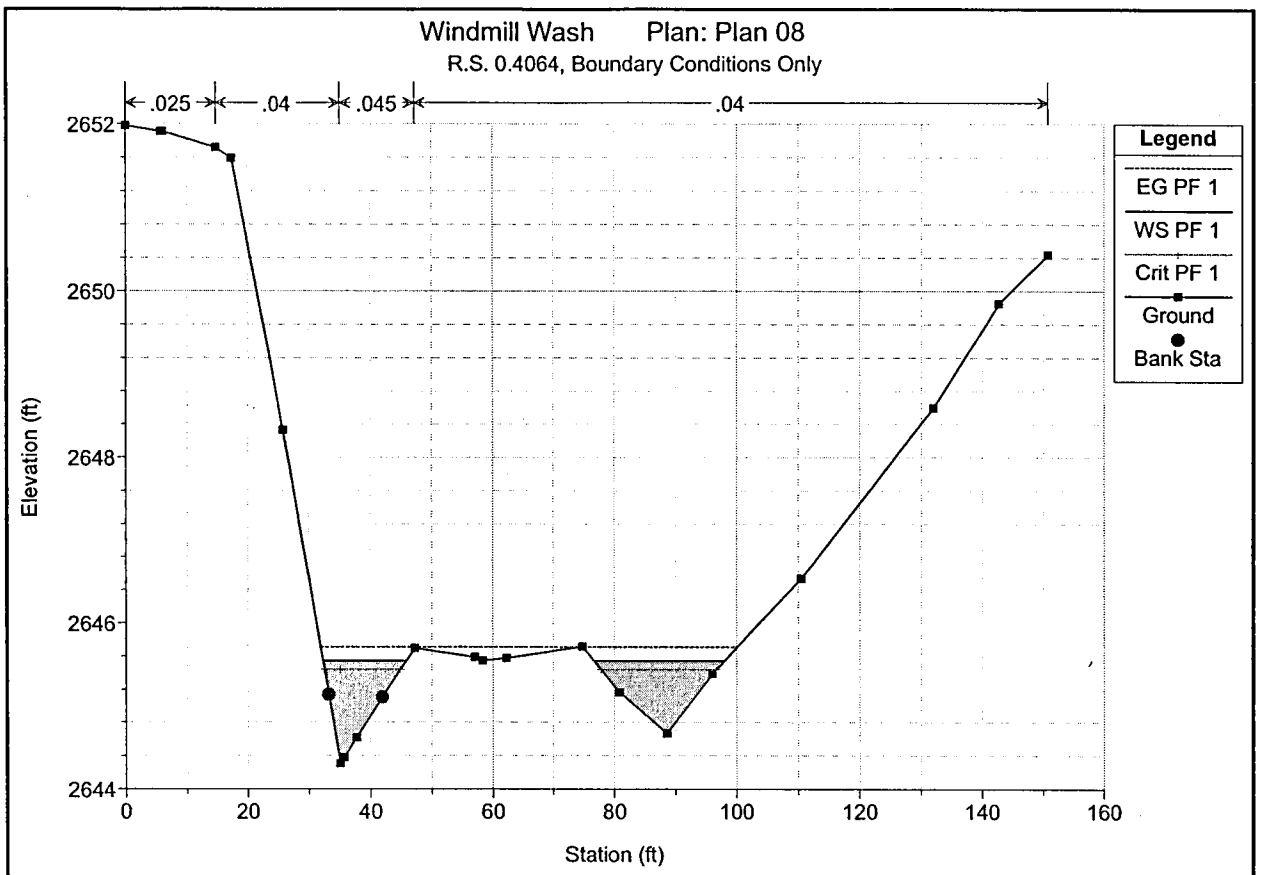

Windmill Wash Plan: Plan 08
R.S. 1.2630
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

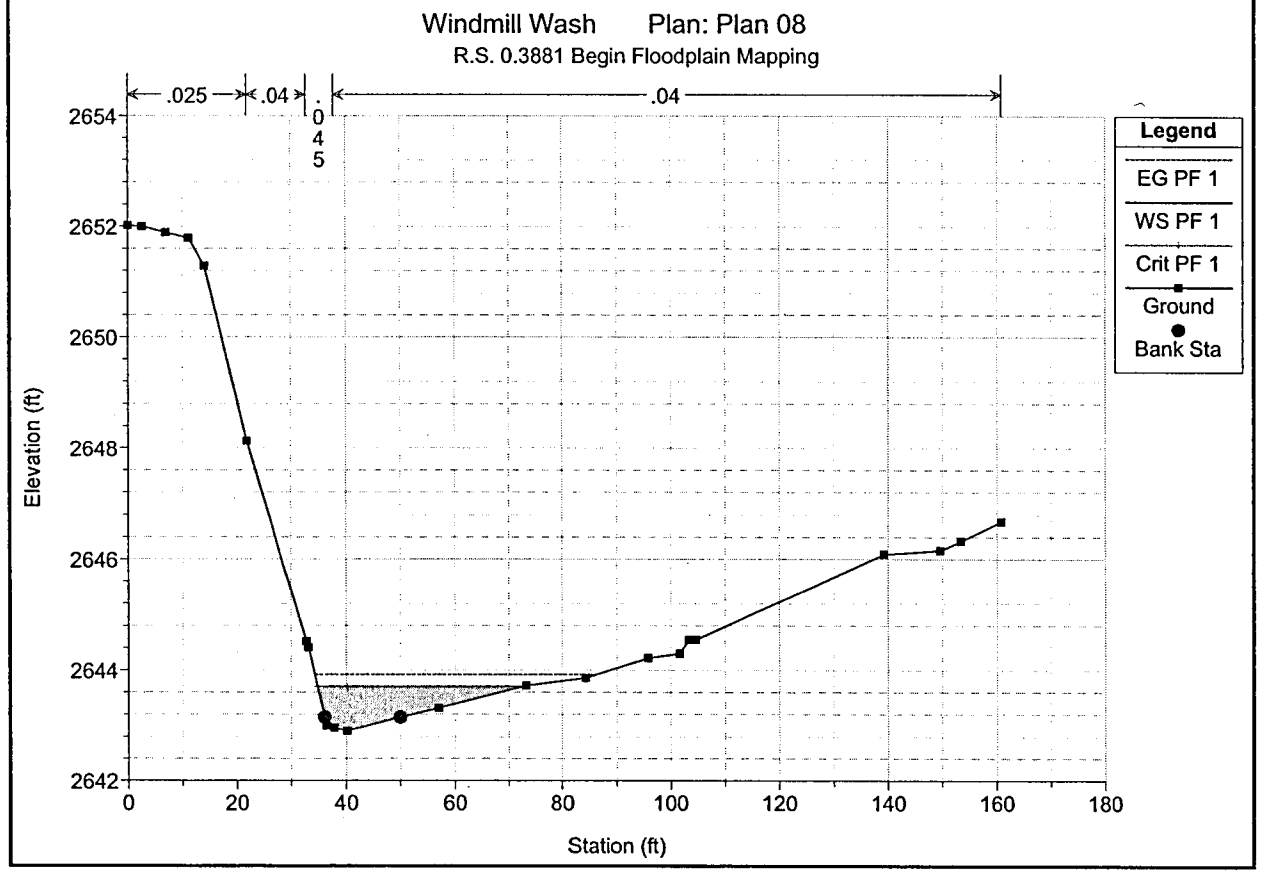

Windmill Wash Plan: Plan 08
R.S. 1.2388 Northern Trib. Upstream Junction
.04
.035
.04
.032
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2604
2603
2602
2601
2600
2599
2598
2597
2596
0
20
40
60
80
100
120
140
160
Station (ft)

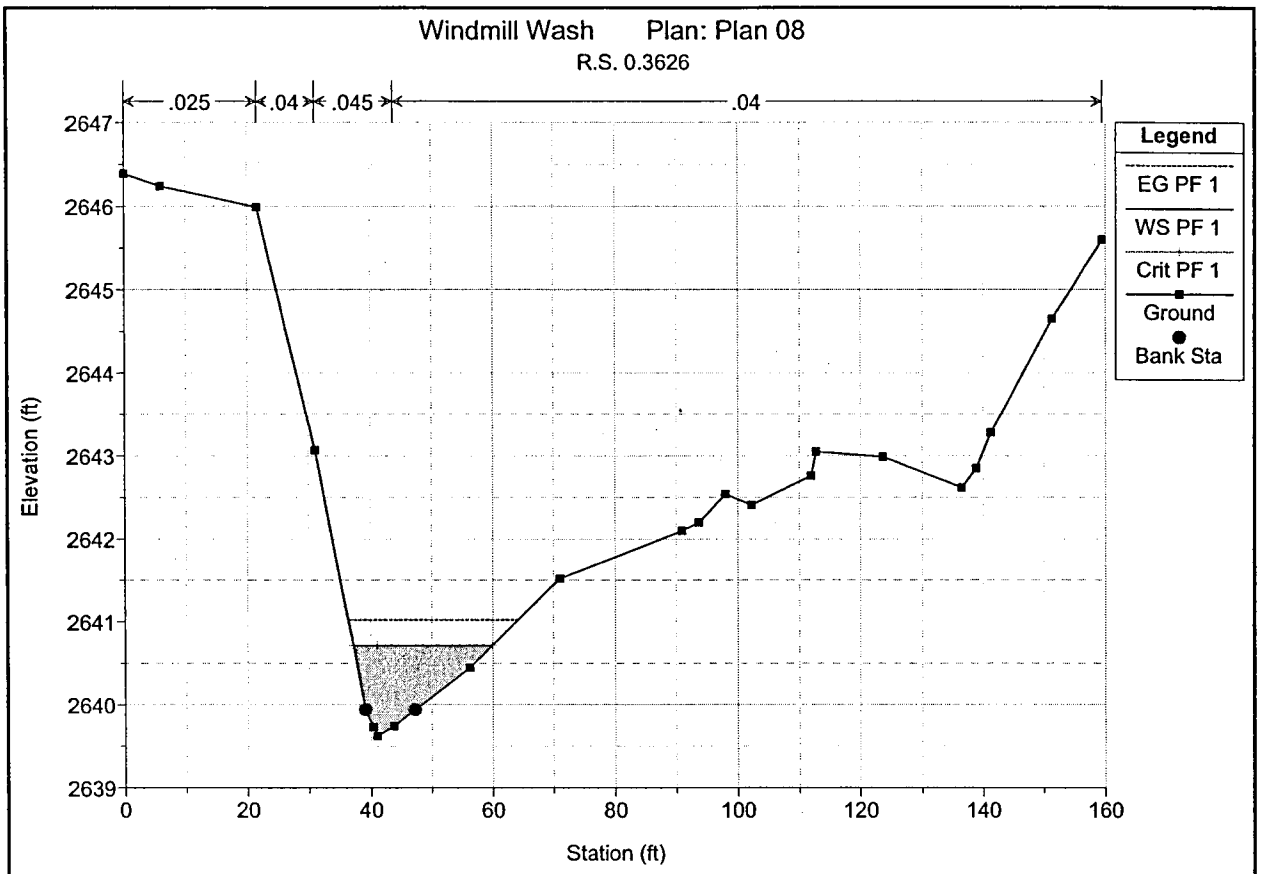
Windmill Wash – South Branch

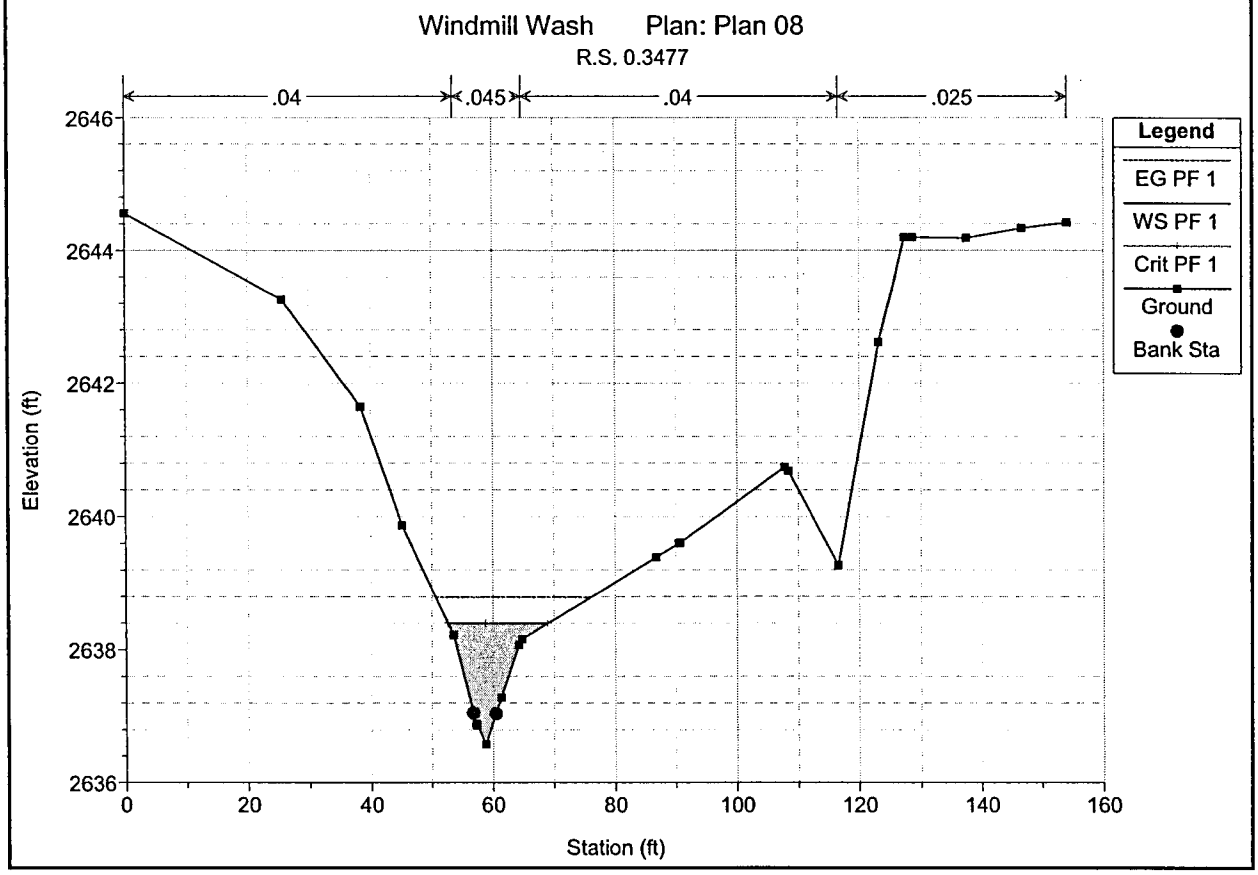

Windmill Wash Plan: Plan 08
R.S. 0.4414 Farthest Upstream Southern Tributary Boundary Condit
.02
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

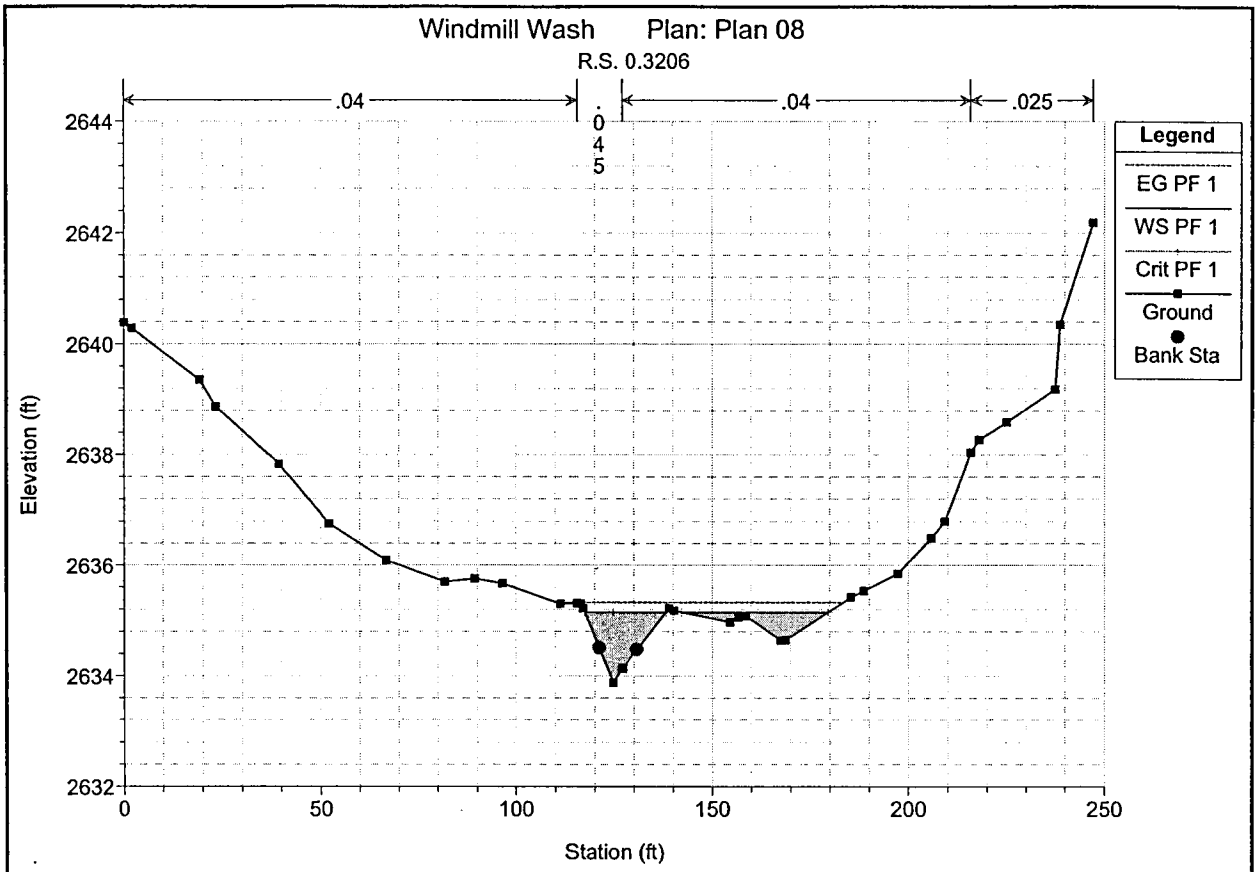

Windmill Wash Plan: Plan 08
R.S. 0.4246, Boundary Conditions Only
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

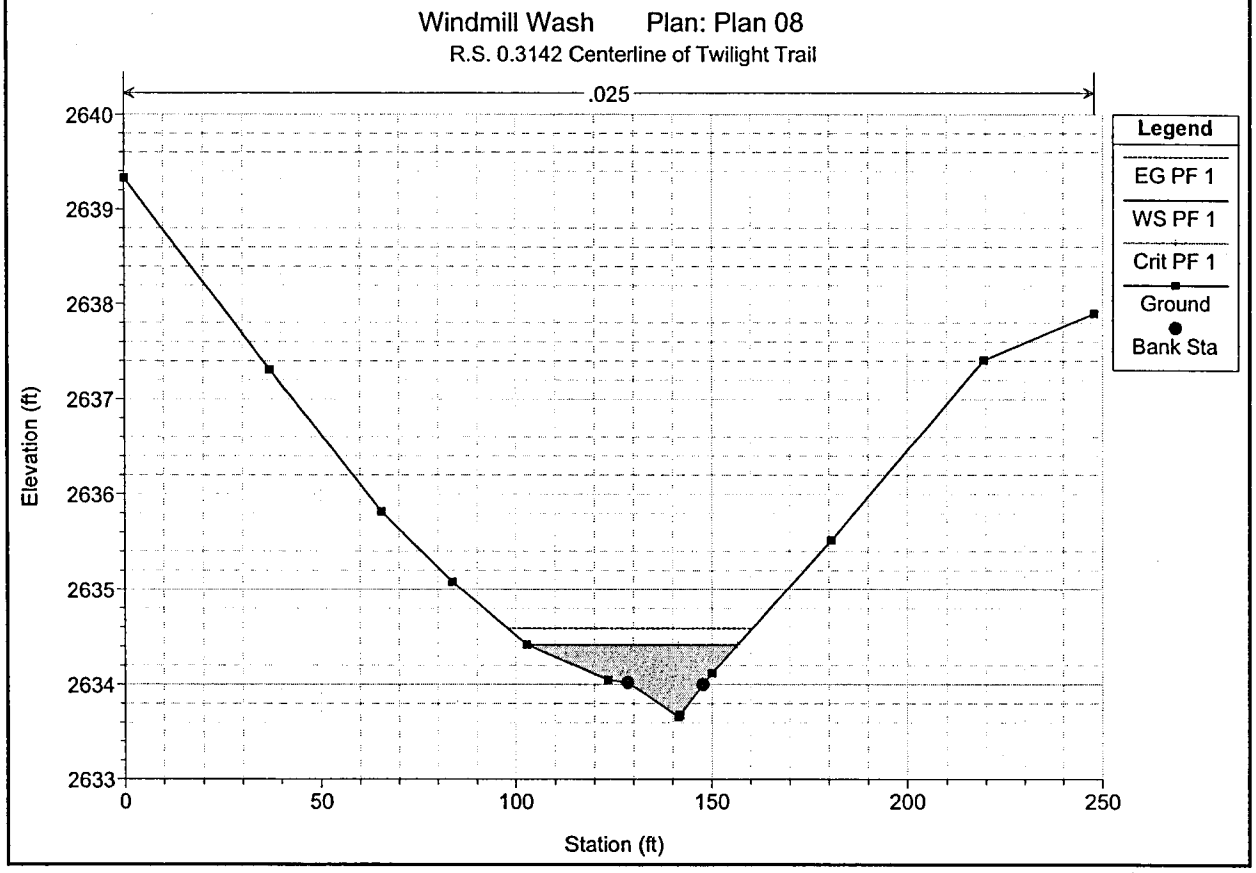

Windmill Wash Plan: Plan 08
R.S. 0.4064, Boundary Conditions Only
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2652
2650
2648
2646
2644
0
20
40
60
80
100
120
140
160
Station (ft)

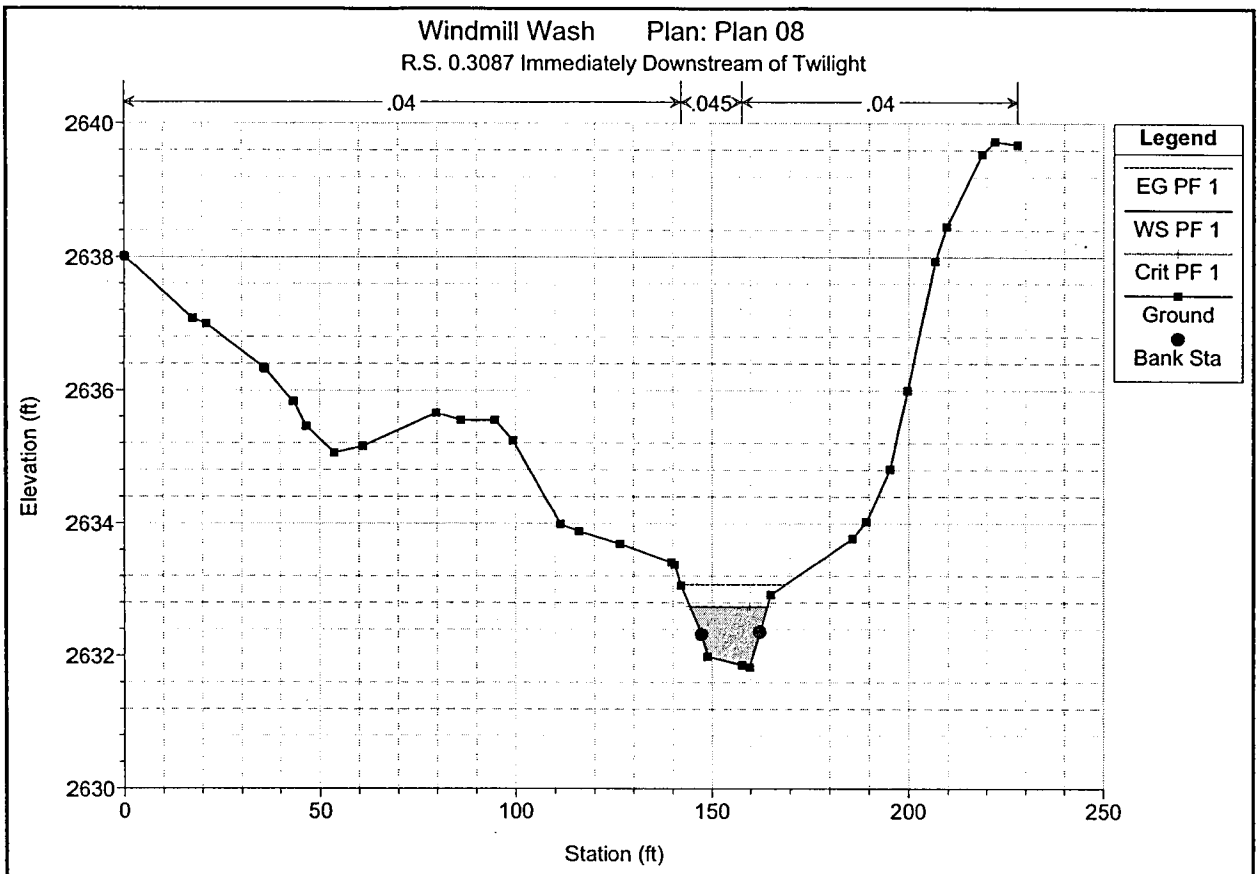

Windmill Wash Plan: Plan 08
R.S. 0.3881 Begin Floodplain Mapping
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2654
2652
2650
2648
2646
2644
2642
0
20
40
60
80
100
120
140
160
180
Station (ft)

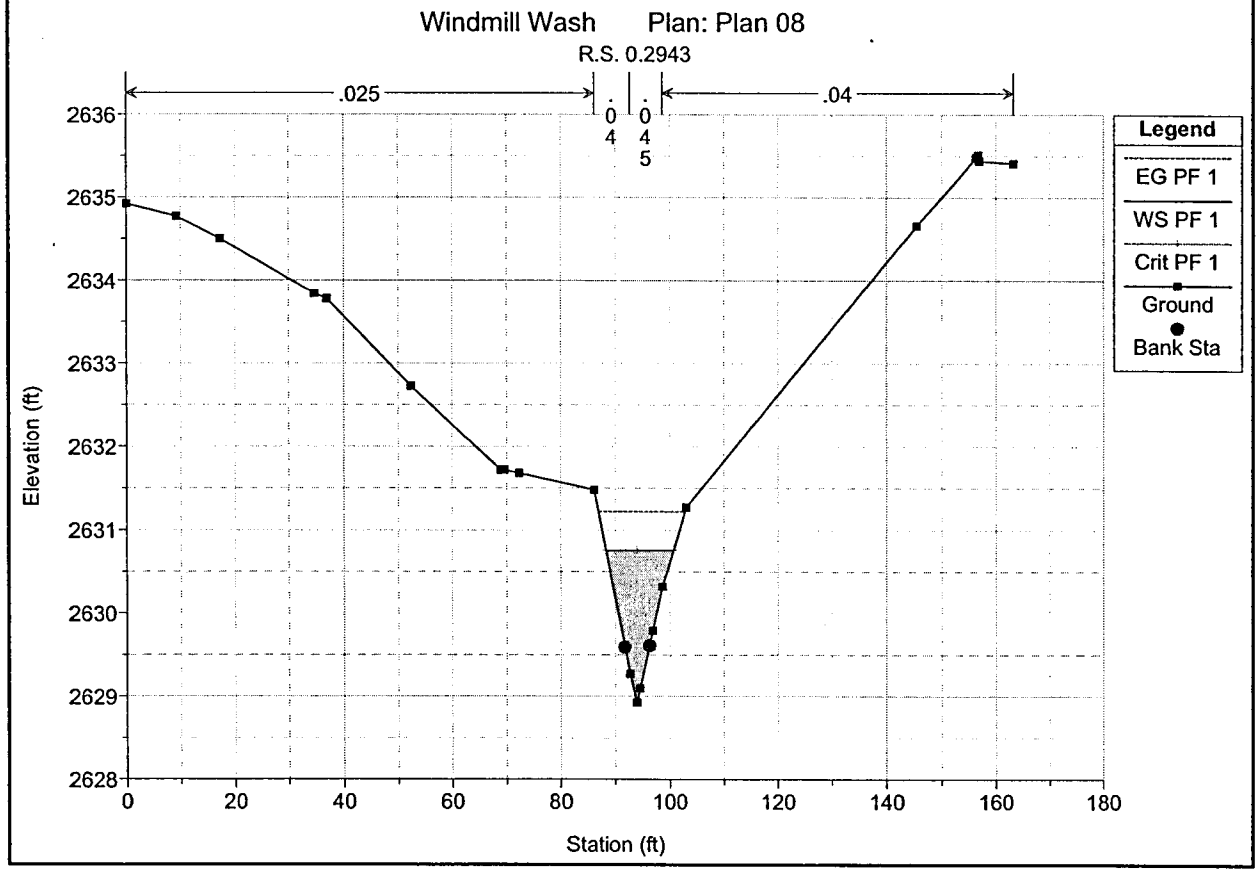

Windmill Wash Plan: Plan 08
R.S. 0.3626
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

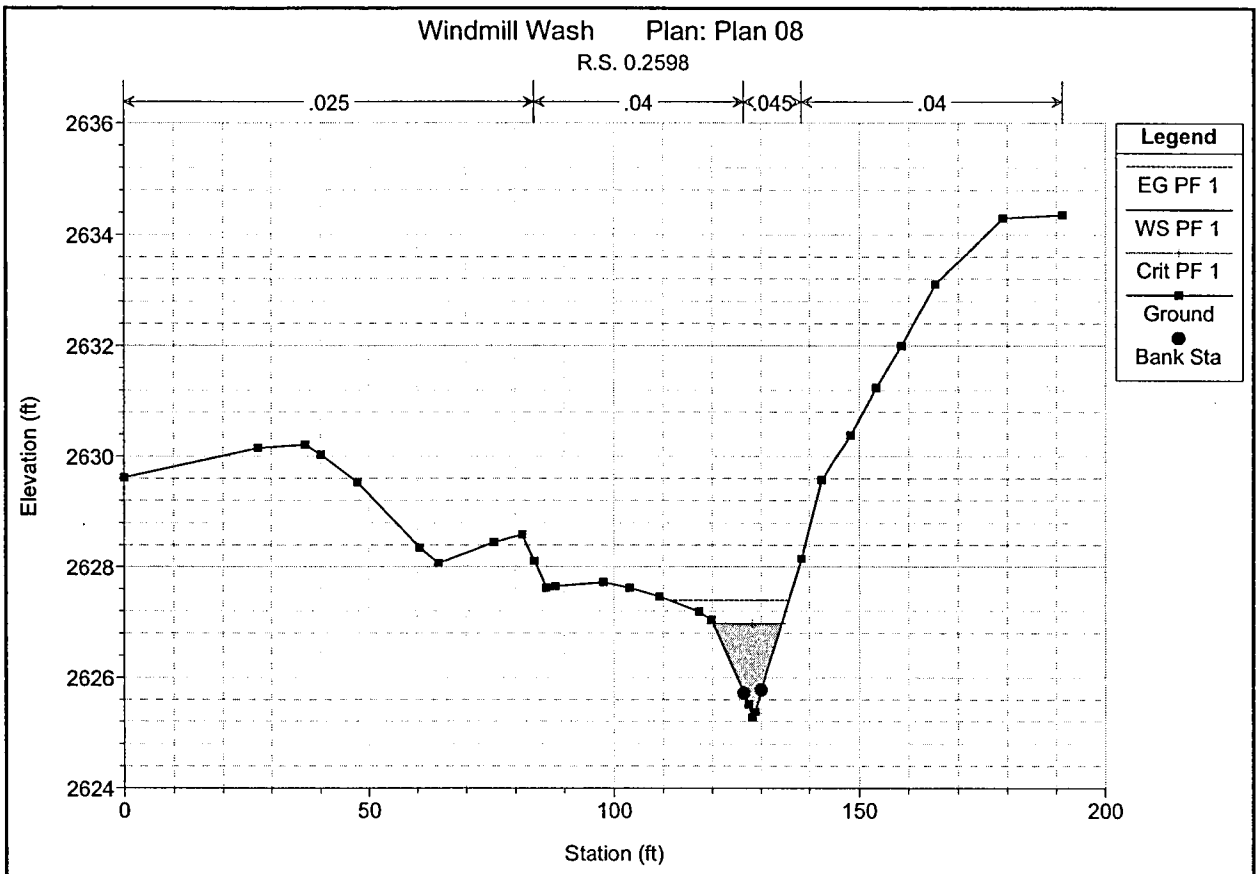

Windmill Wash Plan: Plan 08
R.S. 0.3477
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

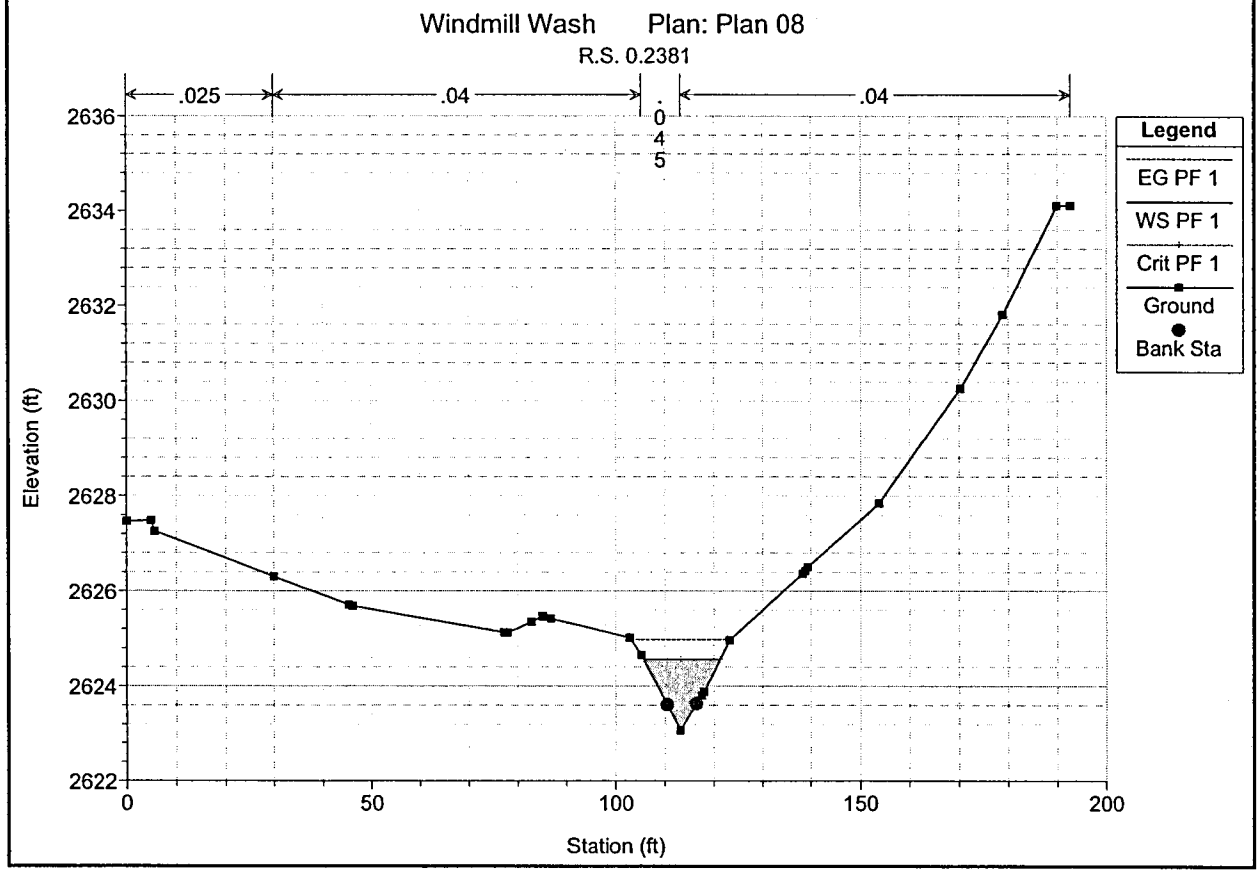

Windmill Wash Plan: Plan 08
R.S. 0.3206
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2632
2634
2636
2638
2640
2642
2644
0
50
100
150
200
250

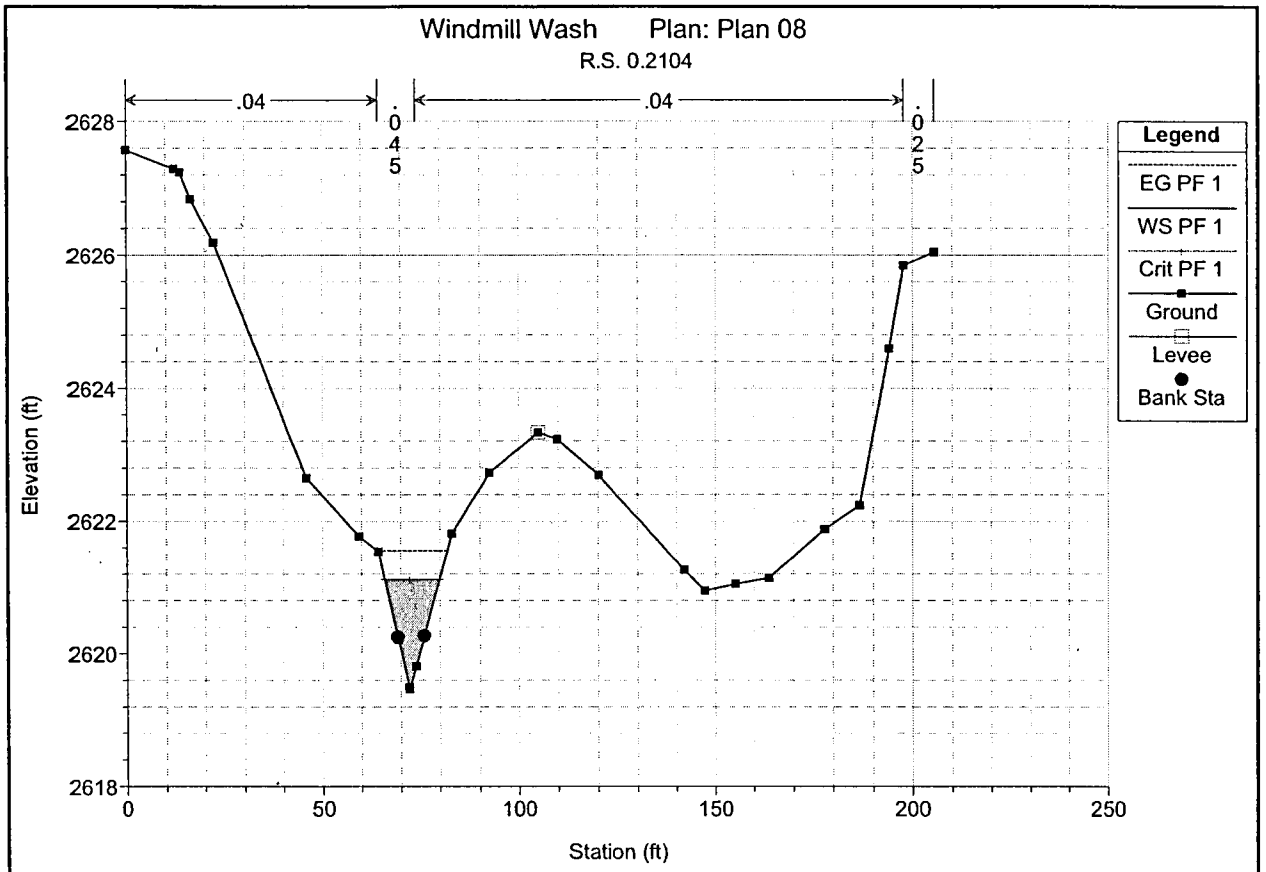

Windmill Wash Plan: Plan 08
R.S. 0.3142 Centerline of Twilight Trail
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2633
2634
2635
2636
2637
2638
2639
2640
0
50
100
150
200
250

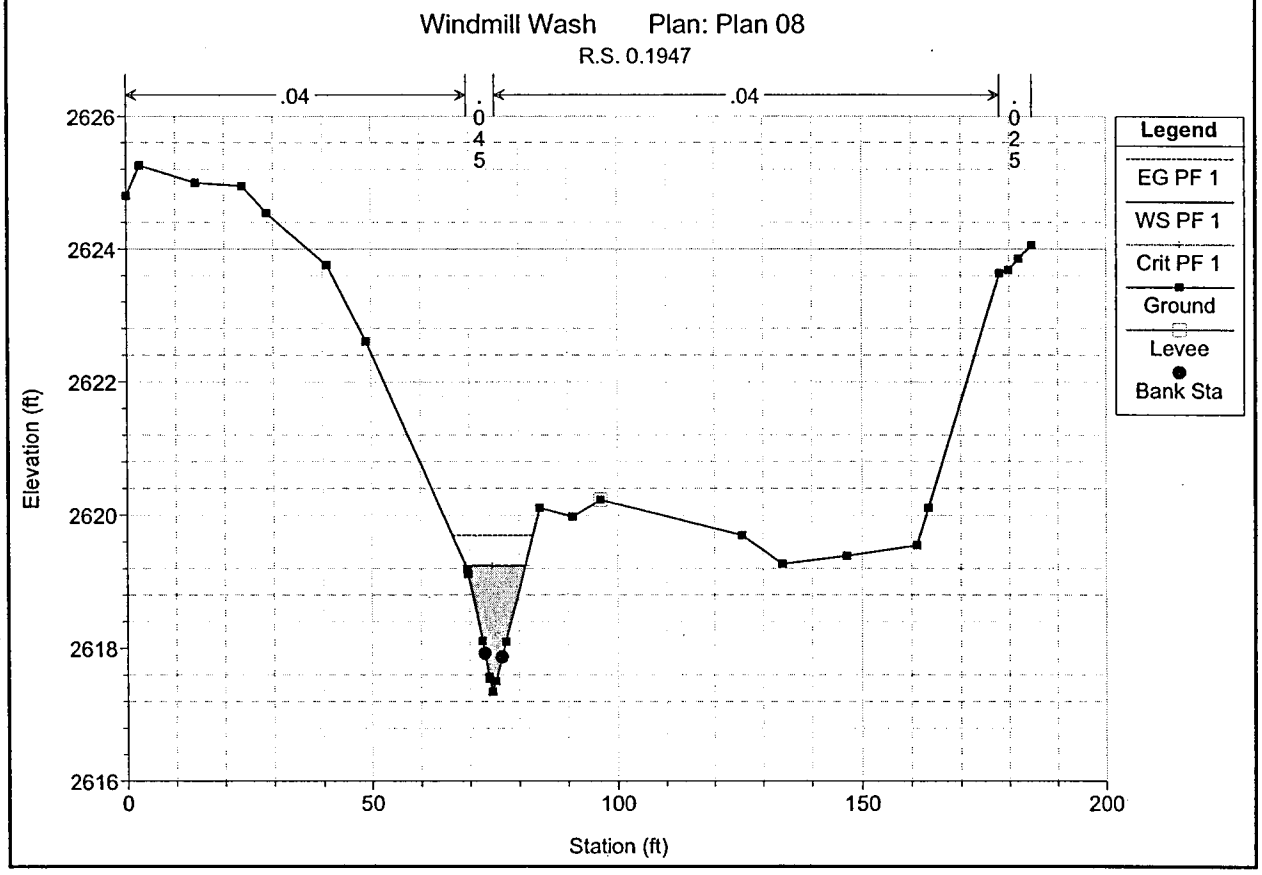

Windmill Wash Plan: Plan 08
R.S. 0.3087 Immediately Downstream of Twilight
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

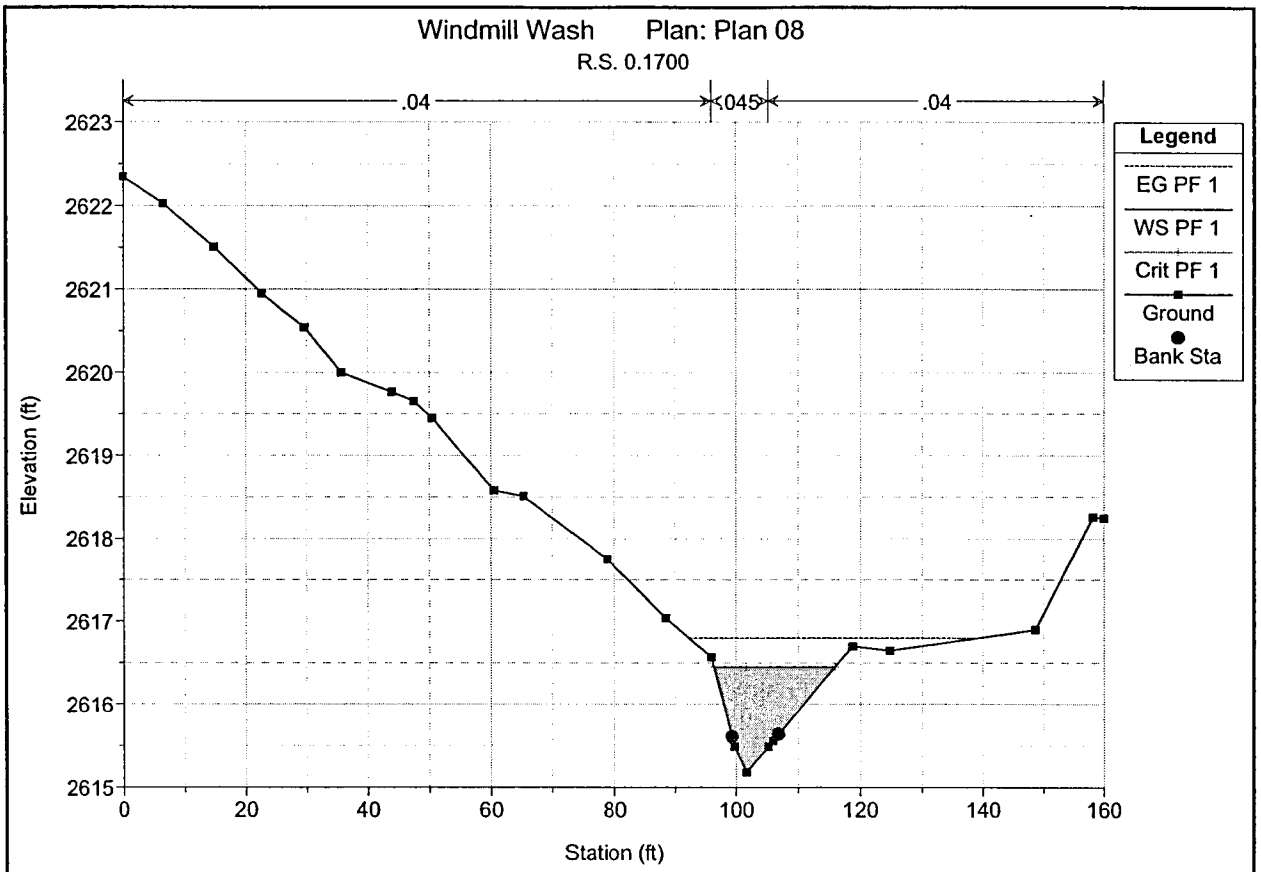

Windmill Wash Plan: Plan 08
R.S. 0.2943
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

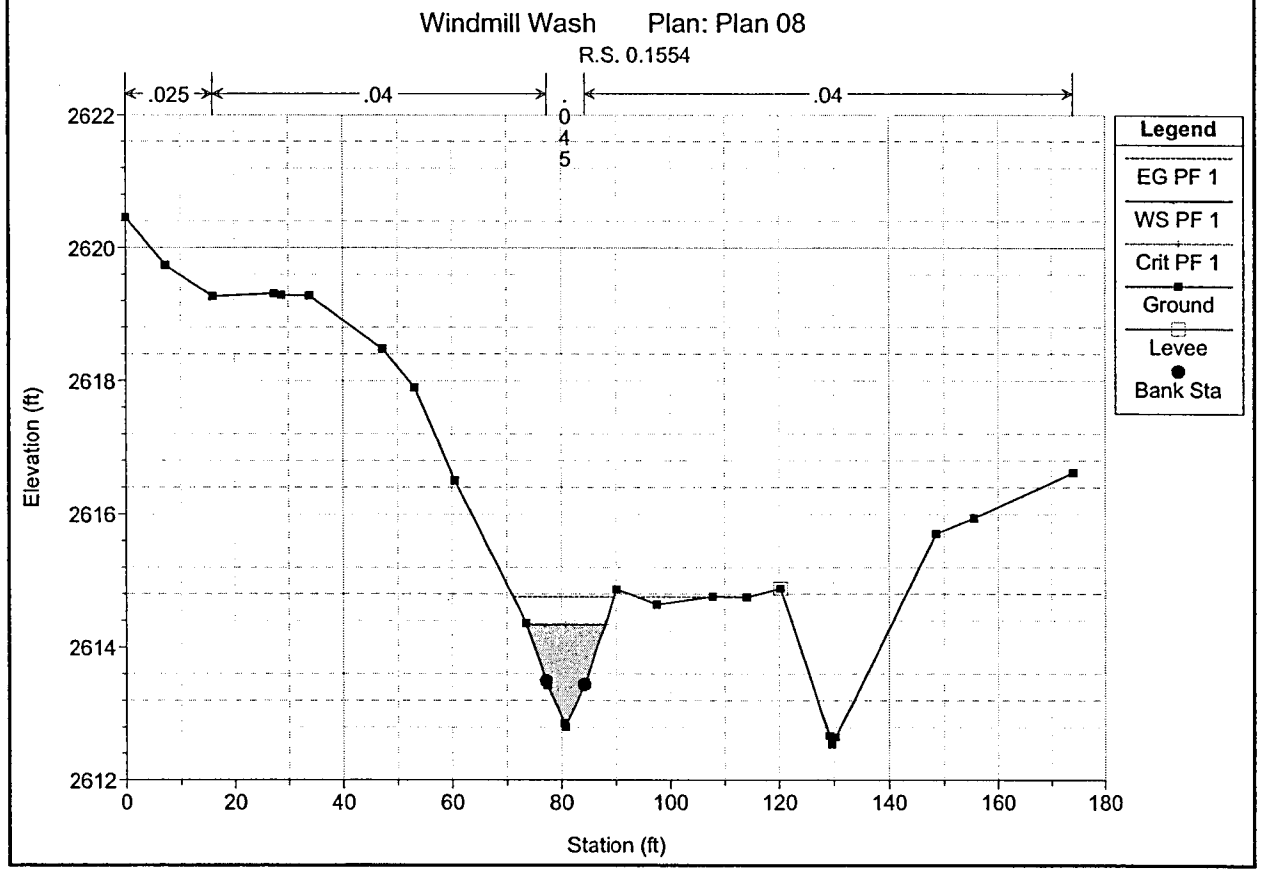

Windmill Wash Plan: Plan 08
R.S. 0.2598
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

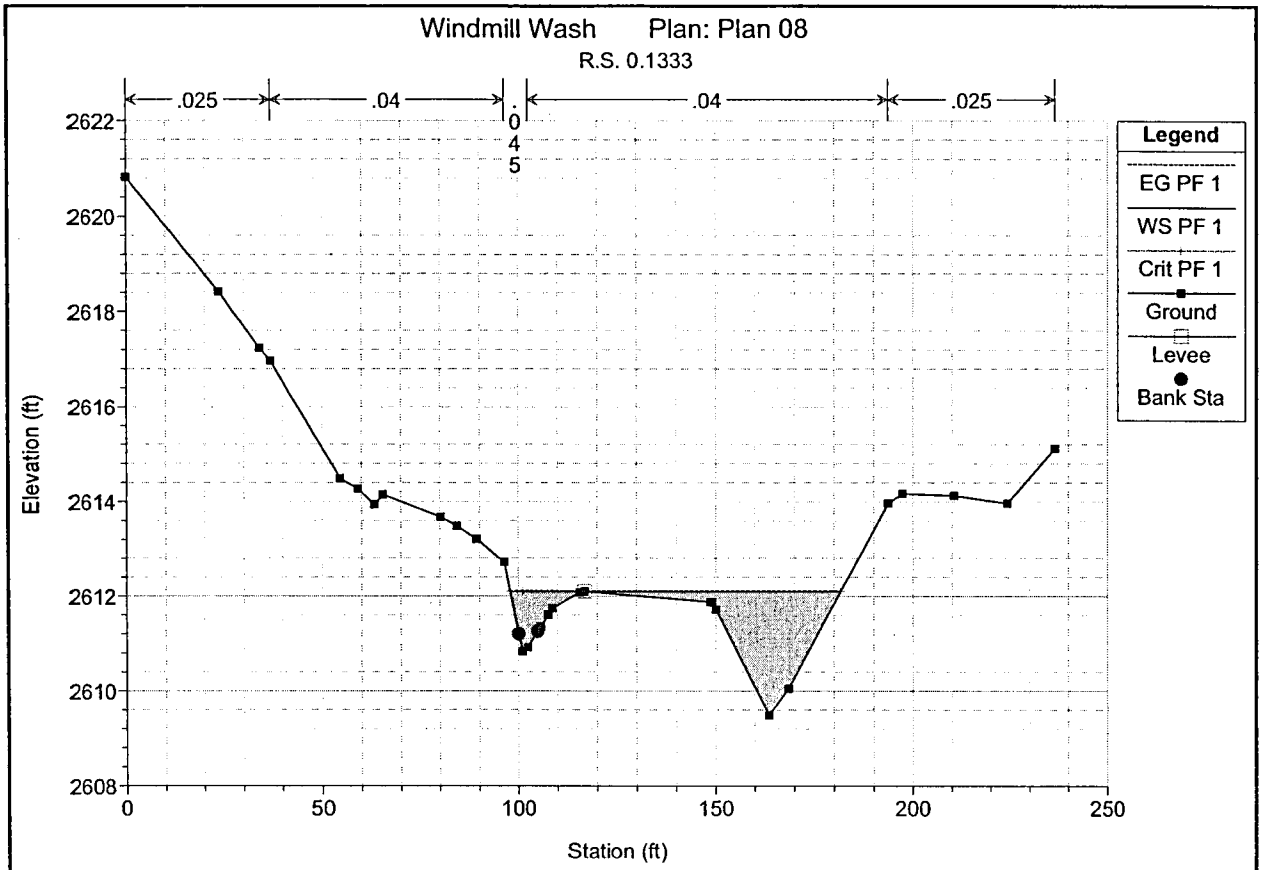

Windmill Wash Plan: Plan 08
R.S. 0.2381
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

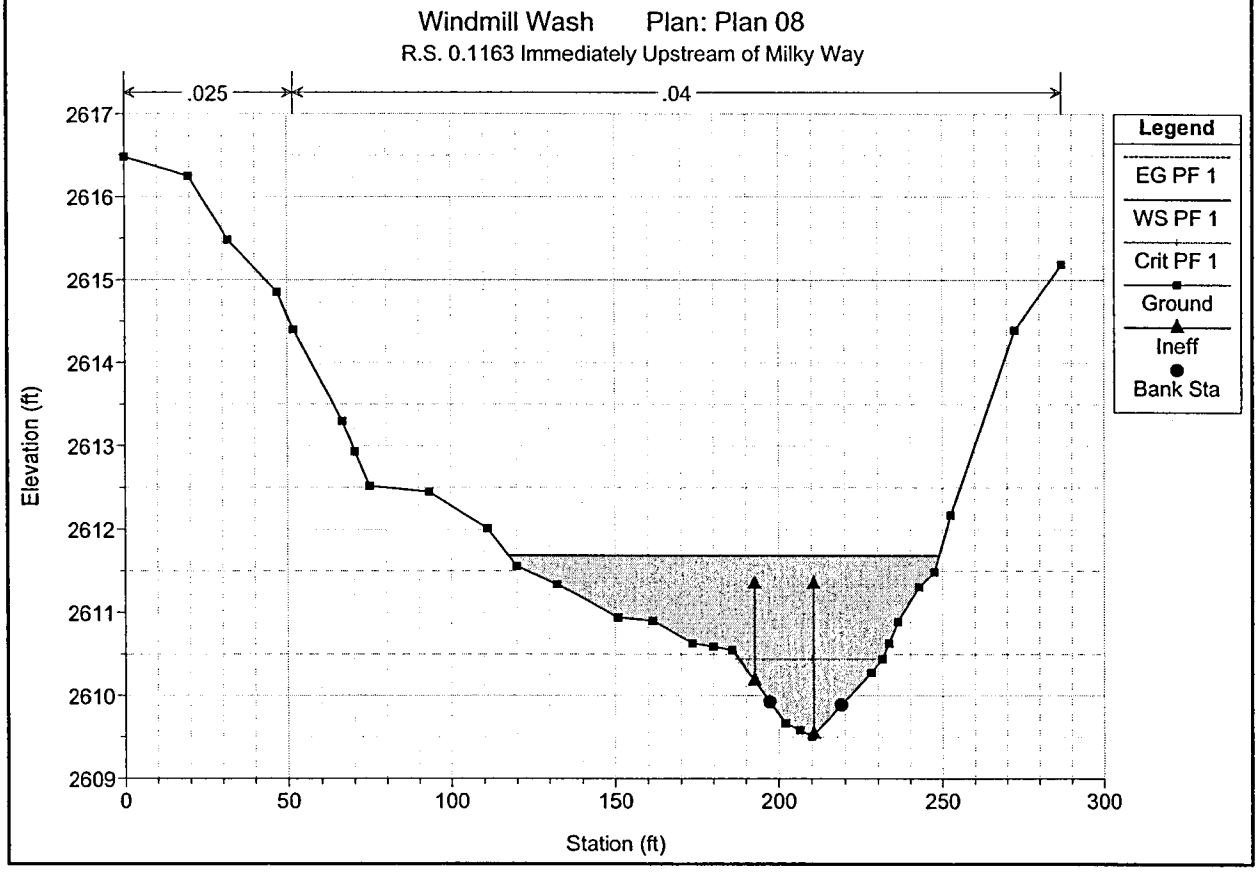

Windmill Wash Plan: Plan 08
R.S. 0.2104
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2628
2626
2624
2622
2620
2618
0
50
100
150
200
250

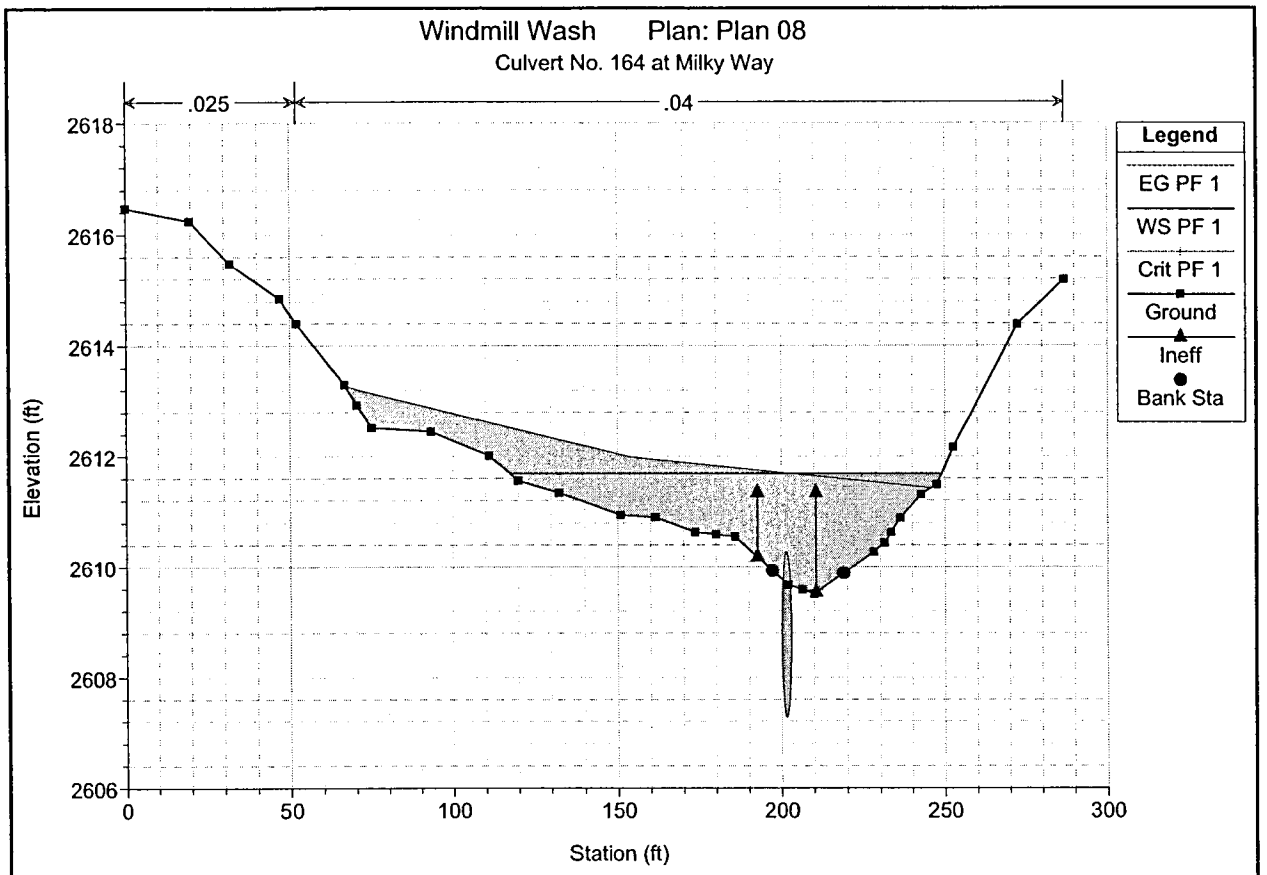

Windmill Wash Plan: Plan 08
R.S. 0.1947
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2626
2624
2622
2620
2618
2616
0
50
100
150
200

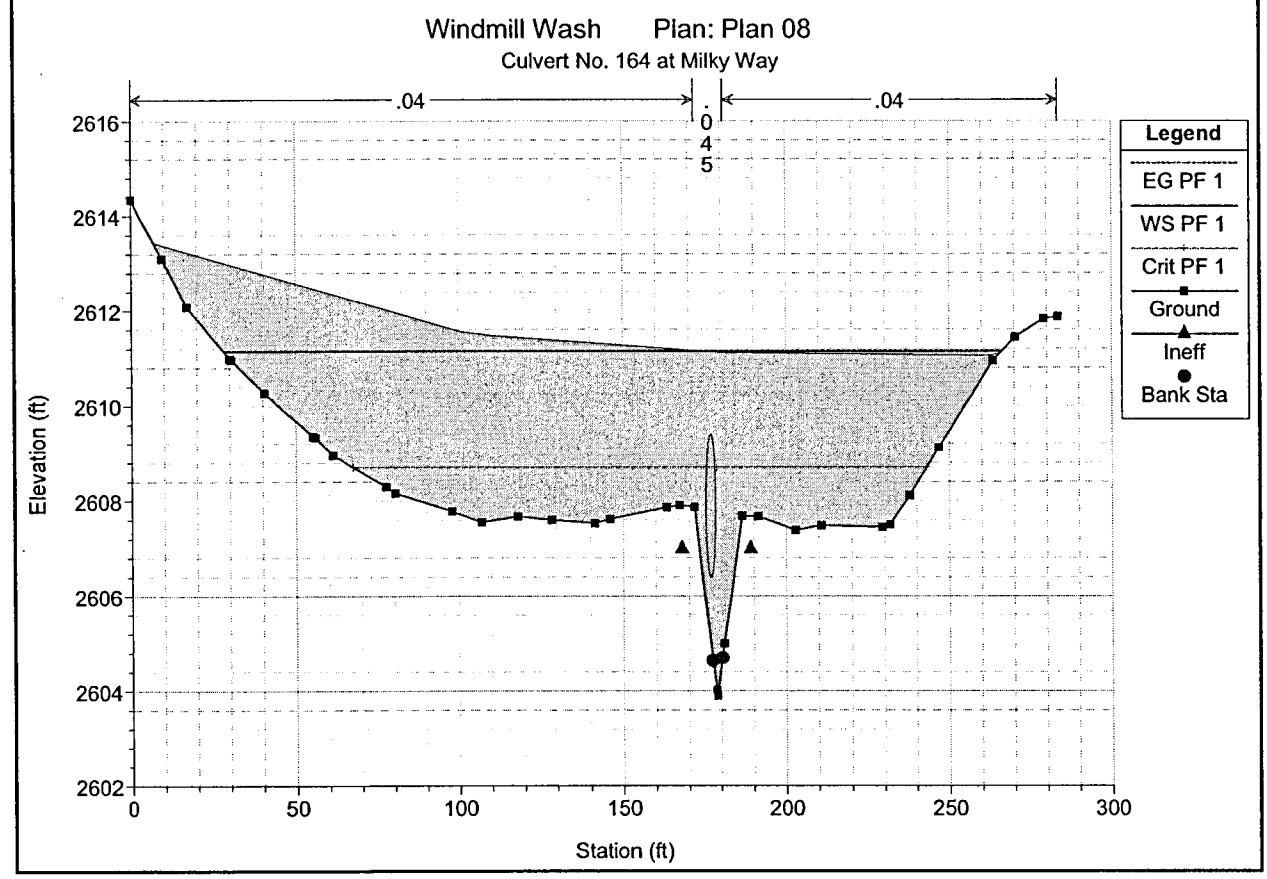

Windmill Wash Plan: Plan 08
R.S. 0.1700
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

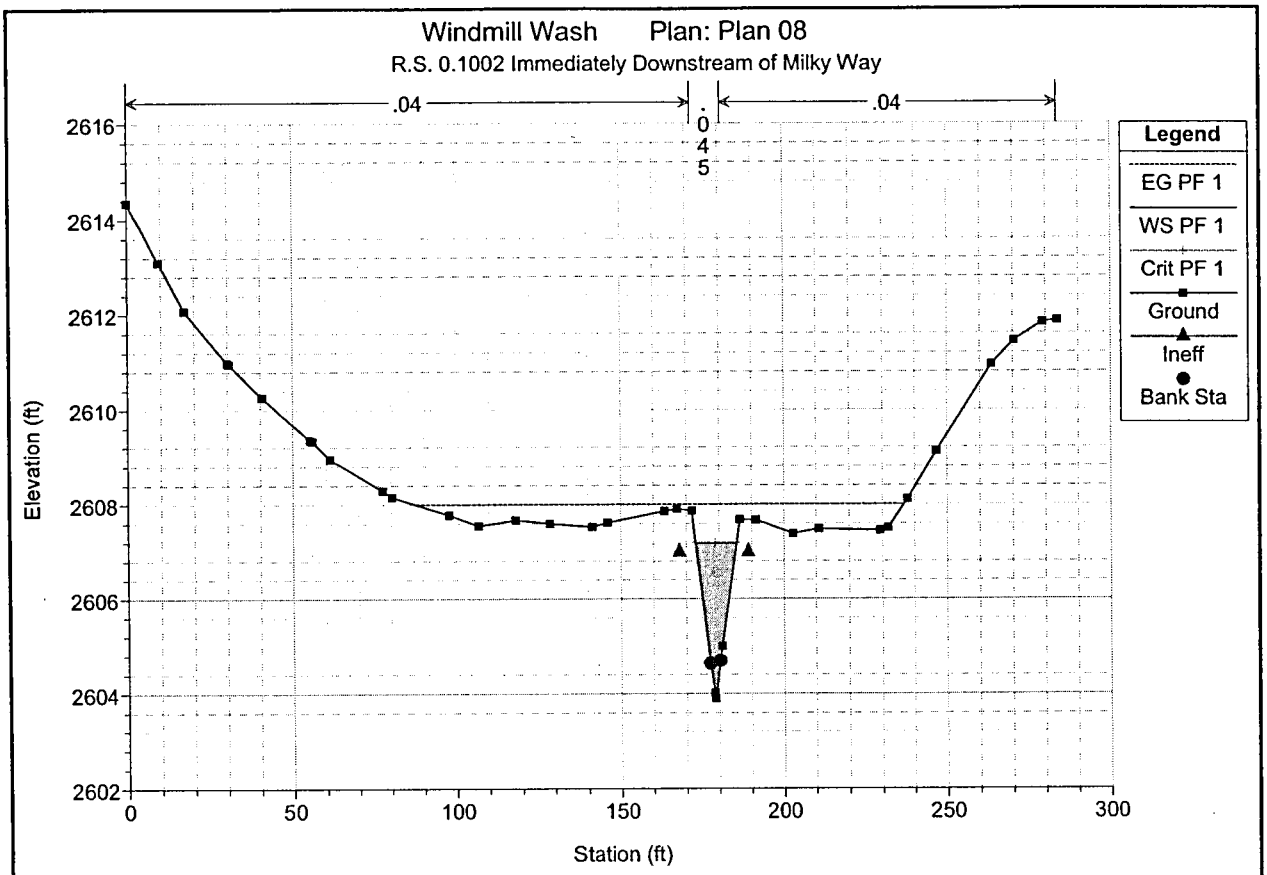

Windmill Wash Plan: Plan 08
R.S. 0.1554
.025
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

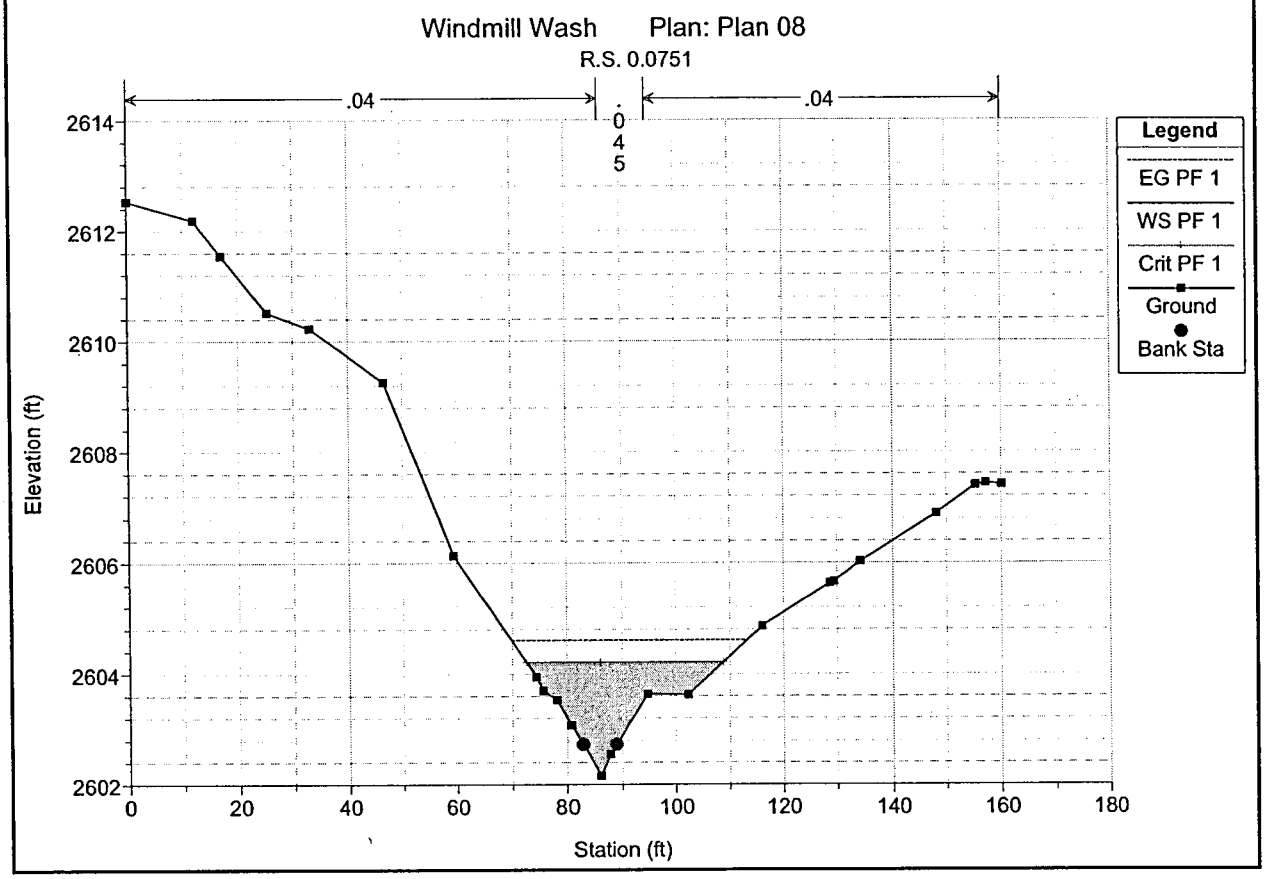

Windmill Wash Plan: Plan 08
R.S. 0.1333
.025
.04
.045
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2622
2620
2618
2616
2614
2612
2610
2608
0
50
100
150
200
250

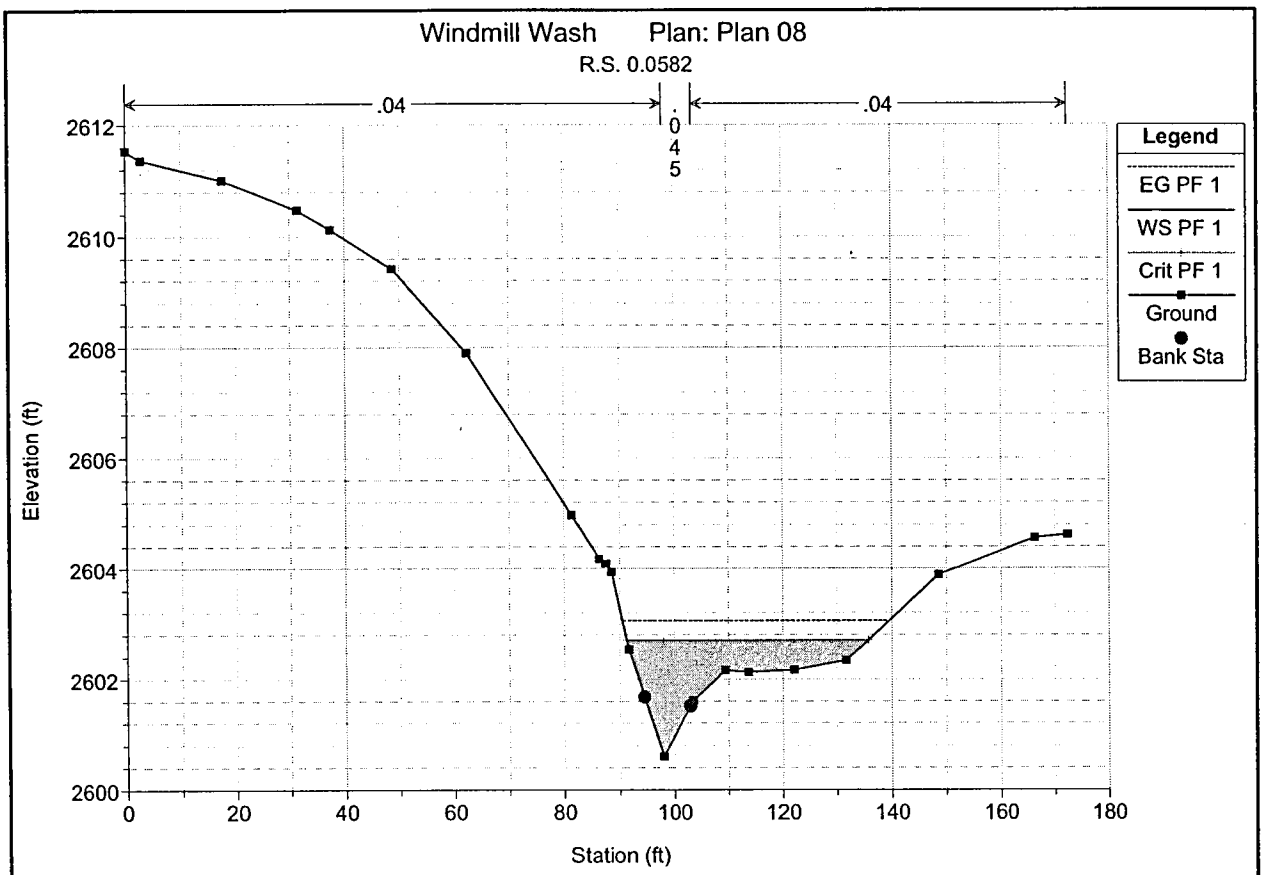

Windmill Wash Plan: Plan 08
R.S. 0.1163 Immediately Upstream of Milky Way
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2617
2616
2615
2614
2613
2612
2611
2610
2609
0
50
100
150
200
250
300

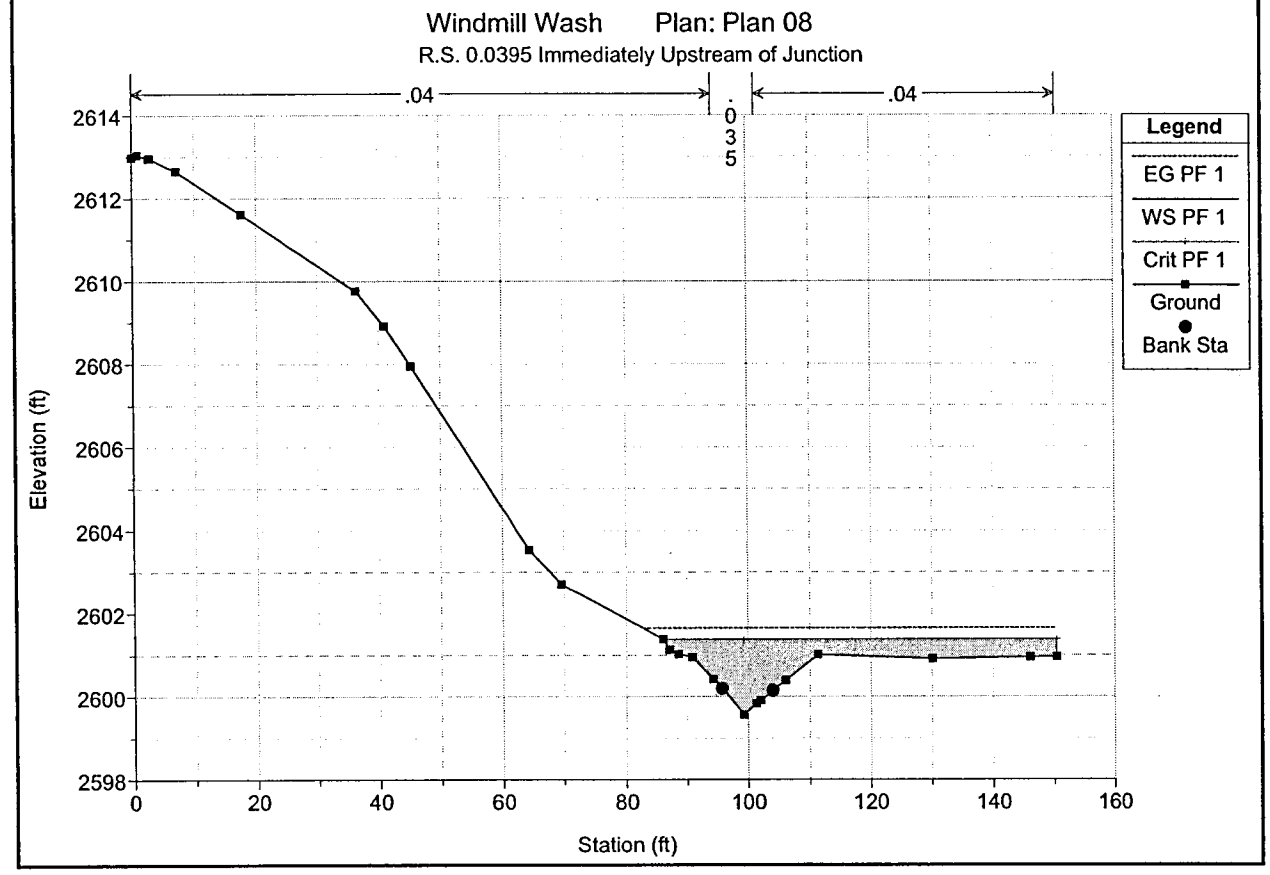

Windmill Wash Plan: Plan 08
Culvert No. 164 at Milky Way
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2618
2616
2614
2612
2610
2608
2606
0
50
100
150
200
250
300


Windmill Wash Plan: Plan 08
Culvert No. 164 at Milky Way
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2616
2614
2612
2610
2608
2606
2604
2602
0
50
100
150
200
250
300

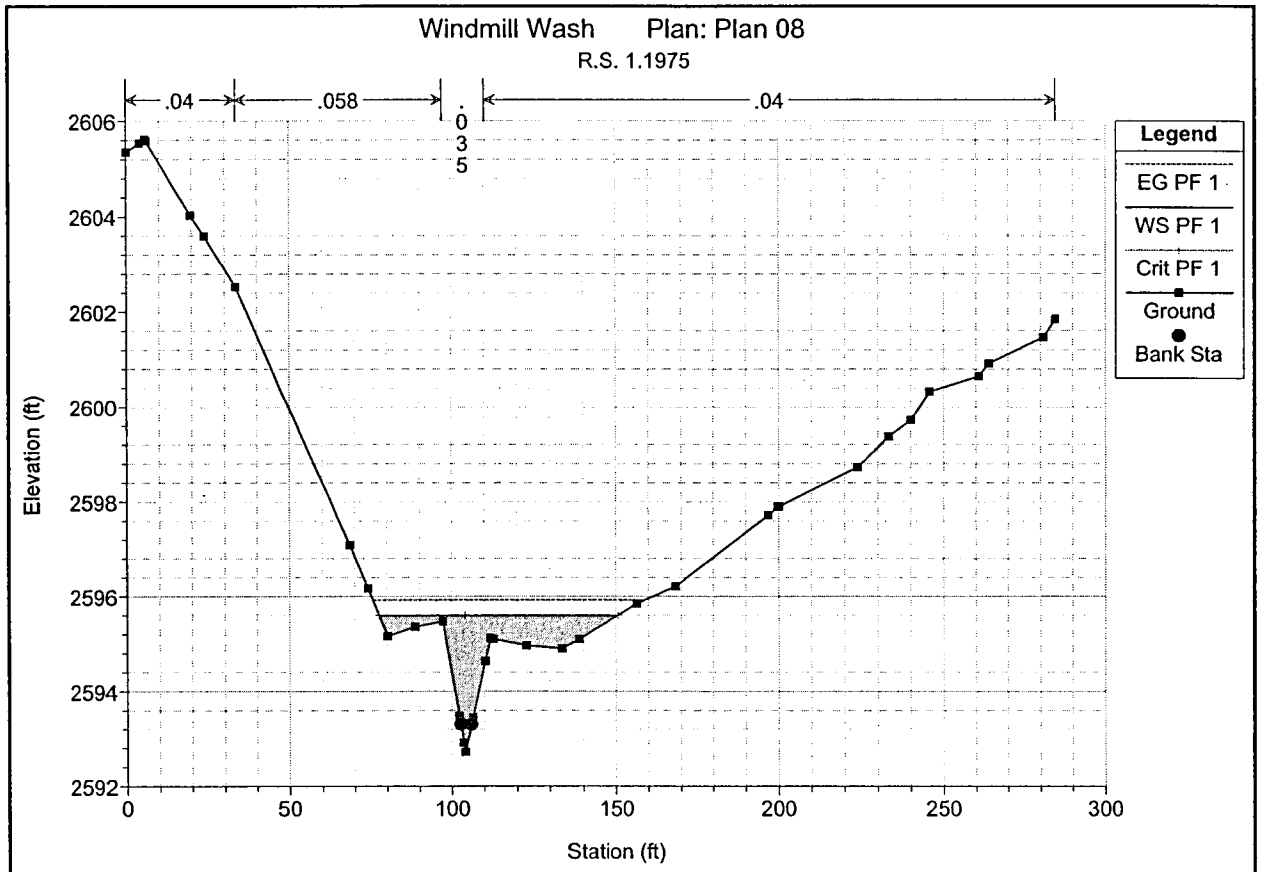

Windmill Wash Plan: Plan 08
R.S. 0.1002 Immediately Downstream of Milky Way
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2616
2614
2612
2610
2608
2606
2604
2602
0
50
100
150
200
250
300

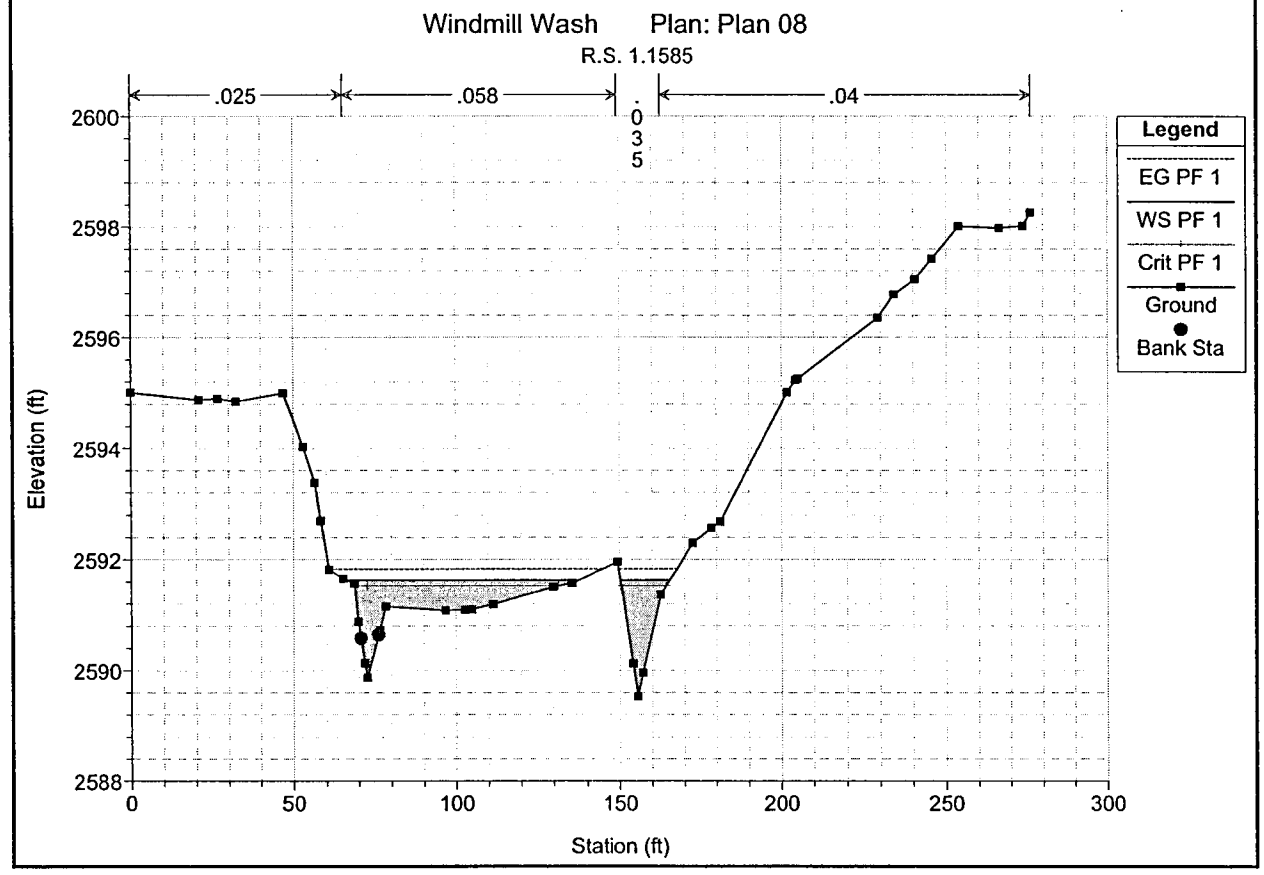

Windmill Wash Plan: Plan 08
R.S. 0.0751
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2614
2612
2610
2608
2606
2604
2602
0
20
40
60
80
100
120
140
160
180

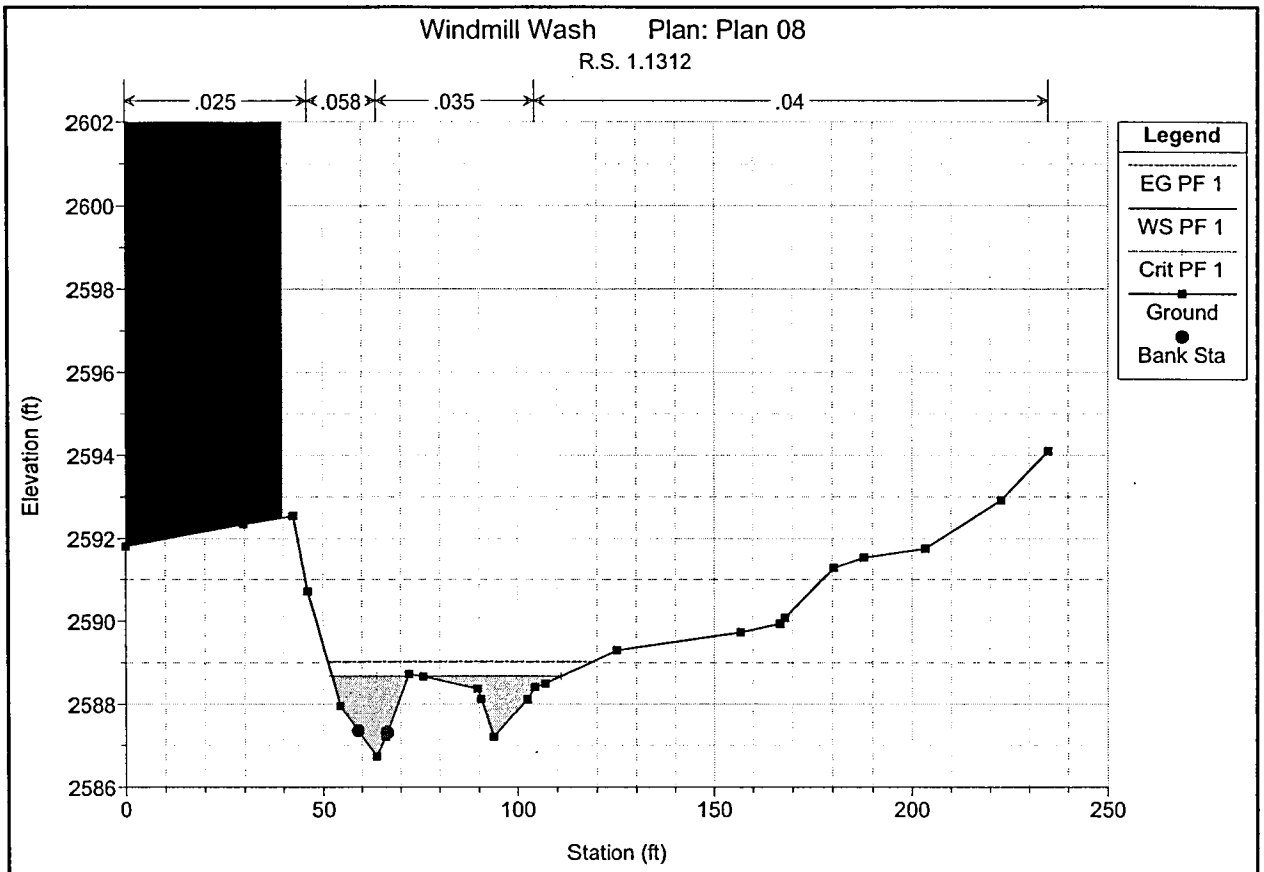

Windmill Wash Plan: Plan 08
R.S. 0.0582
.04
.045
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2600
2602
2604
2606
2608
2610
2612
0
20
40
60
80
100
120
140
160
180

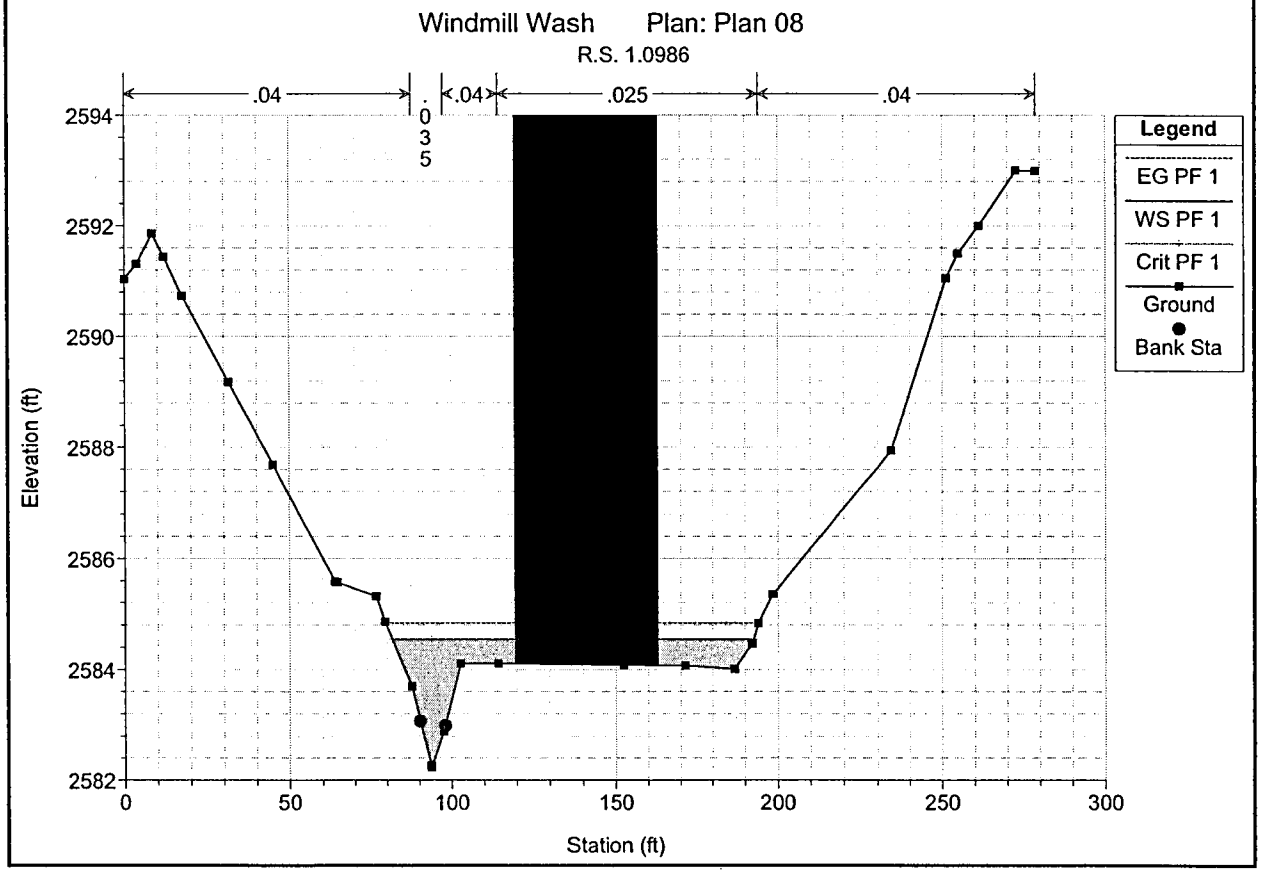

Windmill Wash Plan: Plan 08
R.S. 0.0395 Immediately Upstream of Junction
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2598
2600
2602
2604
2606
2608
2610
2612
2614
0
20
40
60
80
100
120
140
160

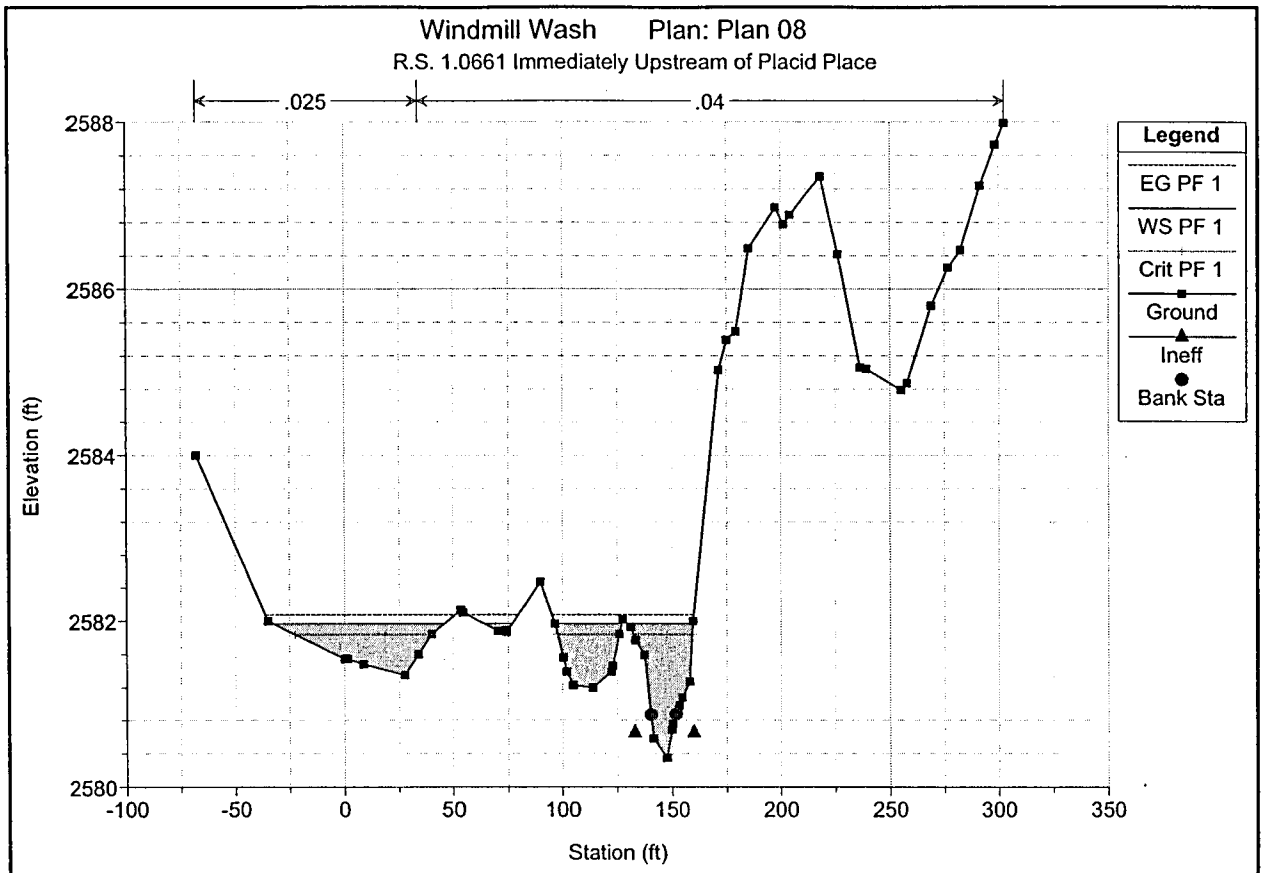
Windmill Wash – Combined Branch

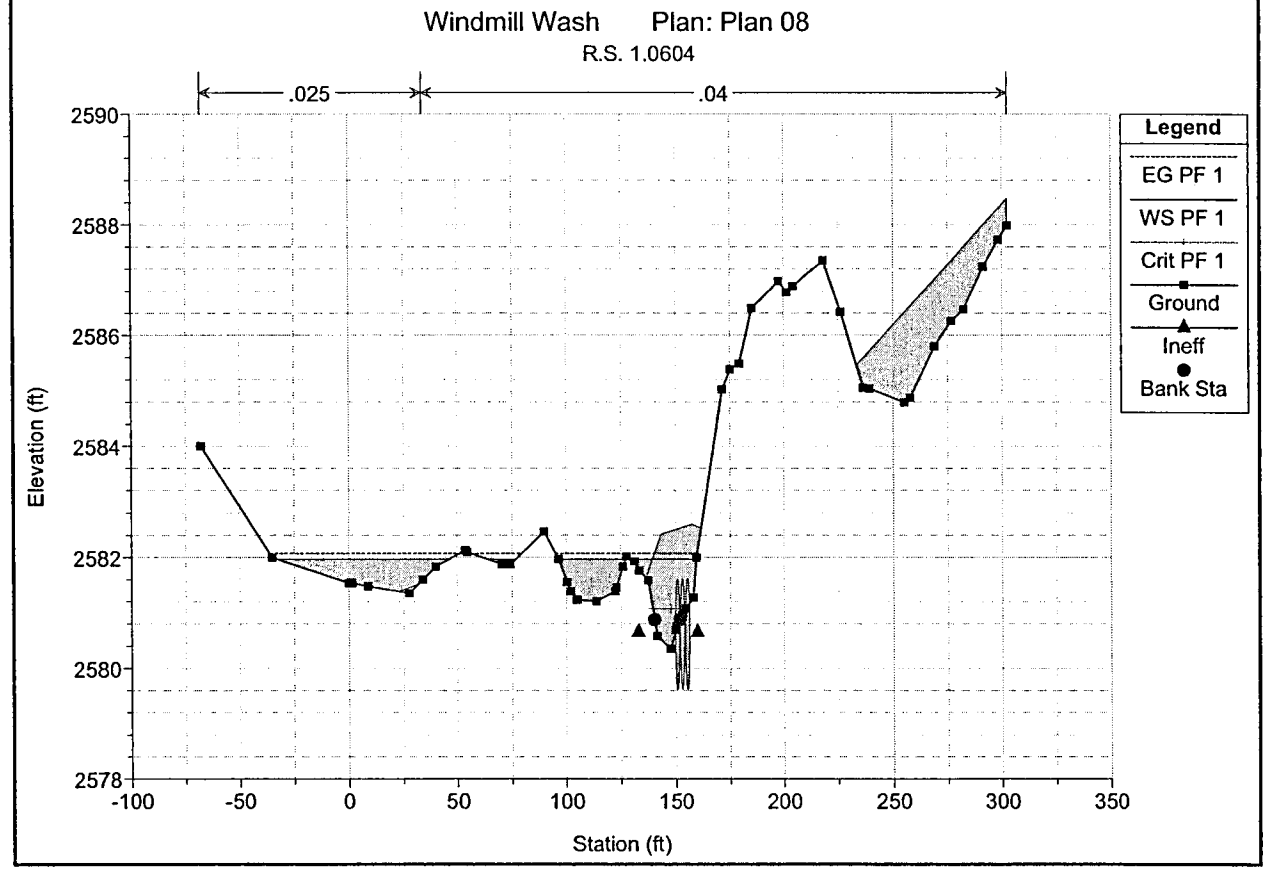

Windmill Wash Plan: Plan 08
R.S. 1.1975
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

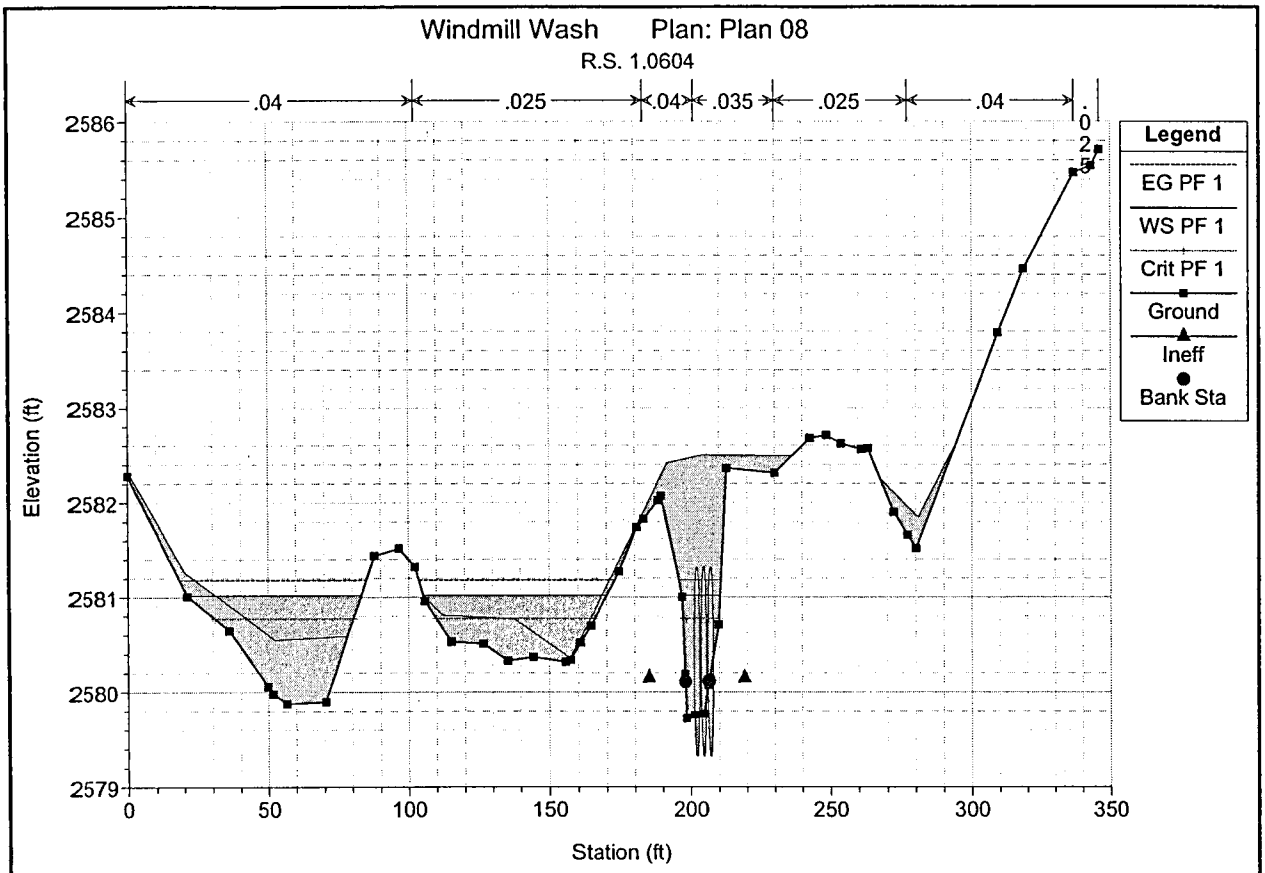

Windmill Wash Plan: Plan 08
R.S. 1.1585
.025
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

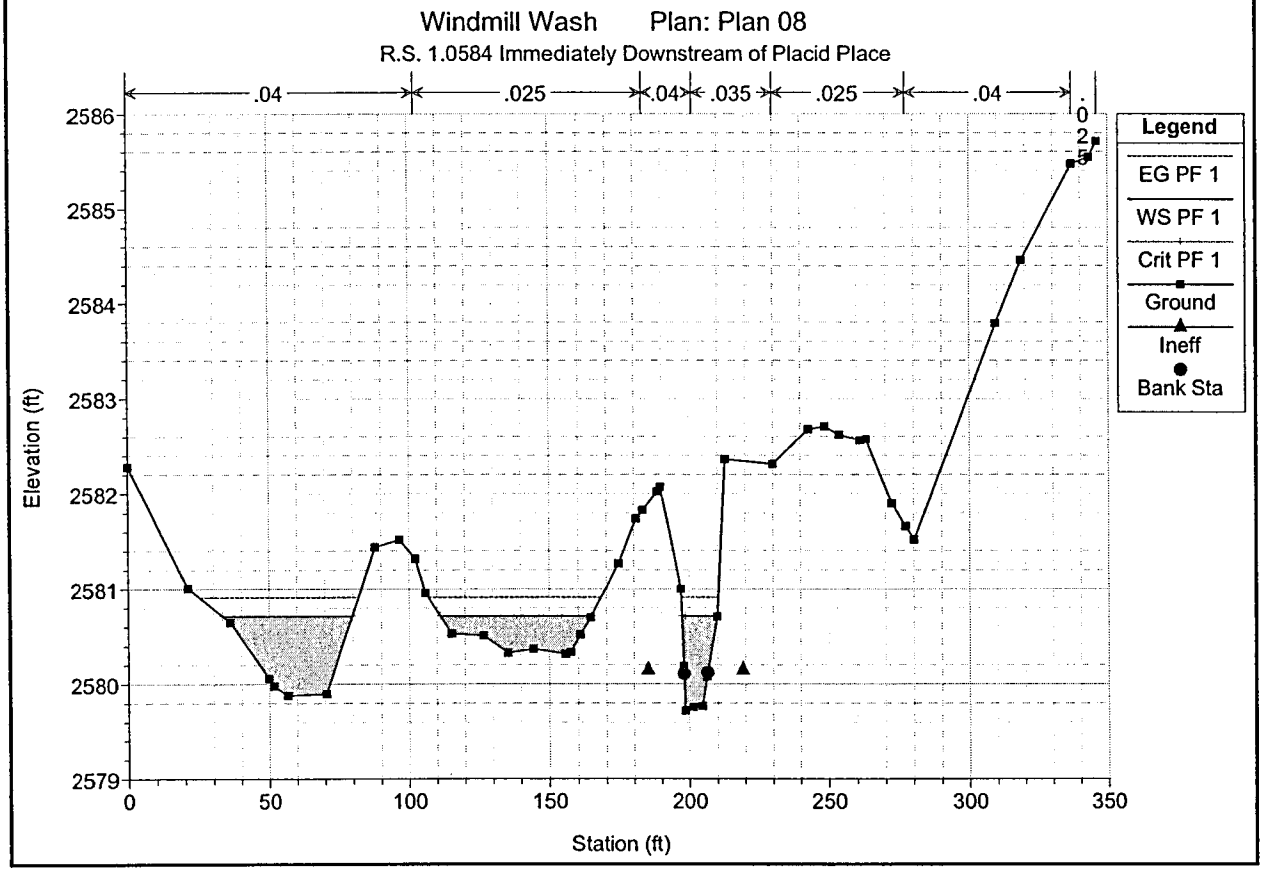

Windmill Wash Plan: Plan 08
R.S. 1.1312
.025
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

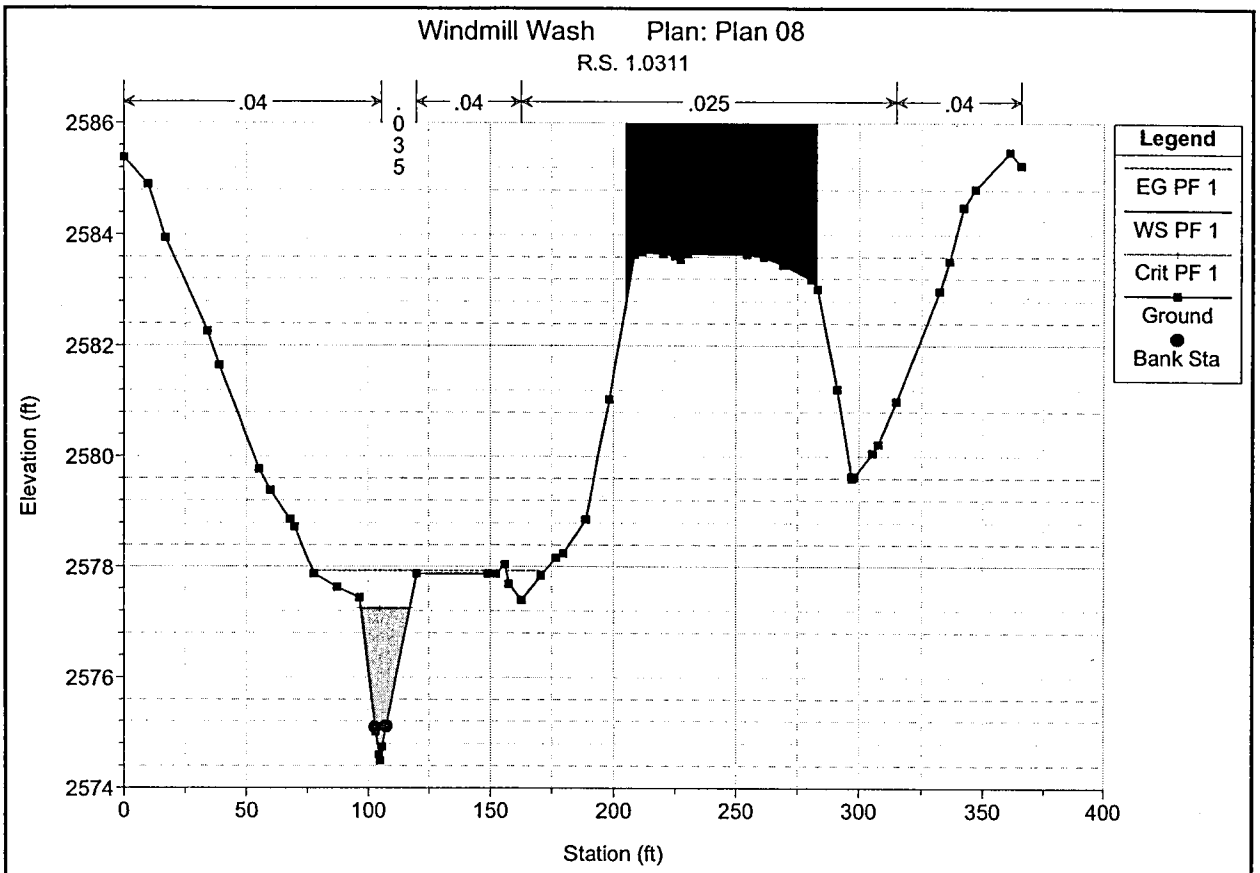

Windmill Wash Plan: Plan 08
R.S. 1.0986
.04
.035
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

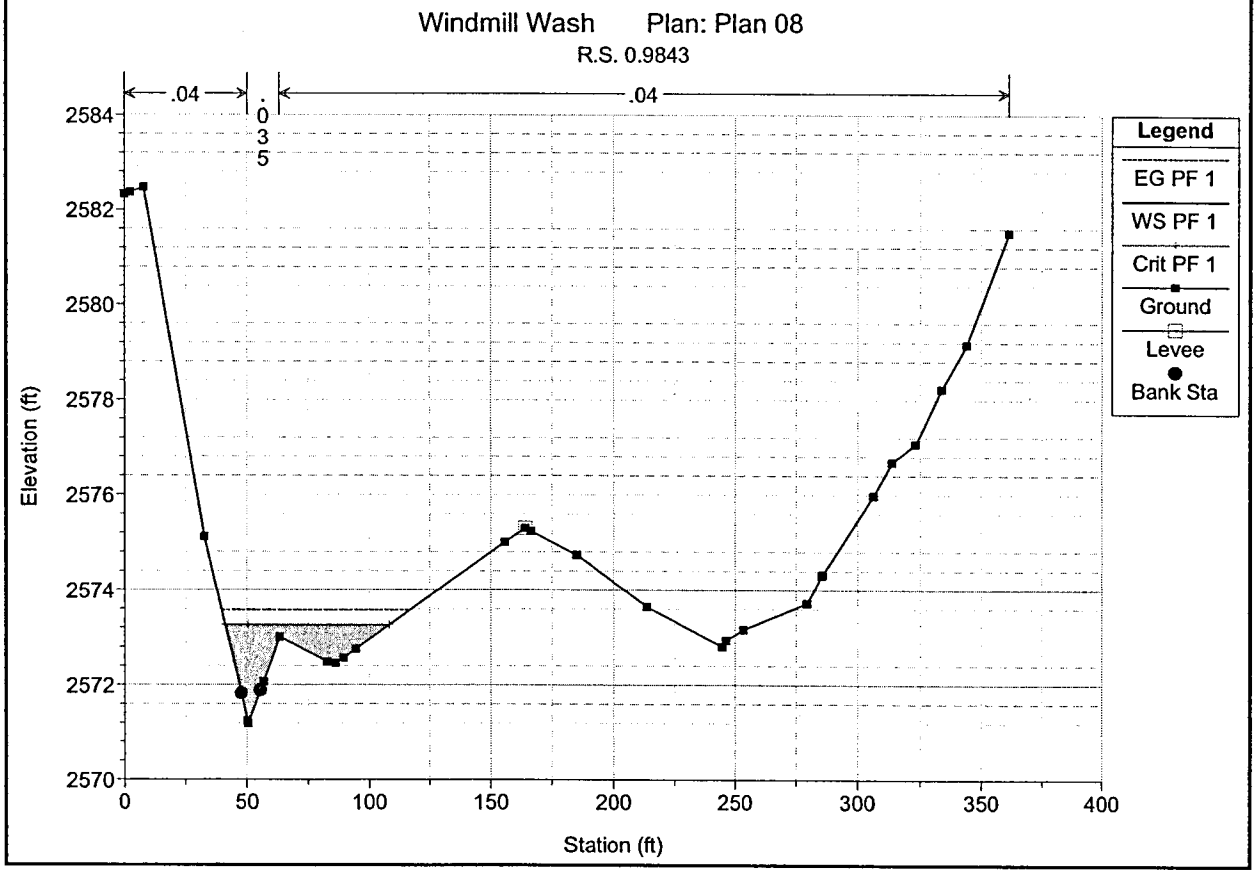

Windmill Wash Plan: Plan 08
R.S. 1.0661 Immediately Upstream of Placid Place
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2588
2586
2584
2582
2580
-100
-50
0
50
100
150
200
250
300
350
Station (ft)

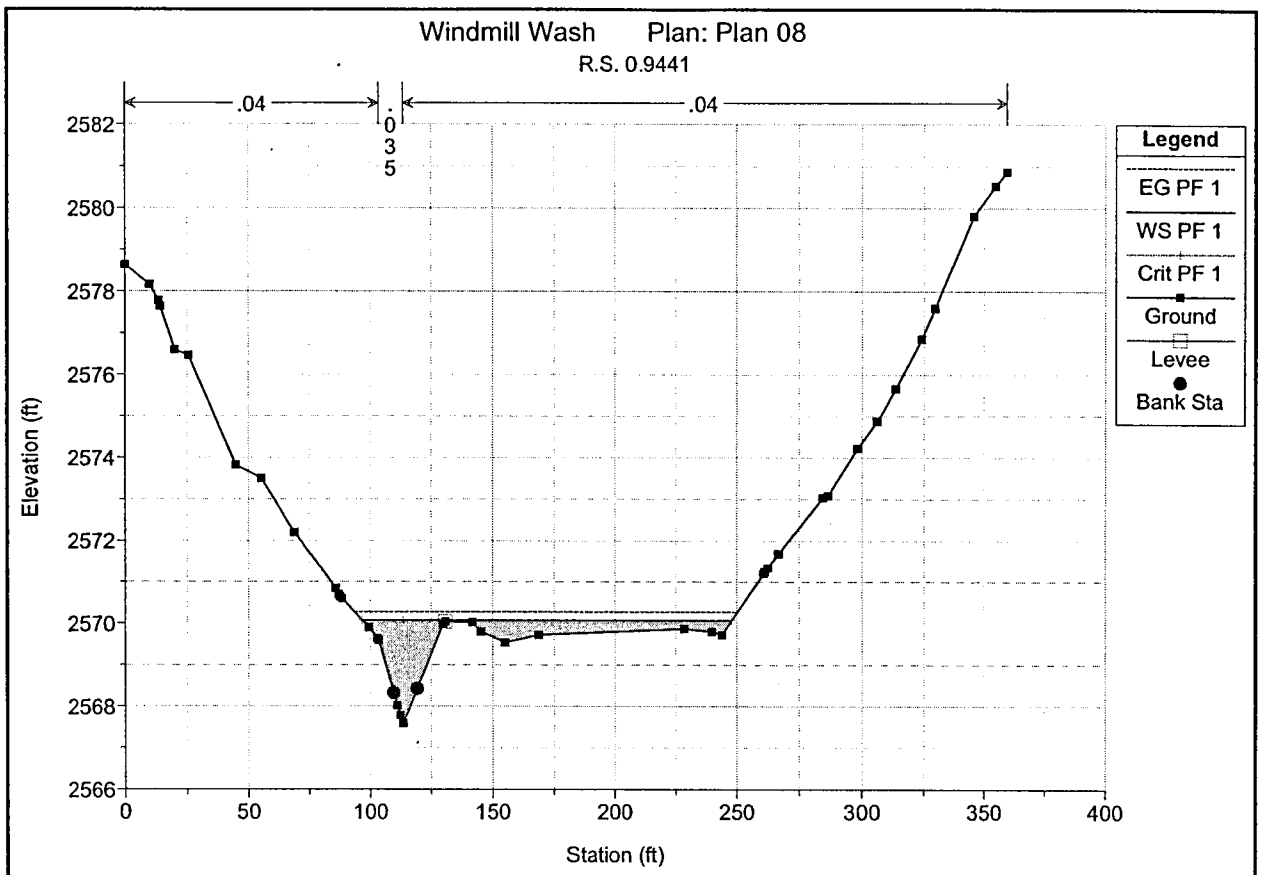

Windmill Wash Plan: Plan 08
R.S. 1.0604
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2590
2588
2586
2584
2582
2580
2578
-100
-50
0
50
100
150
200
250
300
350
Station (ft)

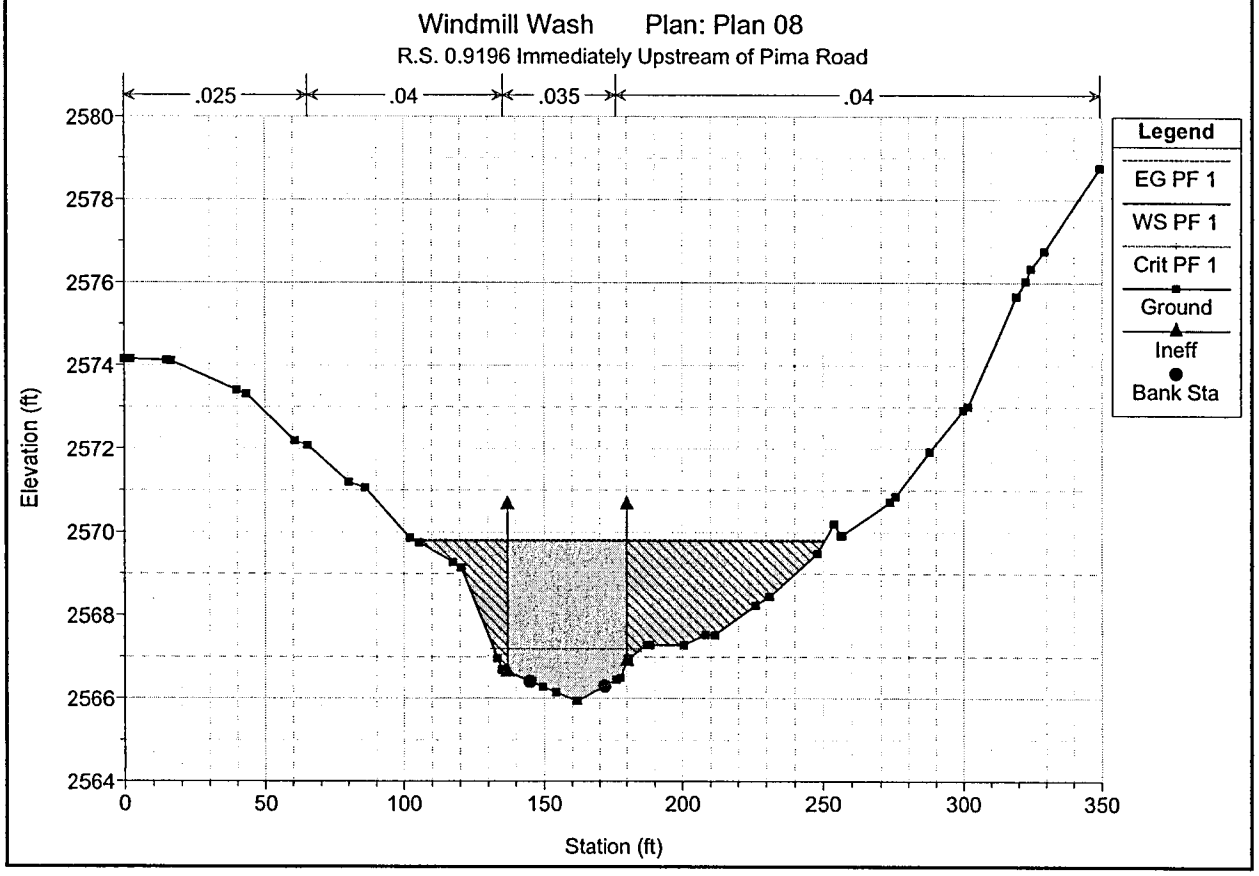

Windmill Wash Plan: Plan 08
R.S. 1.0604
.04
.025
.04
.035
.025
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2586
2585
2584
2583
2582
2581
2580
2579
0
50
100
150
200
250
300
350
Station (ft)

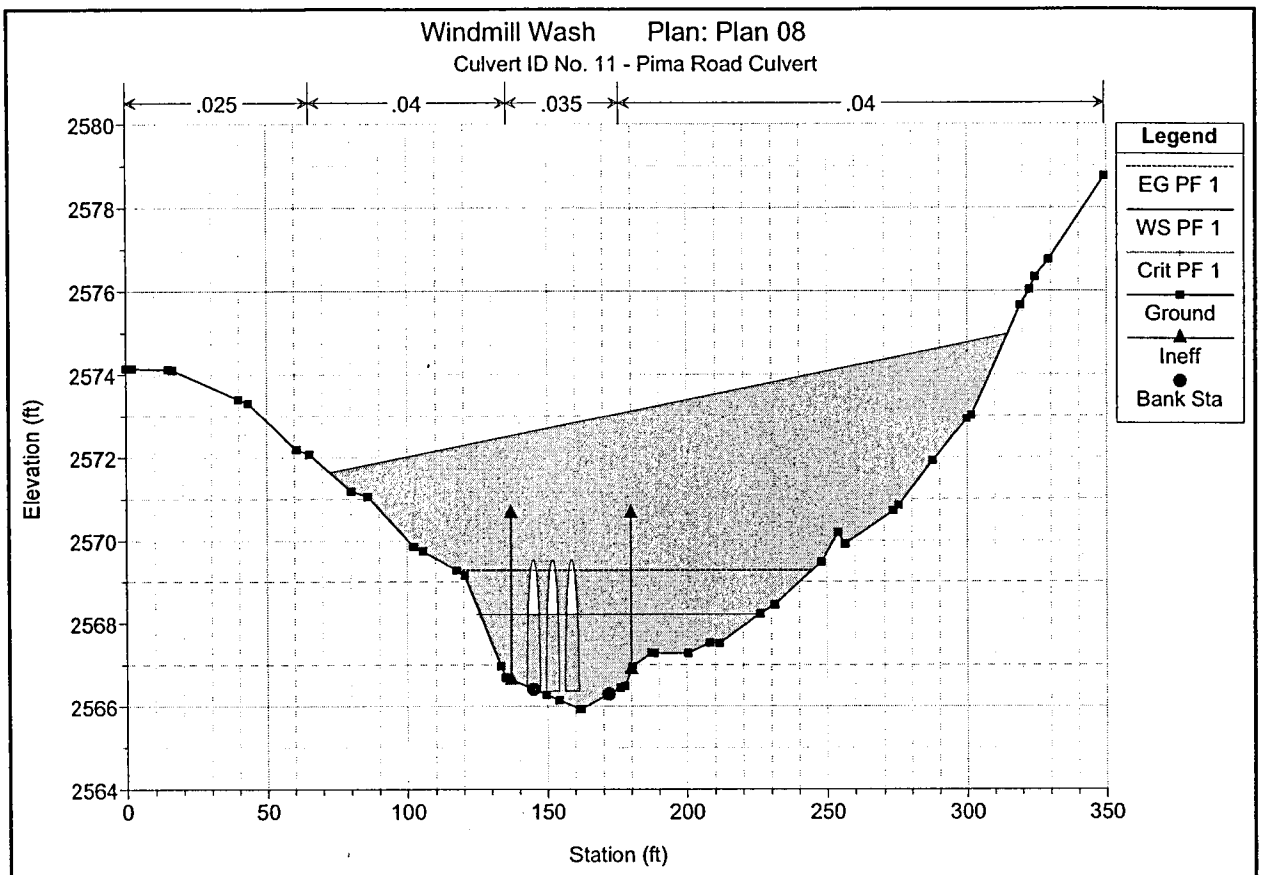

Windmill Wash Plan: Plan 08
R.S. 1.0584 Immediately Downstream of Placid Place
.04
.025
.04
.035
.025
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
2586
2585
2584
2583
2582
2581
2580
2579
0
50
100
150
200
250
300
350
Station (ft)

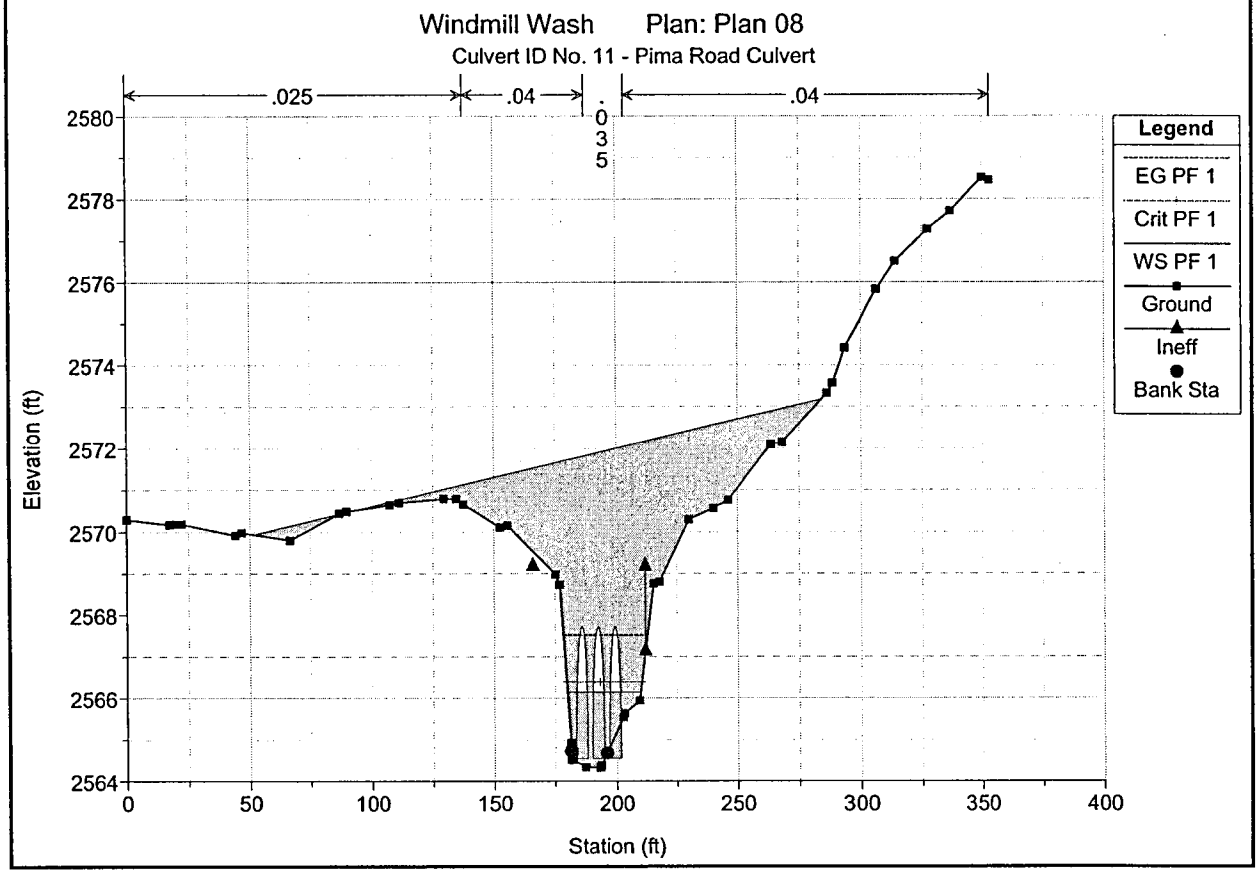

Windmill Wash Plan: Plan 08
R.S. 1.0311
.04
.035
.04
.025
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

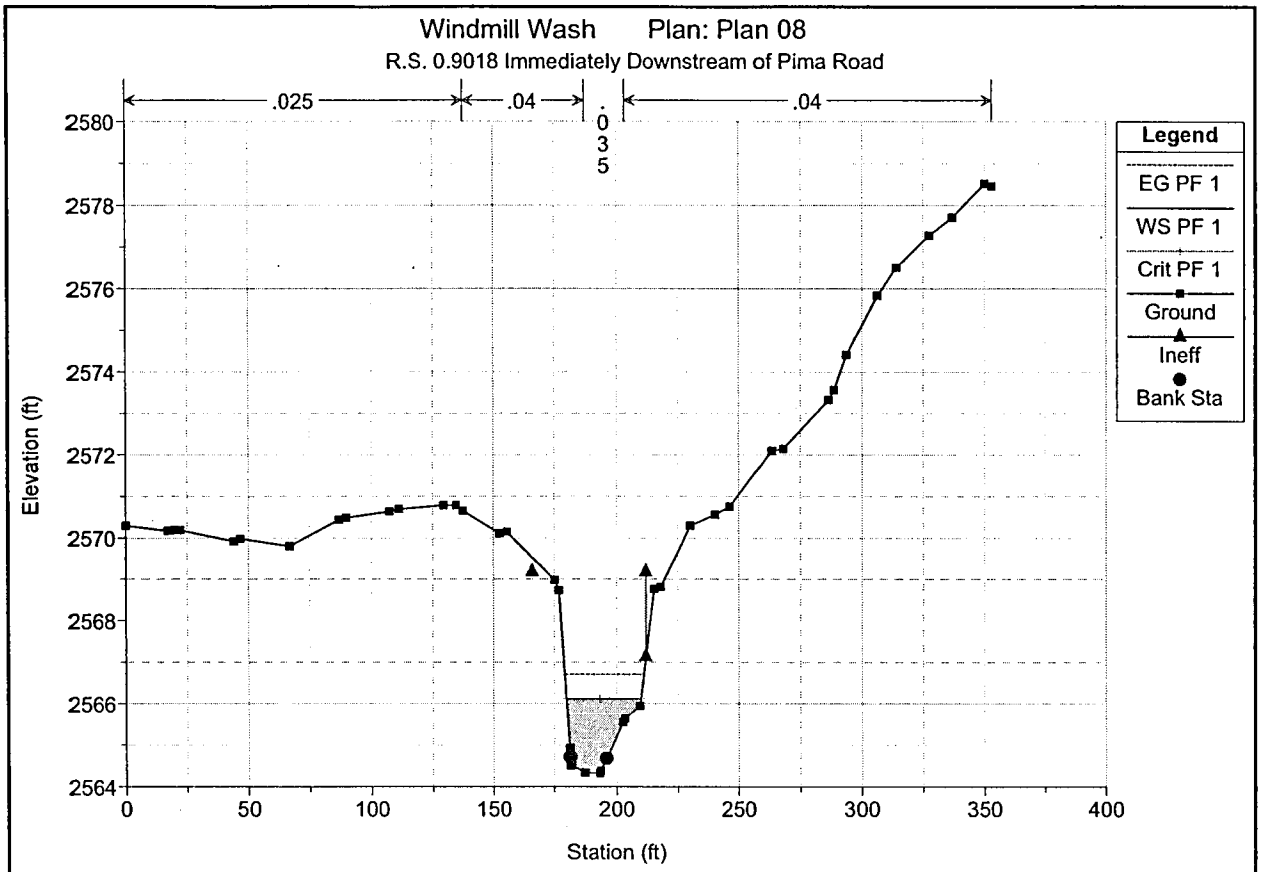

Windmill Wash Plan: Plan 08
R.S. 0.9843
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

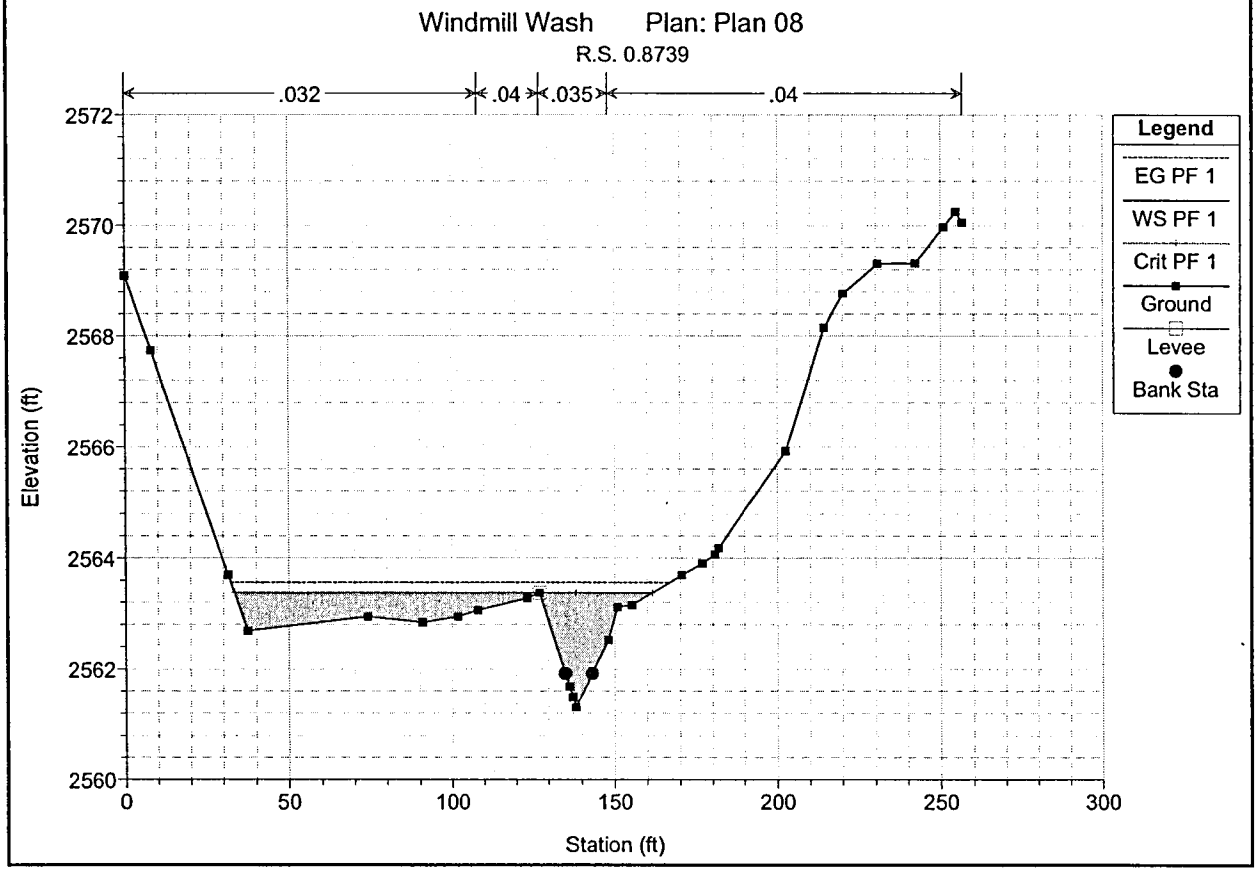

Windmill Wash Plan: Plan 08
R.S. 0.9441
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

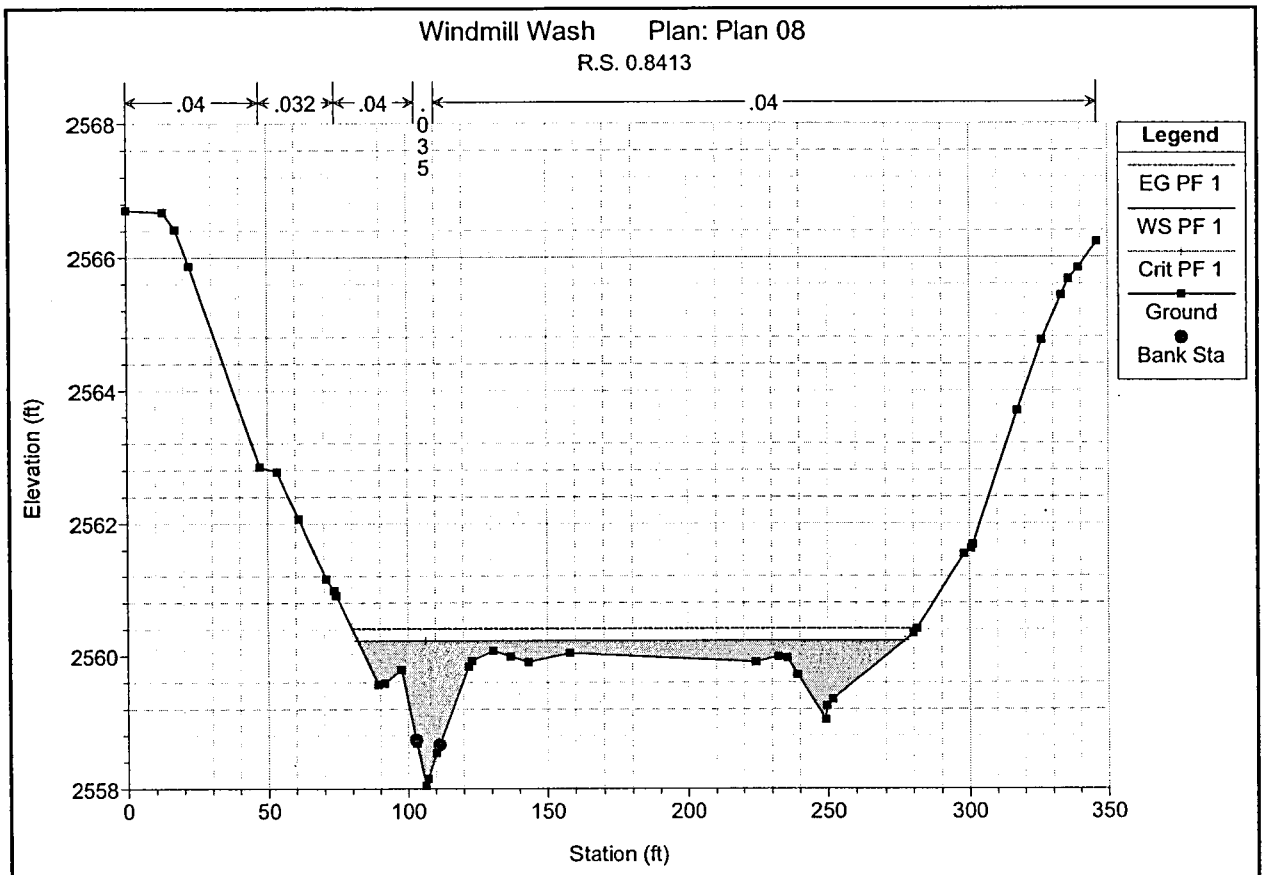

Windmill Wash Plan: Plan 08
R.S. 0.9196 Immediately Upstream of Pima Road
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

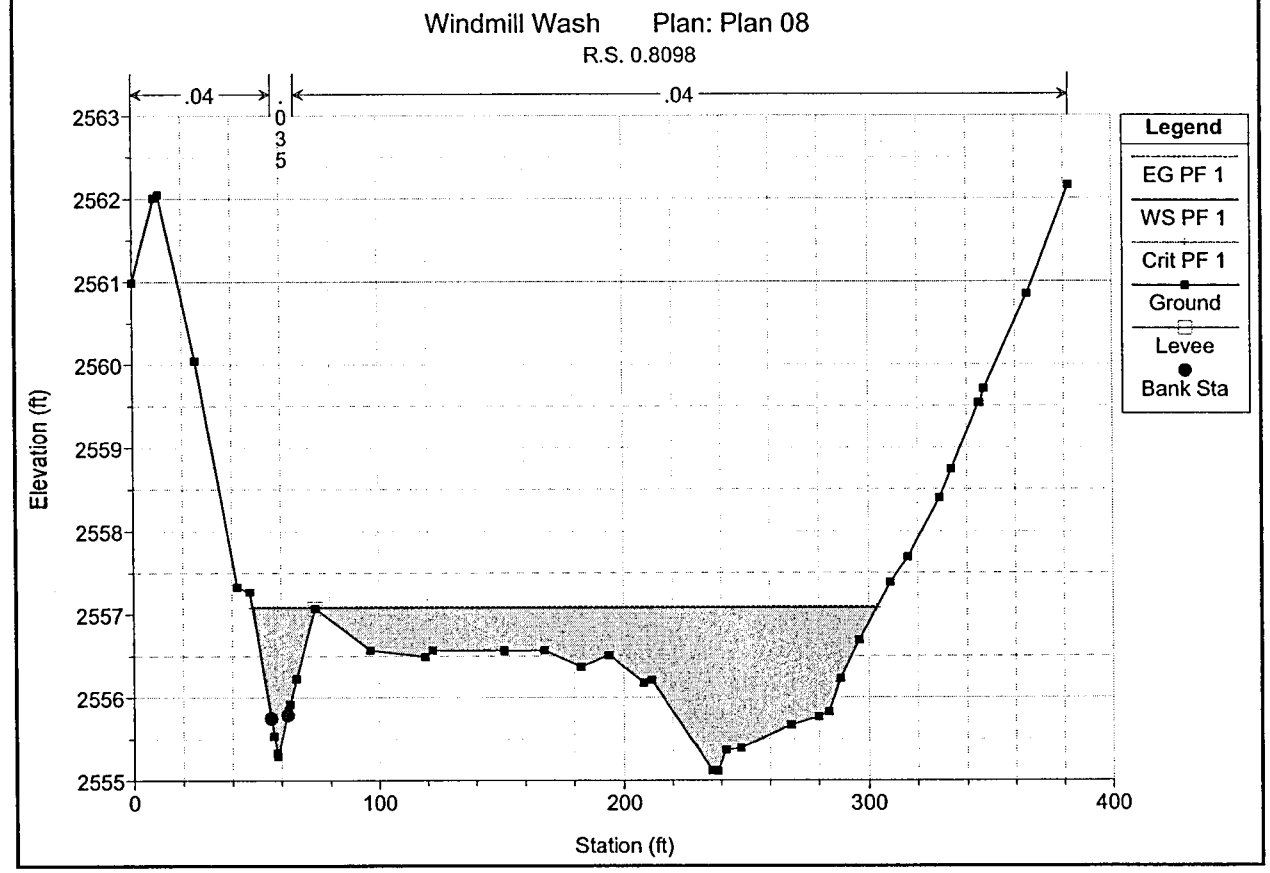

Windmill Wash Plan: Plan 08
Culvert ID No. 11 - Pima Road Culvert
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
Culvert ID No. 11 - Pima Road Culvert
.025
.04
.035
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.9018 Immediately Downstream of Pima Road
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.8739
.032
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.8413
.04
.032
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.8098
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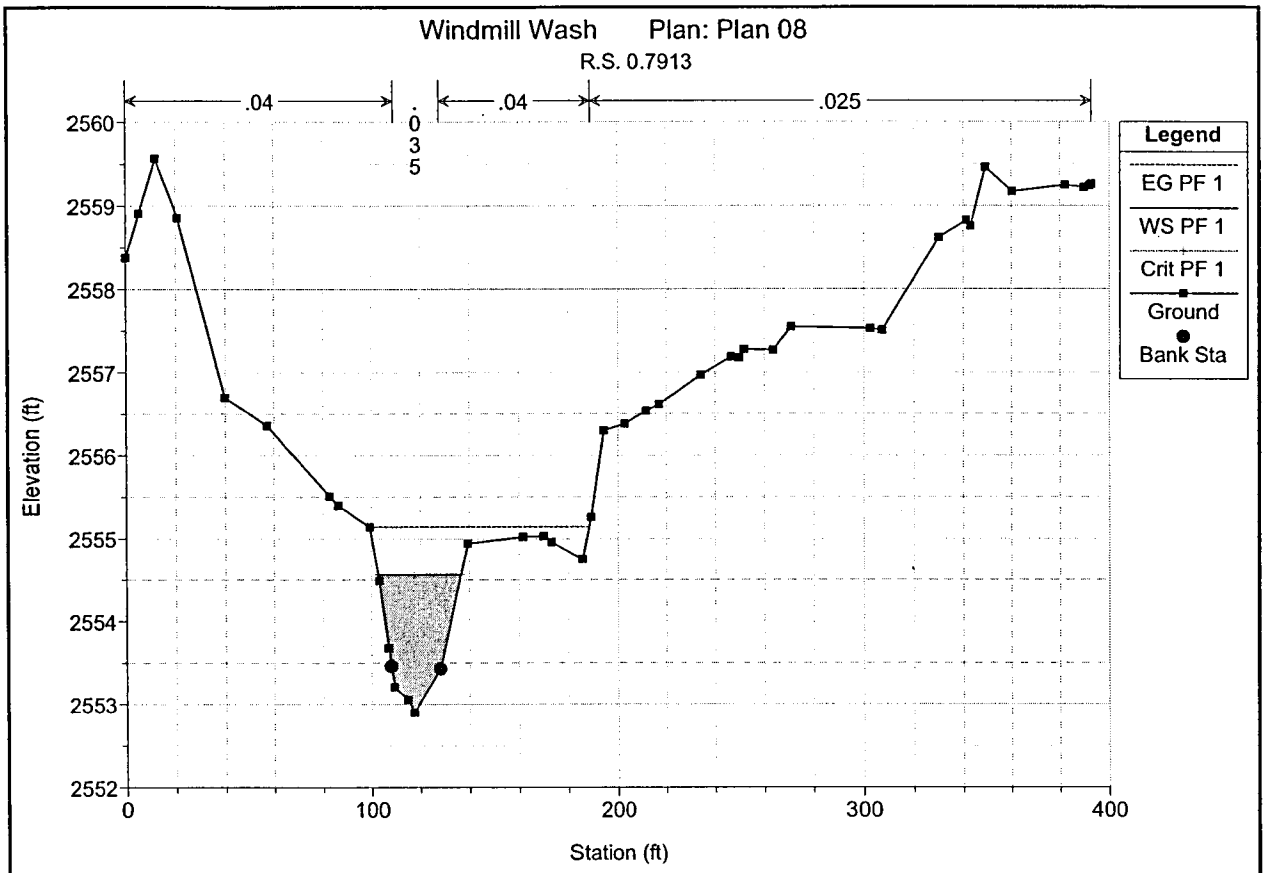
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.7913
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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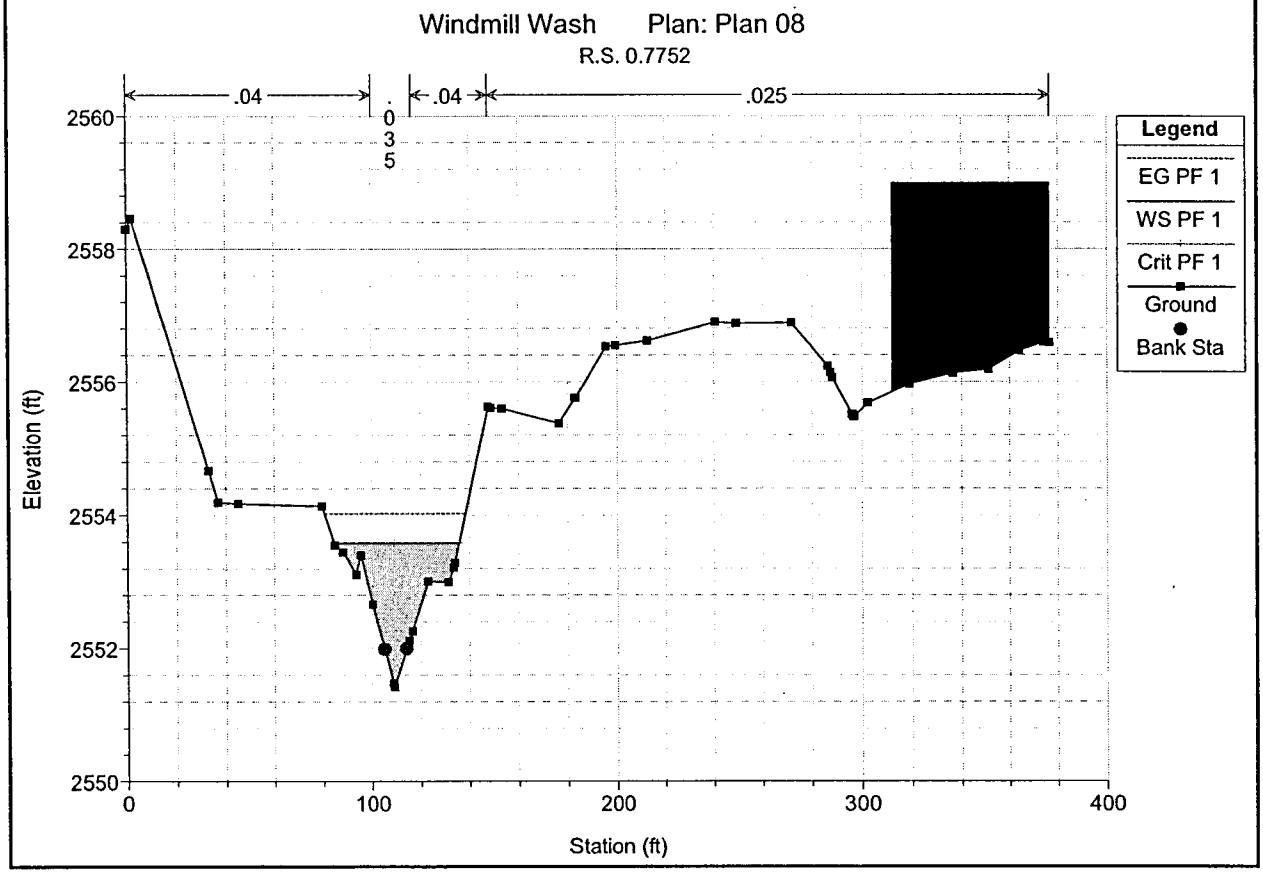
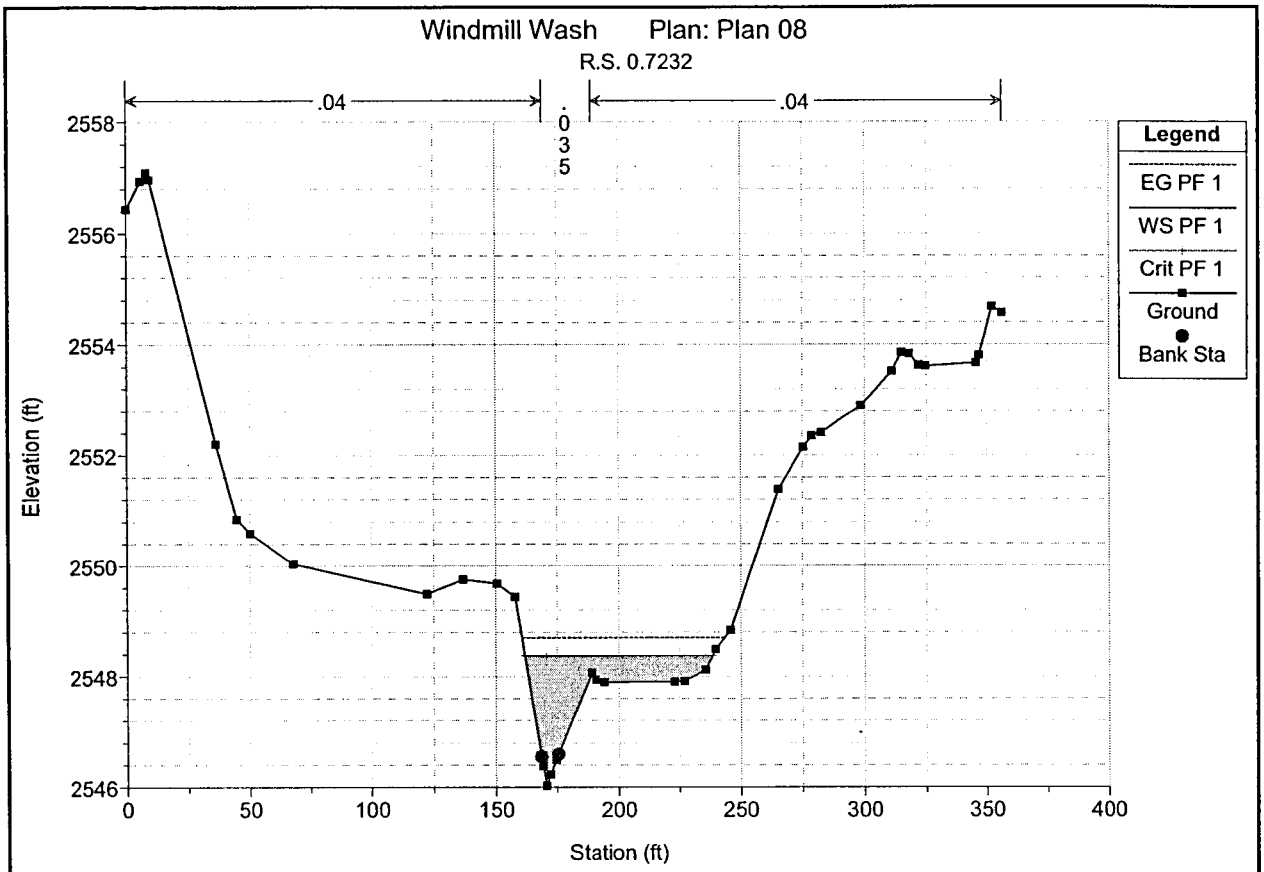
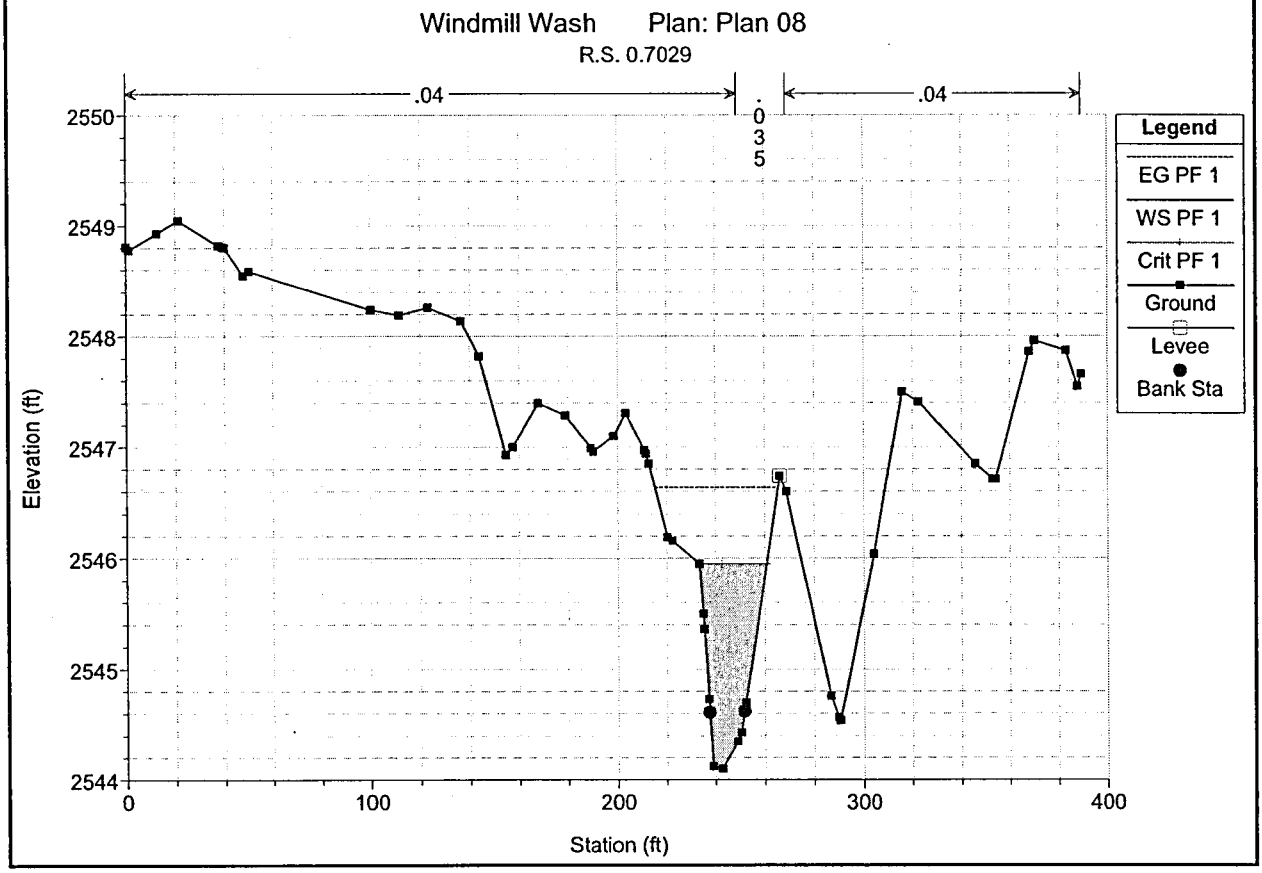
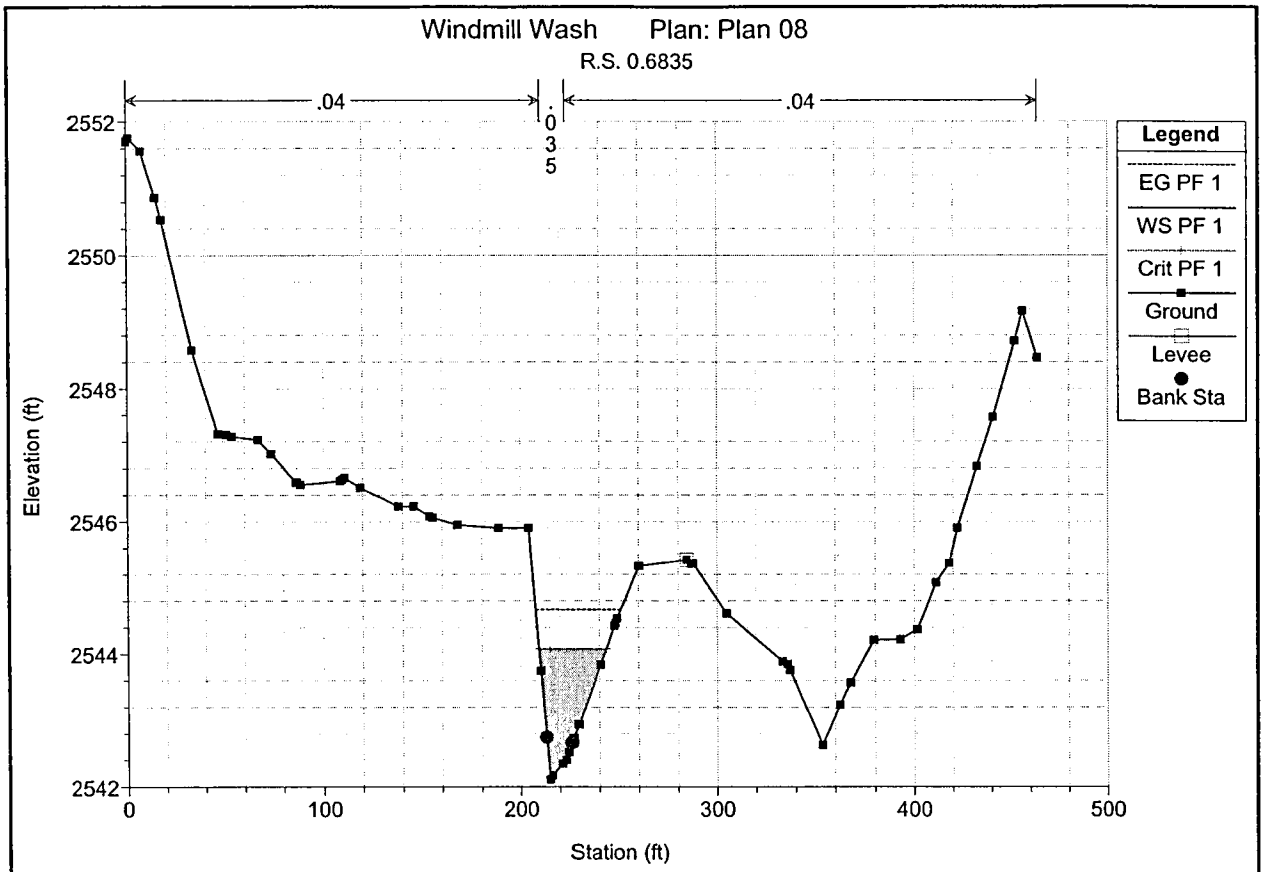
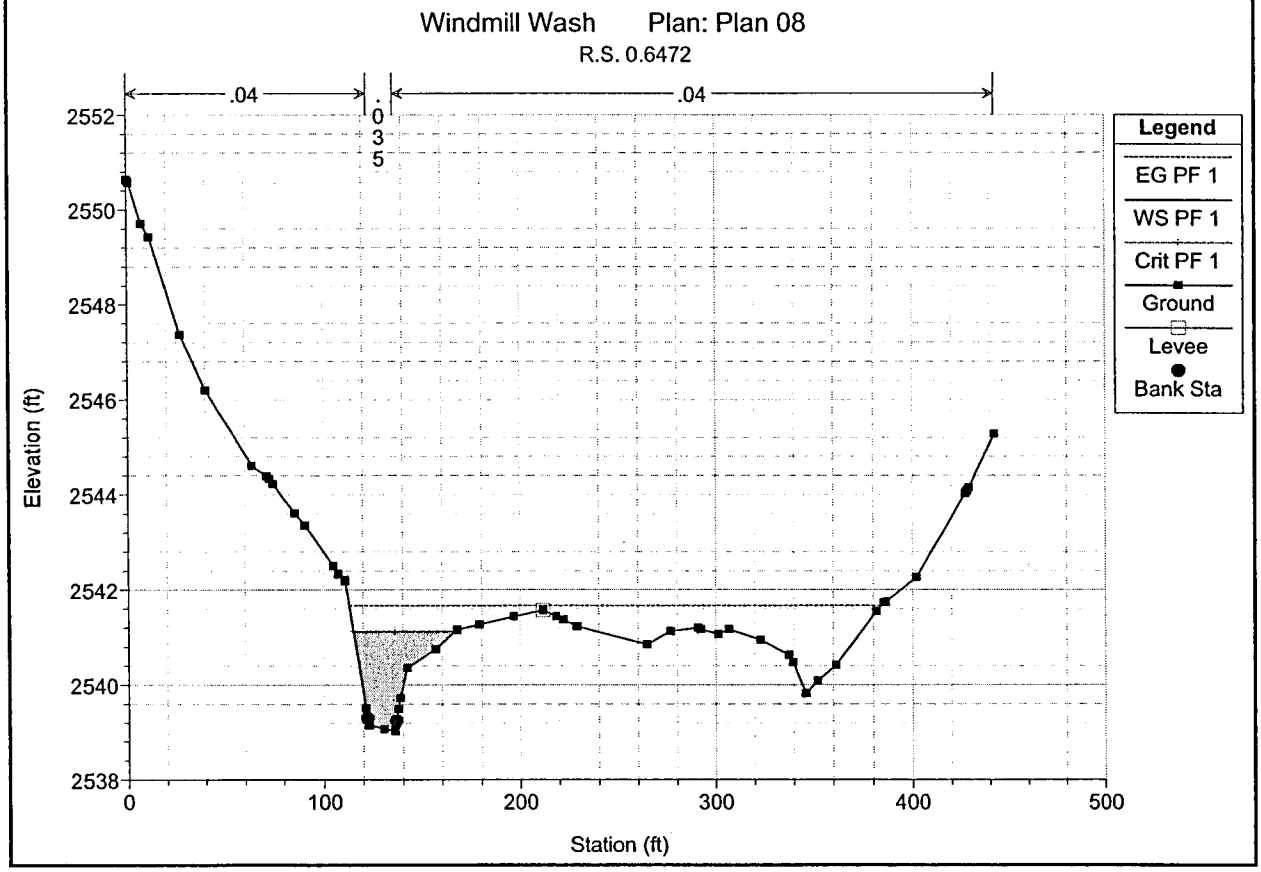
2559
2558
2557
2556
2555
2554
2553
2552
0
100
200
300
400

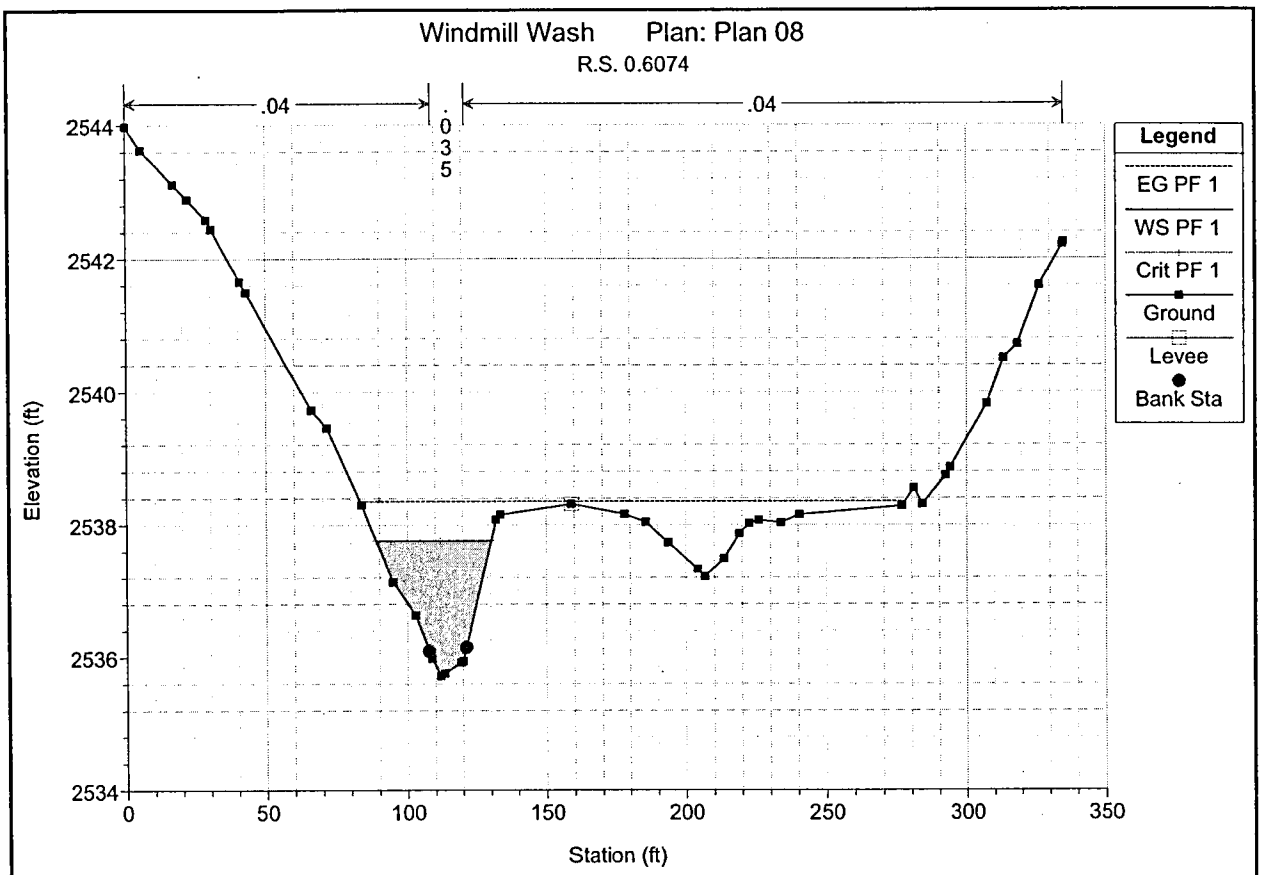

Windmill Wash Plan: Plan 08
R.S. 0.7752
.04
.035
.04
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2560
2558
2556
2554
2552
2550
0
100
200
300
400

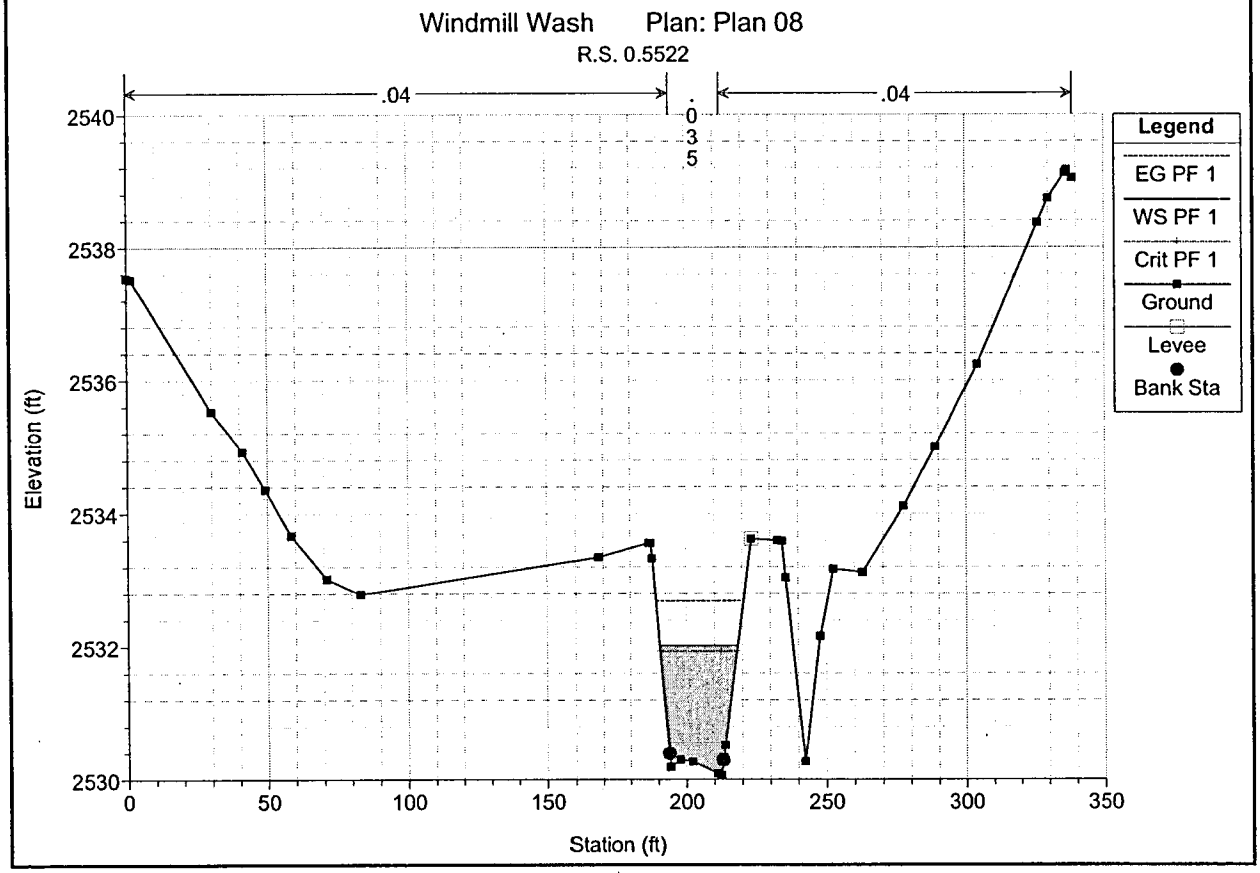

Windmill Wash Plan: Plan 08
R.S. 0.7232
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2558
2556
2554
2552
2550
2548
2546
0
50
100
150
200
250
300
350
400
Station (ft)

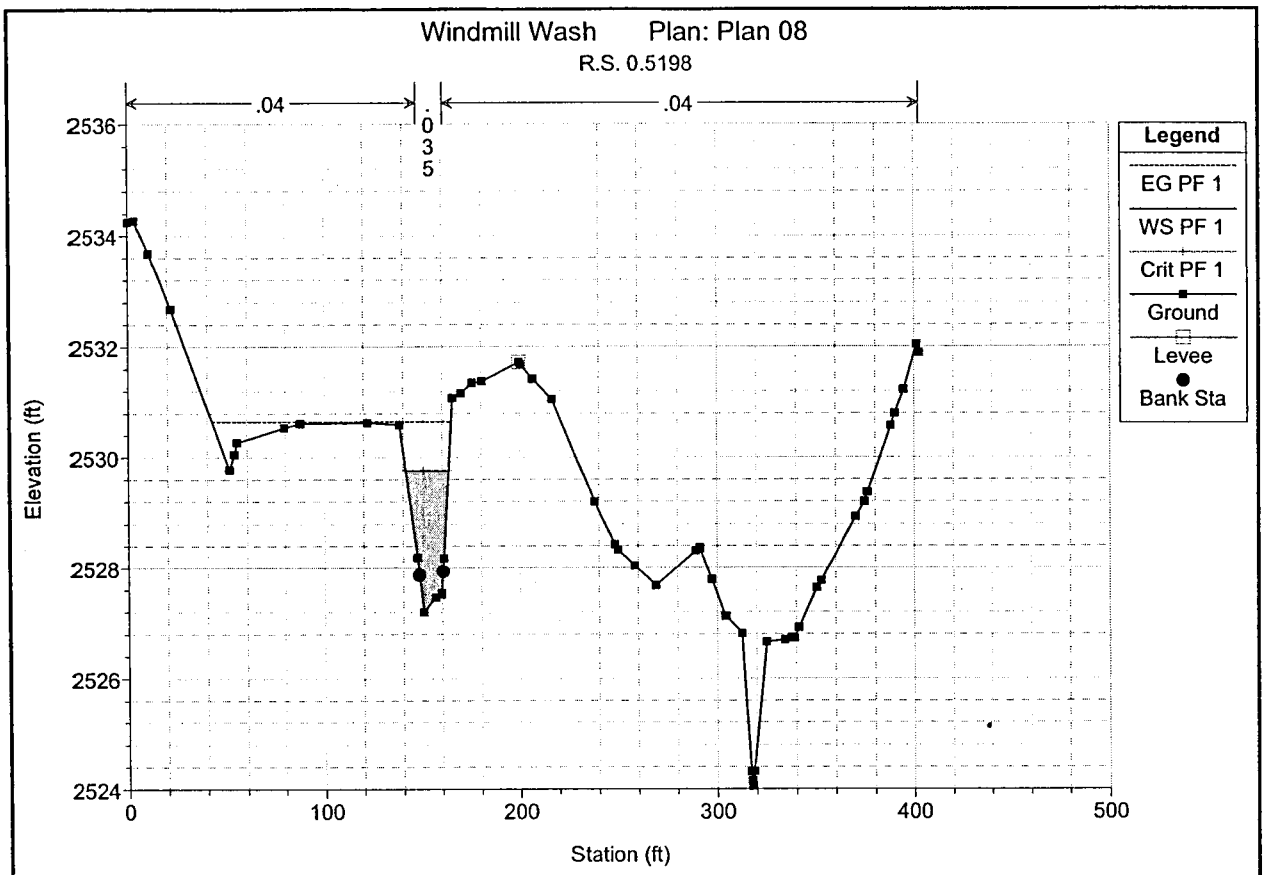

Windmill Wash Plan: Plan 08
R.S. 0.7029
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2550
2549
2548
2547
2546
2545
2544
0
100
200
300
400
Station (ft)

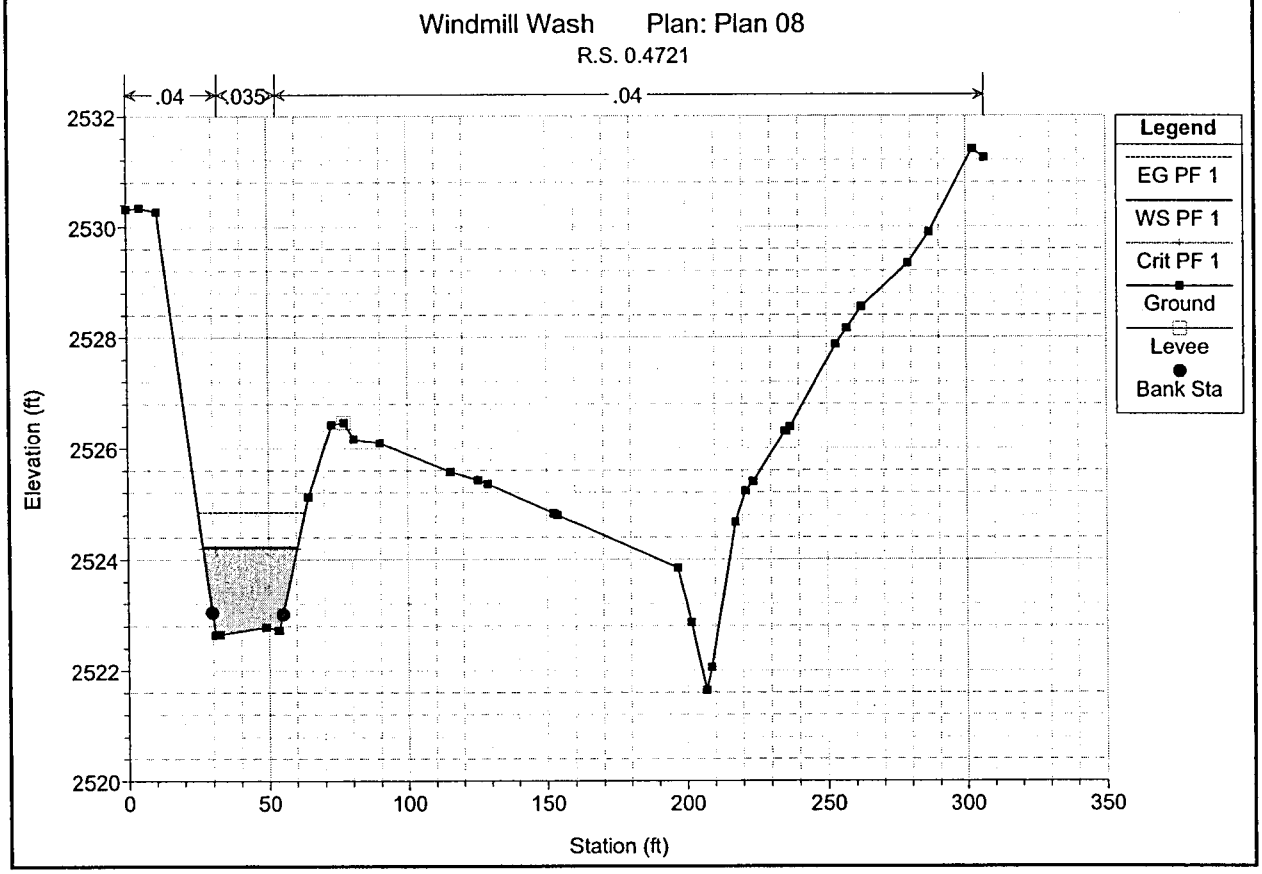

Windmill Wash Plan: Plan 08
R.S. 0.6835
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2552
2550
2548
2546
2544
2542
0
100
200
300
400
500


Windmill Wash Plan: Plan 08
R.S. 0.6472
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2552
2550
2548
2546
2544
2542
2540
2538
0
100
200
300
400
500


Windmill Wash Plan: Plan 08
R.S. 0.6074
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2534
2536
2538
2540
2542
2544
0
50
100
150
200
250
300
350
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.5522
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2530
2532
2534
2536
2538
2540
0
50
100
150
200
250
300
350
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.5198
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.4721
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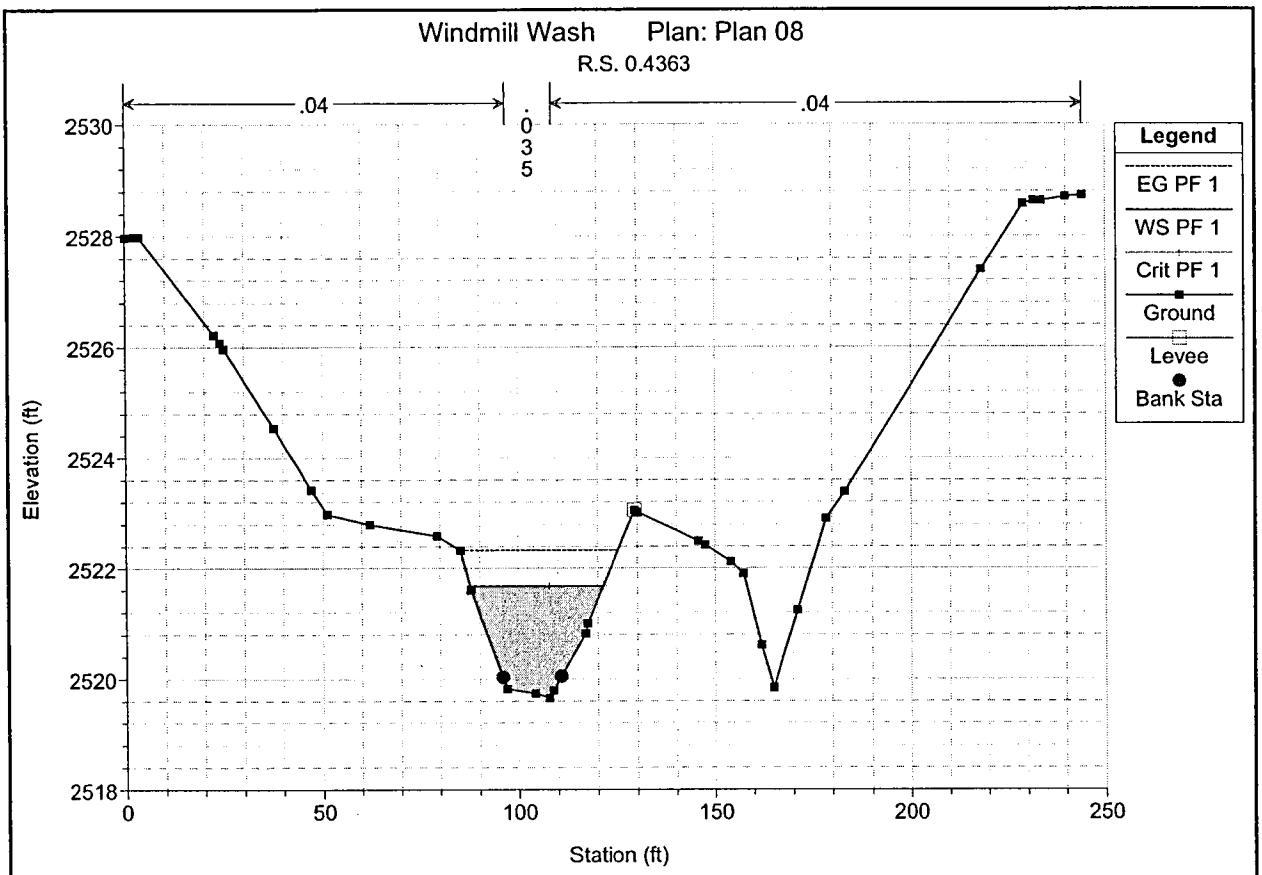
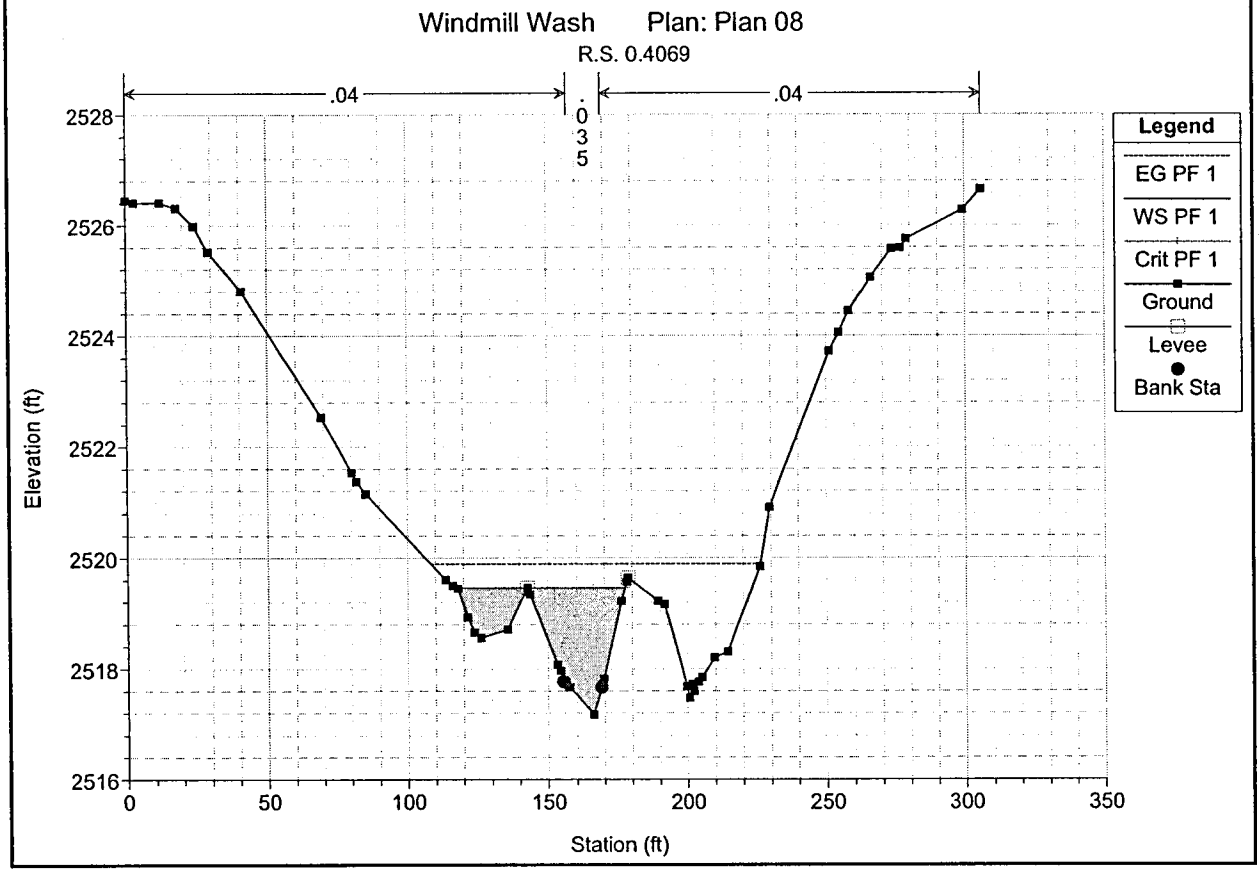
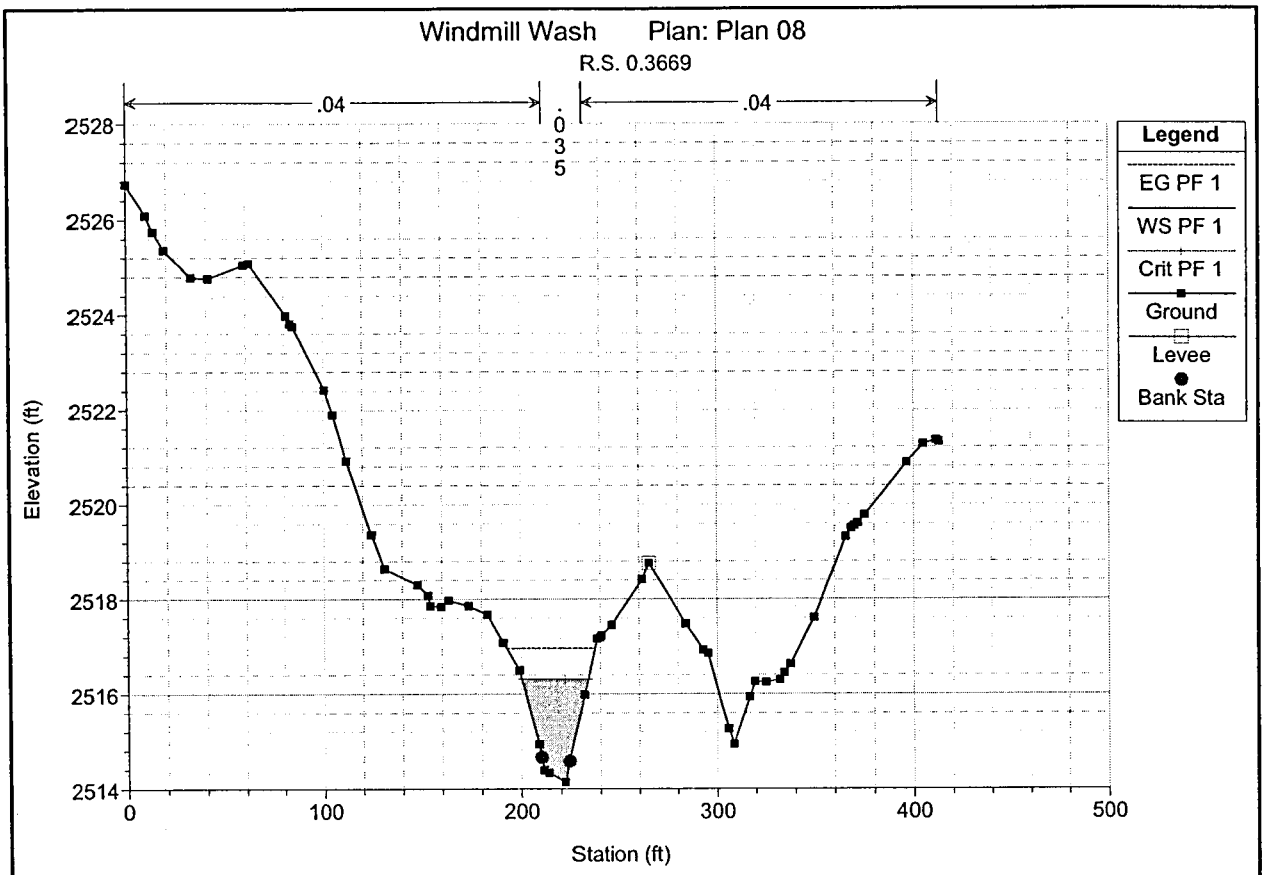
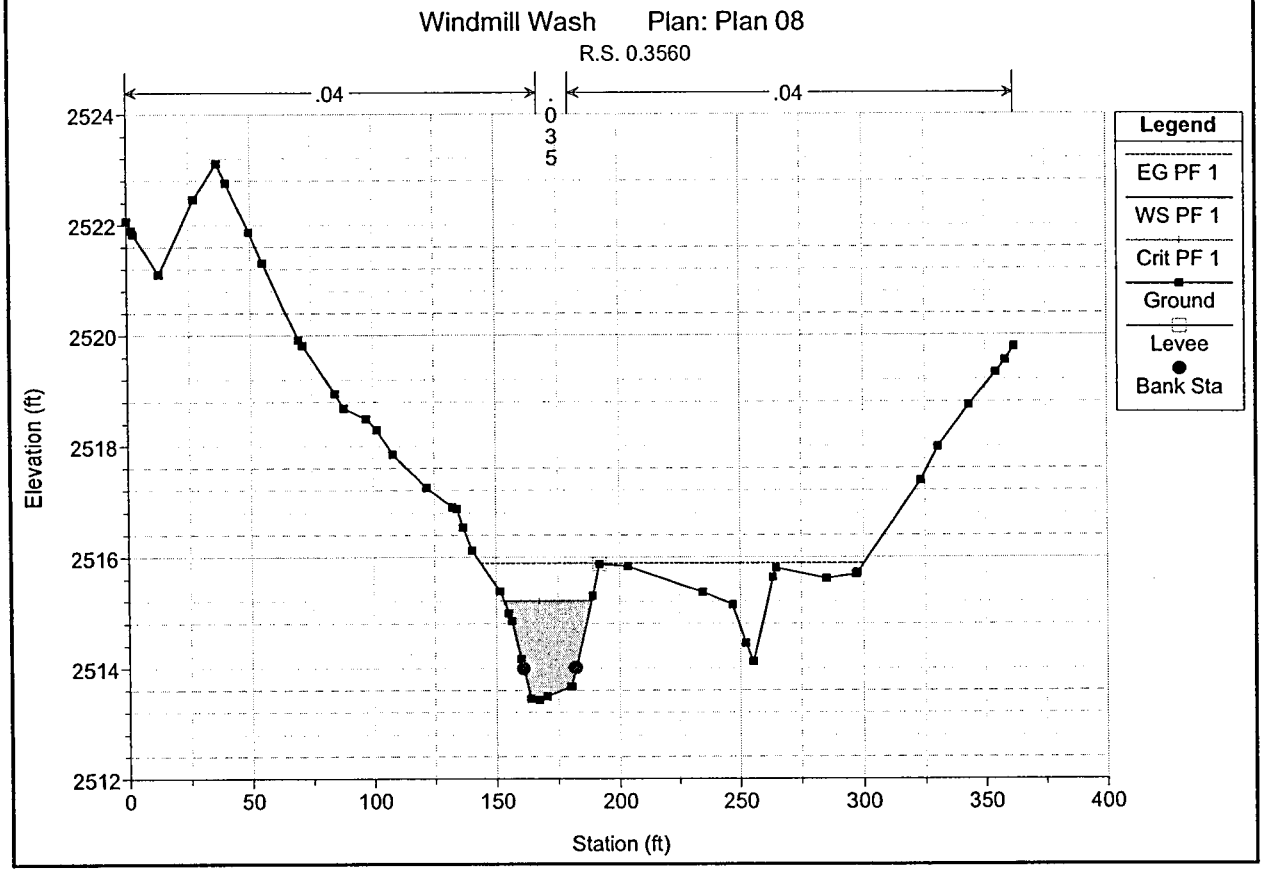
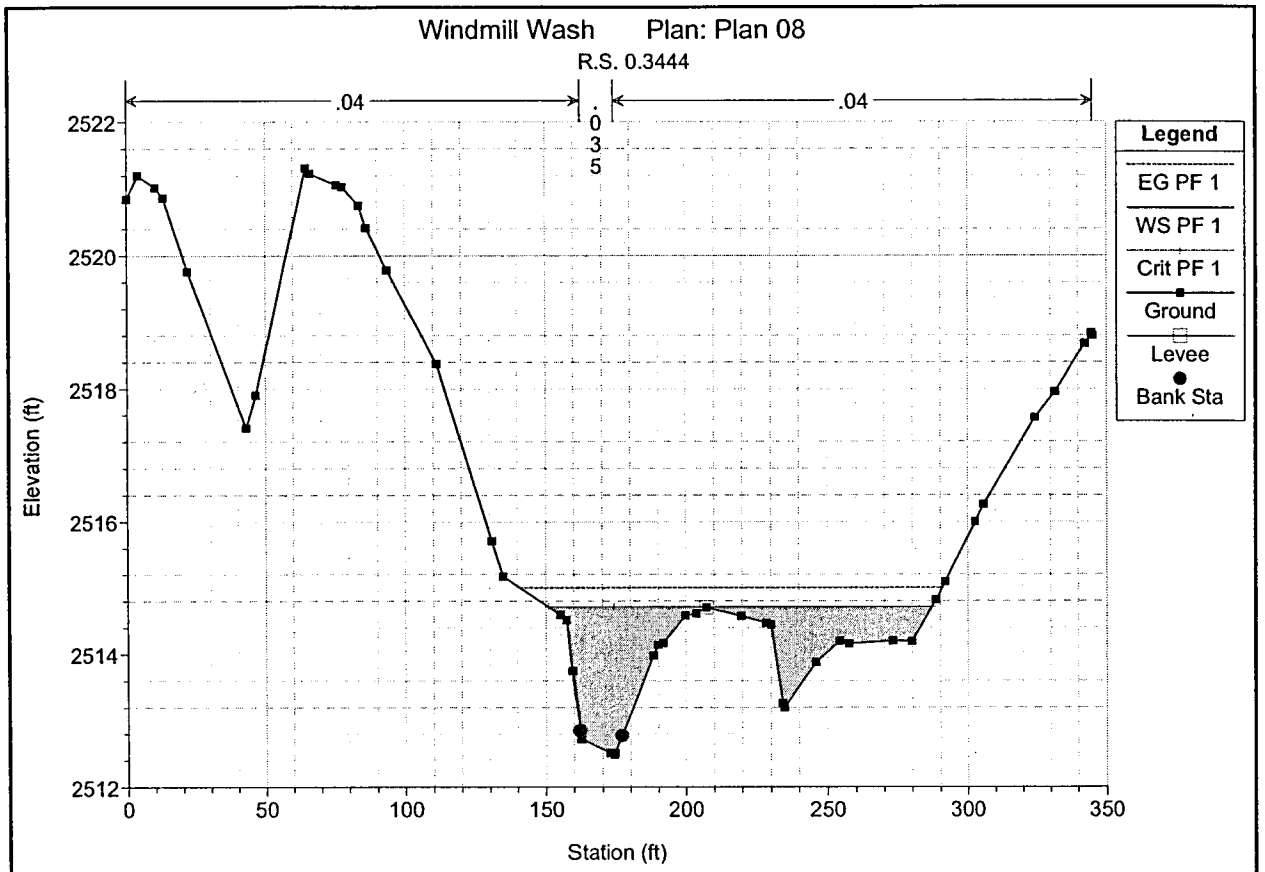
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

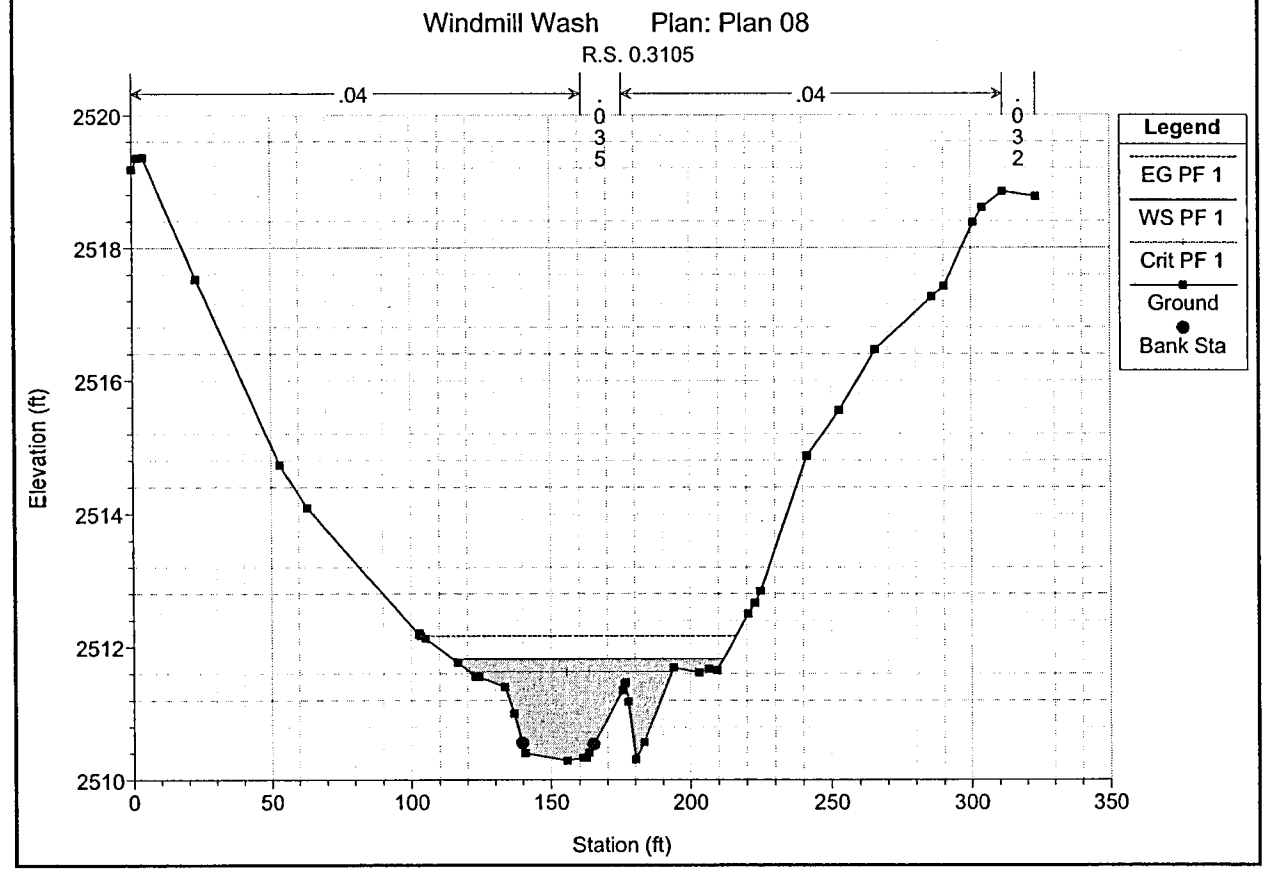

Windmill Wash Plan: Plan 08
R.S. 0.4363
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2530
2528
2526
2524
2522
2520
2518
0
50
100
150
200
250

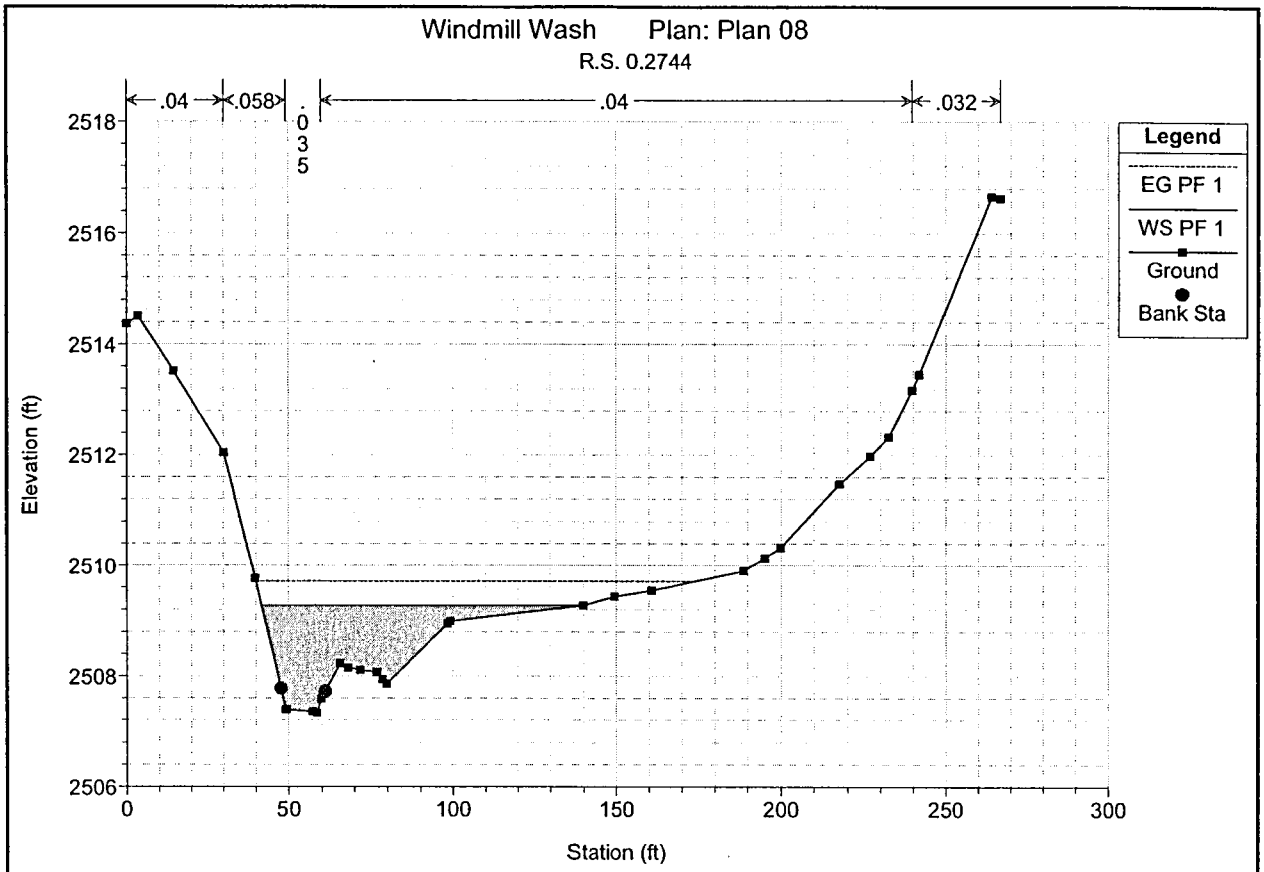

Windmill Wash Plan: Plan 08
R.S. 0.4069
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2528
2526
2524
2522
2520
2518
2516
0
50
100
150
200
250
300
350

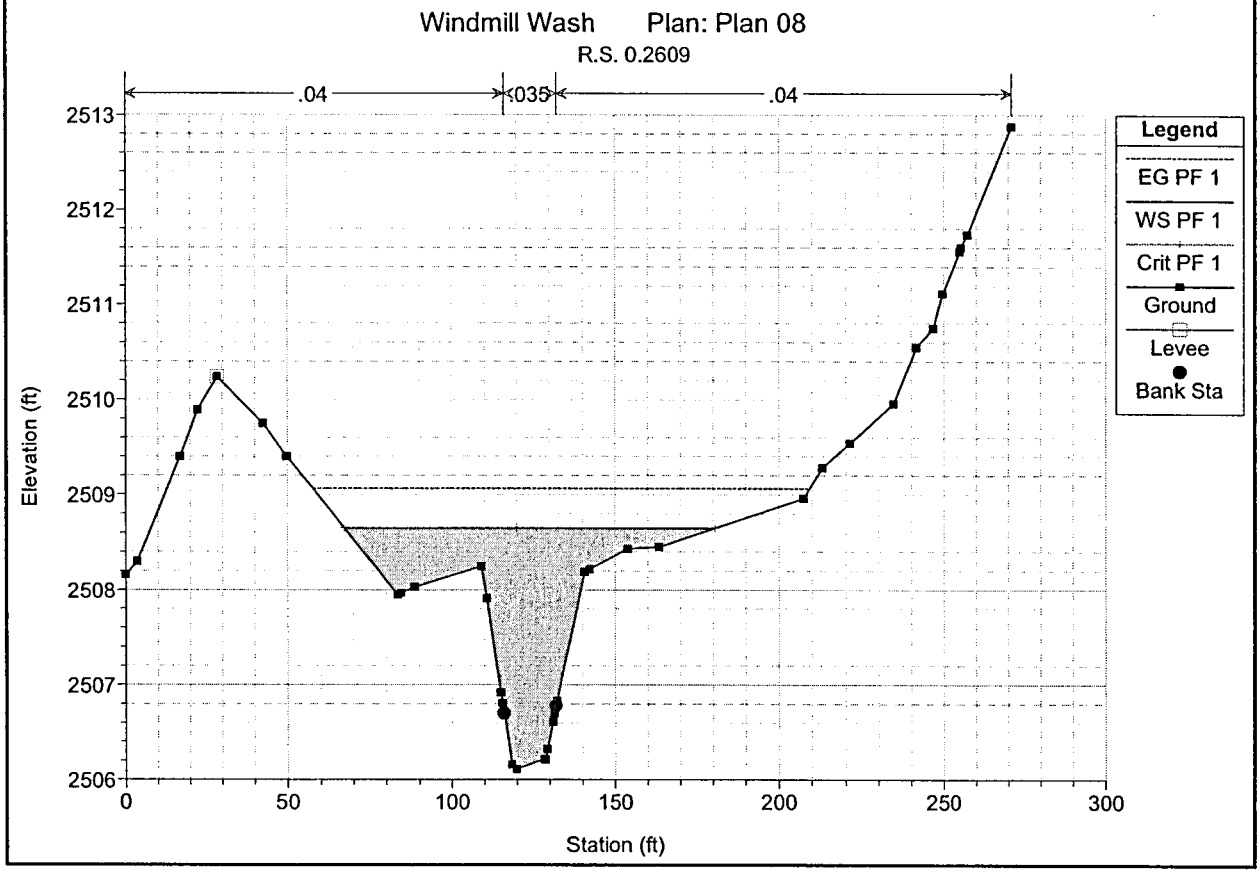

Windmill Wash Plan: Plan 08
R.S. 0.3669
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2528
2526
2524
2522
2520
2518
2516
2514
0
100
200
300
400
500
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.3560
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
2524
2522
2520
2518
2516
2514
2512
0
50
100
150
200
250
300
350
400
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.3444
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2522
2520
2518
2516
2514
2512
0
50
100
150
200
250
300
350


Windmill Wash Plan: Plan 08
R.S. 0.3105
.04
.035
.04
.032
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2520
2518
2516
2514
2512
2510
0
50
100
150
200
250
300
350


Windmill Wash Plan: Plan 08
R.S. 0.2744
.04
.058
.035
.04
.032
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.2609
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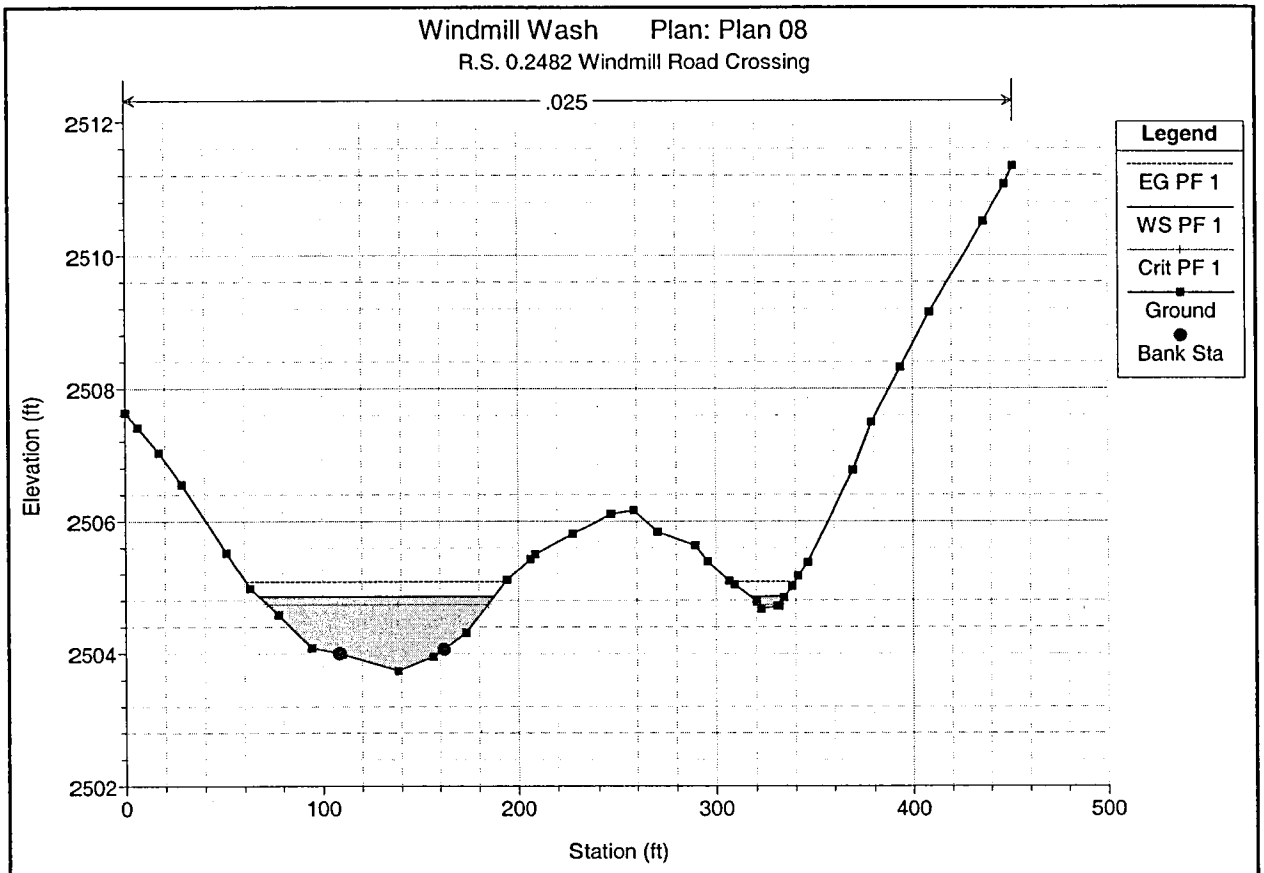
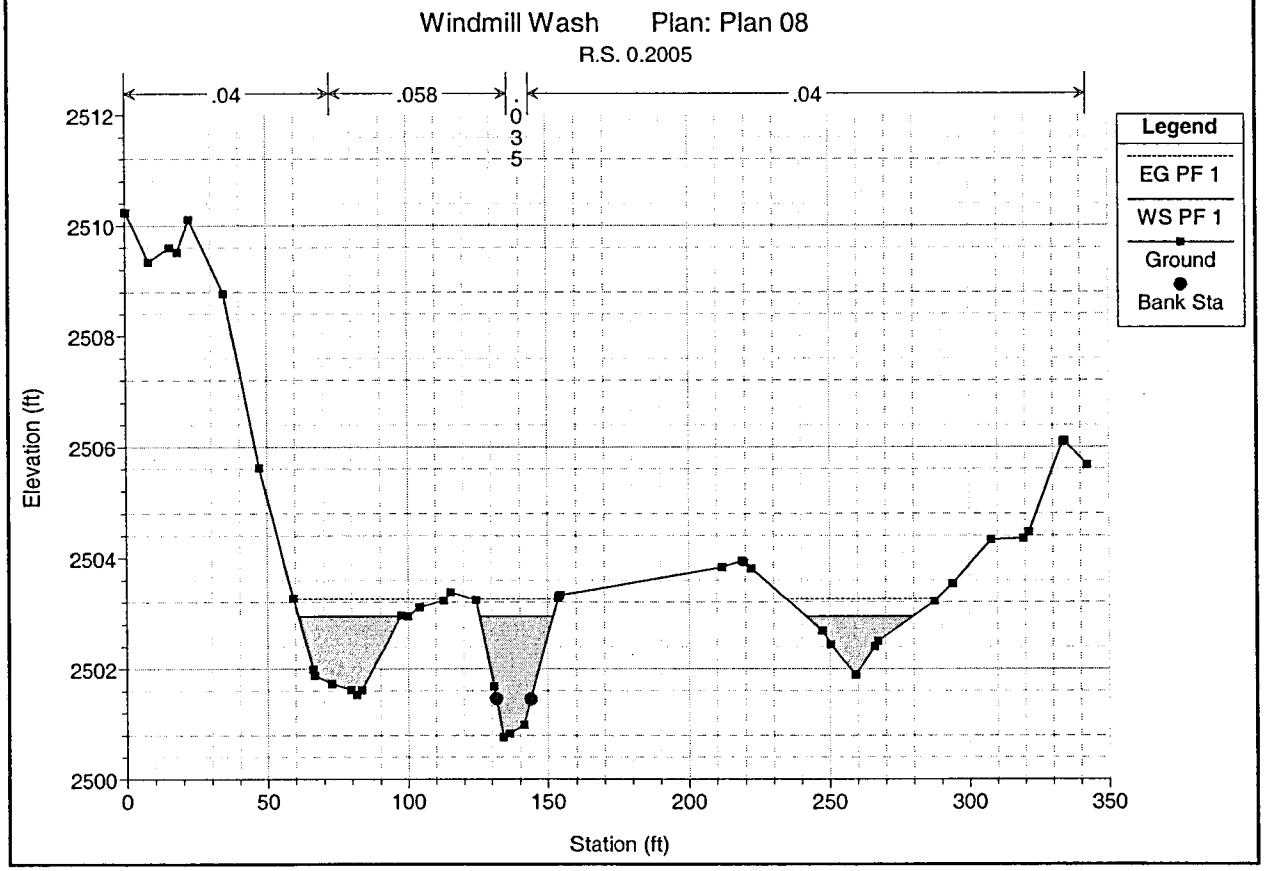
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.2482 Windmill Road Crossing
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
2512
2510
2508
2506
2504
2502
0
100
200
300
400
500
Station (ft)


Windmill Wash Plan: Plan 08
R.S. 0.2005
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
2512
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2508
2506
2504
2502
2500
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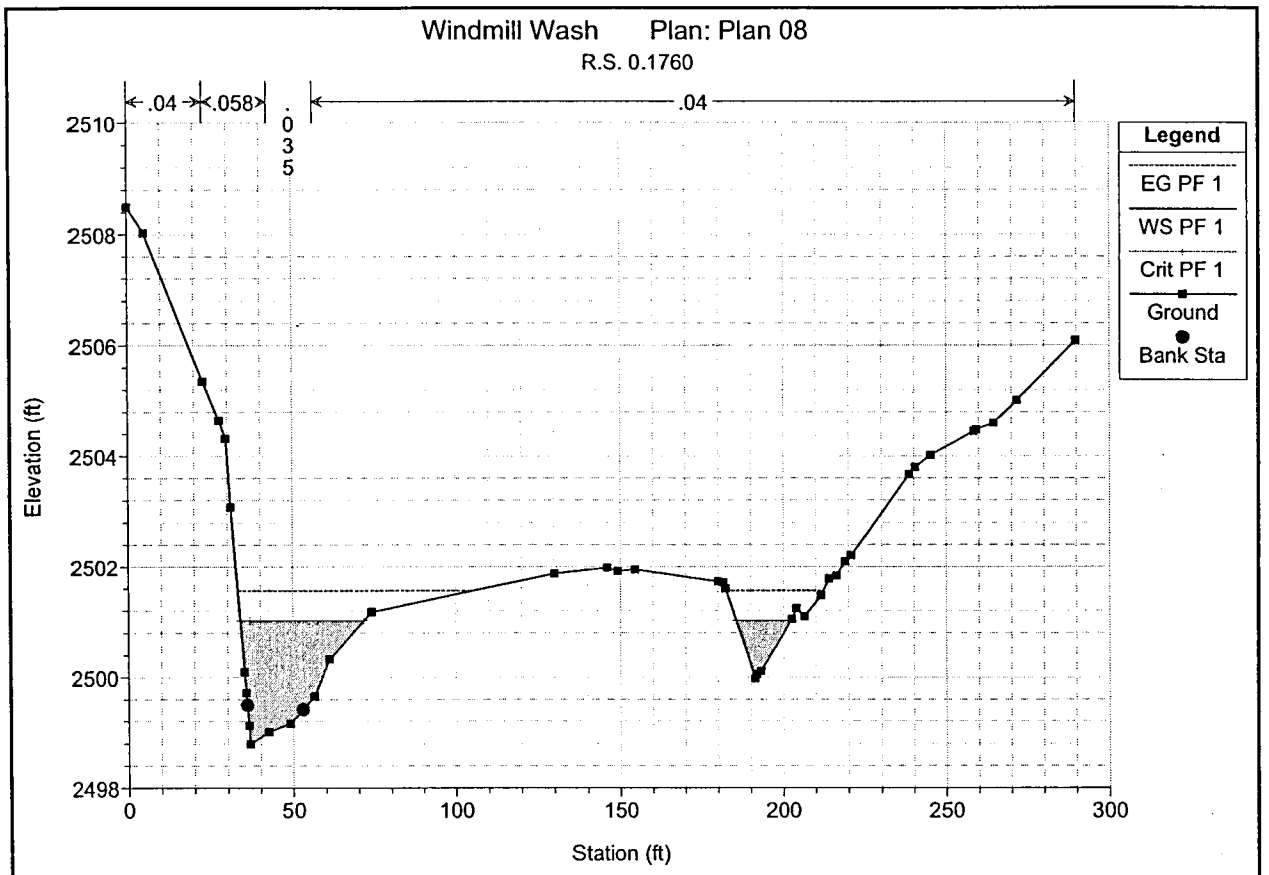
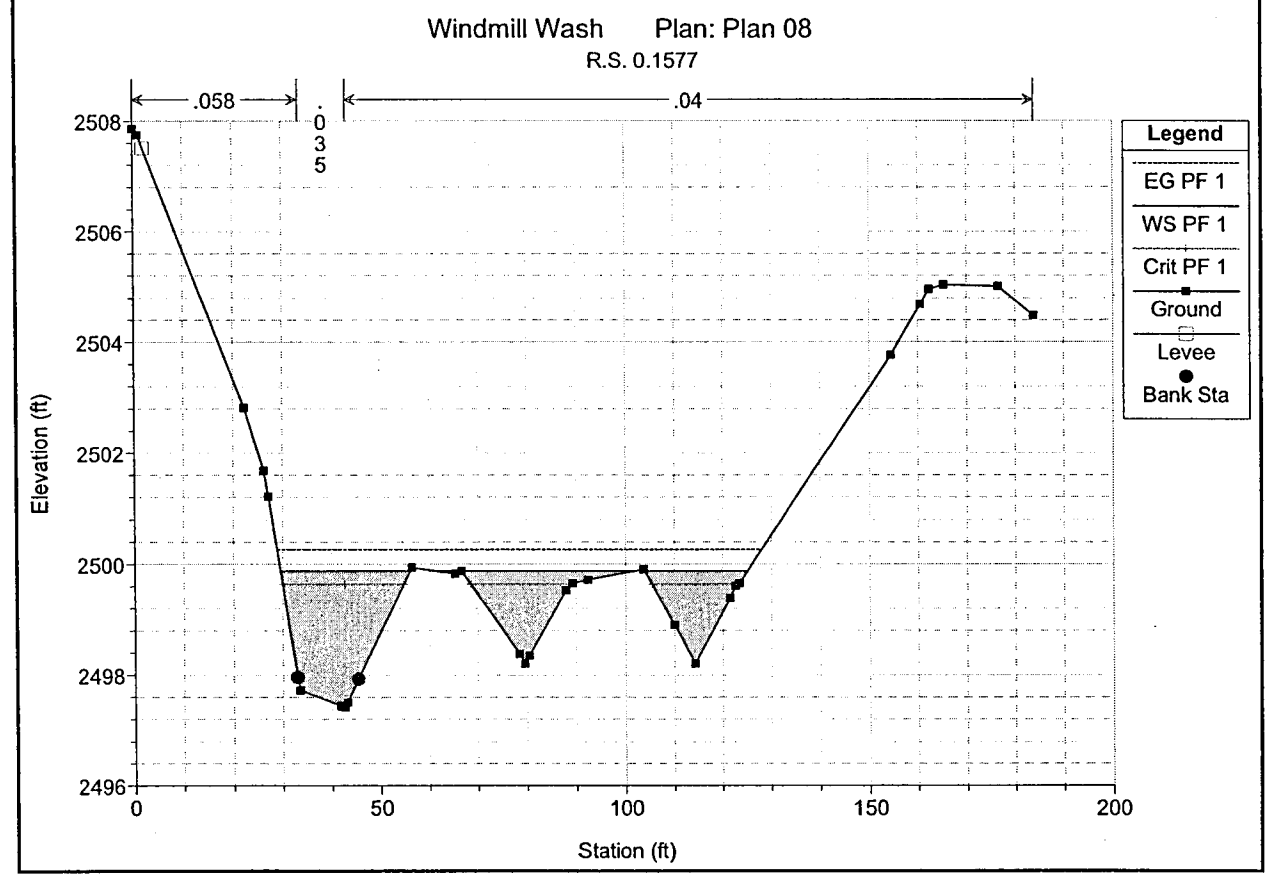
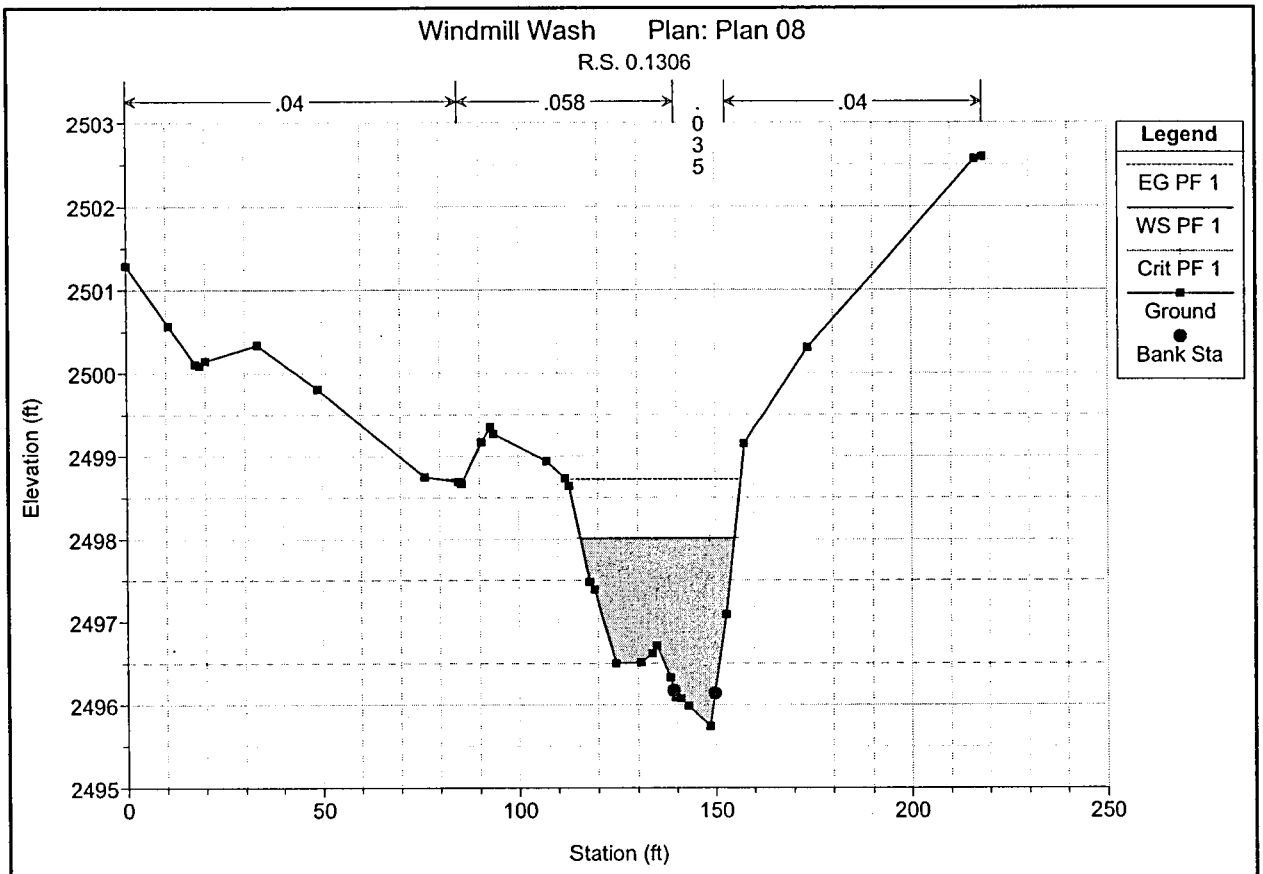
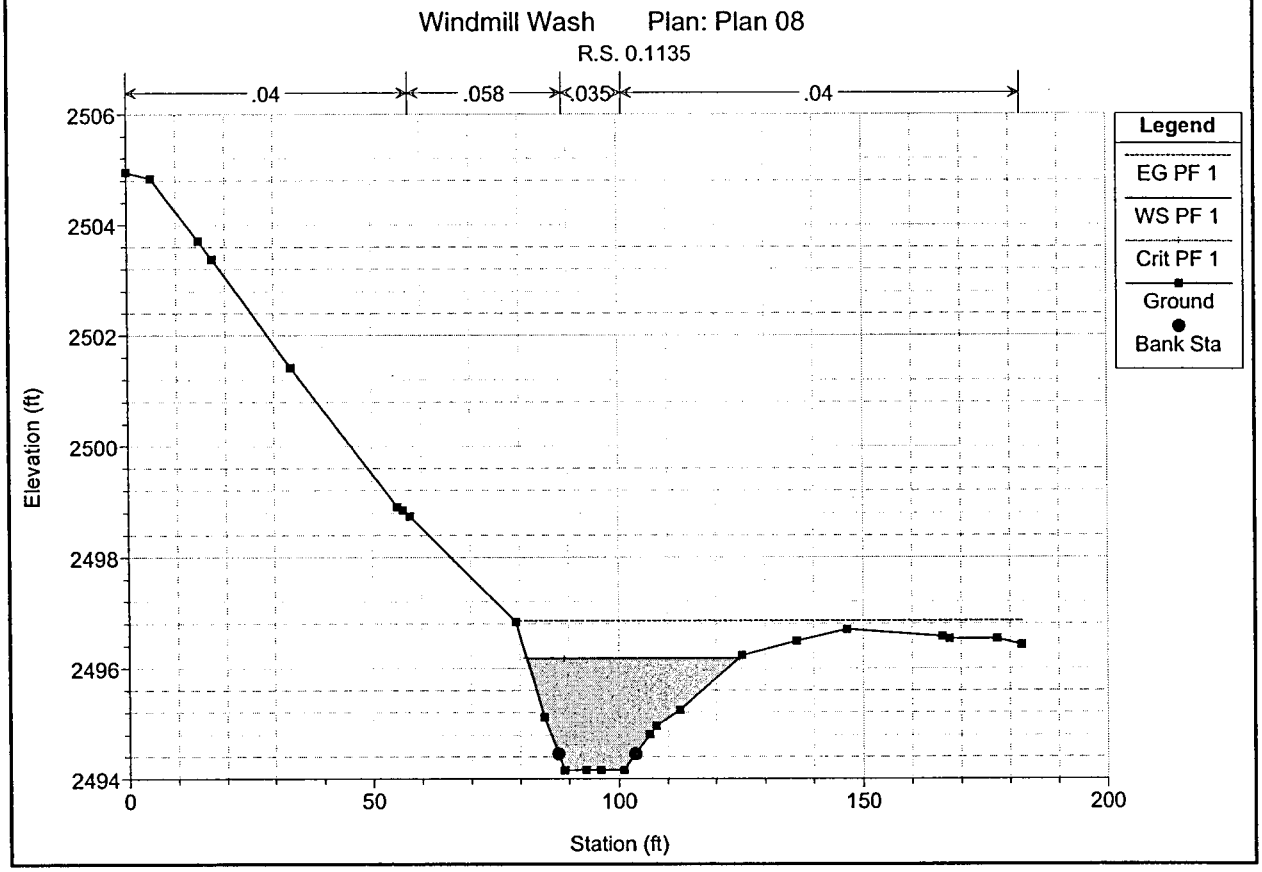
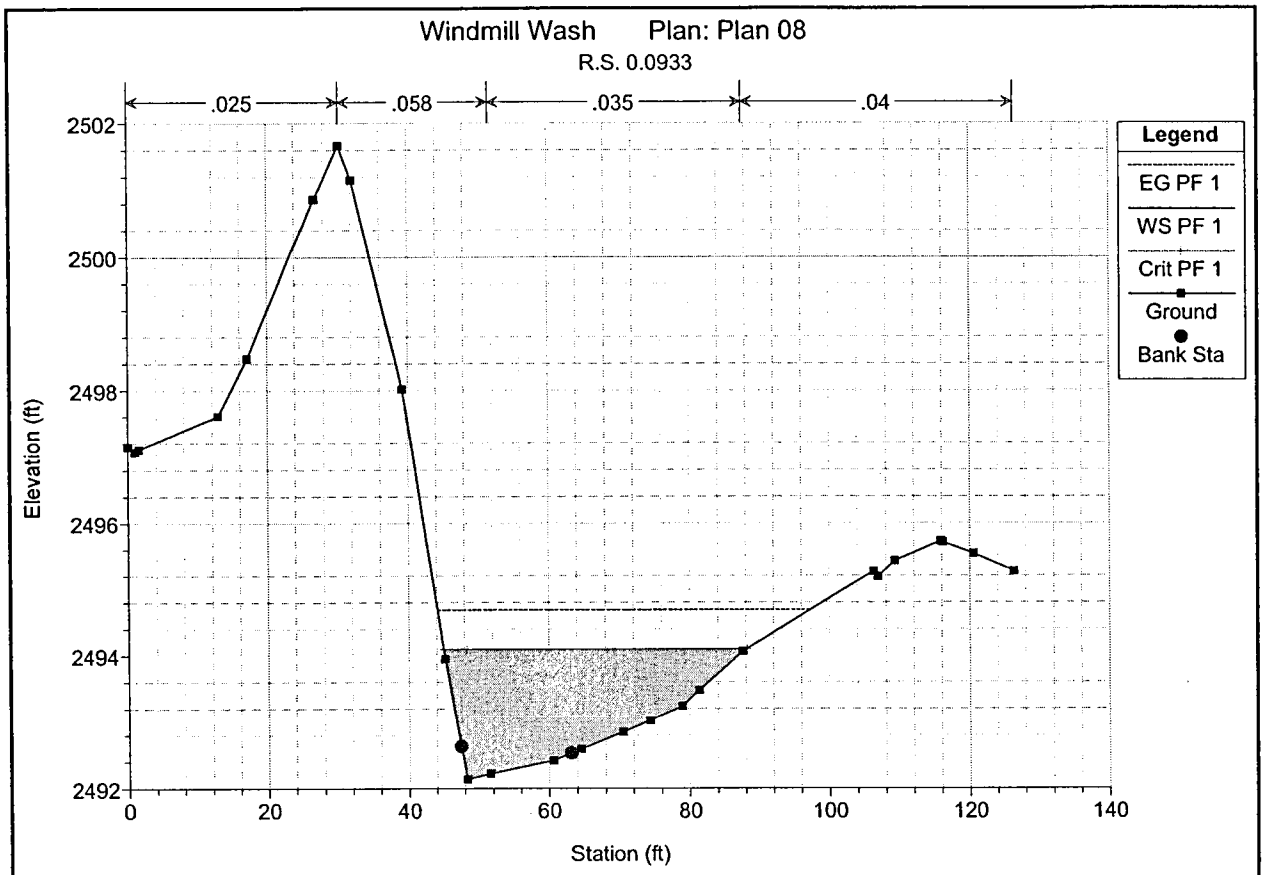
100
150
200
250
300
350
Station (ft)

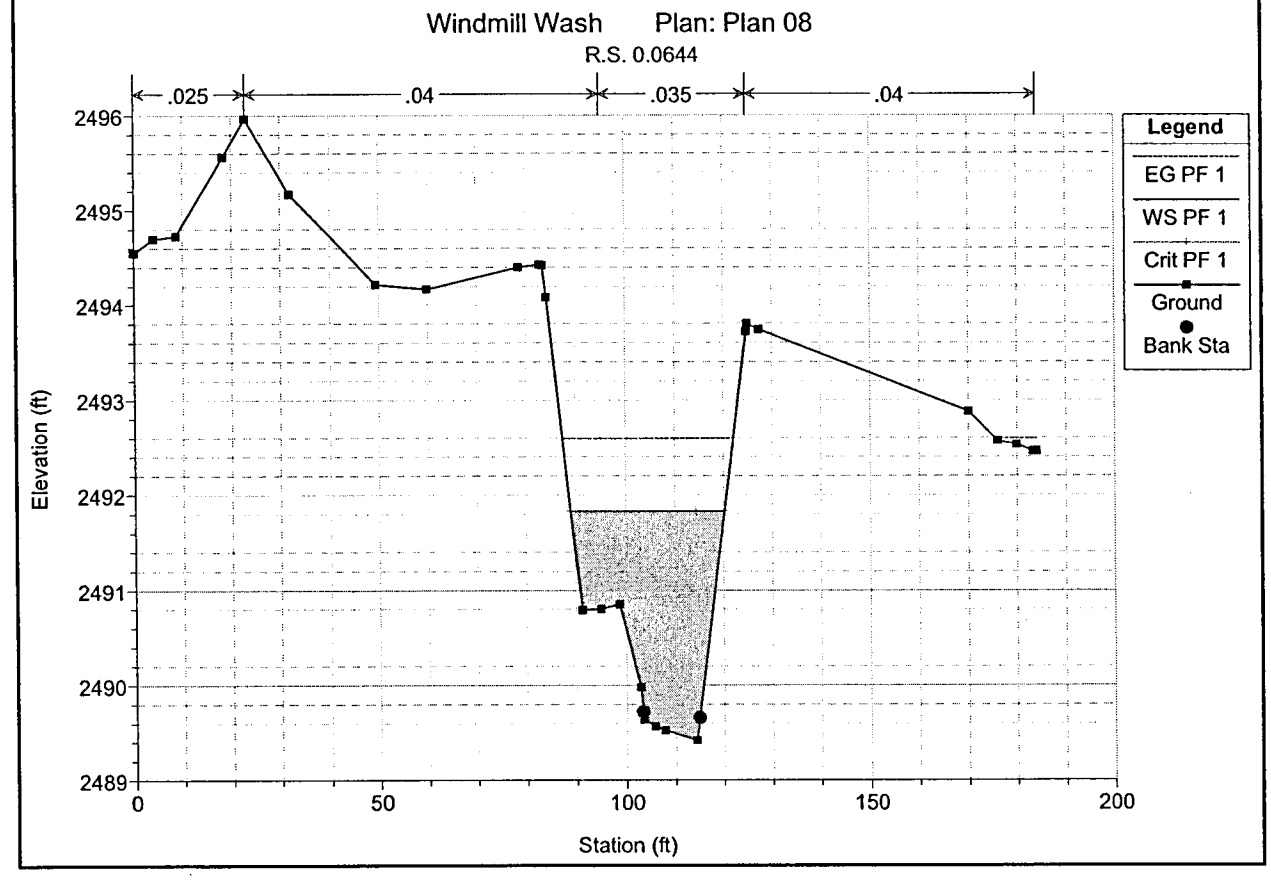

Windmill Wash Plan: Plan 08
R.S. 0.1760
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2510
2508
2506
2504
2502
2500
2498
0
50
100
150
200
250
300

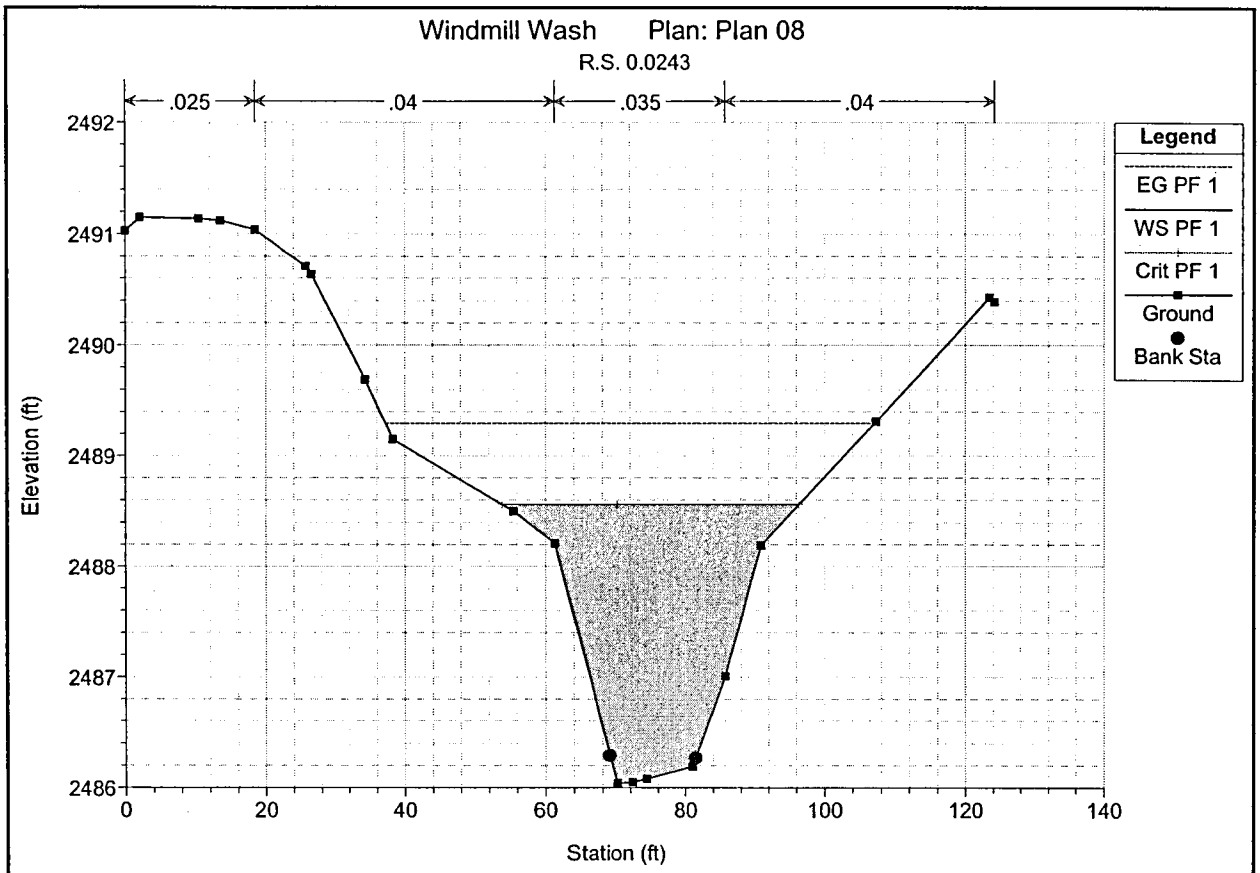

Windmill Wash Plan: Plan 08
R.S. 0.1577
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
2508
2506
2504
2502
2500
2498
2496
0
50
100
150
200

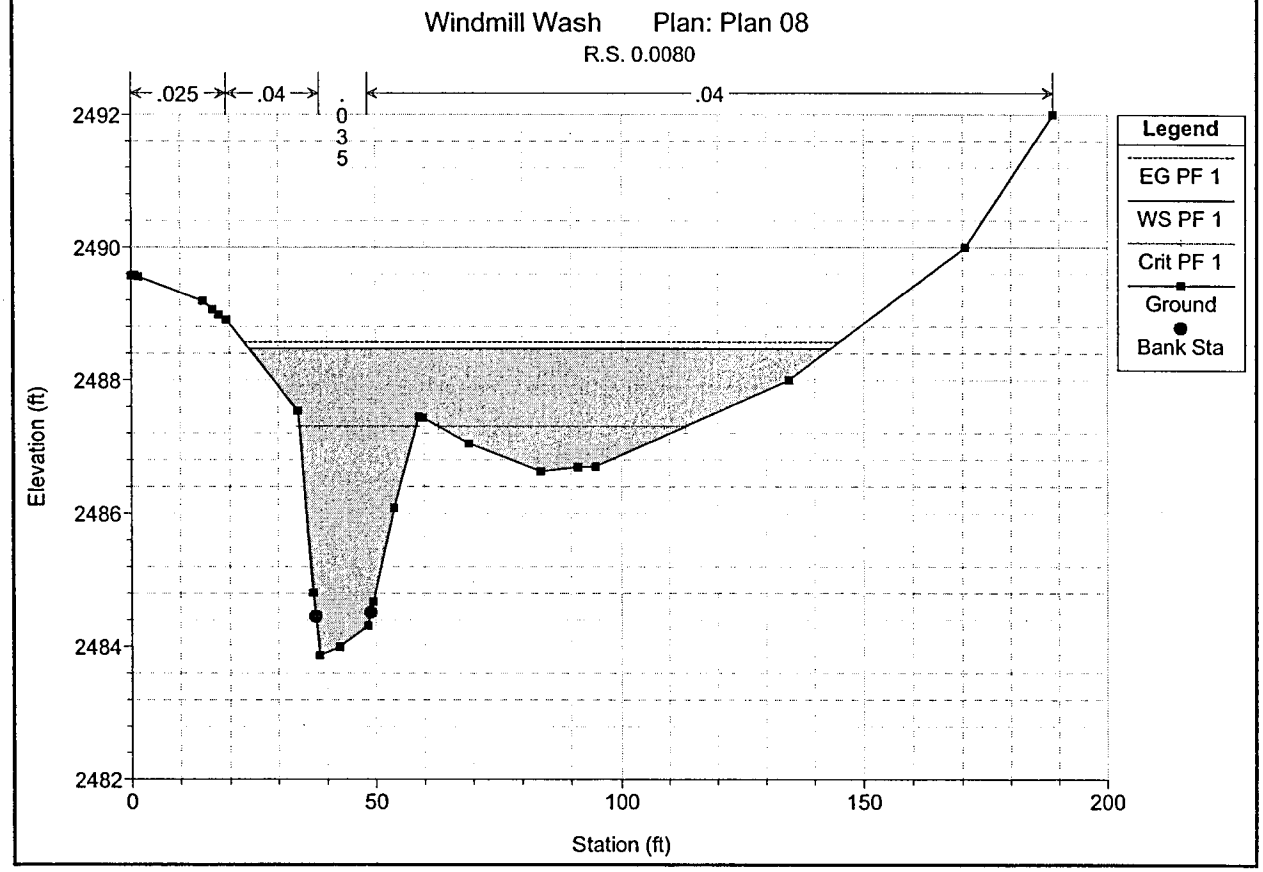

Windmill Wash Plan: Plan 08
R.S. 0.1306
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2503
2502
2501
2500
2499
2498
2497
2496
2495
0
50
100
150
200
250


Windmill Wash Plan: Plan 08
R.S. 0.1135
.04
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2506
2504
2502
2500
2498
2496
2494
0
50
100
150
200


Windmill Wash Plan: Plan 08
R.S. 0.0933
.025
.058
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2502
2500
2498
2496
2494
2492
0
20
40
60
80
100
120
140


Windmill Wash Plan: Plan 08
R.S. 0.0644
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2496
2495
2494
2493
2492
2491
2490
2489
0
50
100
150
200


Windmill Wash Plan: Plan 08
R.S. 0.0243
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2492
2491
2490
2489
2488
2487
2486
0
20
40
60
80
100
120
140


Windmill Wash Plan: Plan 08
R.S. 0.0080
.025
.04
.035
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2492
2490
2488
2486
2484
2482
0
50
100
150
200

APPENDIX E.3

Expansion and Contraction Coefficients

There was no special data or calibration efforts made during this study. Expansion and contraction coefficients used in the floodplain models are discussed in section 5.2.2.

Culvert Slope Check - Floodplain Mapping, Carefree Drainage Master Plan

TO: Tony Bokich

COPIES: File

FROM: Linda Johnson

DATE: January 28, 2003

Per Richard Harris'/FCDMC request, all multiple barrel culverts were checked for barrel slope differences. Per his direction, for adjacent culverts, where each barrel's slope differs by more than 0.5%, each culvert needed to be further analyzed for headwater elevation differences. This is necessary because the HEC-RAS program only allows one invert elevation for both upstream and downstream invert elevations, and cannot calculate different slopes on multiple barrel culverts.

The attached spreadsheet shows only 5 locations where the barrel slopes differ by more than 0.5%, 2 on Windmill Wash and 3 on the Stagecoach Pass tributary. The maximum slope difference was found to be 1.68% between barrels. In order to check headwater depth differences, the HEC-RAS models were run for the following three scenarios:

- Using an average upstream and average downstream invert elevation
- Using the invert elevations that result in the flattest barrel slope
- Using the invert elevations that result in the steepest barrel slope

These scenarios were run for the three greatest slope differentials (1.68%, 1.44%, and 0.97%), and results indicate that in **no case did the headwater water surface elevation differ by more than 0.06 feet**. Therefore, since the accuracy of the water surface is +/- 1 foot (using our 2-foot accuracy topographic mapping), the model is not sensitive to the barrel slope differences. An average of the upstream and downstream inverts will be used in the models.

Carefree DMP
Multiple Barrel Culvert Slope Variations.xls
04/21/2003 12:21 PM

Multiple Barrel Culvert Slope Variations

162944
By: ROL
Checked: LAJ

Culvert ID	Wash	River Station	$IE_{u/s}$	$IE_{d/s}$	Lenth (ft)	Slope	Greatest Difference
242	UC - South	0.3394	2076.15	2076.02	64	0.20%	0.28%
			2076.17	2076.09	64	0.12%	
			2075.99	2076.04	64	-0.08%	
			2076.12	2076.05	64	0.11%	
			2076.59	2076.13	64	0.72%	0.48%
			2076.44	2076.04	64	0.63%	
			2076.55	2075.84	64	1.11%	
			2076.38	2075.97	64	0.64%	
27	UC - North	0.7415	2117.52	2116.85	41.7	1.61%	0.48%
			2117.54	2116.86	41.7	1.63%	
			2117.59	2116.77	41.7	1.97%	
			2117.64	2116.77	41.7	2.09%	
20	UC - North	0.4415	2080.84	2078.91	60	3.22%	0.05%
			2080.82	2078.89	60	3.22%	
			2080.81	2078.87	60	3.23%	
			2080.82	2078.91	60	3.18%	
245	UEwm - Combined WM	1.0604	2579.64	2579.27	19.7	1.88%	0.51%
			2579.62	2579.34	19.7	1.42%	
			2579.61	2579.34	19.7	1.37%	
11	UEwm - Combined WM	0.9042	2566.4	2564.9	69	2.17%	1.68%
			2566.38	2564.98	69	2.03%	
			2566.32	2563.76	69	3.71%	
153	SCP	0.7537	2699.21	2696.73	79.3	3.13%	0.23%
			2699.47	2696.81	79.3	3.35%	
147	SCP	0.5727	2672.16	2671.06	99.6	1.10%	0.24%
			2672.09	2671.19	99.6	0.90%	
			2672.05	2671.19	99.6	0.86%	
148	SCP	0.5170	2666.74	2666.46	19.9	1.41%	0.75%
			2666.67	2666.34	19.9	1.66%	
			2666.87	2666.44	19.9	2.16%	
	SCP	0.4910	2664.48	2664.27	19.4	1.08%	1.44%
			2664.90	2664.41	19.4	2.53%	
			2664.65	2664.32	19.4	1.70%	
243	SCP	0.3527	2650.59	2649.76	81.2	1.02%	0.97%
			2650.99	2649.37	81.2	2.00%	
	Highlighted cells: Greatest Difference greater than 0.50 %						

Check #1 : Average Inverts

Plan: Plan 01 Unnamed Eastern Combined WM RS: 0.9042 Profile: PF 1

CULVERT ID NO. 11
PIMA ROAD CULVERT

Culv Q (cfs)	205.00	Culv Ful Lngh (ft)	
# Barrels	3	Culv Vel US (ft/s)	8.28
Q Barrel (cfs)	68.33	Culv Vel DS (ft/s)	9.40
E.G. US. (ft)	2569.82	Culv Inv El Up (ft)	2566.37
W.S. US. (ft)	2569.81	Culv Inv El Dn (ft)	2564.55
E.G. DS (ft)	2566.71	Culv Frctn Ls (ft)	1.76
W.S. DS (ft)	2566.11	Culv Ext Lss (ft)	0.81
Delta EG (ft)	3.10	Culv Ent Lss (ft)	0.53
Delta WS (ft)	3.69	Q Weir (cfs)	
E.G. IC (ft)	2569.52	Weir Sta Lft (ft)	
E.G. OC (ft)	2569.82	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	2568.22	Weir Max Depth (ft)	
Culv WS Outlet (ft)	2566.15	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.60	Wr Flw Area (sq ft)	
Culv Crt Depth (ft)	1.85	Min El Weir Flow (ft)	2571.66

check #2 - Flattest Slope

Plan: Plan 01 Unnamed Eastern Combined WM RS: 0.9042 Profile: PF 1

Culv Q (cfs)	205.00	Culv Ful Lngh (ft)	
# Barrels	3	Culv Vel US (ft/s)	8.28
Q Barrel (cfs)	68.33	Culv Vel DS (ft/s)	8.51
E.G. US. (ft)	2569.83	Culv Inv El Up (ft)	2566.38
W.S. US. (ft)	2569.82	Culv Inv El Dn (ft)	2564.98
E.G. DS (ft)	2566.71	Culv Frctn Ls (ft)	1.40
W.S. DS (ft)	2566.11	Culv Ext Lss (ft)	1.18
Delta EG (ft)	3.11	Culv Ent Lss (ft)	0.53
Delta WS (ft)	3.70	Q Weir (cfs)	
E.G. IC (ft)	2569.54	Weir Sta Lft (ft)	
E.G. OC (ft)	2569.83	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	2568.23	Weir Max Depth (ft)	
Culv WS Outlet (ft)	2566.77	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.79	Wr Flw Area (sq ft)	
Culv Crt Depth (ft)	1.85	Min El Weir Flow (ft)	2571.66

PIMA ROAD CULVERT

Check #3 - Steepest Slope

Plan: Plan 01 Unnamed Eastern Combined WM RS: 0.9042 Profile: PF 1

Culv Q (cfs)	205.00	Culv Ful Lngh (ft)	
# Barrels	3	Culv Vel US (ft/s)	8.28
Q Barrel (cfs)	68.33	Culv Vel DS (ft/s)	10.67
E.G. US. (ft)	2569.77	Culv Inv El Up (ft)	2566.32
W.S. US. (ft)	2569.76	Culv Inv El Dn (ft)	2563.76
E.G. DS (ft)	2566.71	Culv Frctn Ls (ft)	2.31
W.S. DS (ft)	2566.11	Culv Ext Lss (ft)	0.21
Delta EG (ft)	3.05	Culv Ent Lss (ft)	0.53
Delta WS (ft)	3.64	Q Weir (cfs)	
E.G. IC (ft)	2569.45	Weir Sta Lft (ft)	
E.G. OC (ft)	2569.77	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	2568.17	Weir Max Depth (ft)	
Culv WS Outlet (ft)	2565.16	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.39	Wr Flw Area (sq ft)	
Culv Crt Depth (ft)	1.85	Min El Weir Flow (ft)	2571.66

PIMA ROAD CULVERT

Check #1 : Using average of U/S & D/W Inverts

Plan: Plan 01 Unnamed Eastern Trib to Stagecoa RS: 0.4910 Profile: PF 1

Culv Q (cfs)	98.59	Culv Ful Lngh (ft)	19.40
# Barrels	3	Culv Vel US (ft/s)	8.26
Q Barrel (cfs)	32.86	Culv Vel DS (ft/s)	8.26
E.G. US. (ft)	2669.80	Culv Inv El Up (ft)	2664.68
W.S. US. (ft)	2669.74	Culv Inv El Dn (ft)	2664.33
E.G. DS (ft)	2666.64	Culv Frctn Ls (ft)	0.95
W.S. DS (ft)	2666.03	Culv Ext Lss (ft)	1.25
Delta EG (ft)	3.16	Culv Ent Lss (ft)	0.95
Delta WS (ft)	3.71	Q Weir (cfs)	53.41
E.G. IC (ft)	2669.80	Weir Sta Lft (ft)	104.75
E.G. OC (ft)	2669.80	Weir Sta Rgt (ft)	172.68
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2667.18	Weir Max Depth (ft)	0.67
Culv WS Outlet (ft)	2666.83	Weir Avg Depth (ft)	0.43
Culv Nml Depth (ft)	2.30	Wr Flw Area (sq ft)	29.52
Culv Crt Depth (ft)	2.30	Min El Weir Flow (ft)	2669.80

DRIVEWAY CULVERTS OFF OF WILDFLOWER DRIVE

Check #2: using flattest slope

Plan: Plan 01 Unnamed Eastern Trib to Stagecoa RS: 0.4910 Profile: PF 1

Culv Q (cfs)	99.25	Culv Ful Lngh (ft)	19.40
# Barrels	3	Culv Vel US (ft/s)	8.32
Q Barrel (cfs)	33.08	Culv Vel DS (ft/s)	8.32
E.G. US. (ft)	2669.77	Culv Inv El Up (ft)	2664.48
W.S. US. (ft)	2669.72	Culv Inv El Dn (ft)	2664.27
E.G. DS (ft)	2666.64	Culv Frctn Ls (ft)	0.96
W.S. DS (ft)	2666.03	Culv Ext Lss (ft)	1.21
Delta EG (ft)	3.14	Culv Ent Lss (ft)	0.97
Delta WS (ft)	3.69	Q Weir (cfs)	52.75
E.G. IC (ft)	2669.78	Weir Sta Lft (ft)	104.87
E.G. OC (ft)	2669.77	Weir Sta Rgt (ft)	172.64
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2666.98	Weir Max Depth (ft)	0.67
Culv WS Outlet (ft)	2666.77	Weir Avg Depth (ft)	0.43
Culv Nml Depth (ft)	2.30	Wr Flw Area (sq ft)	29.25
Culv Crt Depth (ft)	2.30	Min El Weir Flow (ft)	2669.80

DRIVEWAY CULVERTS OFF OF WILDFLOWER DRIVE

Check #3: using Steepest Slope

Plan: Plan 01 Unnamed Eastern Trib to Stagecoa RS: 0.4910 Profile: PF 1 Culvert ID: Culvert #1

Culv Q (cfs)	97.52	Culv Ful Lngh (ft)	19.40
# Barrels	3	Culv Vel US (ft/s)	8.17
Q Barrel (cfs)	32.51	Culv Vel DS (ft/s)	8.17
E.G. US. (ft)	2669.82	Culv Inv El Up (ft)	2664.90
W.S. US. (ft)	2669.76	Culv Inv El Dn (ft)	2664.41
E.G. DS (ft)	2666.64	Culv Frctn Ls (ft)	0.94
W.S. DS (ft)	2666.03	Culv Ext Lss (ft)	1.31
Delta EG (ft)	3.18	Culv Ent Lss (ft)	0.93
Delta WS (ft)	3.73	Q Weir (cfs)	54.48
E.G. IC (ft)	2669.82	Weir Sta Lft (ft)	104.56
E.G. OC (ft)	2669.82	Weir Sta Rgt (ft)	172.73
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2667.40	Weir Max Depth (ft)	0.68
Culv WS Outlet (ft)	2666.91	Weir Avg Depth (ft)	0.44
Culv Nml Depth (ft)	2.30	Wr Flw Area (sq ft)	29.95
Culv Crt Depth (ft)	2.30	Min El Weir Flow (ft)	2669.80

DRIVEWAY CULVERTS OFF OF WILDFLOWER DRIVE

check #1 : Using average of US & DS Inverts

Plan: Plan 01 Unnamed Eastern Trib to Stagecoa RS: 0.3527 Profile: PF 1

Culv Q (cfs)	60.30	Culv Ful Lngh (ft)	81.20
# Barrels	2	Culv Vel US (ft/s)	7.16
Q Barrel (cfs)	30.15	Culv Vel DS (ft/s)	7.16
E.G. US. (ft)	2656.63	Culv Inv El Up (ft)	2650.79
W.S. US. (ft)	2656.61	Culv Inv El Dn (ft)	2649.57
E.G. DS (ft)	2651.96	Culv Frctn Ls (ft)	2.86
W.S. DS (ft)	2651.25	Culv Ext Lss (ft)	1.41
Delta EG (ft)	4.67	Culv Ent Lss (ft)	0.40
Delta WS (ft)	5.36	Q Weir (cfs)	164.11
E.G. IC (ft)	2656.56	Weir Sta Lft (ft)	59.26
E.G. OC (ft)	2656.63	Weir Sta Rgt (ft)	172.68
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2653.79	Weir Max Depth (ft)	0.97
Culv WS Outlet (ft)	2652.57	Weir Avg Depth (ft)	0.65
Culv Nml Depth (ft)	2.50	Wr Flw Area (sq ft)	73.59
Culv Crt Depth (ft)	2.50	Min El Weir Flow (ft)	2655.67

DRIVEWAY CULVERT OFF OF STARDUST LANE

Check #2: Using flattest Slope

Plan: Plan 01 Unnamed Eastern Trib to Stagecoa RS: 0.3527 Profile: PF 1

Culv Q (cfs)	58.80	Culv Ful Lngh (ft)	81.20
# Barrels	2	Culv Vel US (ft/s)	6.98
Q Barrel (cfs)	29.40	Culv Vel DS (ft/s)	6.98
E.G. US. (ft)	2656.64	Culv Inv El Up (ft)	2650.59
W.S. US. (ft)	2656.63	Culv Inv El Dn (ft)	2649.76
E.G. DS (ft)	2651.96	Culv Frctn Ls (ft)	2.75
W.S. DS (ft)	2651.25	Culv Ext Lss (ft)	1.56
Delta EG (ft)	4.68	Culv Ent Lss (ft)	0.38
Delta WS (ft)	5.38	Q Weir (cfs)	166.20
E.G. IC (ft)	2656.55	Weir Sta Lft (ft)	59.04
E.G. OC (ft)	2656.64	Weir Sta Rgt (ft)	172.75
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2653.59	Weir Max Depth (ft)	0.97
Culv WS Outlet (ft)	2652.76	Weir Avg Depth (ft)	0.65
Culv Nml Depth (ft)	2.50	Wr Flw Area (sq ft)	74.29
Culv Crt Depth (ft)	2.50	Min El Weir Flow (ft)	2655.67

DRIVEWAY CULVERT OFF OF STARDUST LANE

Check #3: using Steepest Slope

Plan: Plan 01 Unnamed Eastern Trib to Stagecoa RS: 0.3527 Profile: PF 1

Culv Q (cfs)	61.81	Culv Ful Lngh (ft)	81.20
# Barrels	2	Culv Vel US (ft/s)	7.34
Q Barrel (cfs)	30.91	Culv Vel DS (ft/s)	7.34
E.G. US. (ft)	2656.61	Culv Inv El Up (ft)	2650.99
W.S. US. (ft)	2656.59	Culv Inv El Dn (ft)	2649.37
E.G. DS (ft)	2651.96	Culv Frctn Ls (ft)	2.98
W.S. DS (ft)	2651.25	Culv Ext Lss (ft)	1.25
Delta EG (ft)	4.65	Culv Ent Lss (ft)	0.42
Delta WS (ft)	5.34	Q Weir (cfs)	163.19
E.G. IC (ft)	2656.57	Weir Sta Lft (ft)	59.35
E.G. OC (ft)	2656.61	Weir Sta Rgt (ft)	172.65
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2653.99	Weir Max Depth (ft)	0.96
Culv WS Outlet (ft)	2652.37	Weir Avg Depth (ft)	0.65
Culv Nml Depth (ft)	2.50	Wr Flw Area (sq ft)	73.29
Culv Crt Depth (ft)	2.50	Min El Weir Flow (ft)	2655.67

DRIVEWAY CULVERT OFF OF STARDUST LANE

Ineffective Flow Area

= ineffective flow area

2118.2 = WSE

- not enough difference in elevation for side weir
- ineffective flow areas

∴ no side weir modeled

Galloway Wash Middle Branch

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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

PROJECT DATA
Project Title: Galloway Wash Middle Branch
Project File : MG_Final.prj
Run Date and Time: 04/19/2004 9:12:40 AM

Project in English units

Project Description:
Galloway Wash Middle Branch, FCD 2000C037
Prepared by CH2M HILL for the Flood
Control District of Maricopa County
Topographic Mapping Source: Flown and
mapped by M&B Aerial, Flight Date: 8/2/2001, 2' Contour Interval, Datum: NAD
83/NGVD29 from GDACS Control Network (developed and maintained by
MCDOT).
Discharge information from the Carefree Drainage Master Plan Data
Collection Report, Dated November 2002.
Discharge information: From 2094 cfs
to 2423 cfs (middle and combined branch), 209 cfs to 247 cfs (tributary, middle
branch 2)
Study Limits: Town of Carefree Boundary at approx. R.S.
1.5884
Project is Re-delineation of 1988 study by Cella Barr Associates (which
used 4' CI)
Downstream limits tie into the Floodplain Delineation Study of
Andora Hills and Galloway Washes, FP/FW = 2396.5, between R.S. 3.216 and R.S.
3.255
Roadway Dip crossings occur at 1.1895, 0.5212, and 0.1010 (middle branch
2)
Final Model Run: September 2003

PLAN DATA

Plan Title: Plan 04
Plan File : c:\Carefree\HEC-RAS Files\Report 4-9-04\MG_Final.p04

Geometry Title: Galloway Wash Middle Branch
Geometry File : c:\Carefree\HEC-RAS Files\Report 4-9-04\MG_Final.g02

Flow Title : Flow Data
Flow File : c:\Carefree\HEC-RAS Files\Report 4-9-04\MG_Final.f01

Plan Summary Information:

Number of:	Cross Sections =	77	Mulitple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information

```
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0
```

River = GalMidBrnch Reach = GalMidBrnch

RS	Profile	Method	Value1	Value2
1.6862	PF 2	1	249.43	424
1.6631	PF 2	1	321.91	605.2
1.6502	PF 2	1	400.01	657.46
1.6346	PF 2	1	493.44	676.68
1.6190	PF 2	1	638.19	765.68
1.6060	PF 2	1	186.37	399.34
1.5884	PF 2	1	216.14	481.48
1.5702	PF 2	1	219.9	487
1.5371	PF 2	1	156.28	369.42
1.5177	PF 2	1	291.42	463.47
1.4952	PF 2	1	258	332
1.4639	PF 2	1	210	313.32
1.4317	PF 2	1	229.37	356.19
1.4056	PF 2	1	131	245.7
1.3816	PF 2	1	138.61	267.22
1.3579	PF 2	1	315	457.98
1.3323	PF 2	1	231.47	345.36
1.2985	PF 2	1	225.74	336.83
1.2690	PF 2	1	93.07	240.87
1.2355	PF 2	1	81.91	178.35
1.1974	PF 2	1	98.98	220.18
1.1895	PF 2	1	112.06	297
1.1825	PF 2	1	90	340
1.1546	PF 2	1	95.56	368.54
1.1118	PF 2	1	327	433.6
1.0780	PF 2	1	428.23	508.08
1.0256	PF 2	1	290.11	346.08
0.9784	PF 2	1	194.31	265.07
0.9552	PF 2	1	224.18	304.32
0.9366	PF 2	1	190.67	272
0.9152	PF 2	1	143.07	231.51
0.8808	PF 2	1	68.75	146.59
0.8441	PF 2	1	88	190.22
0.8041	PF 2	1	83	235.54
0.7560	PF 2	1	107	257.08
0.7272	PF 2	1	98.41	189.77
0.6777	PF 2	1	51.19	122.3
0.6468	PF 2	1	57.79	137.9
0.5954	PF 2	1	188.5	258.82
0.5644	PF 2	1	177.81	254.84
0.5272	PF 2	1	277.48	354.38
0.5212	PF 2	1	287.05	363.32
0.5157	PF 2	1	292	368.6
0.5006	PF 2	1	350.07	416.38
0.4858	PF 2	1	378.49	432
0.4697	PF 2	1	365.19	427.76
0.4428	PF 2	1	341.3	412.54
0.4243	PF 2	1	253.13	326.51
0.4037	PF 2	1	154.1	214.48
0.3785	PF 2	1	71	127
0.3517	PF 2	1	26	81.11

River = GalMidBrnch Reach = GalMidBrnch Comb

RS	Profile	Method	Value1	Value2
[illegible]3065	PF 2	1	46.53	122
[illegible].2629	PF 2	1	75.7	154.27
0.2268	PF 2	1	48.51	106.73
0.2090	PF 2	1	45.64	104.55
0.1766	PF 2	1	65.35	109.9
0.1637	PF 2	1	183.73	234.32
0.1462	PF 2	1	140.77	204.85
0.1223	PF 2	1	117.46	178.26
0.1024	PF 2	1	84.74	159.49
0.0806	PF 2	1	63.37	248.23
0.0643	PF 2	1	63	140.5
0.0415	PF 2	1	60.17	165.27
0.0164	PF 2	1	113.2	231.77
0.0000	PF 2	1	28.29	140.26

River = GalMidBrnch Trib Reach = GalMidBrnch Trib

RS	Profile	Method	Value1	Value2
0.2762	PF 2	1	36.41	58.87
0.2568	PF 2	1	77.93	116.9
0.2437	PF 2	1	115.64	140.79
0.2045	PF 2	1	64.51	120.48
0.1760	PF 2	1	58.36	85.97
0.1568	PF 2	1	50.59	90.44
0.1295	PF 2	1	83.28	108.25
0.1105	PF 2	1	97.55	118.32
0.1010	PF 2	1	114.85	165.19
0.0954	PF 2	1	124	145.34
0.0792	PF 2	1	101.92	159.24
0.0439	PF 2	1	103.53	156.27

[illegible]OW DATA

Flow Title: Flow Data
Flow File : c:\Carefree\HEC-RAS Files\Report 4-9-04\MG_Final.f01

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2
GalMidBrnch	GalMidBrnch	1.6862	2094	2094
GalMidBrnch	GalMidBrnch	1.5884	2124	2124
GalMidBrnch	GalMidBrnch	1.4317	2153	2153
GalMidBrnch	GalMidBrnch	0.9152	2179	2179
GalMidBrnch	GalMidBrnch	0.6468	2204	2204
GalMidBrnch	GalMidBrnch	0.5272	2210	2210
GalMidBrnch	GalMidBrnch	1.6862	2094	2094
GalMidBrnch	GalMidBrnch	1.5884	2124	2124
GalMidBrnch	GalMidBrnch	1.4317	2153	2153
GalMidBrnch	GalMidBrnch	0.9152	2179	2179
GalMidBrnch	GalMidBrnch	0.6468	2204	2204
GalMidBrnch	GalMidBrnch	0.5272	2210	2210
GalMidBrnch	GalMidBrnch Comb	0.3065	2423	2423
GalMidBrnch	GalMidBrnch Comb	0.3065	2423	2423
GalMidBrnch Trib	GalMidBrnch Trib	0.2762	209	209
GalMidBrnch Trib	GalMidBrnch Trib	0.2045	228	228
GalMidBrnch Trib	GalMidBrnch Trib	0.1010	247	247

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
GalMidBrnch	GalMidBrnch	PF 1	Critical	
GalMidBrnch	GalMidBrnch Comb	PF 1		Known WS = 2396.5
GalMidBrnch Trib	GalMidBrnch Trib	PF 1	Critical	

[illegible]

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.6862

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2613.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.032	0.028	0.035
W.S. Elev (ft)	2612.78	Reach Len. (ft)	205.89	121.83	115.60
Crit W.S. (ft)	2612.78	Flow Area (sq ft)	243.17	120.49	2.03
E.G. Slope (ft/ft)	0.004525	Area (sq ft)	243.17	120.49	2.03
Q Total (cfs)	2094.00	Flow (cfs)	981.99	1107.39	4.61
Top Width (ft)	195.56	Top Width (ft)	165.68	27.96	1.92
Vel Total (ft/s)	5.73	Avg. Vel. (ft/s)	4.04	9.19	2.27
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)	1.47	4.31	1.06
Conv. Total (cfs)	31128.6	Conv. (cfs)	14597.9	16462.1	68.5
Length Wtd. (ft)	168.94	Wetted Per. (ft)	166.29	29.92	2.86
Min Ch El (ft)	2607.68	Shear (lb/sq ft)	0.41	1.14	0.20
Alpha	1.60	Stream Power (lb/ft s)	1.67	10.46	0.46
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	20.08	23.44	21.35
C & E Loss (ft)	0.09	Cum SA (acres)	18.37	7.51	16.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2614.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.	0.032	0.028	
W.S. Elev (ft)	2613.20	Reach Len. (ft)	205.89	121.83	115.60
Crit W.S. (ft)	2613.20	Flow Area (sq ft)	114.85	132.25	
E.G. Slope (ft/ft)	0.006397	Area (sq ft)	114.85	132.25	
Q Total (cfs)	2094.00	Flow (cfs)	669.41	1424.59	
Top Width (ft)	84.31	Top Width (ft)	56.35	27.96	
Vel Total (ft/s)	8.47	Avg. Vel. (ft/s)	5.83	10.77	
Max Chl Dpth (ft)	5.52	Hydr. Depth (ft)	2.04	4.73	
Conv. Total (cfs)	26180.7	Conv. (cfs)	8369.4	17811.2	
Length Wtd. (ft)	157.80	Wetted Per. (ft)	59.60	32.46	
Min Ch El (ft)	2607.68	Shear (lb/sq ft)	0.77	1.63	
Alpha	1.25	Stream Power (lb/ft s)	4.49	17.53	
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	8.78	25.77	10.48
C & E Loss (ft)	0.17	Cum SA (acres)	4.94	7.55	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	79.21	158.42	25.66	12.27	21.13	1.23	0.58	2.09
2	LOB	158.42	237.62	437.14	114.12	79.22	20.88	1.44	3.83
3	LOB	237.62	316.83	515.64	115.12	63.19	24.62	1.83	4.48
4	LOB	316.83	396.04	3.56	1.66	2.75	0.17	0.70	2.15
5	Chan	396.04	401.63	103.26	16.83	6.32	4.93	3.01	6.14
6	Chan	401.63	407.22	235.32	24.59	5.62	11.24	4.40	9.57
7	Chan	407.22	412.82	282.42	27.42	5.61	13.49	4.90	10.30
8	Chan	412.82	418.41	291.49	27.91	5.59	13.92	4.99	10.44
9	Chan	418.41	424.00	194.90	23.74	6.78	9.31	4.24	8.21
10	ROB	424.00	439.61	4.61	2.03	2.86	0.22	1.06	2.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	237.62	316.83	660.57	112.05	56.03	31.55	2.10	5.90
2	LOB	316.83	396.04	8.84	2.80	3.57	0.42	0.91	3.16
3	Chan	396.04	401.63	142.41	19.18	6.32	6.80	3.43	7.42
4	Chan	401.63	407.22	307.07	26.94	5.62	14.66	4.82	11.40
5	Chan	407.22	412.82	363.00	29.78	5.61	17.34	5.32	12.19
6	Chan	412.82	418.41	373.80	30.27	5.59	17.85	5.41	12.35
7	Chan	418.41	424.00	238.31	26.09	9.31	11.38	4.67	9.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.6631

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2608.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.032	0.027	
W.S. Elev (ft)	2608.41	Reach Len. (ft)	113.07	68.33	61.66
Crit W.S. (ft)	2608.41	Flow Area (sq ft)	396.15	86.18	
E.G. Slope (ft/ft)	0.004781	Area (sq ft)	396.15	86.18	
Q Total (cfs)	2094.00	Flow (cfs)	1365.53	728.47	
Top Width (ft)	378.37	Top Width (ft)	356.20	22.17	
Vel Total (ft/s)	4.34	Avg. Vel. (ft/s)	3.45	8.45	
Max Chl Dpth (ft)	4.87	Hydr. Depth (ft)	1.11	3.89	
Conv. Total (cfs)	30285.0	Conv. (cfs)	19749.2	10535.7	
Length Wtd. (ft)	98.95	Wetted Per. (ft)	356.59	26.19	
Min Ch El (ft)	2603.54	Shear (lb/sq ft)	0.33	0.98	
Alpha	1.73	Stream Power (lb/ft s)	1.14	8.30	
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	18.57	23.15	21.34
C & E Loss (ft)	0.03	Cum SA (acres)	17.14	7.44	16.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2609.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.	0.032	0.027	
W.S. Elev (ft)	2609.08	Reach Len. (ft)	113.07	68.33	61.66
Crit W.S. (ft)	2609.08	Flow Area (sq ft)	242.55	101.01	
E.G. Slope (ft/ft)	0.005295	Area (sq ft)	242.55	101.01	
Q Total (cfs)	2094.00	Flow (cfs)	1122.91	971.09	
Top Width (ft)	172.41	Top Width (ft)	149.87	22.54	
Vel Total (ft/s)	6.10	Avg. Vel. (ft/s)	4.63	9.61	
Max Chl Dpth (ft)	5.54	Hydr. Depth (ft)	1.62	4.48	
Conv. Total (cfs)	28777.5	Conv. (cfs)	15432.0	13345.5	
Length Wtd. (ft)	94.10	Wetted Per. (ft)	152.07	26.95	
Min Ch El (ft)	2603.54	Shear (lb/sq ft)	0.53	1.24	
Alpha	1.46	Stream Power (lb/ft s)	2.44	11.91	
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	7.94	25.44	10.48
C & E Loss (ft)	0.04	Cum SA (acres)	4.45	7.48	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	116.50	3.85	2.30	5.89	0.18	0.39	1.67
2	LOB	116.50	233.00	652.34	165.01	116.53	31.15	1.42	3.95
3	LOB	233.00	349.51	321.95	108.01	116.50	15.37	0.93	2.98
4	LOB	349.51	466.01	387.28	120.70	116.56	18.49	1.04	3.21
5	LOB	466.01	582.51	0.10	0.13	1.12	0.00	0.16	0.76
6	Chan	582.51	587.05	75.41	13.10	6.12	3.60	2.89	5.76
7	Chan	587.05	591.59	174.58	19.25	4.55	8.34	4.24	9.07
8	Chan	591.59	596.12	202.82	21.08	4.56	9.69	4.64	9.62
9	Chan	596.12	600.66	199.96	20.93	4.58	9.55	4.61	9.55
10	Chan	600.66	605.20	75.71	11.81	6.38	3.62	2.94	6.41

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	233.00	349.51	180.29	42.24	29.11	8.61	1.53	4.27
2	LOB	349.51	466.01	938.65	197.97	116.56	44.83	1.70	4.74
3	LOB	466.01	582.51	3.96	2.33	6.39	0.19	0.40	1.70
4	Chan	582.51	587.05	110.94	16.11	6.12	5.30	3.55	6.89
5	Chan	587.05	591.59	231.79	22.26	4.55	11.07	4.91	10.41
6	Chan	591.59	596.12	264.06	24.09	4.56	12.61	5.31	10.96
7	Chan	596.12	600.66	260.71	23.94	4.58	12.45	5.28	10.89
8	Chan	600.66	605.20	103.60	14.60	7.14	4.95	3.33	7.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.6502

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2606.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.032	0.025	
W.S. Elev (ft)	2605.94	Reach Len. (ft)	102.24	82.38	78.46
Crit W.S. (ft)	2605.94	Flow Area (sq ft)	479.08	70.96	
E.G. Slope (ft/ft)	0.004705	Area (sq ft)	479.08	70.96	
Q Total (cfs)	2094.00	Flow (cfs)	1500.85	593.15	
Top Width (ft)	511.36	Top Width (ft)	490.96	20.40	
Vel Total (ft/s)	3.81	Avg. Vel. (ft/s)	3.13	8.36	
Max Chl Dpth (ft)	4.47	Hydr. Depth (ft)	0.98	3.48	
Conv. Total (cfs)	30528.7	Conv. (cfs)	21881.0	8647.6	
Length Wtd. (ft)	94.49	Wetted Per. (ft)	491.12	24.17	
Min Ch El (ft)	2601.47	Shear (lb/sq ft)	0.29	0.86	
Alpha	1.85	Stream Power (lb/ft s)	0.90	7.21	
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	17.44	23.03	21.34
C & E Loss (ft)	0.01	Cum SA (acres)	16.04	7.41	16.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2607.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.032	0.025	
W.S. Elev (ft)	2606.65	Reach Len. (ft)	102.24	82.38	78.46
Crit W.S. (ft)	2606.65	Flow Area (sq ft)	301.65	85.76	
E.G. Slope (ft/ft)	0.005029	Area (sq ft)	301.65	85.76	
Q Total (cfs)	2094.00	Flow (cfs)	1289.34	804.66	
Top Width (ft)	222.63	Top Width (ft)	201.60	21.03	
Vel Total (ft/s)	5.41	Avg. Vel. (ft/s)	4.27	9.38	
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)	1.50	4.08	
Conv. Total (cfs)	29526.9	Conv. (cfs)	18180.6	11346.3	
Length Wtd. (ft)	92.52	Wetted Per. (ft)	203.98	25.82	
Min Ch El (ft)	2601.47	Shear (lb/sq ft)	0.46	1.04	

Alpha	1.54	Stream Power (lb/ft s)	1.98	9.78	
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	7.23	25.30	10.48
C & E Loss (ft)	0.02	Cum SA (acres)	4.00	7.45	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	127.26	32.45	13.50	18.64	1.55	0.73	2.40
2	LOB	127.26	254.52	571.32	162.70	127.27	27.28	1.28	3.51
3	LOB	254.52	381.78	335.52	118.22	127.27	16.02	0.93	2.84
4	LOB	381.78	509.04	514.01	152.70	127.26	24.55	1.20	3.37
5	LOB	509.04	636.30	47.55	31.96	90.68	2.27	0.35	1.49
6	Chan	636.30	640.53	33.58	7.36	5.32	1.60	2.10	4.56
7	Chan	640.53	644.76	161.33	17.26	4.25	7.70	4.08	9.35
8	Chan	644.76	649.00	180.63	18.47	4.25	8.63	4.37	9.78
9	Chan	649.00	653.23	161.26	17.25	4.25	7.70	4.08	9.35
10	Chan	653.23	657.46	56.36	10.61	6.10	2.69	2.53	5.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	381.78	509.04	970.96	204.31	111.20	46.37	1.87	4.75
2	LOB	509.04	636.30	318.38	97.34	92.78	15.20	1.05	3.27
3	Chan	636.30	640.53	52.20	10.08	6.25	2.49	2.46	5.18
4	Chan	640.53	644.76	216.40	20.28	4.25	10.33	4.79	10.67
5	Chan	644.76	649.00	238.35	21.50	4.25	11.38	5.08	11.09
6	Chan	649.00	653.23	216.34	20.27	4.25	10.33	4.79	10.67
7	Chan	653.23	657.46	81.37	13.63	6.83	3.89	3.22	5.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.6346

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2603.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.032	0.025	0.035
W.S. Elev (ft)	2603.47	Reach Len. (ft)	170.62	82.17	78.25
Crit W.S. (ft)	2603.47	Flow Area (sq ft)	484.95	117.39	30.27
E.G. Slope (ft/ft)	0.002280	Area (sq ft)	484.95	117.39	30.27
Q Total (cfs)	2094.00	Flow (cfs)	1070.86	928.27	94.87
Top Width (ft)	544.81	Top Width (ft)	504.63	24.94	15.24
Vel Total (ft/s)	3.31	Avg. Vel. (ft/s)	2.21	7.91	3.13
Max Chl Dpth (ft)	5.03	Hydr. Depth (ft)	0.96	4.71	1.99
Conv. Total (cfs)	43852.5	Conv. (cfs)	22425.9	19439.9	1986.7
Length Wtd. (ft)	123.83	Wetted Per. (ft)	505.70	25.24	15.75
Min Ch El (ft)	2598.44	Shear (lb/sq ft)	0.14	0.66	0.27
Alpha	2.80	Stream Power (lb/ft s)	0.30	5.23	0.86
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	16.30	22.85	21.32
C & E Loss (ft)	0.01	Cum SA (acres)	14.87	7.37	16.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2604.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.031	0.025	
W.S. Elev (ft)	2604.01	Reach Len. (ft)	170.62	82.17	78.25
Crit W.S. (ft)	2604.01	Flow Area (sq ft)	218.97	130.80	
E.G. Slope (ft/ft)	0.003566	Area (sq ft)	218.97	130.80	
Q Total (cfs)	2094.00	Flow (cfs)	848.19	1245.81	
Top Width (ft)	162.75	Top Width (ft)	137.81	24.94	
Vel Total (ft/s)	5.99	Avg. Vel. (ft/s)	3.87	9.52	
Max Chl Dpth (ft)	5.57	Hydr. Depth (ft)	1.59	5.24	
Conv. Total (cfs)	35067.4	Conv. (cfs)	14204.3	20863.1	
Length Wtd. (ft)	109.22	Wetted Per. (ft)	141.15	29.75	
Min Ch El (ft)	2598.44	Shear (lb/sq ft)	0.35	0.98	
Alpha	1.68	Stream Power (lb/ft s)	1.34	9.32	
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	6.62	25.09	10.48
C & E Loss (ft)	0.02	Cum SA (acres)	3.60	7.40	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	130.35	0.26	0.62	6.84	0.01	0.09	0.43
2	LOB	130.35	260.70	145.59	88.74	130.37	6.95	0.68	1.64
3	LOB	260.70	391.04	206.77	109.52	130.35	9.87	0.84	1.89
4	LOB	391.04	521.39	466.09	178.36	130.35	22.26	1.37	2.61
5	LOB	521.39	651.74	252.14	107.72	107.79	12.04	1.01	2.34
6	Chan	651.74	656.73	172.95	22.81	5.21	8.26	4.57	7.58
7	Chan	656.73	661.72	197.69	24.29	4.99	9.44	4.87	8.14
8	Chan	661.72	666.70	203.76	24.74	4.99	9.73	4.96	8.23

9	Chan	666.70	671.69	188.12	23.59	4.99	8.98	4.73	7.98
10	Chan	671.69	676.68	165.75	21.96	5.05	7.92	4.40	7.55
11	ROB	676.68	687.54	91.82	27.77	11.22	4.39	2.56	3.31
12	ROB	687.54	698.40	3.04	2.50	4.53	0.15	0.57	1.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	391.04	521.39	214.02	53.03	30.07	10.22	1.90	4.04
2	LOB	521.39	651.74	634.17	165.95	111.08	30.29	1.51	3.82
3	Chan	651.74	656.73	248.91	25.50	5.21	11.89	5.11	9.76
4	Chan	656.73	661.72	281.50	26.97	4.99	13.44	5.41	10.44
5	Chan	661.72	666.70	289.26	27.43	4.99	13.81	5.50	10.55
6	Chan	666.70	671.69	269.19	26.27	4.99	12.86	5.27	10.25
7	Chan	671.69	676.68	156.94	24.64	9.56	7.49	4.94	6.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.6190

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2600.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.032	0.031	0.058
W.S. Elev (ft)	2599.95	Reach Len. (ft)	221.23	68.64	63.20
Crit W.S. (ft)	2599.95	Flow Area (sq ft)	240.46	155.56	2.68
E.G. Slope (ft/ft)	0.005960	Area (sq ft)	308.16	155.56	2.68
Q Total (cfs)	2094.00	Flow (cfs)	905.96	1184.45	3.59
Top Width (ft)	387.81	Top Width (ft)	330.34	52.81	4.66
Vel Total (ft/s)	5.25	Avg. Vel. (ft/s)	3.77	7.61	1.34
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)	1.08	2.95	0.57
Conv. Total (cfs)	27123.2	Conv. (cfs)	11734.7	15342.0	46.5
Length Wtd. (ft)	167.07	Wetted Per. (ft)	223.88	53.55	4.80
Min Ch El (ft)	2596.60	Shear (lb/sq ft)	0.40	1.08	0.21
Alpha	1.41	Stream Power (lb/ft s)	1.51	8.23	0.28
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)	14.75	22.59	21.29
C & E Loss (ft)	0.03	Cum SA (acres)	13.23	7.29	16.88

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2601.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.032	0.032	
W.S. Elev (ft)	2600.45	Reach Len. (ft)	221.23	68.64	63.20
Crit W.S. (ft)	2600.45	Flow Area (sq ft)	87.60	181.87	
E.G. Slope (ft/ft)	0.007718	Area (sq ft)	87.60	181.87	
Q Total (cfs)	2094.00	Flow (cfs)	432.57	1661.43	
Top Width (ft)	117.22	Top Width (ft)	64.41	52.81	
Vel Total (ft/s)	7.77	Avg. Vel. (ft/s)	4.94	9.14	
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)	1.36	3.44	
Conv. Total (cfs)	23835.5	Conv. (cfs)	4923.8	18911.7	
Length Wtd. (ft)	134.20	Wetted Per. (ft)	66.52	55.20	
Min Ch El (ft)	2596.60	Shear (lb/sq ft)	0.63	1.59	
Alpha	1.18	Stream Power (lb/ft s)	3.13	14.50	
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	6.02	24.80	10.48
C & E Loss (ft)	0.02	Cum SA (acres)	3.20	7.33	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	158.67	317.33	0.00	13.62	44.23	0.00	0.31	0.00
2	LOB	317.33	476.00	0.00	54.08	62.71	0.00	0.86	0.00
3	LOB	476.00	594.44	501.63	130.78	118.44	23.96	1.10	3.84
4	LOB	594.44	712.87	404.34	109.68	105.43	19.31	1.04	3.69
5	Chan	712.87	723.43	213.55	29.58	11.10	10.20	2.80	7.22
6	Chan	723.43	733.99	297.53	34.94	10.56	14.21	3.31	8.52
7	Chan	733.99	744.56	296.12	34.84	10.56	14.14	3.30	8.50
8	Chan	744.56	755.12	257.47	32.04	10.57	12.30	3.03	8.04
9	Chan	755.12	765.68	119.78	24.15	10.76	5.72	2.29	4.96
10	ROB	765.68	778.30	3.59	2.68	4.80	0.17	0.57	1.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	594.44	712.87	432.58	87.60	66.52	20.66	1.36	4.94
2	Chan	712.87	723.43	303.82	34.85	11.10	14.51	3.30	8.72
3	Chan	723.43	733.99	412.39	40.20	10.56	19.69	3.81	10.26
4	Chan	733.99	744.56	410.70	40.11	10.56	19.61	3.80	10.24
5	Chan	744.56	755.12	363.94	37.30	10.57	17.38	3.53	9.76
6	Chan	755.12	765.68	170.58	29.41	12.41	8.15	2.78	5.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.6060

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2597.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.036	0.025	
W.S. Elev (ft)	2596.35	Reach Len. (ft)	85.00	92.13	97.00
Crit W.S. (ft)	2596.35	Flow Area (sq ft)	231.27	46.63	
E.G. Slope (ft/ft)	0.010928	Area (sq ft)	231.27	46.63	
Q Total (cfs)	2094.00	Flow (cfs)	1795.80	298.20	
Top Width (ft)	152.71	Top Width (ft)	106.68	46.04	
Vel Total (ft/s)	7.54	Avg. Vel. (ft/s)	7.76	6.40	
Max Chl Dpth (ft)	4.36	Hydr. Depth (ft)	2.17	1.01	
Conv. Total (cfs)	20031.0	Conv. (cfs)	17178.4	2852.6	
Length Wtd. (ft)	88.88	Wetted Per. (ft)	107.91	46.29	
Min Ch El (ft)	2594.92	Shear (lb/sq ft)	1.46	0.69	
Alpha	1.01	Stream Power (lb/ft s)	11.35	4.40	
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	13.38	22.43	21.29
C & E Loss (ft)	0.18	Cum SA (acres)	12.12	7.22	16.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2598.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.030	0.025	
W.S. Elev (ft)	2597.22	Reach Len. (ft)	85.00	92.13	97.00
Crit W.S. (ft)	2597.22	Flow Area (sq ft)	168.19	89.56	
E.G. Slope (ft/ft)	0.008909	Area (sq ft)	168.19	89.56	
Q Total (cfs)	2094.00	Flow (cfs)	1366.89	727.11	
Top Width (ft)	126.78	Top Width (ft)	75.62	51.16	
Vel Total (ft/s)	8.12	Avg. Vel. (ft/s)	8.13	8.12	
Max Chl Dpth (ft)	5.23	Hydr. Depth (ft)	2.22	1.75	
Conv. Total (cfs)	22185.1	Conv. (cfs)	14481.6	7703.5	
Length Wtd. (ft)	89.64	Wetted Per. (ft)	81.27	51.94	
Min Ch El (ft)	2594.92	Shear (lb/sq ft)	1.15	0.96	
Alpha	1.00	Stream Power (lb/ft s)	9.35	7.79	
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	5.37	24.58	10.48
C & E Loss (ft)	0.18	Cum SA (acres)	2.85	7.25	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	139.27	208.91	1420.17	178.20	65.42	67.82	2.77	7.97
2	LOB	208.91	278.54	375.61	53.07	42.49	17.94	1.25	7.08
3	LOB	278.54	348.18						
4	Chan	348.18	358.41	41.28	7.49	8.65	1.97	0.88	5.51
5	Chan	358.41	368.64	100.57	13.66	10.24	4.80	1.34	7.36
6	Chan	368.64	378.88	91.14	12.88	10.24	4.35	1.26	7.08
7	Chan	378.88	389.11	54.39	9.45	10.24	2.60	0.92	5.76
8	Chan	389.11	399.34	10.84	3.15	6.92	0.52	0.46	3.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	139.27	208.91	593.98	75.92	27.95	28.37	3.37	7.82
2	LOB	208.91	278.54	772.86	92.24	52.91	36.91	1.75	8.38
3	LOB	278.54	348.18	0.03	0.03	0.41	0.00	0.08	0.97
4	Chan	348.18	358.41	113.84	15.74	10.55	5.44	1.54	7.23
5	Chan	358.41	368.64	211.40	22.55	10.24	10.10	2.20	9.38
6	Chan	368.64	378.88	199.32	21.76	10.24	9.52	2.13	9.16
7	Chan	378.88	389.11	149.74	18.33	10.24	7.15	1.79	8.17
8	Chan	389.11	399.34	52.83	11.17	10.67	2.52	1.09	4.73

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.5884

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2594.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.032	0.058	0.040
W.S. Elev (ft)	2593.49	Reach Len. (ft)	96.10	96.10	96.10
Crit W.S. (ft)	2593.49	Flow Area (sq ft)	141.45	12.75	225.20
E.G. Slope (ft/ft)	0.014283	Area (sq ft)	141.45	12.75	225.20
Q Total (cfs)	2124.00	Flow (cfs)	930.81	16.24	1176.95
Top Width (ft)	372.76	Top Width (ft)	138.76	47.46	186.53
Vel Total (ft/s)	5.60	Avg. Vel. (ft/s)	6.58	1.27	5.23
Max Chl Dpth (ft)	2.91	Hydr. Depth (ft)	1.02	0.27	1.21
Conv. Total (cfs)	17772.5	Conv. (cfs)	7788.5	135.9	9848.1
Length Wtd. (ft)	96.10	Wetted Per. (ft)	139.13	47.49	186.78
Min Ch El (ft)	2592.85	Shear (lb/sq ft)	0.91	0.24	1.08

Alpha	1.09	Stream Power (lb/ft s)	5.97	0.30	5.62
Frctn Loss (ft)	1.16	Cum Volume (acre-ft)	13.02	22.37	21.04
C & E Loss (ft)	0.19	Cum SA (acres)	11.88	7.12	16.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2594.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.028	0.058	0.041
W.S. Elev (ft)	2594.31	Reach Len. (ft)	96.10	96.10	96.10
Crit W.S. (ft)	2594.31	Flow Area (sq ft)	119.20	61.61	168.79
E.G. Slope (ft/ft)	0.014085	Area (sq ft)	119.20	61.61	168.79
Q Total (cfs)	2124.00	Flow (cfs)	846.79	190.59	1086.62
Top Width (ft)	264.48	Top Width (ft)	111.00	60.00	93.48
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	7.10	3.09	6.44
Max Chl Dpth (ft)	3.00	Hydr. Depth (ft)	1.07	1.03	1.81
Conv. Total (cfs)	17896.9	Conv. (cfs)	7135.1	1606.0	9155.9
Length Wtd. (ft)	96.10	Wetted Per. (ft)	112.58	60.02	96.50
Min Ch El (ft)	2592.85	Shear (lb/sq ft)	0.93	0.90	1.54
Alpha	1.14	Stream Power (lb/ft s)	6.61	2.79	9.90
Frctn Loss (ft)	1.22	Cum Volume (acre-ft)	5.09	24.42	10.29
C & E Loss (ft)	0.22	Cum SA (acres)	2.67	7.13	5.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	131.20	196.80	688.50	81.27	44.69	32.42	1.83	8.47
2	LOB	196.80	262.40	56.13	23.74	35.69	2.64	0.67	2.36
3	LOB	262.40	328.00	186.18	36.44	58.75	8.77	0.62	5.11
4	Chan	328.00	340.00						
5	Chan	340.00	352.00	0.19	0.57	12.00	0.01	0.05	0.32
6	Chan	352.00	364.00	3.91	3.57	12.00	0.18	0.30	1.09
7	Chan	364.00	376.00	10.23	6.36	12.01	0.48	0.53	1.61
8	Chan	376.00	388.00	1.92	2.24	10.84	0.09	0.21	0.86
9	ROB	388.00	433.21	38.16	16.79	42.93	1.80	0.39	2.27
10	ROB	433.21	478.42	361.31	69.00	45.23	17.01	1.53	5.24
11	ROB	478.42	523.64	610.71	94.68	45.39	28.75	2.09	6.45
12	ROB	523.64	568.85	164.29	43.00	45.23	7.74	0.95	3.82
13	ROB	568.85	614.06	2.47	1.73	7.99	0.12	0.22	1.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	196.80	262.40	75.52	29.54	46.93	3.56	0.65	2.56
2	LOB	262.40	328.00	771.27	89.66	65.65	36.31	1.37	8.60
3	Chan	328.00	340.00	24.58	9.58	12.00	1.16	0.80	2.57
4	Chan	340.00	352.00	28.19	10.40	12.00	1.33	0.87	2.71
5	Chan	352.00	364.00	42.98	13.40	12.00	2.02	1.12	3.21
6	Chan	364.00	376.00	58.89	16.19	12.01	2.77	1.35	3.64
7	Chan	376.00	388.00	35.97	12.04	12.01	1.69	1.00	2.99
8	ROB	388.00	433.21	239.05	53.70	45.23	11.25	1.19	4.45
9	ROB	433.21	478.42	796.85	106.02	45.23	37.52	2.34	7.52
10	ROB	478.42	523.64	50.71	9.08	6.04	2.39	2.97	5.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.5702

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2591.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.17	Wt. n-Val.	0.041	0.036	0.041
W.S. Elev (ft)	2590.43	Reach Len. (ft)	175.21	175.01	184.00
Crit W.S. (ft)	2590.43	Flow Area (sq ft)	13.10	218.41	39.36
E.G. Slope (ft/ft)	0.010393	Area (sq ft)	13.10	218.41	39.36
Q Total (cfs)	2124.00	Flow (cfs)	35.58	1965.53	122.89
Top Width (ft)	147.53	Top Width (ft)	20.73	66.99	59.82
Vel Total (ft/s)	7.84	Avg. Vel. (ft/s)	2.72	9.00	3.12
Max Chl Dpth (ft)	4.79	Hydr. Depth (ft)	0.63	3.26	0.66
Conv. Total (cfs)	20834.8	Conv. (cfs)	349.0	19280.3	1205.5
Length Wtd. (ft)	176.48	Wetted Per. (ft)	21.11	69.67	60.22
Min Ch El (ft)	2585.64	Shear (lb/sq ft)	0.40	2.03	0.42
Alpha	1.23	Stream Power (lb/ft s)	1.09	18.30	1.32
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	12.85	22.11	20.74
C & E Loss (ft)	0.41	Cum SA (acres)	11.71	6.99	16.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2591.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.37	Wt. n-Val.	0.041	0.036	0.056
W.S. Elev (ft)	2590.44	Reach Len. (ft)	175.21	175.01	184.00
Crit W.S. (ft)	2590.44	Flow Area (sq ft)	13.30	219.06	3.64
E.G. Slope (ft/ft)	0.011522	Area (sq ft)	13.30	219.06	3.64
Q Total (cfs)	2124.00	Flow (cfs)	38.21	2079.92	5.87
Top Width (ft)	104.90	Top Width (ft)	20.84	66.99	17.07
Vel Total (ft/s)	9.00	Avg. Vel. (ft/s)	2.87	9.49	1.61
Max Chl Dpth (ft)	4.80	Hydr. Depth (ft)	0.64	3.27	0.21
Conv. Total (cfs)	19787.2	Conv. (cfs)	355.9	19376.6	54.7
Length Wtd. (ft)	175.67	Wetted Per. (ft)	21.23	69.67	17.21
Min Ch El (ft)	2585.64	Shear (lb/sq ft)	0.45	2.26	0.15
Alpha	1.09	Stream Power (lb/ft s)	1.29	21.47	0.25
Frctn Loss (ft)	1.22	Cum Volume (acre-ft)	4.95	24.11	10.10
C & E Loss (ft)	0.20	Cum SA (acres)	2.52	6.99	5.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	199.32	267.99	35.58	13.10	21.11	1.68	0.63	2.72
2	Chan	267.99	281.39	389.32	43.24	13.86	18.33	3.23	9.00
3	Chan	281.39	294.79	231.33	31.60	13.81	10.89	2.36	7.32
4	Chan	294.79	308.18	606.86	56.13	13.67	28.57	4.19	10.81
5	Chan	308.18	321.58	512.92	50.40	13.44	24.15	3.76	10.18
6	Chan	321.58	334.98	225.10	37.03	14.91	10.60	2.76	6.08
7	ROB	334.98	392.59	4.87	3.30	12.29	0.23	0.27	1.48
8	ROB	392.59	450.20						
9	ROB	450.20	507.80	1.04	1.16	9.26	0.05	0.13	0.90
10	ROB	507.80	565.41	116.98	34.91	38.67	5.51	0.91	3.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 2

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	199.32	267.99	38.21	13.30	21.23	1.80	0.64	2.87
2	Chan	267.99	281.39	412.08	43.37	13.86	19.40	3.24	9.50
3	Chan	281.39	294.79	245.31	31.73	13.81	11.55	2.37	7.73
4	Chan	294.79	308.18	641.60	56.26	13.67	30.21	4.20	11.40
5	Chan	308.18	321.58	542.52	50.54	13.44	25.54	3.77	10.74
6	Chan	321.58	334.98	238.42	37.17	14.91	11.22	2.77	6.42
7	ROB	334.98	392.59	5.73	3.42	13.55	0.27	0.25	1.68
8	ROB	392.59	450.20						
9	ROB	450.20	507.80	0.14	0.22	3.66	0.01	0.06	0.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.5371

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2587.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.040	0.037	0.033
W.S. Elev (ft)	2587.34	Reach Len. (ft)	100.00	102.43	106.00
Crit W.S. (ft)	2587.34	Flow Area (sq ft)	253.14	162.12	211.52
E.G. Slope (ft/ft)	0.002750	Area (sq ft)	253.14	162.12	211.52
Q Total (cfs)	2124.00	Flow (cfs)	522.58	1043.12	558.30
Top Width (ft)	473.52	Top Width (ft)	240.45	29.70	203.37
Vel Total (ft/s)	3.39	Avg. Vel. (ft/s)	2.06	6.43	2.64
Max Chl Dpth (ft)	5.97	Hydr. Depth (ft)	1.05	5.46	1.04
Conv. Total (cfs)	40503.5	Conv. (cfs)	9965.3	19891.7	10646.6
Length Wtd. (ft)	102.97	Wetted Per. (ft)	241.88	30.29	204.96
Min Ch El (ft)	2581.37	Shear (lb/sq ft)	0.18	0.92	0.18
Alpha	2.02	Stream Power (lb/ft s)	0.37	5.91	0.47
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	12.31	21.35	20.21
C & E Loss (ft)	0.04	Cum SA (acres)	11.18	6.80	15.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2588.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.049	0.037	0.039
W.S. Elev (ft)	2587.91	Reach Len. (ft)	100.00	102.43	106.00
Crit W.S. (ft)	2587.91	Flow Area (sq ft)	111.06	179.21	88.74
E.G. Slope (ft/ft)	0.004629	Area (sq ft)	111.06	179.21	88.74
Q Total (cfs)	2124.00	Flow (cfs)	222.24	1599.37	302.39
Top Width (ft)	213.14	Top Width (ft)	122.93	29.70	60.51

Vel Total (ft/s)	5.60	Avg. Vel. (ft/s)	2.00	8.92	3.41
Max Chl Dpth (ft)	6.54	Hydr. Depth (ft)	0.90	6.03	1.47
Conv. Total (cfs)	31219.3	Conv. (cfs)	3266.6	23508.1	4444.6
Length Wtd. (ft)	103.00	Wetted Per. (ft)	125.37	30.29	64.14
Min Ch El (ft)	2581.37	Shear (lb/sq ft)	0.26	1.71	0.40
Alpha	1.98	Stream Power (lb/ft s)	0.51	15.26	1.36
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	4.70	23.31	9.90
C & E Loss (ft)	0.02	Cum SA (acres)	2.23	6.80	5.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	-57.00	12.34	29.03	11.62	15.78	1.37	0.74	2.50
2	LOB	12.34	81.68	312.54	118.97	69.43	14.71	1.72	2.63
3	LOB	81.68	151.01	120.00	67.42	69.63	5.65	0.97	1.78
4	LOB	151.01	220.35	15.60	13.68	27.57	0.73	0.50	1.14
5	LOB	220.35	279.21	45.41	41.44	59.46	2.14	0.71	1.10
6	Chan	279.21	285.15	110.65	27.96	6.24	5.21	4.71	3.96
7	Chan	285.15	291.09	235.03	33.59	5.95	11.07	5.66	7.00
8	Chan	291.09	297.03	252.03	35.02	5.95	11.87	5.90	7.20
9	Chan	297.03	302.97	237.39	33.78	5.95	11.18	5.69	7.03
10	Chan	302.97	308.91	208.02	31.76	6.21	9.79	5.35	6.55
11	ROB	308.91	356.49	62.71	34.07	48.86	2.95	0.72	1.84
12	ROB	356.49	404.07	290.64	75.62	47.69	13.68	1.59	3.84
13	ROB	404.07	451.64	34.64	27.14	47.67	1.63	0.57	1.28
14	ROB	451.64	499.22	164.29	69.04	47.64	7.74	1.45	2.38
15	ROB	499.22	546.80	6.02	5.66	13.10	0.28	0.43	1.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	151.01	220.35	57.80	35.75	65.77	2.72	0.56	1.62
2	LOB	220.35	279.21	164.44	75.31	59.60	7.74	1.28	2.18
3	Chan	279.21	285.15	173.65	31.38	6.24	8.18	5.28	5.53
4	Chan	285.15	291.09	359.33	37.01	5.95	16.92	6.23	9.71
5	Chan	291.09	297.03	382.91	38.44	5.95	18.03	6.47	9.96
6	Chan	297.03	302.97	362.63	37.20	5.95	17.07	6.26	9.75
7	Chan	302.97	308.91	320.86	35.18	6.21	15.11	5.92	9.12
8	ROB	308.91	356.49	166.58	61.44	48.86	7.84	1.29	2.71
9	ROB	356.49	404.07	135.81	27.30	15.28	6.39	2.11	4.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.5177

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2585.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.043	0.034	0.033
W.S. Elev (ft)	2584.71	Reach Len. (ft)	118.80	118.80	118.80
Crit W.S. (ft)	2584.71	Flow Area (sq ft)	248.50	88.62	224.89
E.G. Slope (ft/ft)	0.004100	Area (sq ft)	248.50	88.62	224.89
Q Total (cfs)	2124.00	Flow (cfs)	555.75	755.27	812.98
Top Width (ft)	466.78	Top Width (ft)	261.34	16.50	188.95
Vel Total (ft/s)	3.78	Avg. Vel. (ft/s)	2.24	8.52	3.62
Max Chl Dpth (ft)	5.92	Hydr. Depth (ft)	0.95	5.37	1.19
Conv. Total (cfs)	33172.2	Conv. (cfs)	8679.6	11795.6	12697.0
Length Wtd. (ft)	118.80	Wetted Per. (ft)	262.53	16.72	189.94
Min Ch El (ft)	2578.79	Shear (lb/sq ft)	0.24	1.36	0.30
Alpha	2.25	Stream Power (lb/ft s)	0.54	11.56	1.10
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	11.74	21.05	19.68
C & E Loss (ft)	0.02	Cum SA (acres)	10.61	6.74	15.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2586.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.	0.049	0.034	0.033
W.S. Elev (ft)	2585.29	Reach Len. (ft)	118.80	118.80	118.80
Crit W.S. (ft)	2585.29	Flow Area (sq ft)	113.17	98.15	154.36
E.G. Slope (ft/ft)	0.005098	Area (sq ft)	113.17	98.15	154.36
Q Total (cfs)	2124.00	Flow (cfs)	355.56	998.44	770.00
Top Width (ft)	172.05	Top Width (ft)	65.08	16.50	90.47
Vel Total (ft/s)	5.81	Avg. Vel. (ft/s)	3.14	10.17	4.99
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	1.74	5.95	1.71
Conv. Total (cfs)	29748.3	Conv. (cfs)	4979.9	13984.0	10784.4
Length Wtd. (ft)	118.80	Wetted Per. (ft)	67.81	16.72	93.61
Min Ch El (ft)	2578.79	Shear (lb/sq ft)	0.53	1.87	0.52
Alpha	1.76	Stream Power (lb/ft s)	1.67	19.00	2.62
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	4.44	22.99	9.61
C & E Loss (ft)	0.06	Cum SA (acres)	2.02	6.74	4.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	71.30	2.53	1.91	5.22	0.12	0.37	1.33
2	LOB	71.30	142.60	289.64	102.89	71.34	13.64	1.44	2.82
3	LOB	142.60	213.90	76.32	46.25	71.46	3.59	0.65	1.65
4	LOB	213.90	285.20	14.70	13.97	42.38	0.69	0.33	1.05
5	LOB	285.20	356.50	172.55	83.48	72.12	8.12	1.17	2.07
6	Chan	356.50	359.80	123.75	16.89	3.38	5.83	5.12	7.33
7	Chan	359.80	363.10	168.67	18.69	3.34	7.94	5.67	9.02
8	Chan	363.10	366.40	172.80	18.91	3.32	8.14	5.73	9.14
9	Chan	366.40	369.70	155.08	17.73	3.32	7.30	5.37	8.75
10	Chan	369.70	373.00	134.96	16.39	3.36	6.35	4.97	8.23
11	ROB	373.00	415.51	164.46	40.21	43.24	7.74	0.95	4.09
12	ROB	415.51	458.01	210.57	52.56	42.61	9.91	1.24	4.01
13	ROB	458.01	500.52	299.24	72.68	42.53	14.09	1.71	4.12
14	ROB	500.52	543.02	116.90	47.00	42.52	5.50	1.11	2.49
15	ROB	543.02	585.53	21.83	12.45	19.03	1.03	0.66	1.75

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	285.20	356.50	355.56	113.17	67.81	16.74	1.74	3.14
2	Chan	356.50	359.80	164.82	18.79	3.38	7.76	5.70	8.77
3	Chan	359.80	363.10	221.27	20.60	3.34	10.42	6.24	10.74
4	Chan	363.10	366.40	226.28	20.82	3.32	10.65	6.31	10.87
5	Chan	366.40	369.70	205.17	19.63	3.32	9.66	5.95	10.45
6	Chan	369.70	373.00	180.90	18.30	3.36	8.52	5.54	9.89
7	ROB	373.00	415.51	291.81	64.75	43.24	13.74	1.52	4.51
8	ROB	415.51	458.01	405.88	77.10	42.61	19.11	1.81	5.26
9	ROB	458.01	500.52	72.31	12.51	7.75	3.40	2.29	5.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch

REACH: GalMidBrnch RS: 1.4952

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2582.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.044	0.038	0.055
W.S. Elev (ft)	2581.75	Reach Len. (ft)	156.42	165.35	171.61
Crit W.S. (ft)	2581.75	Flow Area (sq ft)	131.23	85.52	208.15
E.G. Slope (ft/ft)	0.007345	Area (sq ft)	131.23	85.52	208.15
Q Total (cfs)	2124.00	Flow (cfs)	293.89	792.44	1037.67
Top Width (ft)	301.30	Top Width (ft)	217.74	18.00	65.56
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)	2.24	9.27	4.99
Max Chl Dpth (ft)	5.40	Hydr. Depth (ft)	0.60	4.75	3.17
Conv. Total (cfs)	24782.9	Conv. (cfs)	3429.2	9246.2	12107.5
Length Wtd. (ft)	165.46	Wetted Per. (ft)	218.39	18.45	67.42
Min Ch El (ft)	2576.35	Shear (lb/sq ft)	0.28	2.13	1.42
Alpha	1.80	Stream Power (lb/ft s)	0.62	19.70	7.06
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	11.22	20.82	19.09
C & E Loss (ft)	0.02	Cum SA (acres)	9.95	6.70	15.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2583.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.56	Wt. n-Val.	0.058	0.038	0.054
W.S. Elev (ft)	2581.79	Reach Len. (ft)	156.42	165.35	171.61
Crit W.S. (ft)	2581.79	Flow Area (sq ft)	17.72	86.21	149.71
E.G. Slope (ft/ft)	0.013390	Area (sq ft)	17.72	86.21	149.71
Q Total (cfs)	2124.00	Flow (cfs)	75.74	1084.25	964.01
Top Width (ft)	74.00	Top Width (ft)	9.00	18.00	47.00
Vel Total (ft/s)	8.37	Avg. Vel. (ft/s)	4.27	12.58	6.44
Max Chl Dpth (ft)	5.44	Hydr. Depth (ft)	1.97	4.79	3.19
Conv. Total (cfs)	18355.5	Conv. (cfs)	654.5	9370.1	8331.0
Length Wtd. (ft)	165.72	Wetted Per. (ft)	10.23	18.45	52.83
Min Ch El (ft)	2576.35	Shear (lb/sq ft)	1.45	3.91	2.37
Alpha	1.43	Stream Power (lb/ft s)	6.19	49.13	15.25
Frctn Loss (ft)	1.55	Cum Volume (acre-ft)	4.26	22.73	9.19
C & E Loss (ft)	0.12	Cum SA (acres)	1.91	6.70	4.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	53.40	1.42	1.12	4.17	0.07	0.27	1.27
2	LOB	53.40	106.80	68.56	31.79	53.48	3.23	0.60	2.16
3	LOB	106.80	160.20	25.61	17.60	53.43	1.21	0.33	1.45
4	LOB	160.20	213.60	106.26	41.33	53.42	5.00	0.77	2.57
5	LOB	213.60	267.00	92.05	39.39	53.89	4.33	0.74	2.34

6	Chan	267.00	270.60	74.03	15.05	3.81	3.49	4.18	4.92
7	Chan	270.60	274.20	187.22	18.14	3.63	8.81	5.04	10.32
8	Chan	274.20	277.80	207.57	19.16	3.62	9.77	5.32	10.83
9	Chan	277.80	281.40	184.09	17.85	3.63	8.67	4.96	10.31
10	Chan	281.40	285.00	139.53	15.32	3.75	6.57	4.25	9.11
11	ROB	285.00	310.43	196.32	47.38	26.13	9.24	1.86	4.14
12	ROB	310.43	335.86	668.32	118.90	25.69	31.47	4.68	5.62
13	ROB	335.86	361.29	173.03	41.87	15.60	8.15	2.85	4.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	213.60	267.00	75.74	17.72	10.23	3.57	1.97	4.27
2	Chan	267.00	270.60	101.50	15.19	3.81	4.78	4.22	6.68
3	Chan	270.60	274.20	256.03	18.28	3.63	12.05	5.08	14.01
4	Chan	274.20	277.80	283.67	19.30	3.62	13.36	5.36	14.70
5	Chan	277.80	281.40	251.79	17.99	3.63	11.85	5.00	14.00
6	Chan	281.40	285.00	191.26	15.45	3.75	9.00	4.29	12.38
7	ROB	285.00	310.43	278.07	48.35	26.13	13.09	1.90	5.75
8	ROB	310.43	335.86	685.95	101.36	26.70	32.30	4.70	6.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.4639

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2578.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.044	0.036	0.046
W.S. Elev (ft)	2578.24	Reach Len. (ft)	134.51	169.92	207.70
Crit W.S. (ft)	2578.24	Flow Area (sq ft)	243.36	151.13	79.90
E.G. Slope (ft/ft)	0.004755	Area (sq ft)	243.36	151.13	79.90
Q Total (cfs)	2124.00	Flow (cfs)	592.83	1232.55	298.62
Top Width (ft)	316.76	Top Width (ft)	245.86	31.35	39.55
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	2.44	8.16	3.74
Max Chl Dpth (ft)	5.09	Hydr. Depth (ft)	0.99	4.82	2.02
Conv. Total (cfs)	30802.1	Conv. (cfs)	8597.2	17874.3	4330.6
Length Wtd. (ft)	171.48	Wetted Per. (ft)	246.51	31.64	40.11
Min Ch El (ft)	2573.15	Shear (lb/sq ft)	0.29	1.42	0.59
Alpha	2.11	Stream Power (lb/ft s)	0.71	11.56	2.21
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	10.54	20.37	18.52
C & E Loss (ft)	0.01	Cum SA (acres)	9.12	6.60	14.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2579.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.33	Wt. n-Val.	0.049	0.036	0.032
W.S. Elev (ft)	2578.57	Reach Len. (ft)	134.51	169.92	207.70
Crit W.S. (ft)	2578.57	Flow Area (sq ft)	119.18	161.51	6.18
E.G. Slope (ft/ft)	0.006904	Area (sq ft)	119.18	161.51	6.18
Q Total (cfs)	2124.00	Flow (cfs)	439.77	1658.73	25.50
Top Width (ft)	103.32	Top Width (ft)	70.53	31.35	1.44
Vel Total (ft/s)	7.40	Avg. Vel. (ft/s)	3.69	10.27	4.12
Max Chl Dpth (ft)	5.42	Hydr. Depth (ft)	1.69	5.15	4.29
Conv. Total (cfs)	25562.4	Conv. (cfs)	5292.6	19962.9	306.9
Length Wtd. (ft)	172.42	Wetted Per. (ft)	72.26	31.64	5.59
Min Ch El (ft)	2573.15	Shear (lb/sq ft)	0.71	2.20	0.48
Alpha	1.56	Stream Power (lb/ft s)	2.62	22.59	1.97
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	4.01	22.26	8.89
C & E Loss (ft)	0.09	Cum SA (acres)	1.77	6.60	4.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	55.27	53.74	20.27	20.92	2.53	0.98	2.65
2	LOB	55.27	111.59	63.92	34.94	56.32	3.01	0.62	1.83
3	LOB	111.59	167.90	115.99	49.95	56.32	5.46	0.89	2.32
4	LOB	167.90	224.22	146.28	57.41	56.32	6.89	1.02	2.55
5	LOB	224.22	280.53	212.91	80.79	56.62	10.02	1.43	2.64
6	Chan	280.53	286.80	141.46	29.25	6.45	6.66	4.66	4.84
7	Chan	286.80	293.07	265.64	31.19	6.27	12.51	4.97	8.52
8	Chan	293.07	299.34	277.62	30.33	6.27	13.07	4.84	9.15
9	Chan	299.34	305.61	280.99	30.55	6.27	13.23	4.87	9.20
10	Chan	305.61	311.88	266.83	29.81	6.38	12.56	4.75	8.95
11	ROB	311.88	333.33	234.89	53.65	21.69	11.06	2.50	4.38
12	ROB	333.33	354.79	63.73	26.26	18.42	3.00	1.45	2.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	167.90	224.22	71.10	19.73	15.64	3.35	1.39	3.60
2	LOB	224.22	280.53	368.66	99.45	56.62	17.36	1.77	3.71
3	Chan	280.53	286.80	191.12	31.32	6.45	9.00	5.00	6.10
4	Chan	286.80	293.07	356.45	33.27	6.27	16.78	5.31	10.71
5	Chan	293.07	299.34	373.59	32.41	6.27	17.59	5.17	11.53

6	Chan	299.34	305.61	377.84	32.63	6.27	17.79	5.20	11.58
7	Chan	305.61	311.88	359.74	31.89	6.38	16.94	5.09	11.28
8	ROB	311.88	333.33	25.50	6.18	5.59	1.20	4.29	4.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.4317

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2574.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.040	0.033	0.041
W.S. Elev (ft)	2573.67	Reach Len. (ft)	137.81	137.81	137.81
Crit W.S. (ft)	2573.67	Flow Area (sq ft)	120.07	130.68	184.53
E.G. Slope (ft/ft)	0.006421	Area (sq ft)	120.07	130.68	184.53
Q Total (cfs)	2153.00	Flow (cfs)	307.63	1123.32	722.05
Top Width (ft)	331.97	Top Width (ft)	160.34	34.66	136.96
Vel Total (ft/s)	4.95	Avg. Vel. (ft/s)	2.56	8.60	3.91
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)	0.75	3.77	1.35
Conv. Total (cfs)	26868.1	Conv. (cfs)	3839.0	14018.4	9010.7
Length Wtd. (ft)	137.81	Wetted Per. (ft)	160.59	34.96	138.17
Min Ch El (ft)	2569.48	Shear (lb/sq ft)	0.30	1.50	0.54
Alpha	1.82	Stream Power (lb/ft s)	0.77	12.88	2.09
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	9.98	19.82	17.89
C & E Loss (ft)	0.03	Cum SA (acres)	8.49	6.47	14.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2575.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.14	Wt. n-Val.		0.034	0.044
W.S. Elev (ft)	2574.22	Reach Len. (ft)	137.81	137.81	137.81
Crit W.S. (ft)	2574.22	Flow Area (sq ft)		149.79	152.39
E.G. Slope (ft/ft)	0.008211	Area (sq ft)		149.79	152.39
Q Total (cfs)	2153.00	Flow (cfs)		1482.85	670.15
Top Width (ft)	126.82	Top Width (ft)		34.66	92.16
Vel Total (ft/s)	7.13	Avg. Vel. (ft/s)		9.90	4.40
Max Chl Dpth (ft)	4.74	Hydr. Depth (ft)		4.32	1.65
Conv. Total (cfs)	23759.8	Conv. (cfs)		16364.2	7395.6
Length Wtd. (ft)	137.81	Wetted Per. (ft)		38.03	95.04
Min Ch El (ft)	2569.48	Shear (lb/sq ft)		2.02	0.82
Alpha	1.45	Stream Power (lb/ft s)		19.99	3.61
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	3.83	21.66	8.51
C & E Loss (ft)	0.01	Cum SA (acres)	1.66	6.47	4.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.87	91.75	0.93	1.95	22.73	0.04	0.09	0.48
2	LOB	91.75	137.62	41.33	23.64	45.89	1.92	0.52	1.75
3	LOB	137.62	183.50	167.29	54.71	45.90	7.77	1.19	3.06
4	LOB	183.50	229.37	98.07	39.77	46.07	4.56	0.87	2.47
5	Chan	229.37	236.30	165.90	23.73	7.15	7.71	3.42	6.99
6	Chan	236.30	243.23	263.17	28.29	6.93	12.22	4.08	9.30
7	Chan	243.23	250.17	246.11	27.18	6.93	11.43	3.92	9.06
8	Chan	250.17	257.10	236.10	26.51	6.93	10.97	3.82	8.91
9	Chan	257.10	264.03	212.03	24.97	7.01	9.85	3.60	8.49
10	ROB	264.03	297.40	136.55	39.84	33.72	6.34	1.19	3.43
11	ROB	297.40	330.77	25.07	18.46	33.38	1.16	0.55	1.36
12	ROB	330.77	364.13	224.57	54.06	33.75	10.43	1.62	4.15
13	ROB	364.13	397.50	328.87	69.28	33.48	15.27	2.08	4.75
14	ROB	397.50	430.87	6.98	2.89	3.84	0.32	0.83	2.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	229.37	236.30	190.04	27.55	10.22	8.83	3.97	6.90
2	Chan	236.30	243.23	351.40	32.12	6.93	16.32	4.63	10.94
3	Chan	243.23	250.17	331.30	31.00	6.93	15.39	4.47	10.69
4	Chan	250.17	257.10	319.47	30.33	6.93	14.84	4.38	10.53
5	Chan	257.10	264.03	290.63	28.79	7.01	13.50	4.15	10.10
6	ROB	264.03	297.40	264.26	58.23	33.72	12.27	1.75	4.54
7	ROB	297.40	330.77	90.93	36.86	33.38	4.22	1.10	2.47
8	ROB	330.77	364.13	314.96	57.30	27.94	14.63	2.25	5.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.4056

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2571.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.036	0.032	0.040
W.S. Elev (ft)	2570.55	Reach Len. (ft)	126.72	126.72	126.72
Crit W.S. (ft)	2570.55	Flow Area (sq ft)	60.40	66.40	294.64
E.G. Slope (ft/ft)	0.008233	Area (sq ft)	60.40	66.40	294.64
Q Total (cfs)	2153.00	Flow (cfs)	210.71	640.67	1301.62
Top Width (ft)	295.24	Top Width (ft)	70.54	19.00	205.70
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	3.49	9.65	4.42
Max Chl Dpth (ft)	3.91	Hydr. Depth (ft)	0.86	3.49	1.43
Conv. Total (cfs)	23728.5	Conv. (cfs)	2322.2	7060.9	14345.4
Length Wtd. (ft)	126.72	Wetted Per. (ft)	71.02	19.16	207.17
Min Ch El (ft)	2566.82	Shear (lb/sq ft)	0.44	1.78	0.73
Alpha	1.56	Stream Power (lb/ft s)	1.52	17.19	3.23
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	9.70	19.51	17.14
C & E Loss (ft)	0.01	Cum SA (acres)	8.13	6.39	13.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2572.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.		0.032	0.041
W.S. Elev (ft)	2571.08	Reach Len. (ft)	126.72	126.72	126.72
Crit W.S. (ft)	2571.08	Flow Area (sq ft)		76.44	203.84
E.G. Slope (ft/ft)	0.010972	Area (sq ft)		76.44	203.84
Q Total (cfs)	2153.00	Flow (cfs)		833.77	1319.24
Top Width (ft)	114.70	Top Width (ft)		19.00	95.70
Vel Total (ft/s)	7.68	Avg. Vel. (ft/s)		10.91	6.47
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)		4.02	2.13
Conv. Total (cfs)	20554.1	Conv. (cfs)		7959.7	12594.4
Length Wtd. (ft)	126.72	Wetted Per. (ft)		22.77	97.65
Min Ch El (ft)	2566.82	Shear (lb/sq ft)		2.30	1.43
Alpha	1.22	Stream Power (lb/ft s)		25.09	9.25
Frctn Loss (ft)	1.38	Cum Volume (acre-ft)	3.83	21.30	7.94
C & E Loss (ft)	0.00	Cum SA (acres)	1.66	6.39	4.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	52.40	78.60	1.68	2.23	18.14	0.08	0.12	0.75
2	LOB	78.60	104.80	70.77	24.42	26.23	3.29	0.93	2.90
3	LOB	104.80	131.00	138.26	33.75	26.65	6.42	1.29	4.10
4	Chan	131.00	134.80	131.05	13.62	3.94	6.09	3.58	9.62
5	Chan	134.80	138.60	134.74	13.65	3.80	6.26	3.59	9.87
6	Chan	138.60	142.40	129.30	13.32	3.80	6.01	3.50	9.71
7	Chan	142.40	146.20	127.92	13.23	3.80	5.94	3.48	9.67
8	Chan	146.20	150.00	117.65	12.59	3.81	5.46	3.31	9.35

9	ROB	150.00	197.78	338.88	79.63	47.87	15.74	1.67	4.26
10	ROB	197.78	245.56	363.77	73.47	48.17	16.90	1.54	4.95
11	ROB	245.56	293.34	82.55	33.12	47.88	3.83	0.69	2.49
12	ROB	293.34	341.12	479.55	95.68	48.52	22.27	2.00	5.01
13	ROB	341.12	388.90	36.88	12.75	14.74	1.71	0.87	2.89

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	131.00	134.80	118.49	15.63	7.55	5.50	4.11	7.58
2	Chan	134.80	138.60	187.75	15.66	3.80	8.72	4.12	11.99
3	Chan	138.60	142.40	181.14	15.32	3.80	8.41	4.03	11.82
4	Chan	142.40	146.20	179.47	15.24	3.80	8.34	4.01	11.78
5	Chan	146.20	150.00	166.91	14.60	3.81	7.75	3.84	11.44
6	ROB	150.00	197.78	616.02	104.90	47.87	28.61	2.20	5.87
7	ROB	197.78	245.56	703.01	98.74	48.17	32.65	2.07	7.12
8	ROB	245.56	293.34	0.20	0.21	1.61	0.01	1.48	0.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.3816

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2568.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.	0.055	0.036	0.040
W.S. Elev (ft)	2567.77	Reach Len. (ft)	125.14	125.14	125.14
Crit W.S. (ft)	2567.77	Flow Area (sq ft)	41.10	134.29	210.14
E.G. Slope (ft/ft)	0.008670	Area (sq ft)	41.10	134.29	210.14
Q Total (cfs)	2153.00	Flow (cfs)	114.01	1149.16	889.83
Top Width (ft)	263.02	Top Width (ft)	42.13	40.93	179.96
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	2.77	8.56	4.23
Max Chl Dpth (ft)	3.62	Hydr. Depth (ft)	0.98	3.28	1.17
Conv. Total (cfs)	23122.2	Conv. (cfs)	1224.5	12341.4	9556.3
Length Wtd. (ft)	125.14	Wetted Per. (ft)	42.35	41.20	181.39
Min Ch El (ft)	2564.15	Shear (lb/sq ft)	0.53	1.76	0.63
Alpha	1.50	Stream Power (lb/ft s)	1.46	15.10	2.66
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	9.55	19.22	16.40
C & E Loss (ft)	0.02	Cum SA (acres)	7.96	6.30	13.28

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2569.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.		0.037	0.045
W.S. Elev (ft)	2568.37	Reach Len. (ft)	125.14	125.14	125.14
Crit W.S. (ft)	2568.37	Flow Area (sq ft)		158.47	132.09
E.G. Slope (ft/ft)	0.010779	Area (sq ft)		158.47	132.09
Q Total (cfs)	2153.00	Flow (cfs)		1533.81	619.19
Top Width (ft)	128.61	Top Width (ft)		40.93	87.68
Vel Total (ft/s)	7.41	Avg. Vel. (ft/s)		9.68	4.69
Max Chl Dpth (ft)	4.21	Hydr. Depth (ft)		3.87	1.51
Conv. Total (cfs)	20737.3	Conv. (cfs)		14773.4	5963.9
Length Wtd. (ft)	125.14	Wetted Per. (ft)		44.26	91.22
Min Ch El (ft)	2564.15	Shear (lb/sq ft)		2.41	0.97
Alpha	1.33	Stream Power (lb/ft s)		23.32	4.57
Frctn Loss (ft)	1.31	Cum Volume (acre-ft)	3.83	20.96	7.46
C & E Loss (ft)	0.07	Cum SA (acres)	1.66	6.30	3.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	83.17	110.89	8.69	5.10	14.43	0.40	0.35	1.70
2	LOB	110.89	138.61	105.32	36.00	27.92	4.89	1.30	2.93
3	Chan	138.61	146.80	185.84	27.11	8.35	8.63	3.31	6.86
4	Chan	146.80	154.98	235.70	26.44	8.20	10.95	3.23	8.91
5	Chan	154.98	163.17	245.26	27.07	8.19	11.39	3.31	9.06
6	Chan	163.17	171.35	261.82	28.15	8.19	12.16	3.44	9.30
7	Chan	171.35	179.54	220.54	25.51	8.28	10.24	3.12	8.64
8	ROB	179.54	222.58	133.55	42.04	43.17	6.20	0.98	3.18
9	ROB	222.58	265.62	159.13	34.08	39.73	7.39	0.86	4.67
10	ROB	265.62	308.66	190.96	48.75	43.28	8.87	1.13	3.92
11	ROB	308.66	351.70	268.29	60.25	43.21	12.46	1.40	4.45
12	ROB	351.70	394.74	137.90	25.03	12.02	6.41	2.21	5.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	138.61	146.80	223.92	31.94	11.41	10.40	3.90	7.01
2	Chan	146.80	154.98	321.65	31.28	8.20	14.94	3.82	10.28
3	Chan	154.98	163.17	332.71	31.91	8.19	15.45	3.90	10.43

4	Chan	163.17	171.35	351.73	32.99	8.19	16.34	4.03	10.66
5	Chan	171.35	179.54	303.80	30.35	8.28	14.11	3.71	10.01
6	ROB	179.54	222.58	291.83	67.46	43.17	13.55	1.57	4.33
7	ROB	222.58	265.62	307.03	59.43	43.26	14.26	1.38	5.17
8	ROB	265.62	308.66	20.32	5.19	4.79	0.94	3.25	3.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.3579

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2565.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.052	0.036	0.036
W.S. Elev (ft)	2565.15	Reach Len. (ft)	135.17	135.17	135.17
Crit W.S. (ft)	2565.15	Flow Area (sq ft)	51.72	107.51	215.85
E.G. Slope (ft/ft)	0.009084	Area (sq ft)	51.72	107.51	215.85
Q Total (cfs)	2153.00	Flow (cfs)	123.66	889.78	1139.56
Top Width (ft)	287.48	Top Width (ft)	90.84	35.00	161.64
Vel Total (ft/s)	5.74	Avg. Vel. (ft/s)	2.39	8.28	5.28
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)	0.57	3.07	1.34
Conv. Total (cfs)	22589.9	Conv. (cfs)	1297.5	9335.8	11956.6
Length Wtd. (ft)	135.17	Wetted Per. (ft)	90.99	35.23	162.60
Min Ch El (ft)	2561.75	Shear (lb/sq ft)	0.32	1.73	0.75
Alpha	1.32	Stream Power (lb/ft s)	0.77	14.32	3.97
Frctn Loss (ft)	1.25	Cum Volume (acre-ft)	9.42	18.87	15.79
C & E Loss (ft)	0.00	Cum SA (acres)	7.77	6.19	12.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2566.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.		0.038	0.040
W.S. Elev (ft)	2565.91	Reach Len. (ft)	135.17	135.17	135.17
Crit W.S. (ft)	2565.91	Flow Area (sq ft)		134.19	179.56
E.G. Slope (ft/ft)	0.010174	Area (sq ft)		134.19	179.56
Q Total (cfs)	2153.00	Flow (cfs)		1221.44	931.56
Top Width (ft)	142.98	Top Width (ft)		35.00	107.98
Vel Total (ft/s)	6.86	Avg. Vel. (ft/s)		9.10	5.19
Max Chl Dpth (ft)	4.16	Hydr. Depth (ft)		3.83	1.66
Conv. Total (cfs)	21345.6	Conv. (cfs)		12109.7	9235.9
Length Wtd. (ft)	135.17	Wetted Per. (ft)		38.30	110.20
Min Ch El (ft)	2561.75	Shear (lb/sq ft)		2.23	1.03
Alpha	1.25	Stream Power (lb/ft s)		20.26	5.37
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)	3.83	20.54	7.01
C & E Loss (ft)	0.02	Cum SA (acres)	1.66	6.19	3.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	189.00	252.00	1.69	2.52	27.85	0.08	0.09	0.67
2	LOB	252.00	315.00	121.97	49.21	63.15	5.67	0.78	2.48
3	Chan	315.00	322.00	153.12	21.70	7.16	7.11	3.10	7.06
4	Chan	322.00	329.00	204.39	22.54	7.00	9.49	3.22	9.07
5	Chan	329.00	336.00	186.74	21.35	7.00	8.67	3.05	8.75
6	Chan	336.00	343.00	188.09	21.44	7.00	8.74	3.06	8.77
7	Chan	343.00	350.00	157.44	20.47	7.06	7.31	2.92	7.69
8	ROB	350.00	392.31	176.90	47.42	42.43	8.22	1.12	3.73
9	ROB	392.31	434.63	70.24	27.22	42.31	3.26	0.64	2.58
10	ROB	434.63	476.94	261.90	60.08	42.55	12.16	1.42	4.36
11	ROB	476.94	519.26	630.51	81.12	35.31	29.29	2.34	7.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	315.00	322.00	190.27	27.04	10.23	8.84	3.86	7.04
2	Chan	322.00	329.00	281.86	27.88	7.00	13.09	3.98	10.11
3	Chan	329.00	336.00	262.12	26.69	7.00	12.17	3.81	9.82
4	Chan	336.00	343.00	263.65	26.78	7.00	12.25	3.83	9.85
5	Chan	343.00	350.00	223.54	25.81	7.06	10.38	3.69	8.66
6	ROB	350.00	392.31	450.34	79.68	42.43	20.92	1.88	5.65
7	ROB	392.31	434.63	277.07	59.47	42.31	12.87	1.41	4.66
8	ROB	434.63	476.94	204.15	40.41	25.46	9.48	1.73	5.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.3323

SS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2562.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.050	0.032	0.037
W.S. Elev (ft)	2562.27	Reach Len. (ft)	209.05	178.15	147.07
Crit W.S. (ft)	2562.27	Flow Area (sq ft)	41.76	72.25	261.42
E.G. Slope (ft/ft)	0.009465	Area (sq ft)	41.76	72.25	261.42
Q Total (cfs)	2153.00	Flow (cfs)	114.85	672.26	1365.89
Top Width (ft)	257.81	Top Width (ft)	57.83	24.31	175.68
Vel Total (ft/s)	5.73	Avg. Vel. (ft/s)	2.75	9.30	5.22
Max Chl Dpth (ft)	3.45	Hydr. Depth (ft)	0.72	2.97	1.49
Conv. Total (cfs)	22130.4	Conv. (cfs)	1180.5	6910.0	14039.8
Length Wtd. (ft)	161.08	Wetted Per. (ft)	58.05	24.44	176.33
Min Ch El (ft)	2558.82	Shear (lb/sq ft)	0.43	1.75	0.88
Alpha	1.36	Stream Power (lb/ft s)	1.17	16.25	4.58
Frctn Loss (ft)	1.68	Cum Volume (acre-ft)	9.27	18.59	15.05
C & E Loss (ft)	0.02	Cum SA (acres)	7.54	6.10	12.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2563.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.		0.032	0.038
W.S. Elev (ft)	2562.85	Reach Len. (ft)	209.05	178.15	147.07
Crit W.S. (ft)	2562.85	Flow Area (sq ft)		86.28	189.86
.G. Slope (ft/ft)	0.010913	Area (sq ft)		86.28	189.86
Total (cfs)	2153.00	Flow (cfs)		889.49	1263.51
Top Width (ft)	113.89	Top Width (ft)		24.31	89.58
Vel Total (ft/s)	7.80	Avg. Vel. (ft/s)		10.31	6.65
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)		3.55	2.12
Conv. Total (cfs)	20610.1	Conv. (cfs)		8514.8	12095.3
Length Wtd. (ft)	160.28	Wetted Per. (ft)		27.85	91.37
Min Ch El (ft)	2558.82	Shear (lb/sq ft)		2.11	1.42
Alpha	1.15	Stream Power (lb/ft s)		21.76	9.42
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)	3.83	20.20	6.43
C & E Loss (ft)	0.00	Cum SA (acres)	1.66	6.10	3.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	138.88	185.18	0.64	0.97	11.53	0.03	0.08	0.66
2	LOB	185.18	231.47	114.21	40.79	46.52	5.30	0.88	2.80
3	Chan	231.47	236.33	155.38	15.87	4.95	7.22	3.26	9.79
4	Chan	236.33	241.19	146.07	15.19	4.87	6.78	3.12	9.62
5	Chan	241.19	246.06	128.92	14.09	4.87	5.99	2.90	9.15
[illegible]	Chan	246.06	250.92	132.32	14.31	4.87	6.15	2.94	9.25
7	Chan	250.92	255.78	109.57	12.79	4.88	5.09	2.63	8.56

8	ROB	255.78	300.77	478.55	82.32	45.18	22.23	1.83	5.81
9	ROB	300.77	345.76	233.29	56.22	45.03	10.84	1.25	4.15
10	ROB	345.76	390.75	194.63	50.41	44.99	9.04	1.12	3.86
11	ROB	390.75	435.74	459.42	72.48	41.12	21.34	1.78	6.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	231.47	236.33	151.70	18.67	8.36	7.05	3.84	8.12
2	Chan	236.33	241.19	204.49	18.00	4.87	9.50	3.70	11.36
3	Chan	241.19	246.06	184.17	16.89	4.87	8.55	3.47	10.90
4	Chan	246.06	250.92	188.20	17.12	4.87	8.74	3.52	10.99
5	Chan	250.92	255.78	160.94	15.60	4.88	7.48	3.21	10.32
6	ROB	255.78	300.77	804.08	108.29	45.18	37.35	2.41	7.43
7	ROB	300.77	345.76	459.43	81.57	46.19	21.34	1.83	5.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.2985

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2559.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.054	0.038	0.041
W.S. Elev (ft)	2558.94	Reach Len. (ft)	155.67	155.67	155.67
Crit W.S. (ft)	2558.94	Flow Area (sq ft)	44.27	81.43	274.69
E.G. Slope (ft/ft)	0.011554	Area (sq ft)	44.27	81.43	274.69
Q Total (cfs)	2153.00	Flow (cfs)	154.67	731.01	1267.32
Top Width (ft)	281.15	Top Width (ft)	40.24	25.75	215.16
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	3.49	8.98	4.61
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)	1.10	3.16	1.28
Conv. Total (cfs)	20029.8	Conv. (cfs)	1438.9	6800.7	11790.2
Length Wtd. (ft)	155.67	Wetted Per. (ft)	40.33	26.11	215.94
Min Ch El (ft)	2555.19	Shear (lb/sq ft)	0.79	2.25	0.92
Alpha	1.41	Stream Power (lb/ft s)	2.77	20.20	4.23
Frctn Loss (ft)	1.59	Cum Volume (acre-ft)	9.07	18.27	14.14
C & E Loss (ft)	0.04	Cum SA (acres)	7.31	6.00	11.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2560.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.10	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2559.48	Reach Len. (ft)	155.67	155.67	155.67
Crit W.S. (ft)	2559.48	Flow Area (sq ft)		95.25	171.96
E.G. Slope (ft/ft)	0.014505	Area (sq ft)		95.25	171.96
Q Total (cfs)	2153.00	Flow (cfs)		940.63	1212.37
Top Width (ft)	111.09	Top Width (ft)		25.75	85.34
Vel Total (ft/s)	8.06	Avg. Vel. (ft/s)		9.88	7.05
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)		3.70	2.01
Conv. Total (cfs)	17876.8	Conv. (cfs)		7810.3	10066.5
Length Wtd. (ft)	155.67	Wetted Per. (ft)		28.91	88.64
Min Ch El (ft)	2555.19	Shear (lb/sq ft)		2.98	1.76
Alpha	1.09	Stream Power (lb/ft s)		29.47	12.39
Frctn Loss (ft)	2.03	Cum Volume (acre-ft)	3.83	19.82	5.82
C & E Loss (ft)	0.06	Cum SA (acres)	1.66	6.00	3.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	180.59	225.74	154.67	44.27	40.33	7.18	1.10	3.49
2	Chan	225.74	230.89	89.84	16.50	5.44	4.17	3.20	5.44
3	Chan	230.89	236.04	188.41	17.92	5.16	8.75	3.48	10.52
4	Chan	236.04	241.19	163.42	16.44	5.15	7.59	3.19	9.94
5	Chan	241.19	246.34	159.66	16.21	5.15	7.42	3.15	9.85
6	Chan	246.34	251.49	129.69	14.36	5.20	6.02	2.79	9.03
7	ROB	251.49	309.72	314.95	68.73	58.30	14.63	1.18	4.58
8	ROB	309.72	367.95	526.35	96.44	58.73	24.45	1.66	5.46
9	ROB	367.95	426.19	245.54	67.29	58.28	11.40	1.16	3.65
10	ROB	426.19	484.42	180.48	42.24	40.63	8.38	1.04	4.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	225.74	230.89	91.05	19.26	8.24	4.23	3.74	4.73
2	Chan	230.89	236.04	244.22	20.68	5.16	11.34	4.02	11.81
3	Chan	236.04	241.19	216.07	19.21	5.15	10.04	3.73	11.25
4	Chan	241.19	246.34	211.83	18.97	5.15	9.84	3.68	11.17
5	Chan	246.34	251.49	177.47	17.13	5.20	8.24	3.33	10.36
6	ROB	251.49	309.72	648.28	99.97	58.30	30.11	1.72	6.48
7	ROB	309.72	367.95	564.08	71.98	30.34	26.20	2.66	7.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.2690

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2555.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	Wt. n-Val.	0.035	0.034	0.037
W.S. Elev (ft)	2555.13	Reach Len. (ft)	176.88	176.88	181.64
Crit W.S. (ft)	2555.13	Flow Area (sq ft)	41.52	69.81	325.38
E.G. Slope (ft/ft)	0.009107	Area (sq ft)	41.52	69.81	325.38
Q Total (cfs)	2153.00	Flow (cfs)	193.77	595.22	1364.01
Top Width (ft)	379.52	Top Width (ft)	36.09	23.76	319.66
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)	4.67	8.53	4.19
Max Chl Dpth (ft)	3.43	Hydr. Depth (ft)	1.15	2.94	1.02
Conv. Total (cfs)	22561.4	Conv. (cfs)	2030.5	6237.4	14293.5
Length Wtd. (ft)	179.78	Wetted Per. (ft)	36.38	24.02	320.43
Min Ch El (ft)	2551.70	Shear (lb/sq ft)	0.65	1.65	0.58
Alpha	1.37	Stream Power (lb/ft s)	3.03	14.09	2.42
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	8.91	18.00	13.07
C & E Loss (ft)	0.00	Cum SA (acres)	7.17	5.91	10.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2556.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.		0.034	0.043
W.S. Elev (ft)	2555.73	Reach Len. (ft)	176.88	176.88	181.64
Crit W.S. (ft)	2555.73	Flow Area (sq ft)		84.04	231.63
E.G. Slope (ft/ft)	0.011795	Area (sq ft)		84.04	231.63
Q Total (cfs)	2153.00	Flow (cfs)		841.78	1311.22
Top Width (ft)	147.80	Top Width (ft)		23.76	124.04
Vel Total (ft/s)	6.82	Avg. Vel. (ft/s)		10.02	5.66
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)		3.54	1.87
Conv. Total (cfs)	19823.8	Conv. (cfs)		7750.7	12073.1
Length Wtd. (ft)	179.37	Wetted Per. (ft)		27.27	126.23
Min Ch El (ft)	2551.70	Shear (lb/sq ft)		2.27	1.35
Alpha	1.26	Stream Power (lb/ft s)		22.73	7.65
Frctn Loss (ft)	2.24	Cum Volume (acre-ft)	3.83	19.50	5.10
C & E Loss (ft)	0.03	Cum SA (acres)	1.66	5.91	2.64

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	55.84	74.46	41.14	13.47	17.54	1.91	0.77	3.05
2	LOB	74.46	93.07	152.62	28.05	18.84	7.09	1.51	5.44
3	Chan	93.07	97.82	144.17	15.33	4.96	6.70	3.23	9.40
4	Chan	97.82	102.57	132.20	14.33	4.76	6.14	3.02	9.23
5	Chan	102.57	107.33	117.72	13.35	4.75	5.47	2.81	8.82
6	Chan	107.33	112.08	122.70	13.69	4.75	5.70	2.88	8.96
7	Chan	112.08	116.83	78.43	13.11	4.80	3.64	2.76	5.98
8	ROB	116.83	194.16	468.80	114.39	77.83	21.77	1.48	4.10
9	ROB	194.16	271.49	205.63	63.01	77.34	9.55	0.81	3.26
10	ROB	271.49	348.81	34.28	21.24	59.27	1.59	0.36	1.61
11	ROB	348.81	426.14	530.28	97.77	77.37	24.63	1.26	5.42
12	ROB	426.14	503.47	125.02	28.97	28.61	5.81	1.01	4.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	93.07	97.82	152.63	18.18	8.21	7.09	3.83	8.40
2	Chan	97.82	102.57	199.47	17.18	4.76	9.26	3.61	11.61
3	Chan	102.57	107.33	181.23	16.20	4.75	8.42	3.41	11.19
4	Chan	107.33	112.08	187.54	16.54	4.75	8.71	3.48	11.34
5	Chan	112.08	116.83	120.92	15.95	4.80	5.62	3.36	7.58
6	ROB	116.83	194.16	942.21	160.72	77.83	43.76	2.08	5.86
7	ROB	194.16	271.49	369.01	70.91	48.39	17.14	1.52	5.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.2355

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2551.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.058	0.037	0.036
W.S. Elev (ft)	2551.21	Reach Len. (ft)	214.98	201.45	191.86
Crit W.S. (ft)	2551.21	Flow Area (sq ft)	6.94	114.07	301.81
E.G. Slope (ft/ft)	0.008705	Area (sq ft)	6.94	114.07	301.81
Q Total (cfs)	2153.00	Flow (cfs)	19.07	877.11	1256.82

Top Width (ft)	353.71	Top Width (ft)	4.81	38.68	310.22
Vel Total (ft/s)	5.09	Avg. Vel. (ft/s)	2.75	7.69	4.16
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)	1.44	2.95	0.97
Conv. Total (cfs)	23075.6	Conv. (cfs)	204.4	9400.8	13470.4
Length Wtd. (ft)	195.90	Wetted Per. (ft)	5.62	38.80	310.66
Min Ch El (ft)	2547.98	Shear (lb/sq ft)	0.67	1.60	0.53
Alpha	1.32	Stream Power (lb/ft s)	1.84	12.28	2.20
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	8.81	17.63	11.76
C & E Loss (ft)	0.01	Cum SA (acres)	7.09	5.78	9.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2552.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.		0.036	0.036
W.S. Elev (ft)	2551.48	Reach Len. (ft)	214.98	201.45	191.86
Crit W.S. (ft)	2551.48	Flow Area (sq ft)		124.43	120.64
E.G. Slope (ft/ft)	0.013239	Area (sq ft)		124.43	120.64
Q Total (cfs)	2153.00	Flow (cfs)		1216.28	936.72
Top Width (ft)	96.44	Top Width (ft)		38.68	57.76
Vel Total (ft/s)	8.79	Avg. Vel. (ft/s)		9.77	7.76
Max Chl Dpth (ft)	3.50	Hydr. Depth (ft)		3.22	2.09
Conv. Total (cfs)	18711.6	Conv. (cfs)		10570.6	8141.0
Length Wtd. (ft)	196.94	Wetted Per. (ft)		41.97	59.17
Min Ch El (ft)	2547.98	Shear (lb/sq ft)		2.45	1.69
Alpha	1.04	Stream Power (lb/ft s)		23.95	13.09
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)	3.83	19.08	4.37
C & E Loss (ft)	0.04	Cum SA (acres)	1.66	5.78	2.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	65.53	81.91	19.07	6.94	5.62	0.89	1.44	2.75
2	Chan	81.91	89.65	138.05	24.47	7.84	6.41	3.16	5.64
3	Chan	89.65	97.38	214.23	23.55	7.74	9.95	3.04	9.10
4	Chan	97.38	105.12	199.80	22.58	7.74	9.28	2.92	8.85
5	Chan	105.12	112.85	179.12	22.07	7.74	8.32	2.85	8.12
6	Chan	112.85	120.59	145.92	21.40	7.75	6.78	2.77	6.82
7	ROB	120.59	192.18	647.00	119.43	71.81	30.05	1.67	5.42
8	ROB	192.18	263.77	203.82	64.41	71.60	9.47	0.90	3.16
9	ROB	263.77	335.36	65.76	32.68	71.62	3.05	0.46	2.01
10	ROB	335.36	406.95	242.01	61.82	71.67	11.24	0.86	3.92
11	ROB	406.95	478.54	98.23	23.47	23.96	4.56	0.98	4.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	81.91	89.65	160.53	26.54	11.01	7.46	3.43	6.05
2	Chan	89.65	97.38	304.06	25.62	7.74	14.12	3.31	11.87
3	Chan	97.38	105.12	285.22	24.66	7.74	13.25	3.19	11.57
4	Chan	105.12	112.85	256.54	24.14	7.74	11.92	3.12	10.63
5	Chan	112.85	120.59	209.93	23.47	7.75	9.75	3.03	8.94
6	ROB	120.59	192.18	936.72	120.64	59.17	43.51	2.09	7.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.1974

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2547.44	Element			
Vel Head (ft)	0.63	Wt. n-Val.	0.038	0.032	0.047
W.S. Elev (ft)	2546.81	Reach Len. (ft)	43.12	41.71	37.95
Crit W.S. (ft)	2546.81	Flow Area (sq ft)	14.56	84.18	332.75
E.G. Slope (ft/ft)	0.009396	Area (sq ft)	14.56	84.18	332.75
Q Total (cfs)	2153.00	Flow (cfs)	49.08	772.48	1331.44
Top Width (ft)	302.36	Top Width (ft)	25.03	28.75	248.58
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)	3.37	9.18	4.00
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	0.58	2.93	1.34
Conv. Total (cfs)	22211.8	Conv. (cfs)	506.3	7969.5	13736.0
Length Wtd. (ft)	39.92	Wetted Per. (ft)	25.30	28.91	248.88
Min Ch El (ft)	2543.54	Shear (lb/sq ft)	0.34	1.71	0.78
Alpha	1.62	Stream Power (lb/ft s)	1.14	15.67	3.14
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	8.76	17.17	10.37
C & E Loss (ft)	0.01	Cum SA (acres)	7.01	5.63	8.11

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2548.44	Element			
Vel Head (ft)	1.11	Wt. n-Val.		0.032	0.054
W.S. Elev (ft)	2547.33	Reach Len. (ft)	43.12	41.71	37.95
Crit W.S. (ft)	2547.33	Flow Area (sq ft)		98.97	205.38
E.G. Slope (ft/ft)	0.011773	Area (sq ft)		98.97	205.38
Q Total (cfs)	2153.00	Flow (cfs)		1066.31	1086.69
Top Width (ft)	121.20	Top Width (ft)		28.75	92.45
Vel Total (ft/s)	7.07	Avg. Vel. (ft/s)		10.77	5.29
Max Chl Dpth (ft)	3.79	Hydr. Depth (ft)		3.44	2.22
Conv. Total (cfs)	19843.1	Conv. (cfs)		9827.6	10015.5
Length Wtd. (ft)	40.26	Wetted Per. (ft)		31.65	93.69
Min Ch El (ft)	2543.54	Shear (lb/sq ft)		2.30	1.61
Alpha	1.43	Stream Power (lb/ft s)		24.76	8.52

Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	3.83	18.56	3.65
C & E Loss (ft)	0.09	Cum SA (acres)	1.66	5.63	1.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	59.39	79.18	2.72	1.45	5.26	0.13	0.28	1.88
2	LOB	79.18	98.98	46.36	13.11	20.03	2.15	0.66	3.54
3	Chan	98.98	104.73	151.12	16.78	5.88	7.02	2.92	9.01
4	Chan	104.73	110.48	181.77	18.57	5.75	8.44	3.23	9.79
5	Chan	110.48	116.23	176.92	18.28	5.76	8.22	3.18	9.68
6	Chan	116.23	121.98	145.97	16.30	5.76	6.78	2.83	8.96
7	Chan	121.98	127.73	116.69	14.25	5.76	5.42	2.48	8.19
8	ROB	127.73	192.51	563.67	137.00	64.87	26.18	2.11	4.11
9	ROB	192.51	257.30	136.23	47.55	64.79	6.33	0.73	2.87
10	ROB	257.30	322.08	306.66	77.41	64.87	14.24	1.19	3.96
11	ROB	322.08	386.87	324.89	70.79	54.35	15.09	1.31	4.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	98.98	104.73	169.52	19.73	8.62	7.87	3.43	8.59
2	Chan	104.73	110.48	256.74	21.53	5.75	11.92	3.74	11.92
3	Chan	110.48	116.23	250.79	21.24	5.76	11.65	3.69	11.81
4	Chan	116.23	121.98	212.82	19.25	5.76	9.88	3.35	11.05
5	Chan	121.98	127.73	176.44	17.21	5.76	8.19	2.99	10.25
6	ROB	127.73	192.51	925.86	170.34	64.87	43.00	2.63	5.44
7	ROB	192.51	257.30	160.84	35.04	28.82	7.47	1.27	4.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.1895

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2546.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2545.45	Reach Len. (ft)	36.79	36.79	36.79
Crit W.S. (ft)	2545.45	Flow Area (sq ft)	15.37	181.04	195.51
E.G. Slope (ft/ft)	0.004408	Area (sq ft)	15.37	181.04	195.51
Q Total (cfs)	2153.00	Flow (cfs)	62.74	1324.40	765.86
Top Width (ft)	286.32	Top Width (ft)	17.04	71.67	197.61
Vel Total (ft/s)	5.49	Avg. Vel. (ft/s)	4.08	7.32	3.92
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	0.90	2.53	0.99
Conv. Total (cfs)	32429.1	Conv. (cfs)	945.0	19948.5	11535.6
Length Wtd. (ft)	36.79	Wetted Per. (ft)	17.14	71.73	197.68
Min Ch El (ft)	2542.47	Shear (lb/sq ft)	0.25	0.69	0.27
Alpha	1.29	Stream Power (lb/ft s)	1.01	5.08	1.07
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	8.75	17.05	10.14
C & E Loss (ft)	0.02	Cum SA (acres)	6.99	5.58	7.92

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2546.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.		0.025	0.025
W.S. Elev (ft)	2545.70	Reach Len. (ft)	36.79	36.79	36.79
Crit W.S. (ft)	2545.70	Flow Area (sq ft)		199.00	128.99
E.G. Slope (ft/ft)	0.004757	Area (sq ft)		199.00	128.99
Q Total (cfs)	2153.00	Flow (cfs)		1580.20	572.80
Top Width (ft)	184.94	Top Width (ft)		71.67	113.27
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)		7.94	4.44
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)		2.78	1.14
Conv. Total (cfs)	31217.2	Conv. (cfs)		22912.0	8305.2
Length Wtd. (ft)	36.79	Wetted Per. (ft)		73.81	114.40
Min Ch El (ft)	2542.47	Shear (lb/sq ft)		0.80	0.33
Alpha	1.20	Stream Power (lb/ft s)		6.36	1.49
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	3.83	18.42	3.50
C & E Loss (ft)	0.03	Cum SA (acres)	1.66	5.58	1.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	89.65	112.06	62.74	15.37	17.14	2.91	0.90	4.08
2	Chan	112.06	126.39	222.74	32.82	14.36	10.35	2.29	6.79
3	Chan	126.39	140.73	329.43	41.49	14.34	15.30	2.89	7.94
4	Chan	140.73	155.06	320.83	40.83	14.34	14.90	2.85	7.86
5	Chan	155.06	169.40	263.29	36.27	14.35	12.23	2.53	7.26
6	Chan	169.40	183.73	188.11	29.64	14.34	8.74	2.07	6.35
7	ROB	183.73	241.12	255.99	62.88	57.40	11.89	1.10	4.07

8	ROB	241.12	298.50	115.70	39.04	57.39	5.37	0.68	2.96
9	ROB	298.50	355.89	317.60	71.56	57.39	14.75	1.25	4.44
10	ROB	355.89	413.27	76.56	22.03	25.50	3.56	0.87	3.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	112.06	126.39	250.68	36.41	16.44	11.64	2.54	6.88
2	Chan	126.39	140.73	391.94	45.08	14.34	18.20	3.14	8.70
3	Chan	140.73	155.06	382.53	44.42	14.34	17.77	3.10	8.61
4	Chan	155.06	169.40	319.25	39.86	14.35	14.83	2.78	8.01
5	Chan	169.40	183.73	235.80	33.23	14.34	10.95	2.32	7.10
6	ROB	183.73	241.12	378.09	77.25	57.40	17.56	1.35	4.89
7	ROB	241.12	298.50	194.71	51.73	57.00	9.04	0.93	3.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.1825

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2544.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.058	0.037	0.033
W.S. Elev (ft)	2543.69	Reach Len. (ft)	147.45	147.45	147.45
Crit W.S. (ft)	2543.69	Flow Area (sq ft)	40.29	81.27	205.01
E.G. Slope (ft/ft)	0.010474	Area (sq ft)	40.29	81.27	205.01
Q Total (cfs)	2153.00	Flow (cfs)	89.22	639.69	1424.09
Top Width (ft)	227.89	Top Width (ft)	51.83	30.25	145.81
Vel Total (ft/s)	6.59	Avg. Vel. (ft/s)	2.21	7.87	6.95
Max Chl Dpth (ft)	5.24	Hydr. Depth (ft)	0.78	2.69	1.41
Conv. Total (cfs)	21036.9	Conv. (cfs)	871.8	6250.3	13914.7
Length Wtd. (ft)	147.45	Wetted Per. (ft)	51.90	30.38	147.28
Min Ch El (ft)	2540.50	Shear (lb/sq ft)	0.51	1.75	0.91
Alpha	1.16	Stream Power (lb/ft s)	1.12	13.77	6.32
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	8.72	16.93	9.97
C & E Loss (ft)	0.03	Cum SA (acres)	6.96	5.54	7.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2545.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.058	0.037	0.043
W.S. Elev (ft)	2544.64	Reach Len. (ft)	147.45	147.45	147.45
Crit W.S. (ft)	2544.64	Flow Area (sq ft)	56.76	109.99	239.94
E.G. Slope (ft/ft)	0.009111	Area (sq ft)	56.76	109.99	239.94
Q Total (cfs)	2153.00	Flow (cfs)	221.17	988.09	943.74
Top Width (ft)	250.00	Top Width (ft)	26.61	30.25	193.14
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	3.90	8.98	3.93
Max Chl Dpth (ft)	6.19	Hydr. Depth (ft)	2.13	3.64	1.24
Conv. Total (cfs)	22555.6	Conv. (cfs)	2317.0	10351.6	9887.0
Length Wtd. (ft)	147.45	Wetted Per. (ft)	28.22	30.38	200.22
Min Ch El (ft)	2540.50	Shear (lb/sq ft)	1.14	2.06	0.68
Alpha	1.62	Stream Power (lb/ft s)	4.46	18.50	2.68
Frctn Loss (ft)	1.16	Cum Volume (acre-ft)	3.81	18.29	3.35
C & E Loss (ft)	0.03	Cum SA (acres)	1.65	5.54	1.71

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	46.64	69.97	0.18	0.43	5.19	0.01	0.08	0.42
2	LOB	69.97	93.29	13.45	10.43	23.33	0.62	0.45	1.29
3	LOB	93.29	116.61	75.59	29.42	23.38	3.51	1.26	2.57
4	Chan	116.61	122.66	87.37	16.41	6.17	4.06	2.71	5.32
5	Chan	122.66	128.71	166.20	18.17	6.06	7.72	3.00	9.15
6	Chan	128.71	134.76	143.45	16.63	6.05	6.66	2.75	8.63
7	Chan	134.76	140.81	129.92	15.67	6.05	6.03	2.59	8.29
8	Chan	140.81	146.86	112.75	14.39	6.05	5.24	2.38	7.83
9	ROB	146.86	210.53	140.05	43.27	42.59	6.50	1.02	3.24
10	ROB	210.53	274.19						
11	ROB	274.19	337.86	196.45	46.90	53.43	9.12	0.89	4.19
12	ROB	337.86	401.52	1087.59	114.84	51.26	50.52	2.27	9.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	69.97	93.29	12.94	5.18	4.83	0.60	1.58	2.50
2	LOB	93.29	116.61	208.22	51.57	23.38	9.67	2.21	4.04
3	Chan	116.61	122.66	133.56	22.16	6.17	6.20	3.66	6.03
4	Chan	122.66	128.71	245.64	23.91	6.06	11.41	3.95	10.27
5	Chan	128.71	134.76	219.94	22.37	6.05	10.22	3.70	9.83
6	Chan	134.76	140.81	204.44	21.41	6.05	9.50	3.54	9.55
7	Chan	140.81	146.86	184.53	20.14	6.05	8.57	3.33	9.16

8	ROB	146.86	210.53	332.37	97.06	63.75	15.44	1.52	3.42
9	ROB	210.53	274.19	39.83	24.18	63.67	1.85	0.38	1.65
10	ROB	274.19	337.86	491.77	105.60	64.51	22.84	1.66	4.66
11	ROB	337.86	401.52	79.77	13.10	8.29	3.71	6.12	6.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.1546

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2540.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.	0.058	0.034	0.030
W.S. Elev (ft)	2539.25	Reach Len. (ft)	230.00	225.98	222.00
Crit W.S. (ft)	2539.25	Flow Area (sq ft)	5.92	83.93	203.79
E.G. Slope (ft/ft)	0.008025	Area (sq ft)	5.92	83.93	203.79
Q Total (cfs)	2153.00	Flow (cfs)	9.81	504.47	1638.73
Top Width (ft)	161.12	Top Width (ft)	9.57	44.06	107.49
Vel Total (ft/s)	7.33	Avg. Vel. (ft/s)	1.66	6.01	8.04
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)	0.62	1.90	1.90
Conv. Total (cfs)	24033.4	Conv. (cfs)	109.5	5631.2	18292.7
Length Wtd. (ft)	223.61	Wetted Per. (ft)	9.65	44.14	109.42
Min Ch El (ft)	2536.89	Shear (lb/sq ft)	0.31	0.95	0.93
Alpha	1.07	Stream Power (lb/ft s)	0.51	5.73	7.50
Frctn Loss (ft)	2.05	Cum Volume (acre-ft)	8.64	16.66	9.28
C & E Loss (ft)	0.11	Cum SA (acres)	6.86	5.41	7.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2540.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.		0.034	0.030
W.S. Elev (ft)	2539.37	Reach Len. (ft)	230.00	225.98	222.00
Crit W.S. (ft)	2539.24	Flow Area (sq ft)		89.26	217.28
E.G. Slope (ft/ft)	0.006871	Area (sq ft)		89.26	217.28
Q Total (cfs)	2153.00	Flow (cfs)		512.24	1640.76
Top Width (ft)	159.41	Top Width (ft)		44.06	115.35
Vel Total (ft/s)	7.02	Avg. Vel. (ft/s)		5.74	7.55
Max Chl Dpth (ft)	4.39	Hydr. Depth (ft)		2.03	1.88
Conv. Total (cfs)	25973.6	Conv. (cfs)		6179.6	19794.0
Length Wtd. (ft)	223.94	Wetted Per. (ft)		45.49	117.42
Min Ch El (ft)	2536.89	Shear (lb/sq ft)		0.84	0.79
Alpha	1.04	Stream Power (lb/ft s)		4.83	5.99
Frctn Loss (ft)	2.45	Cum Volume (acre-ft)	3.71	17.95	2.57
C & E Loss (ft)	0.43	Cum SA (acres)	1.61	5.41	1.19

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	76.45	95.56	9.81	5.92	9.65	0.46	0.62	1.66
2	Chan	95.56	104.37	44.50	13.94	8.84	2.07	1.58	3.19
3	Chan	104.37	113.18	120.79	18.14	8.82	5.61	2.06	6.66
4	Chan	113.18	122.00	145.10	20.25	8.81	6.74	2.30	7.17
5	Chan	122.00	130.81	120.87	18.16	8.83	5.61	2.06	6.66
6	Chan	130.81	139.62	73.20	13.44	8.83	3.40	1.52	5.45
7	ROB	139.62	194.14	578.72	96.12	54.59	26.88	1.76	6.02
8	ROB	194.14	248.65	5.49	2.20	5.01	0.25	0.45	2.50
9	ROB	248.65	303.17						
10	ROB	303.17	357.68	818.57	77.95	38.06	38.02	2.10	10.50
11	ROB	357.68	412.20	235.96	27.52	11.76	10.96	2.54	8.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	95.56	104.37	42.57	15.01	10.20	1.98	1.70	2.84
2	Chan	104.37	113.18	123.07	19.21	8.82	5.72	2.18	6.41
3	Chan	113.18	122.00	146.42	21.31	8.81	6.80	2.42	6.87
4	Chan	122.00	130.81	123.15	19.22	8.83	5.72	2.18	6.41
5	Chan	130.81	139.62	77.02	14.50	8.83	3.58	1.65	5.31
6	ROB	139.62	194.14	598.50	102.72	54.59	27.80	1.88	5.83
7	ROB	194.14	248.65	7.42	2.83	5.64	0.34	0.51	2.62
8	ROB	248.65	303.17	0.00	0.00	0.34	0.00	0.01	0.10
9	ROB	303.17	357.68	801.79	82.88	44.97	37.24	1.88	9.67
10	ROB	357.68	412.20	233.05	28.84	11.88	10.82	2.66	8.08

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.1118

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2536.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.26	Wt. n-Val.	0.050	0.036	0.033
W.S. Elev (ft)	2534.97	Reach Len. (ft)	173.00	178.46	184.00

Crit W.S. (ft)	2534.97	Flow Area (sq ft)	18.70	118.82	112.27
E.G. Slope (ft/ft)	0.010555	Area (sq ft)	18.70	118.82	112.27
Q Total (cfs)	2153.00	Flow (cfs)	51.84	1114.25	986.91
Top Width (ft)	107.69	Top Width (ft)	23.41	36.00	48.28
Vel Total (ft/s)	8.62	Avg. Vel. (ft/s)	2.77	9.38	8.79
Max Chl Dpth (ft)	4.42	Hydr. Depth (ft)	0.80	3.30	2.33
Conv. Total (cfs)	20956.4	Conv. (cfs)	504.6	10845.6	9606.2
Length Wtd. (ft)	178.87	Wetted Per. (ft)	23.92	36.24	49.82
Min Ch El (ft)	2531.28	Shear (lb/sq ft)	0.52	2.16	1.48
Alpha	1.09	Stream Power (lb/ft s)	1.43	20.26	13.05
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	8.58	16.13	8.47
C & E Loss (ft)	0.02	Cum SA (acres)	6.77	5.20	6.95

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2537.30				
Vel Head (ft)	2.22	Wt. n-Val.		0.036	0.038
W.S. Elev (ft)	2535.08	Reach Len. (ft)	173.00	178.46	184.00
Crit W.S. (ft)	2535.08	Flow Area (sq ft)		122.89	65.56
E.G. Slope (ft/ft)	0.020030	Area (sq ft)		122.89	65.56
Q Total (cfs)	2153.00	Flow (cfs)		1588.86	564.14
Top Width (ft)	66.99	Top Width (ft)		36.00	30.99
Vel Total (ft/s)	11.43	Avg. Vel. (ft/s)		12.93	8.60
Max Chl Dpth (ft)	4.53	Hydr. Depth (ft)		3.41	2.12
Conv. Total (cfs)	15212.7	Conv. (cfs)		11226.6	3986.1
Length Wtd. (ft)	178.79	Wetted Per. (ft)		38.76	36.29
Min Ch El (ft)	2531.28	Shear (lb/sq ft)		3.96	2.26
Alpha	1.09	Stream Power (lb/ft s)		51.26	19.44
Frctn Loss (ft)	1.94	Cum Volume (acre-ft)	3.71	17.40	1.85
C & E Loss (ft)	0.30	Cum SA (acres)	1.61	5.20	0.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	130.80	196.20	22.51	8.63	15.26	1.05	0.57	2.61
2	LOB	196.20	261.60						
3	LOB	261.60	327.00	29.34	10.08	8.66	1.36	1.21	2.91
4	Chan	327.00	334.20	110.75	20.86	7.27	5.14	2.90	5.31
5	Chan	334.20	341.40	185.02	22.84	7.20	8.59	3.17	8.10
6	Chan	341.40	348.60	269.95	24.83	7.20	12.54	3.45	10.87
7	Chan	348.60	355.80	295.31	26.20	7.20	13.72	3.64	11.27
8	Chan	355.80	363.00	253.21	24.10	7.36	11.76	3.35	10.51
9	ROB	363.00	391.64	50.88	9.80	7.99	2.36	1.29	5.19
10	ROB	391.64	420.28	28.58	8.45	9.38	1.33	0.92	3.38
11	ROB	420.28	448.93	904.10	92.52	29.39	41.99	3.23	9.77
12	ROB	448.93	477.57	3.35	1.49	3.06	0.16	0.52	2.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	327.00	334.20	133.04	21.67	9.79	6.18	3.01	6.14
2	Chan	334.20	341.40	269.46	23.65	7.20	12.52	3.28	11.39
3	Chan	341.40	348.60	391.48	25.64	7.20	18.18	3.56	15.27
4	Chan	348.60	355.80	427.08	27.01	7.20	19.84	3.75	15.81
5	Chan	355.80	363.00	367.80	24.91	7.36	17.08	3.46	14.77
6	ROB	363.00	391.64	74.41	10.67	8.33	3.46	1.35	6.97
7	ROB	391.64	420.28	43.65	9.52	9.98	2.03	0.97	4.58
8	ROB	420.28	448.93	446.08	45.37	17.98	20.72	3.41	9.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.0780

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2533.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.21	Wt. n-Val.	0.045	0.032	0.040
W.S. Elev (ft)	2532.01	Reach Len. (ft)	275.20	276.66	276.66
Crit W.S. (ft)	2532.01	Flow Area (sq ft)	211.49	124.24	19.33
E.G. Slope (ft/ft)	0.006830	Area (sq ft)	211.49	124.24	19.33
Q Total (cfs)	2153.00	Flow (cfs)	718.88	1345.42	88.70
Top Width (ft)	229.49	Top Width (ft)	193.76	25.96	9.77
Vel Total (ft/s)	6.06	Avg. Vel. (ft/s)	3.40	10.83	4.59
Max Chl Dpth (ft)	4.92	Hydr. Depth (ft)	1.09	4.79	1.98
Conv. Total (cfs)	26052.1	Conv. (cfs)	8698.7	16280.1	1073.3
Length Wtd. (ft)	276.25	Wetted Per. (ft)	194.22	26.21	10.58
Min Ch El (ft)	2527.09	Shear (lb/sq ft)	0.46	2.02	0.78
Alpha	2.12	Stream Power (lb/ft s)	1.58	21.89	3.57
Frctn Loss (ft)	1.98	Cum Volume (acre-ft)	8.12	15.63	8.19
C & E Loss (ft)	0.09	Cum SA (acres)	6.34	5.08	6.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2534.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.61	Wt. n-Val.	0.053	0.032	0.040
W.S. Elev (ft)	2532.53	Reach Len. (ft)	275.20	276.66	276.66
Crit W.S. (ft)	2532.53	Flow Area (sq ft)	103.79	137.60	24.36
E.G. Slope (ft/ft)	0.006774	Area (sq ft)	103.79	137.60	24.36
Q Total (cfs)	2153.00	Flow (cfs)	438.64	1588.58	125.78
Top Width (ft)	79.85	Top Width (ft)	44.12	25.96	9.77
Vel Total (ft/s)	8.10	Avg. Vel. (ft/s)	4.23	11.54	5.16
Max Chl Dpth (ft)	5.44	Hydr. Depth (ft)	2.35	5.30	2.49
Conv. Total (cfs)	26159.0	Conv. (cfs)	5329.4	19301.2	1528.3
Length Wtd. (ft)	276.48	Wetted Per. (ft)	45.16	26.21	11.10
Min Ch El (ft)	2527.09	Shear (lb/sq ft)	0.97	2.22	0.93
Alpha	1.58	Stream Power (lb/ft s)	4.11	25.63	4.79
Frctn Loss (ft)	2.56	Cum Volume (acre-ft)	3.50	16.87	1.66
C & E Loss (ft)	0.03	Cum SA (acres)	1.52	5.08	0.73

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	94.47	188.94	24.01	12.33	23.60	1.12	0.52	1.95
2	LOB	188.94	283.41	397.98	115.02	92.84	18.48	1.24	3.46
3	LOB	283.41	377.88	0.66	1.29	18.29	0.03	0.07	0.51
4	LOB	377.88	472.35	296.24	82.85	59.50	13.76	1.40	3.58
5	Chan	472.35	477.54	256.92	24.26	5.29	11.93	4.67	10.59
6	Chan	477.54	482.73	275.16	25.10	5.19	12.78	4.83	10.96
7	Chan	482.73	487.93	280.45	25.39	5.19	13.03	4.89	11.05
8	Chan	487.93	493.12	275.74	25.13	5.19	12.81	4.84	10.97
9	Chan	493.12	498.31	257.15	24.37	5.34	11.94	4.69	10.55
10	ROB	498.31	511.21	88.70	19.33	10.58	4.12	1.98	4.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	377.88	472.35	438.64	103.79	45.16	20.37	2.35	4.23
2	Chan	472.35	477.54	304.55	26.94	5.29	14.15	5.19	11.31
3	Chan	477.54	482.73	324.39	27.77	5.19	15.07	5.35	11.68
4	Chan	482.73	487.93	330.02	28.06	5.19	15.33	5.40	11.76
5	Chan	487.93	493.12	325.00	27.80	5.19	15.10	5.35	11.69
6	Chan	493.12	498.31	304.61	27.04	5.34	14.15	5.21	11.27
7	ROB	498.31	511.21	125.79	24.36	11.10	5.84	2.49	5.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 1.0256

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2525.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.046	0.036	0.040
W.S. Elev (ft)	2524.78	Reach Len. (ft)	246.20	248.96	248.96
Crit W.S. (ft)	2524.78	Flow Area (sq ft)	155.23	184.25	19.05
E.G. Slope (ft/ft)	0.007505	Area (sq ft)	155.23	184.25	19.05
Q Total (cfs)	2153.00	Flow (cfs)	490.49	1596.93	65.58
Top Width (ft)	206.02	Top Width (ft)	136.49	48.47	21.06
Vel Total (ft/s)	6.01	Avg. Vel. (ft/s)	3.16	8.67	3.44
Max Chl Dpth (ft)	4.21	Hydr. Depth (ft)	1.14	3.80	0.90
Conv. Total (cfs)	24852.2	Conv. (cfs)	5661.7	18433.5	757.0
Length Wtd. (ft)	248.24	Wetted Per. (ft)	137.35	48.72	21.52
Min Ch El (ft)	2520.57	Shear (lb/sq ft)	0.53	1.77	0.41
Alpha	1.62	Stream Power (lb/ft s)	1.67	15.36	1.43
Frctn Loss (ft)	1.89	Cum Volume (acre-ft)	6.96	14.65	8.07
C & E Loss (ft)	0.01	Cum SA (acres)	5.30	4.84	6.72

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2526.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.87	Wt. n-Val.	0.058	0.036	
W.S. Elev (ft)	2524.81	Reach Len. (ft)	246.20	248.96	248.96
Crit W.S. (ft)	2524.81	Flow Area (sq ft)	18.15	185.64	
E.G. Slope (ft/ft)	0.013410	Area (sq ft)	18.15	185.64	
Q Total (cfs)	2153.00	Flow (cfs)	83.43	2069.57	
Top Width (ft)	55.97	Top Width (ft)	7.50	48.47	
Vel Total (ft/s)	10.56	Avg. Vel. (ft/s)	4.60	11.15	
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)	2.42	3.83	
Conv. Total (cfs)	18592.2	Conv. (cfs)	720.4	17871.8	
Length Wtd. (ft)	248.65	Wetted Per. (ft)	9.42	51.52	
Min Ch El (ft)	2520.57	Shear (lb/sq ft)	1.61	3.02	
Alpha	1.08	Stream Power (lb/ft s)	7.42	33.63	
Frctn Loss (ft)	3.05	Cum Volume (acre-ft)	3.12	15.84	1.59
C & E Loss (ft)	0.07	Cum SA (acres)	1.36	4.84	0.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	59.52	119.04	203.09	56.91	48.05	9.43	1.20	3.57
2	LOB	119.04	178.57						
3	LOB	178.57	238.09	88.51	28.44	29.49	4.11	0.97	3.11
4	LOB	238.09	297.61	198.88	69.87	59.81	9.24	1.17	2.85
5	Chan	297.61	307.30	247.21	35.22	9.76	11.48	3.63	7.02
6	Chan	307.30	317.00	347.90	37.42	9.69	16.16	3.86	9.30
7	Chan	317.00	326.69	337.79	36.77	9.70	15.69	3.79	9.19
8	Chan	326.69	336.39	367.01	38.67	9.71	17.05	3.99	9.49
9	Chan	336.39	346.08	297.02	36.16	9.85	13.80	3.73	8.21
10	ROB	346.08	381.40	60.60	15.90	12.33	2.81	1.32	3.81
11	ROB	381.40	416.71	4.98	3.16	9.19	0.23	0.35	1.58

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	238.09	297.61	83.43	18.15	9.42	3.87	2.42	4.60
2	Chan	297.61	307.30	326.53	35.50	9.76	15.17	3.66	9.20
3	Chan	307.30	317.00	459.28	37.70	9.69	21.33	3.89	12.18
4	Chan	317.00	326.69	446.04	37.05	9.70	20.72	3.82	12.04
5	Chan	326.69	336.39	484.33	38.95	9.71	22.50	4.02	12.44
6	Chan	336.39	346.08	353.41	36.44	12.66	16.41	3.76	9.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.9784

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2520.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.	0.049	0.035	0.040
W.S. Elev (ft)	2519.32	Reach Len. (ft)	180.19	122.83	107.98
Crit W.S. (ft)	2519.32	Flow Area (sq ft)	175.09	144.41	30.82
E.G. Slope (ft/ft)	0.007729	Area (sq ft)	175.09	144.41	30.82
Q Total (cfs)	2153.00	Flow (cfs)	640.00	1376.78	136.22
Top Width (ft)	186.00	Top Width (ft)	127.57	35.26	23.17

Vel Total (ft/s)	6.15	Avg. Vel. (ft/s)	3.66	9.53	4.42
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)	1.37	4.10	1.33
Conv. Total (cfs)	24489.9	Conv. (cfs)	7279.9	15660.5	1549.4
Length Wtd. (ft)	143.43	Wetted Per. (ft)	128.13	35.44	23.63
Min Ch El (ft)	2515.03	Shear (lb/sq ft)	0.66	1.97	0.63
Alpha	1.68	Stream Power (lb/ft s)	2.41	18.74	2.78
Frctn Loss (ft)	1.14	Cum Volume (acre-ft)	6.03	13.71	7.93
C & E Loss (ft)	0.09	Cum SA (acres)	4.55	4.60	6.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2521.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.64	Wt. n-Val.	0.058	0.035	
W.S. Elev (ft)	2519.66	Reach Len. (ft)	180.19	122.83	107.98
Crit W.S. (ft)	2519.66	Flow Area (sq ft)	87.08	156.39	
E.G. Slope (ft/ft)	0.011284	Area (sq ft)	87.08	156.39	
Q Total (cfs)	2153.00	Flow (cfs)	404.41	1748.59	
Top Width (ft)	70.76	Top Width (ft)	35.50	35.26	
Vel Total (ft/s)	8.84	Avg. Vel. (ft/s)	4.64	11.18	
Max Chl Dpth (ft)	4.63	Hydr. Depth (ft)	2.45	4.44	
Conv. Total (cfs)	20268.1	Conv. (cfs)	3807.1	16461.0	
Length Wtd. (ft)	135.64	Wetted Per. (ft)	39.06	39.28	
Min Ch El (ft)	2515.03	Shear (lb/sq ft)	1.57	2.80	
Alpha	1.35	Stream Power (lb/ft s)	7.29	31.36	
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	2.82	14.87	1.59
C & E Loss (ft)	0.05	Cum SA (acres)	1.23	4.60	0.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.96	91.92	34.45	14.04	19.58	1.60	0.72	2.45
2	LOB	91.92	137.89	17.88	9.56	20.04	0.83	0.48	1.87
3	LOB	137.89	183.85	135.33	43.38	42.21	6.29	1.03	3.12
4	LOB	183.85	229.81	452.35	108.12	46.31	21.01	2.35	4.18
5	Chan	229.81	236.86	250.49	29.13	7.16	11.63	4.13	8.60
6	Chan	236.86	243.91	293.48	29.14	7.05	13.63	4.13	10.07
7	Chan	243.91	250.97	286.36	28.72	7.05	13.30	4.07	9.97
8	Chan	250.97	258.02	291.72	29.04	7.05	13.55	4.12	10.05
9	Chan	258.02	265.07	254.72	28.37	7.12	11.83	4.02	8.98
10	ROB	265.07	294.11	134.39	29.38	17.73	6.24	1.69	4.57
11	ROB	294.11	323.15	1.83	1.43	5.90	0.08	0.25	1.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	183.85	229.81	404.41	87.08	39.06	18.78	2.45	4.64
2	Chan	229.81	236.86	326.74	31.53	7.16	15.18	4.47	10.36
3	Chan	236.86	243.91	383.29	31.54	7.05	17.80	4.47	12.15
4	Chan	243.91	250.97	374.69	31.11	7.05	17.40	4.41	12.04
5	Chan	250.97	258.02	381.17	31.44	7.05	17.70	4.46	12.13
6	Chan	258.02	265.07	282.70	30.77	10.96	13.13	4.36	9.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.9552

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2516.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.044	0.037	0.040
W.S. Elev (ft)	2516.30	Reach Len. (ft)	103.00	98.21	94.00
Crit W.S. (ft)	2516.30	Flow Area (sq ft)	255.87	139.70	9.21
E.G. Slope (ft/ft)	0.008227	Area (sq ft)	255.87	139.70	9.21
Q Total (cfs)	2153.00	Flow (cfs)	950.29	1168.89	33.82
Top Width (ft)	246.95	Top Width (ft)	198.83	40.38	7.74
Vel Total (ft/s)	5.32	Avg. Vel. (ft/s)	3.71	8.37	3.67
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	1.29	3.46	1.19
Conv. Total (cfs)	23736.4	Conv. (cfs)	10476.7	12886.8	372.9
Length Wtd. (ft)	100.03	Wetted Per. (ft)	199.75	40.76	8.10
Min Ch El (ft)	2512.32	Shear (lb/sq ft)	0.66	1.76	0.58
Alpha	1.57	Stream Power (lb/ft s)	2.44	14.73	2.14
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	5.14	13.31	7.88
C & E Loss (ft)	0.01	Cum SA (acres)	3.88	4.49	6.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2517.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.	0.049	0.037	
W.S. Elev (ft)	2516.51	Reach Len. (ft)	103.00	98.21	94.00

Crit W.S. (ft)	2516.51	Flow Area (sq ft)	93.08	147.98	
E.G. Slope (ft/ft)	0.013896	Area (sq ft)	93.08	147.98	
Q Total (cfs)	2153.00	Flow (cfs)	556.99	1596.01	
Top Width (ft)	80.14	Top Width (ft)	39.76	40.38	
Vel Total (ft/s)	8.93	Avg. Vel. (ft/s)	5.98	10.79	
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)	2.34	3.66	
Conv. Total (cfs)	18264.0	Conv. (cfs)	4725.0	13539.0	
Length Wtd. (ft)	99.37	Wetted Per. (ft)	42.69	43.35	
Min Ch El (ft)	2512.32	Shear (lb/sq ft)	1.89	2.96	
Alpha	1.20	Stream Power (lb/ft s)	11.32	31.94	
Frctn Loss (ft)	1.27	Cum Volume (acre-ft)	2.45	14.44	1.59
C & E Loss (ft)	0.01	Cum SA (acres)	1.08	4.49	0.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	52.79	105.58	121.15	40.57	40.82	5.63	1.00	2.99
2	LOB	105.58	158.36	111.23	42.04	52.80	5.17	0.80	2.65
3	LOB	158.36	211.15	185.78	57.34	53.16	8.63	1.09	3.24
4	LOB	211.15	263.94	532.13	115.92	52.97	24.72	2.20	4.59
5	Chan	263.94	272.02	191.43	28.34	8.27	8.89	3.51	6.75
6	Chan	272.02	280.09	282.63	30.06	8.08	13.13	3.72	9.40
7	Chan	280.09	288.17	246.30	27.68	8.08	11.44	3.43	8.90
8	Chan	288.17	296.24	242.73	27.43	8.08	11.27	3.40	8.85
9	Chan	296.24	304.32	205.80	26.18	8.25	9.56	3.24	7.86
10	ROB	304.32	323.76	33.82	9.21	8.10	1.57	1.19	3.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	211.15	263.94	556.99	93.08	42.69	25.87	2.34	5.98
2	Chan	263.94	272.02	265.01	30.00	8.27	12.31	3.71	8.83
3	Chan	272.02	280.09	390.41	31.72	8.08	18.13	3.93	12.31
4	Chan	280.09	288.17	342.78	29.34	8.08	15.92	3.63	11.68
5	Chan	288.17	296.24	338.09	29.09	8.08	15.70	3.60	11.62
6	Chan	296.24	304.32	259.73	27.84	10.83	12.06	3.45	9.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.9366

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2514.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.042	0.033	0.056
W.S. Elev (ft)	2513.66	Reach Len. (ft)	112.99	112.99	112.99
Crit W.S. (ft)	2513.66	Flow Area (sq ft)	209.65	145.41	36.06
E.G. Slope (ft/ft)	0.008138	Area (sq ft)	209.65	145.41	36.06
Q Total (cfs)	2153.00	Flow (cfs)	804.15	1247.54	101.31
Top Width (ft)	243.83	Top Width (ft)	168.54	47.00	28.29
Vel Total (ft/s)	5.50	Avg. Vel. (ft/s)	3.84	8.58	2.81
Max Chl Dpth (ft)	3.39	Hydr. Depth (ft)	1.24	3.09	1.27
Conv. Total (cfs)	23866.0	Conv. (cfs)	8914.0	13829.0	1123.0
Length Wtd. (ft)	112.99	Wetted Per. (ft)	169.38	47.16	28.41
Min Ch El (ft)	2510.27	Shear (lb/sq ft)	0.63	1.57	0.64
Alpha	1.60	Stream Power (lb/ft s)	2.41	13.44	1.81
Frctn Loss (ft)	1.23	Cum Volume (acre-ft)	4.59	12.99	7.83
C & E Loss (ft)	0.00	Cum SA (acres)	3.44	4.39	6.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2515.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.	0.045	0.033	
W.S. Elev (ft)	2513.95	Reach Len. (ft)	112.99	112.99	112.99
Crit W.S. (ft)	2513.95	Flow Area (sq ft)	79.80	158.87	
E.G. Slope (ft/ft)	0.011807	Area (sq ft)	79.80	158.87	
Q Total (cfs)	2153.00	Flow (cfs)	481.66	1671.34	
Top Width (ft)	81.33	Top Width (ft)	34.33	47.00	
Vel Total (ft/s)	9.02	Avg. Vel. (ft/s)	6.04	10.52	
Max Chl Dpth (ft)	3.68	Hydr. Depth (ft)	2.32	3.38	
Conv. Total (cfs)	19813.9	Conv. (cfs)	4432.7	15381.2	
Length Wtd. (ft)	112.99	Wetted Per. (ft)	37.31	49.97	
Min Ch El (ft)	2510.27	Shear (lb/sq ft)	1.58	2.34	
Alpha	1.16	Stream Power (lb/ft s)	9.52	24.66	
Frctn Loss (ft)	1.72	Cum Volume (acre-ft)	2.24	14.09	1.59
C & E Loss (ft)	0.03	Cum SA (acres)	0.99	4.39	0.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.00	90.00	234.97	56.92	37.09	10.91	1.54	4.13
2	LOB	90.00	135.00	87.92	34.14	45.15	4.08	0.76	2.58
3	LOB	135.00	180.00	69.67	28.80	41.86	3.24	0.69	2.42
4	LOB	180.00	225.00	411.59	89.79	45.29	19.12	2.00	4.58
5	Chan	225.00	234.40	195.51	27.80	9.47	9.08	2.96	7.03
6	Chan	234.40	243.80	253.63	28.75	9.40	11.78	3.06	8.82
7	Chan	243.80	253.20	253.88	28.76	9.40	11.79	3.06	8.83

8	Chan	253.20	262.60	275.58	30.22	9.40	12.80	3.21	9.12
9	Chan	262.60	272.00	268.94	29.89	9.49	12.49	3.18	9.00
10	ROB	272.00	300.33	101.31	36.06	28.41	4.71	1.27	2.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	180.00	225.00	481.66	79.80	37.31	22.37	2.32	6.04
2	Chan	225.00	234.40	272.40	30.49	9.47	12.65	3.24	8.93
3	Chan	234.40	243.80	352.63	31.44	9.40	16.38	3.34	11.22
4	Chan	243.80	253.20	352.94	31.45	9.40	16.39	3.35	11.22
5	Chan	253.20	262.60	380.48	32.91	9.40	17.67	3.50	11.56
6	Chan	262.60	272.00	312.89	32.58	12.30	14.53	3.47	9.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.9152

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2511.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.048	0.037	0.046
W.S. Elev (ft)	2510.67	Reach Len. (ft)	174.00	181.79	183.55
Crit W.S. (ft)	2510.67	Flow Area (sq ft)	226.08	74.99	45.16
E.G. Slope (ft/ft)	0.015184	Area (sq ft)	226.08	74.99	45.16
Q Total (cfs)	2179.00	Flow (cfs)	1272.68	715.30	191.02
Top Width (ft)	220.12	Top Width (ft)	147.93	28.14	44.05
Vel Total (ft/s)	6.29	Avg. Vel. (ft/s)	5.63	9.54	4.23
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	1.53	2.66	1.03
Conv. Total (cfs)	17683.3	Conv. (cfs)	10328.2	5804.9	1550.2
Length Wtd. (ft)	178.62	Wetted Per. (ft)	148.52	28.19	44.23
Min Ch El (ft)	2507.69	Shear (lb/sq ft)	1.44	2.52	0.97
Alpha	1.26	Stream Power (lb/ft s)	8.12	24.05	4.09
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	4.02	12.70	7.72
C & E Loss (ft)	0.02	Cum SA (acres)	3.03	4.30	6.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2512.44	Element	Left OB	Channel	Right OB

Vel Head (ft)	1.36	Wt. n-Val.	0.054	0.037	
W.S. Elev (ft)	2511.08	Reach Len. (ft)	174.00	181.79	183.55
Crit W.S. (ft)	2511.08	Flow Area (sq ft)	162.49	86.53	
E.G. Slope (ft/ft)	0.020156	Area (sq ft)	162.49	86.53	
Q Total (cfs)	2179.00	Flow (cfs)	1201.87	977.13	
Top Width (ft)	88.44	Top Width (ft)	60.30	28.14	
Vel Total (ft/s)	8.75	Avg. Vel. (ft/s)	7.40	11.29	
Max Chl Dpth (ft)	3.39	Hydr. Depth (ft)	2.69	3.07	
Conv. Total (cfs)	15348.0	Conv. (cfs)	8465.5	6882.5	
Length Wtd. (ft)	178.84	Wetted Per. (ft)	63.41	30.78	
Min Ch El (ft)	2507.69	Shear (lb/sq ft)	3.22	3.54	
Alpha	1.14	Stream Power (lb/ft s)	23.85	39.95	
Frctn Loss (ft)	2.66	Cum Volume (acre-ft)	1.93	13.77	1.59
C & E Loss (ft)	0.02	Cum SA (acres)	0.87	4.30	0.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	40.67	81.35	143.00	29.75	26.20	6.56	1.15	4.81
2	LOB	81.35	122.02	58.56	20.77	40.69	2.69	0.51	2.82
3	LOB	122.02	162.70	626.44	87.93	40.88	28.75	2.16	7.12
4	LOB	162.70	203.37	444.69	87.64	40.75	20.41	2.15	5.07
5	Chan	203.37	209.00	79.59	13.88	5.64	3.65	2.47	5.73
6	Chan	209.00	214.63	141.62	16.13	5.64	6.50	2.87	8.78
7	Chan	214.63	220.25	185.56	16.13	5.63	8.52	2.87	11.51
8	Chan	220.25	225.88	169.68	15.28	5.63	7.79	2.72	11.10
9	Chan	225.88	231.51	138.85	13.57	5.65	6.37	2.41	10.23
10	ROB	231.51	269.57	190.67	44.60	38.24	8.75	1.17	4.27
11	ROB	269.57	307.64	0.35	0.56	5.99	0.02	0.09	0.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	122.02	162.70	493.74	58.17	22.67	22.66	2.96	8.49
2	LOB	162.70	203.37	708.14	104.32	40.75	32.50	2.56	6.79
3	Chan	203.37	209.00	116.02	16.19	5.64	5.32	2.88	7.17
4	Chan	209.00	214.63	199.29	18.44	5.64	9.15	3.28	10.81
5	Chan	214.63	220.25	261.62	18.44	5.63	12.01	3.28	14.19
6	Chan	220.25	225.88	241.98	17.59	5.63	11.11	3.13	13.75
7	Chan	225.88	231.51	158.22	15.88	8.24	7.26	2.82	9.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

VER: GalMidBrnch
ACH: GalMidBrnch RS: 0.8808

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2507.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.	0.032	0.032	0.058
W.S. Elev (ft)	2506.43	Reach Len. (ft)	143.83	193.76	240.82
Crit W.S. (ft)	2506.43	Flow Area (sq ft)	80.47	116.91	125.65
E.G. Slope (ft/ft)	0.010644	Area (sq ft)	80.47	116.91	125.65
Q Total (cfs)	2179.00	Flow (cfs)	646.09	1078.89	454.02
Top Width (ft)	168.99	Top Width (ft)	37.55	43.69	87.75
Vel Total (ft/s)	6.75	Avg. Vel. (ft/s)	8.03	9.23	3.61
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	2.14	2.68	1.43
Conv. Total (cfs)	21120.8	Conv. (cfs)	6262.5	10457.6	4400.8
Length Wtd. (ft)	199.86	Wetted Per. (ft)	38.13	43.71	87.95
Min Ch El (ft)	2503.45	Shear (lb/sq ft)	1.40	1.78	0.95
Alpha	1.41	Stream Power (lb/ft s)	11.26	16.40	3.43
Frctn Loss (ft)	2.65	Cum Volume (acre-ft)	3.41	12.30	7.36
C & E Loss (ft)	0.07	Cum SA (acres)	2.66	4.15	6.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

.G. Elev (ft)	2508.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.51	Wt. n-Val.	0.032	0.032	0.058
W.S. Elev (ft)	2506.91	Reach Len. (ft)	143.83	193.76	240.82
Crit W.S. (ft)	2506.91	Flow Area (sq ft)	55.64	137.76	42.27
E.G. Slope (ft/ft)	0.011444	Area (sq ft)	55.64	137.76	42.27
Q Total (cfs)	2179.00	Flow (cfs)	494.74	1470.51	213.75
Top Width (ft)	77.84	Top Width (ft)	20.44	43.69	13.71
Vel Total (ft/s)	9.25	Avg. Vel. (ft/s)	8.89	10.67	5.06
Max Chl Dpth (ft)	3.46	Hydr. Depth (ft)	2.72	3.15	3.08
Conv. Total (cfs)	20368.6	Conv. (cfs)	4624.7	13745.8	1998.1
Length Wtd. (ft)	191.68	Wetted Per. (ft)	23.24	43.71	16.86
Min Ch El (ft)	2503.45	Shear (lb/sq ft)	1.71	2.25	1.79
Alpha	1.14	Stream Power (lb/ft s)	15.21	24.04	9.06
Frctn Loss (ft)	2.75	Cum Volume (acre-ft)	1.49	13.30	1.50
C & E Loss (ft)	0.09	Cum SA (acres)	0.71	4.15	0.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	35.68	53.51	2.43	1.04	2.18	0.11	0.56	2.34
2	LOB	53.51	71.35	316.68	39.46	18.11	14.53	2.21	8.03
[illegible]	LOB	71.35	89.19	326.98	39.97	17.84	15.01	2.24	8.18
4	Chan	89.19	97.93	183.82	21.26	8.74	8.44	2.43	8.65

5	Chan	97.93	106.67	203.56	22.60	8.74	9.34	2.59	9.01
6	Chan	106.67	115.40	240.37	24.98	8.74	11.03	2.86	9.62
7	Chan	115.40	124.14	240.47	24.98	8.74	11.04	2.86	9.63
8	Chan	124.14	132.88	210.67	23.10	8.74	9.67	2.64	9.12
9	ROB	132.88	180.33	406.23	101.46	47.52	18.64	2.14	4.00
10	ROB	180.33	227.77	40.32	20.26	27.09	1.85	0.75	1.99
11	ROB	227.77	275.22	7.48	3.93	13.34	0.34	0.30	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	53.51	71.35	41.51	7.16	5.40	1.91	2.75	5.80
2	LOB	71.35	89.19	453.23	48.48	17.84	20.80	2.72	9.35
3	Chan	89.19	97.93	257.04	25.43	8.74	11.80	2.91	10.11
4	Chan	97.93	106.67	280.03	26.77	8.74	12.85	3.06	10.46
5	Chan	106.67	115.40	322.55	29.15	8.74	14.80	3.34	11.07
6	Chan	115.40	124.14	322.69	29.15	8.74	14.81	3.34	11.07
7	Chan	124.14	132.88	288.19	27.27	8.74	13.23	3.12	10.57
8	ROB	132.88	180.33	213.75	42.27	16.86	9.81	3.08	5.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.8441

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2502.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.040	0.042	0.038
W.S. Elev (ft)	2501.84	Reach Len. (ft)	133.20	210.90	324.80
Crit W.S. (ft)	2501.84	Flow Area (sq ft)	4.14	178.89	134.42
E.G. Slope (ft/ft)	0.017026	Area (sq ft)	4.14	178.89	134.42
Q Total (cfs)	2179.00	Flow (cfs)	15.09	1351.84	812.07
Top Width (ft)	209.66	Top Width (ft)	6.22	85.32	118.13
Vel Total (ft/s)	6.86	Avg. Vel. (ft/s)	3.64	7.56	6.04
Max Chl Dpth (ft)	2.45	Hydr. Depth (ft)	0.67	2.10	1.14
Conv. Total (cfs)	16699.5	Conv. (cfs)	115.7	10360.3	6223.5
Length Wtd. (ft)	262.81	Wetted Per. (ft)	6.36	85.48	118.21
Min Ch El (ft)	2499.39	Shear (lb/sq ft)	0.69	2.22	1.21
Alpha	1.04	Stream Power (lb/ft s)	2.52	16.81	7.30
Frctn Loss (ft)	4.82	Cum Volume (acre-ft)	3.27	11.65	6.65
C & E Loss (ft)	0.06	Cum SA (acres)	2.59	3.86	5.58

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2503.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.	0.040	0.042	0.039
W.S. Elev (ft)	2502.32	Reach Len. (ft)	133.20	210.90	324.80
Crit W.S. (ft)	2502.32	Flow Area (sq ft)	6.61	220.05	21.33
E.G. Slope (ft/ft)	0.018456	Area (sq ft)	6.61	220.05	21.33
Q Total (cfs)	2179.00	Flow (cfs)	35.19	1987.60	156.21
Top Width (ft)	102.22	Top Width (ft)	5.29	85.32	11.61
Vel Total (ft/s)	8.79	Avg. Vel. (ft/s)	5.33	9.03	7.32
Max Chl Dpth (ft)	2.93	Hydr. Depth (ft)	1.25	2.58	1.84
Conv. Total (cfs)	16039.5	Conv. (cfs)	259.0	14630.7	1149.8
Length Wtd. (ft)	227.47	Wetted Per. (ft)	6.09	85.48	13.42
Min Ch El (ft)	2499.39	Shear (lb/sq ft)	1.25	2.97	1.83
Alpha	1.02	Stream Power (lb/ft s)	6.66	26.79	13.41
Frctn Loss (ft)	4.55	Cum Volume (acre-ft)	1.39	12.51	1.32
C & E Loss (ft)	0.08	Cum SA (acres)	0.66	3.86	0.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.63	93.29	15.09	4.14	6.36	0.69	0.67	3.64
2	Chan	93.29	110.35	336.66	38.46	17.18	15.45	2.25	8.75
3	Chan	110.35	127.42	382.92	40.50	17.07	17.57	2.37	9.45
4	Chan	127.42	144.48	318.41	36.26	17.07	14.61	2.13	8.78
5	Chan	144.48	161.55	192.68	36.53	17.09	8.84	2.14	5.27
6	Chan	161.55	178.61	121.18	27.13	17.08	5.56	1.59	4.47
7	ROB	178.61	234.50	572.65	78.24	55.89	26.28	1.40	7.32
8	ROB	234.50	290.39	236.01	53.66	44.68	10.83	1.20	4.40
9	ROB	290.39	346.28	3.40	2.51	17.64	0.16	0.14	1.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.63	93.29	35.19	6.61	6.09	1.61	1.25	5.33
2	Chan	93.29	110.35	486.22	46.70	17.18	22.31	2.74	10.41
3	Chan	110.35	127.42	547.61	48.74	17.07	25.13	2.86	11.24
4	Chan	127.42	144.48	470.44	44.49	17.07	21.59	2.61	10.57
5	Chan	144.48	161.55	284.73	44.76	17.09	13.07	2.62	6.36

6	Chan	161.55	178.61	198.61	35.37	17.08	9.11	2.07	5.62
7	ROB	178.61	234.50	156.20	21.33	13.42	7.17	1.84	7.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.8041

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2497.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.040	0.043	0.041
W.S. Elev (ft)	2496.89	Reach Len. (ft)	181.00	254.24	302.74
Crit W.S. (ft)	2496.89	Flow Area (sq ft)	8.09	138.88	230.25
E.G. Slope (ft/ft)	0.019845	Area (sq ft)	8.09	138.88	230.25
Q Total (cfs)	2179.00	Flow (cfs)	29.94	944.35	1204.71
Top Width (ft)	341.33	Top Width (ft)	13.53	85.31	242.49
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)	3.70	6.80	5.23
Max Chl Dpth (ft)	1.85	Hydr. Depth (ft)	0.60	1.63	0.95
Conv. Total (cfs)	15468.0	Conv. (cfs)	212.5	6703.6	8551.9
Length Wtd. (ft)	260.90	Wetted Per. (ft)	13.59	85.36	242.77
Min Ch El (ft)	2495.04	Shear (lb/sq ft)	0.74	2.02	1.18
Alpha	1.06	Stream Power (lb/ft s)	2.73	13.71	6.15
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	3.25	10.88	5.29
C & E Loss (ft)	0.07	Cum SA (acres)	2.56	3.45	4.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2498.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.95	Wt. n-Val.	0.040	0.043	0.051
W.S. Elev (ft)	2497.40	Reach Len. (ft)	181.00	254.24	302.74
Crit W.S. (ft)	2497.40	Flow Area (sq ft)	13.08	182.22	94.49
E.G. Slope (ft/ft)	0.021721	Area (sq ft)	13.08	182.22	94.49
Q Total (cfs)	2179.00	Flow (cfs)	78.78	1544.77	555.46
Top Width (ft)	152.54	Top Width (ft)	10.53	85.31	56.70
Vel Total (ft/s)	7.52	Avg. Vel. (ft/s)	6.02	8.48	5.88
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)	1.24	2.14	1.67
Conv. Total (cfs)	14785.0	Conv. (cfs)	534.5	10481.5	3768.9
Length Wtd. (ft)	249.69	Wetted Per. (ft)	11.33	85.36	58.91
Min Ch El (ft)	2495.04	Shear (lb/sq ft)	1.57	2.89	2.17
Alpha	1.08	Stream Power (lb/ft s)	9.43	24.54	12.79
Frctn Loss (ft)	3.80	Cum Volume (acre-ft)	1.36	11.53	0.89
C & E Loss (ft)	0.02	Cum SA (acres)	0.64	3.45	0.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.82	93.53	29.94	8.09	13.59	1.37	0.60	3.70
2	Chan	93.53	110.59	253.52	28.21	17.08	11.63	1.65	8.99
3	Chan	110.59	127.65	285.68	29.99	17.06	13.11	1.76	9.52
4	Chan	127.65	144.72	139.19	26.50	17.06	6.39	1.55	5.25
5	Chan	144.72	161.78	126.59	26.30	17.06	5.81	1.54	4.81
6	Chan	161.78	178.84	139.37	27.87	17.09	6.40	1.63	5.00
7	ROB	178.84	256.76	571.76	102.67	77.96	26.24	1.32	5.57
8	ROB	256.76	334.68	410.86	78.35	77.97	18.86	1.01	5.24
9	ROB	334.68	412.61	218.20	46.11	61.50	10.01	0.75	4.73
10	ROB	412.61	490.53	3.90	3.11	25.34	0.18	0.12	1.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.82	93.53	78.78	13.08	11.33	3.62	1.24	6.02
2	Chan	93.53	110.59	413.57	36.88	17.08	18.98	2.16	11.21
3	Chan	110.59	127.65	456.36	38.66	17.06	20.94	2.27	11.80
4	Chan	127.65	144.72	232.89	35.17	17.06	10.69	2.06	6.62
5	Chan	144.72	161.78	212.95	34.97	17.06	9.77	2.05	6.09
6	Chan	161.78	178.84	228.99	36.54	17.09	10.51	2.14	6.27
7	ROB	178.84	256.76	555.46	94.49	58.91	25.49	1.67	5.88

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.7560

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2492.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.032	0.035	0.051
W.S. Elev (ft)	2491.34	Reach Len. (ft)	151.90	151.90	150.60
Crit W.S. (ft)	2491.34	Flow Area (sq ft)	92.91	192.84	57.66
E.G. Slope (ft/ft)	0.010414	Area (sq ft)	92.91	192.84	57.66
Q Total (cfs)	2179.00	Flow (cfs)	489.60	1511.31	178.10
Top Width (ft)	215.86	Top Width (ft)	79.16	79.04	57.65
Vel Total (ft/s)	6.35	Avg. Vel. (ft/s)	5.27	7.84	3.09
Max Chl Dpth (ft)	2.89	Hydr. Depth (ft)	1.17	2.44	1.00
Conv. Total (cfs)	21352.0	Conv. (cfs)	4797.6	14809.3	1745.2
Length Wtd. (ft)	151.65	Wetted Per. (ft)	79.22	79.08	57.69
Min Ch El (ft)	2488.45	Shear (lb/sq ft)	0.76	1.59	0.65

Alpha	1.23	Stream Power (lb/ft s)	4.02	12.43	2.01
Frctn Loss (ft)	1.66	Cum Volume (acre-ft)	3.04	9.91	4.29
C & E Loss (ft)	0.01	Cum SA (acres)	2.37	2.97	3.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2492.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.	0.032	0.035	
W.S. Elev (ft)	2491.39	Reach Len. (ft)	151.90	151.90	150.60
Crit W.S. (ft)	2491.39	Flow Area (sq ft)	94.44	197.18	
E.G. Slope (ft/ft)	0.011254	Area (sq ft)	94.44	197.18	
Q Total (cfs)	2179.00	Flow (cfs)	559.78	1619.22	
Top Width (ft)	150.08	Top Width (ft)	71.04	79.04	
Vel Total (ft/s)	7.47	Avg. Vel. (ft/s)	5.93	8.21	
Max Chl Dpth (ft)	2.94	Hydr. Depth (ft)	1.33	2.49	
Conv. Total (cfs)	20540.0	Conv. (cfs)	5276.6	15263.4	
Length Wtd. (ft)	151.87	Wetted Per. (ft)	71.56	80.71	
Min Ch El (ft)	2488.45	Shear (lb/sq ft)	0.93	1.72	
Alpha	1.06	Stream Power (lb/ft s)	5.50	14.10	
Frctn Loss (ft)	1.74	Cum Volume (acre-ft)	1.14	10.43	0.56
C & E Loss (ft)	0.13	Cum SA (acres)	0.47	2.97	0.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	71.22	106.82	4.33	2.29	7.97	0.20	0.29	1.89
2	LOB	106.82	142.43	126.70	31.61	35.62	5.81	0.89	4.01
3	LOB	142.43	178.04	358.58	59.01	35.63	16.46	1.66	6.08
4	Chan	178.04	193.85	301.65	36.55	15.82	13.84	2.31	8.25
5	Chan	193.85	209.66	394.96	42.96	15.81	18.13	2.72	9.19
6	Chan	209.66	225.46	421.44	44.67	15.81	19.34	2.83	9.44
7	Chan	225.46	241.27	275.21	38.91	15.82	12.63	2.46	7.07
8	Chan	241.27	257.08	118.03	29.74	15.82	5.42	1.88	3.97
9	ROB	257.08	298.75	161.38	50.12	41.68	7.41	1.20	3.22
10	ROB	298.75	340.41	16.72	7.54	16.01	0.77	0.47	2.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	106.82	142.43	150.06	33.48	35.93	6.89	0.94	4.48
2	LOB	142.43	178.04	409.73	60.96	35.63	18.80	1.71	6.72
3	Chan	178.04	193.85	325.89	37.42	15.82	14.96	2.37	8.71

4	Chan	193.85	209.66	424.24	43.83	15.81	19.47	2.77	9.68
5	Chan	209.66	225.46	452.12	45.53	15.81	20.75	2.88	9.93
6	Chan	225.46	241.27	296.47	39.78	15.82	13.61	2.52	7.45
7	Chan	241.27	257.08	120.50	30.61	17.45	5.53	1.94	3.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.7272

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2488.43	Element			
Vel Head (ft)	0.80	Wt. n-Val.	0.032	0.032	0.057
W.S. Elev (ft)	2487.63	Reach Len. (ft)	288.21	261.22	169.76
Crit W.S. (ft)	2487.63	Flow Area (sq ft)	0.38	180.78	192.98
E.G. Slope (ft/ft)	0.011484	Area (sq ft)	0.38	180.78	192.98
Q Total (cfs)	2179.00	Flow (cfs)	0.69	1502.11	676.21
Top Width (ft)	233.55	Top Width (ft)	1.71	83.62	148.22
Vel Total (ft/s)	5.82	Avg. Vel. (ft/s)	1.80	8.31	3.50
Max Chl Dpth (ft)	2.57	Hydr. Depth (ft)	0.22	2.16	1.30
Conv. Total (cfs)	20333.4	Conv. (cfs)	6.4	14017.0	6310.0
Length Wtd. (ft)	237.18	Wetted Per. (ft)	1.76	83.78	148.26
Min Ch El (ft)	2485.06	Shear (lb/sq ft)	0.16	1.55	0.93
Alpha	1.52	Stream Power (lb/ft s)	0.28	12.85	3.27
Frctn Loss (ft)	2.61	Cum Volume (acre-ft)	2.88	9.26	3.85
C & E Loss (ft)	0.01	Cum SA (acres)	2.23	2.68	2.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2489.43	Element			
Vel Head (ft)	1.34	Wt. n-Val.		0.032	0.050
W.S. Elev (ft)	2488.09	Reach Len. (ft)	288.21	261.22	169.76
Crit W.S. (ft)	2488.09	Flow Area (sq ft)		219.40	20.51
E.G. Slope (ft/ft)	0.011643	Area (sq ft)		219.40	20.51
Q Total (cfs)	2179.00	Flow (cfs)		2073.59	105.41
Top Width (ft)	91.36	Top Width (ft)		83.62	7.74
Vel Total (ft/s)	9.08	Avg. Vel. (ft/s)		9.45	5.14
Max Chl Dpth (ft)	3.03	Hydr. Depth (ft)		2.62	2.65
Conv. Total (cfs)	20194.0	Conv. (cfs)		19217.0	976.9
Length Wtd. (ft)	259.01	Wetted Per. (ft)		84.69	10.34
Min Ch El (ft)	2485.06	Shear (lb/sq ft)		1.88	1.44
Alpha	1.05	Stream Power (lb/ft s)		17.80	7.41
Frctn Loss (ft)	3.70	Cum Volume (acre-ft)	0.97	9.70	0.53
C & E Loss (ft)	0.02	Cum SA (acres)	0.35	2.68	0.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	78.73	98.41	0.69	0.38	1.76	0.03	0.22	1.80
2	Chan	98.41	115.13	194.53	28.12	16.87	8.93	1.68	6.92
3	Chan	115.13	131.86	271.10	34.20	16.73	12.44	2.04	7.93
4	Chan	131.86	148.58	290.46	35.64	16.73	13.33	2.13	8.15
5	Chan	148.58	165.31	383.63	42.12	16.73	17.61	2.52	9.11
6	Chan	165.31	182.03	362.39	40.70	16.73	16.63	2.43	8.90
7	ROB	182.03	232.12	399.44	95.72	50.10	18.33	1.91	4.17
8	ROB	232.12	282.20	197.15	63.68	50.09	9.05	1.27	3.10
9	ROB	282.20	332.29	79.61	33.58	48.06	3.65	0.70	2.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	98.41	115.13	283.76	35.84	17.78	13.02	2.14	7.92
2	Chan	115.13	131.86	383.75	41.92	16.73	17.61	2.51	9.15
3	Chan	131.86	148.58	406.03	43.37	16.73	18.63	2.59	9.36
4	Chan	148.58	165.31	512.01	49.85	16.73	23.50	2.98	10.27
5	Chan	165.31	182.03	488.04	48.43	16.73	22.40	2.90	10.08
6	ROB	182.03	232.12	105.41	20.51	10.34	4.84	2.65	5.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.6777

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2482.48	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.058	0.041	0.054
W.S. Elev (ft)	2481.71	Reach Len. (ft)	164.17	163.01	154.02
Crit W.S. (ft)	2481.71	Flow Area (sq ft)	1.04	217.84	157.33
E.G. Slope (ft/ft)	0.010586	Area (sq ft)	1.04	217.84	157.33
Q Total (cfs)	2179.00	Flow (cfs)	1.72	1707.09	470.19
Top Width (ft)	227.47	Top Width (ft)	1.65	71.11	154.72
Vel Total (ft/s)	5.79	Avg. Vel. (ft/s)	1.66	7.84	2.99
Max Chl Dpth (ft)	3.44	Hydr. Depth (ft)	0.63	3.06	1.02
Conv. Total (cfs)	21178.0	Conv. (cfs)	16.7	16591.5	4569.8
Length Wtd. (ft)	160.66	Wetted Per. (ft)	2.07	71.77	154.92
Min Ch El (ft)	2478.27	Shear (lb/sq ft)	0.33	2.01	0.67
Alpha	1.49	Stream Power (lb/ft s)	0.55	15.72	2.01
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	2.88	8.06	3.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.22	2.22	2.25

rning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2483.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.55	Wt. n-Val.		0.041	
W.S. Elev (ft)	2481.71	Reach Len. (ft)	164.17	163.01	154.02
Crit W.S. (ft)	2481.71	Flow Area (sq ft)		217.83	
E.G. Slope (ft/ft)	0.017892	Area (sq ft)		217.83	
Q Total (cfs)	2179.00	Flow (cfs)		2179.00	
Top Width (ft)	71.11	Top Width (ft)		71.11	
Vel Total (ft/s)	10.00	Avg. Vel. (ft/s)		10.00	
Max Chl Dpth (ft)	3.44	Hydr. Depth (ft)		3.06	
Conv. Total (cfs)	16290.0	Conv. (cfs)		16290.0	
Length Wtd. (ft)	162.75	Wetted Per. (ft)		75.00	
Min Ch El (ft)	2478.27	Shear (lb/sq ft)		3.24	
Alpha	1.00	Stream Power (lb/ft s)		32.45	
Frctn Loss (ft)	2.63	Cum Volume (acre-ft)	0.97	8.39	0.49
C & E Loss (ft)	0.02	Cum SA (acres)	0.35	2.22	0.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	40.95	51.19	1.72	1.04	2.07	0.08	0.63	1.66
2	Chan	51.19	65.41	206.96	40.30	14.79	9.50	2.83	5.14
3	Chan	65.41	79.63	348.42	43.32	14.22	15.99	3.05	8.04
4	Chan	79.63	93.86	478.01	45.88	14.22	21.94	3.23	10.42
5	Chan	93.86	108.08	461.40	47.97	14.23	21.18	3.37	9.62
6	Chan	108.08	122.30	212.31	40.38	14.30	9.74	2.84	5.26
7	ROB	122.30	178.80	170.48	62.01	56.57	7.82	1.10	2.75
8	ROB	178.80	235.29	244.24	76.91	56.53	11.21	1.36	3.18
9	ROB	235.29	291.79	55.47	18.41	41.81	2.55	0.44	3.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	51.19	65.41	254.44	40.29	16.05	11.68	2.83	6.31
2	Chan	65.41	79.63	452.28	43.31	14.22	20.76	3.05	10.44
3	Chan	79.63	93.86	620.50	45.88	14.22	28.48	3.23	13.53
4	Chan	93.86	108.08	598.96	47.97	14.23	27.49	3.37	12.49
5	Chan	108.08	122.30	252.82	40.37	16.28	11.60	2.84	6.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.6468

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2478.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.058	0.037	0.037
W.S. Elev (ft)	2477.93	Reach Len. (ft)	282.09	271.75	262.90
Crit W.S. (ft)	2477.93	Flow Area (sq ft)	1.59	180.63	131.13
E.G. Slope (ft/ft)	0.011727	Area (sq ft)	1.59	180.63	131.13
Q Total (cfs)	2204.00	Flow (cfs)	3.16	1523.86	676.98
Top Width (ft)	175.46	Top Width (ft)	2.18	65.08	108.20
Vel Total (ft/s)	7.03	Avg. Vel. (ft/s)	1.99	8.44	5.16
Max Chl Dpth (ft)	3.09	Hydr. Depth (ft)	0.73	2.78	1.21
Conv. Total (cfs)	20352.5	Conv. (cfs)	29.1	14071.9	6251.5
Length Wtd. (ft)	271.67	Wetted Per. (ft)	2.62	65.62	108.30
Min Ch El (ft)	2474.84	Shear (lb/sq ft)	0.44	2.02	0.89
Alpha	1.16	Stream Power (lb/ft s)	0.88	17.00	4.58
Frctn Loss (ft)	2.17	Cum Volume (acre-ft)	2.87	7.32	2.66
C & E Loss (ft)	0.02	Cum SA (acres)	2.21	1.97	1.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2479.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.		0.038	0.058
W.S. Elev (ft)	2478.34	Reach Len. (ft)	282.09	271.75	262.90
Crit W.S. (ft)	2478.34	Flow Area (sq ft)		207.67	28.93
E.G. Slope (ft/ft)	0.014677	Area (sq ft)		207.67	28.93
Q Total (cfs)	2204.00	Flow (cfs)		2075.69	128.31
Top Width (ft)	80.11	Top Width (ft)		65.08	15.03
Vel Total (ft/s)	9.32	Avg. Vel. (ft/s)		10.00	4.44
Max Chl Dpth (ft)	3.50	Hydr. Depth (ft)		3.19	1.92
Conv. Total (cfs)	18192.5	Conv. (cfs)		17133.4	1059.1
Length Wtd. (ft)	271.90	Wetted Per. (ft)		67.49	16.93
Min Ch El (ft)	2474.84	Shear (lb/sq ft)		2.82	1.57
Alpha	1.10	Stream Power (lb/ft s)		28.18	6.94
Frctn Loss (ft)	2.90	Cum Volume (acre-ft)	0.97	7.59	0.44
C & E Loss (ft)	0.01	Cum SA (acres)	0.35	1.97	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	46.23	57.79	3.16	1.59	2.62	0.14	0.73	1.99
2	Chan	57.79	70.81	330.38	38.13	13.51	14.99	2.93	8.67
3	Chan	70.81	83.82	378.47	39.98	13.02	17.17	3.07	9.47
4	Chan	83.82	96.84	346.62	37.92	13.02	15.73	2.91	9.14
5	Chan	96.84	109.85	306.25	35.21	13.02	13.90	2.71	8.70
6	Chan	109.85	122.87	162.15	29.39	13.05	7.36	2.26	5.52
7	ROB	122.87	168.62	305.52	68.72	45.76	13.86	1.50	4.45
8	ROB	168.62	214.38	353.85	54.88	45.82	16.05	1.20	6.45
9	ROB	214.38	260.13	17.61	7.52	16.72	0.80	0.45	2.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	57.79	70.81	438.29	43.53	15.38	19.89	3.34	10.07
2	Chan	70.81	83.82	509.68	45.39	13.02	23.13	3.49	11.23
3	Chan	83.82	96.84	471.81	43.33	13.02	21.41	3.33	10.89
4	Chan	96.84	109.85	423.58	40.62	13.02	19.22	3.12	10.43
5	Chan	109.85	122.87	232.34	34.80	13.05	10.54	2.67	6.68
6	ROB	122.87	168.62	128.31	28.93	16.93	5.82	1.92	4.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.5954

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2473.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.039	0.029	0.053
W.S. Elev (ft)	2472.24	Reach Len. (ft)	124.62	163.51	203.49
Crit W.S. (ft)	2472.24	Flow Area (sq ft)	165.31	183.87	34.09
E.G. Slope (ft/ft)	0.005773	Area (sq ft)	165.31	183.87	34.09
Q Total (cfs)	2204.00	Flow (cfs)	598.67	1537.84	67.49
Top Width (ft)	227.51	Top Width (ft)	123.97	59.16	44.37
Vel Total (ft/s)	5.75	Avg. Vel. (ft/s)	3.62	8.36	1.98
Max Chl Dpth (ft)	3.37	Hydr. Depth (ft)	1.33	3.11	0.77
Conv. Total (cfs)	29007.2	Conv. (cfs)	7879.2	20239.8	888.2
Length Wtd. (ft)	157.17	Wetted Per. (ft)	124.07	59.26	44.51
Min Ch El (ft)	2468.87	Shear (lb/sq ft)	0.48	1.12	0.28
Alpha	1.59	Stream Power (lb/ft s)	1.74	9.35	0.55
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	2.33	6.18	2.16
C & E Loss (ft)	0.01	Cum SA (acres)	1.80	1.58	1.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2474.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.58	Wt. n-Val.	0.028	0.029	
W.S. Elev (ft)	2472.47	Reach Len. (ft)	124.62	163.51	203.49
Crit W.S. (ft)	2472.47	Flow Area (sq ft)	23.87	197.18	
E.G. Slope (ft/ft)	0.008104	Area (sq ft)	23.87	197.18	
Q Total (cfs)	2204.00	Flow (cfs)	172.60	2031.41	
Top Width (ft)	70.32	Top Width (ft)	11.16	59.16	
Vel Total (ft/s)	9.97	Avg. Vel. (ft/s)	7.23	10.30	
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)	2.14	3.33	
Conv. Total (cfs)	24482.7	Conv. (cfs)	1917.2	22565.4	
Length Wtd. (ft)	160.57	Wetted Per. (ft)	12.82	61.80	
Min Ch El (ft)	2468.87	Shear (lb/sq ft)	0.94	1.61	
Alpha	1.03	Stream Power (lb/ft s)	6.81	16.63	
Frctn Loss (ft)	1.41	Cum Volume (acre-ft)	0.90	6.33	0.35
C & E Loss (ft)	0.02	Cum SA (acres)	0.31	1.58	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	39.93	79.86	0.55	0.51	4.18	0.03	0.12	1.09
2	LOB	79.86	119.80	134.52	42.12	39.96	6.10	1.05	3.19
3	LOB	119.80	159.73	155.32	60.82	39.93	7.05	1.52	2.55
4	LOB	159.73	199.66	308.28	61.86	39.99	13.99	1.55	4.98
5	Chan	199.66	211.49	271.65	33.65	11.85	12.33	2.84	8.07
6	Chan	211.49	223.32	327.00	37.59	11.83	14.84	3.18	8.70
7	Chan	223.32	235.16	353.83	39.41	11.83	16.05	3.33	8.98
8	Chan	235.16	246.99	333.91	38.06	11.83	15.15	3.22	8.77
9	Chan	246.99	258.82	251.45	35.15	11.91	11.41	2.97	7.15
10	ROB	258.82	293.74	65.20	31.90	35.05	2.96	0.91	2.04
11	ROB	293.74	328.67	2.29	2.20	9.46	0.10	0.23	1.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	159.73	199.66	172.60	23.87	12.82	7.83	2.14	7.23
2	Chan	199.66	211.49	365.49	36.32	11.85	16.58	3.07	10.06
3	Chan	211.49	223.32	434.33	40.25	11.83	19.71	3.40	10.79
4	Chan	223.32	235.16	467.58	42.07	11.83	21.22	3.56	11.11
5	Chan	235.16	246.99	442.91	40.73	11.83	20.10	3.44	10.88
6	Chan	246.99	258.82	321.09	37.81	14.44	14.57	3.20	8.49

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.5644

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2469.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.043	0.030	0.049
W.S. Elev (ft)	2468.70	Reach Len. (ft)	139.45	196.63	211.00
Crit W.S. (ft)	2468.70	Flow Area (sq ft)	124.49	185.11	77.37
E.G. Slope (ft/ft)	0.007009	Area (sq ft)	124.49	185.11	77.37
Q Total (cfs)	2204.00	Flow (cfs)	441.05	1518.01	244.94
Top Width (ft)	235.96	Top Width (ft)	114.17	65.53	56.26
Vel Total (ft/s)	5.70	Avg. Vel. (ft/s)	3.54	8.20	3.17
Max Chl Dpth (ft)	3.02	Hydr. Depth (ft)	1.09	2.82	1.38
Conv. Total (cfs)	26325.0	Conv. (cfs)	5268.0	18131.4	2925.6
Length Wtd. (ft)	178.36	Wetted Per. (ft)	114.24	65.56	56.43
Min Ch El (ft)	2465.68	Shear (lb/sq ft)	0.48	1.24	0.60
Alpha	1.54	Stream Power (lb/ft s)	1.69	10.13	1.90
Frctn Loss (ft)	1.09	Cum Volume (acre-ft)	1.92	5.49	1.90
C & E Loss (ft)	0.02	Cum SA (acres)	1.46	1.34	1.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2470.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.50	Wt. n-Val.	0.037	0.030	
W.S. Elev (ft)	2468.97	Reach Len. (ft)	139.45	196.63	211.00
Crit W.S. (ft)	2468.97	Flow Area (sq ft)	25.89	202.92	
E.G. Slope (ft/ft)	0.009569	Area (sq ft)	25.89	202.92	
Q Total (cfs)	2204.00	Flow (cfs)	160.31	2043.69	
Top Width (ft)	77.03	Top Width (ft)	11.50	65.53	
Vel Total (ft/s)	9.63	Avg. Vel. (ft/s)	6.19	10.07	
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)	2.25	3.10	
Conv. Total (cfs)	22530.4	Conv. (cfs)	1638.7	20891.6	
Length Wtd. (ft)	180.70	Wetted Per. (ft)	13.60	68.11	
Min Ch El (ft)	2465.68	Shear (lb/sq ft)	1.14	1.78	
Alpha	1.04	Stream Power (lb/ft s)	7.04	17.93	
Frctn Loss (ft)	1.48	Cum Volume (acre-ft)	0.83	5.58	0.35
C & E Loss (ft)	0.01	Cum SA (acres)	0.28	1.34	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	37.86	75.72	0.01	0.04	0.60	0.00	0.06	0.33
2	LOB	75.72	113.59	40.04	15.35	37.88	1.82	0.41	2.61
3	LOB	113.59	151.45	158.11	43.21	37.88	7.17	1.14	3.66
4	LOB	151.45	189.31	242.89	65.89	37.88	11.02	1.74	3.69
5	Chan	189.31	202.42	306.22	35.51	13.12	13.89	2.71	8.62
6	Chan	202.42	215.52	347.55	38.30	13.11	15.77	2.92	9.07
7	Chan	215.52	228.63	359.79	39.10	13.11	16.32	2.98	9.20
8	Chan	228.63	241.73	344.18	38.07	13.11	15.62	2.91	9.04
9	Chan	241.73	254.84	160.27	34.13	13.12	7.27	2.60	4.70
10	ROB	254.84	283.59	133.07	45.00	28.79	6.04	1.56	2.96
11	ROB	283.59	312.35	111.87	32.37	27.64	5.08	1.18	3.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	151.45	189.31	160.31	25.89	13.60	7.27	2.25	6.19
2	Chan	189.31	202.42	419.61	39.07	13.12	19.04	2.98	10.74
3	Chan	202.42	215.52	471.00	41.86	13.11	21.37	3.19	11.25
4	Chan	215.52	228.63	486.17	42.66	13.11	22.06	3.26	11.40
5	Chan	228.63	241.73	466.82	41.63	13.11	21.18	3.18	11.21
6	Chan	241.73	254.84	200.09	37.69	15.67	9.08	2.88	5.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.5272

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2464.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.028	0.026	0.028
W.S. Elev (ft)	2464.27	Reach Len. (ft)	31.80	31.80	42.00
Crit W.S. (ft)	2464.27	Flow Area (sq ft)	222.45	105.44	41.87
E.G. Slope (ft/ft)	0.005383	Area (sq ft)	222.45	105.44	41.87
Q Total (cfs)	2210.00	Flow (cfs)	1083.18	919.63	207.19
Top Width (ft)	278.38	Top Width (ft)	210.78	35.68	31.92
Vel Total (ft/s)	5.98	Avg. Vel. (ft/s)	4.87	8.72	4.95
Max Chl Dpth (ft)	3.12	Hydr. Depth (ft)	1.06	2.96	1.31
Conv. Total (cfs)	30121.1	Conv. (cfs)	14763.2	12534.1	2823.8
Length Wtd. (ft)	32.70	Wetted Per. (ft)	210.96	35.71	32.05
Min Ch El (ft)	2461.15	Shear (lb/sq ft)	0.35	0.99	0.44
Alpha	1.28	Stream Power (lb/ft s)	1.73	8.66	2.17
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	1.36	4.83	1.61
C & E Loss (ft)	0.00	Cum SA (acres)	0.94	1.12	0.87

Warning: The energy equation could not be balanced within the specified number of iterations. The

program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2465.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.	0.025	0.026	
W.S. Elev (ft)	2464.49	Reach Len. (ft)	31.80	31.80	42.00
Crit W.S. (ft)	2464.49	Flow Area (sq ft)	112.97	113.41	
E.G. Slope (ft/ft)	0.007055	Area (sq ft)	112.97	113.41	
Q Total (cfs)	2210.00	Flow (cfs)	1069.75	1140.25	
Top Width (ft)	76.90	Top Width (ft)	41.22	35.68	
Vel Total (ft/s)	9.76	Avg. Vel. (ft/s)	9.47	10.05	
Max Chl Dpth (ft)	3.34	Hydr. Depth (ft)	2.74	3.18	
Conv. Total (cfs)	26312.0	Conv. (cfs)	12736.4	13575.7	
Length Wtd. (ft)	31.80	Wetted Per. (ft)	43.50	38.62	
Min Ch El (ft)	2461.15	Shear (lb/sq ft)	1.14	1.29	
Alpha	1.00	Stream Power (lb/ft s)	10.83	13.00	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	0.60	4.87	0.35
C & E Loss (ft)	0.00	Cum SA (acres)	0.19	1.12	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	63.74	127.48	50.71	15.11	19.63	2.29	0.77	3.36
2	LOB	127.48	191.22	50.81	31.04	63.79	2.30	0.49	1.64
3	LOB	191.22	254.96	78.67	40.34	63.75	3.56	0.63	1.95
4	LOB	254.96	318.70	903.00	135.96	63.79	40.86	2.13	6.64
5	Chan	318.70	325.84	166.76	19.55	7.14	7.55	2.74	8.53
6	Chan	325.84	332.97	182.42	20.64	7.14	8.25	2.89	8.84
7	Chan	332.97	340.11	199.23	21.75	7.14	9.02	3.05	9.16
8	Chan	340.11	347.24	198.99	22.14	7.14	9.00	3.10	8.99
9	Chan	347.24	354.38	172.24	21.36	7.16	7.79	2.99	8.06
10	ROB	354.38	379.48	202.39	38.84	25.19	9.16	1.55	5.21
11	ROB	379.48	404.58	4.80	3.03	6.86	0.22	0.45	1.58

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	254.96	318.70	1069.75	112.97	43.50	48.40	2.74	9.47
2	Chan	318.70	325.84	216.94	21.15	7.14	9.82	2.96	10.26
3	Chan	325.84	332.97	235.74	22.23	7.14	10.67	3.12	10.61
4	Chan	332.97	340.11	255.89	23.35	7.14	11.58	3.27	10.96
5	Chan	340.11	347.24	255.07	23.73	7.14	11.54	3.33	10.75
6	Chan	347.24	354.38	176.60	22.96	10.07	7.99	3.22	7.69

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.5212

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2464.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.036	0.025	0.025
W.S. Elev (ft)	2463.79	Reach Len. (ft)	28.70	28.70	30.00
Crit W.S. (ft)	2463.79	Flow Area (sq ft)	205.57	170.10	36.51
E.G. Slope (ft/ft)	0.004677	Area (sq ft)	205.57	170.10	36.51
Q Total (cfs)	2210.00	Flow (cfs)	626.87	1402.20	180.94
Top Width (ft)	279.95	Top Width (ft)	194.08	58.88	26.99
Vel Total (ft/s)	5.36	Avg. Vel. (ft/s)	3.05	8.24	4.96
Max Chl Dpth (ft)	3.11	Hydr. Depth (ft)	1.06	2.89	1.35
Conv. Total (cfs)	32315.0	Conv. (cfs)	9166.2	20503.2	2645.7
Length Wtd. (ft)	28.79	Wetted Per. (ft)	194.28	58.90	27.12
Min Ch El (ft)	2460.68	Shear (lb/sq ft)	0.31	0.84	0.39
Alpha	1.66	Stream Power (lb/ft s)	0.94	6.95	1.95
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	1.20	4.73	1.57
C & E Loss (ft)	0.01	Cum SA (acres)	0.79	1.08	0.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2465.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.51	Wt. n-Val.	0.030	0.025	
W.S. Elev (ft)	2464.03	Reach Len. (ft)	28.70	28.70	30.00
Crit W.S. (ft)	2464.03	Flow Area (sq ft)	44.67	183.80	
E.G. Slope (ft/ft)	0.006905	Area (sq ft)	44.67	183.80	
Q Total (cfs)	2210.00	Flow (cfs)	329.84	1880.16	
Top Width (ft)	76.27	Top Width (ft)	17.39	58.88	
Vel Total (ft/s)	9.67	Avg. Vel. (ft/s)	7.38	10.23	
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)	2.57	3.12	
Conv. Total (cfs)	26594.9	Conv. (cfs)	3969.3	22625.6	
Length Wtd. (ft)	28.70	Wetted Per. (ft)	19.40	61.66	
Min Ch El (ft)	2460.68	Shear (lb/sq ft)	0.99	1.28	
Alpha	1.04	Stream Power (lb/ft s)	7.33	13.14	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.55	4.76	0.35
C & E Loss (ft)	0.02	Cum SA (acres)	0.17	1.08	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	60.89	121.78	8.10	5.44	11.45	0.37	0.48	1.49
2	LOB	121.78	182.66	128.93	55.88	60.98	5.83	0.92	2.31
3	LOB	182.66	243.55	96.17	46.84	60.91	4.35	0.77	2.05
4	LOB	243.55	304.44	393.67	97.41	60.94	17.81	1.60	4.04
5	Chan	304.44	316.22	245.50	31.44	11.78	11.11	2.67	7.81
6	Chan	316.22	327.99	276.38	33.75	11.78	12.51	2.87	8.19

7	Chan	327.99	339.77	305.18	35.82	11.78	13.81	3.04	8.52
8	Chan	339.77	351.54	309.48	36.12	11.78	14.00	3.07	8.57
9	Chan	351.54	363.32	265.67	32.97	11.79	12.02	2.80	8.06
10	ROB	363.32	391.46	180.94	36.51	27.12	8.19	1.35	4.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	243.55	304.44	329.84	44.67	19.40	14.92	2.57	7.38
2	Chan	304.44	316.22	341.13	34.17	11.78	15.44	2.90	9.98
3	Chan	316.22	327.99	380.52	36.49	11.78	17.22	3.10	10.43
4	Chan	327.99	339.77	417.15	38.56	11.78	18.88	3.27	10.82
5	Chan	339.77	351.54	422.60	38.86	11.78	19.12	3.30	10.87
6	Chan	351.54	363.32	318.76	35.71	14.55	14.42	3.03	8.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.5157

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2463.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.033	0.026	0.028
W.S. Elev (ft)	2463.25	Reach Len. (ft)	79.67	79.67	79.67
Crit W.S. (ft)	2463.25	Flow Area (sq ft)	233.00	145.07	28.42
E.G. Slope (ft/ft)	0.004939	Area (sq ft)	233.00	145.07	28.42
Q Total (cfs)	2210.00	Flow (cfs)	857.20	1228.84	123.96
Top Width (ft)	272.57	Top Width (ft)	203.65	46.64	22.28
Vel Total (ft/s)	5.44	Avg. Vel. (ft/s)	3.68	8.47	4.36
Max Chl Dpth (ft)	3.74	Hydr. Depth (ft)	1.14	3.11	1.28
Conv. Total (cfs)	31446.7	Conv. (cfs)	12197.3	17485.5	1763.8
Length Wtd. (ft)	79.67	Wetted Per. (ft)	203.88	46.73	22.47
Min Ch El (ft)	2459.51	Shear (lb/sq ft)	0.35	0.96	0.39
Alpha	1.56	Stream Power (lb/ft s)	1.30	8.11	1.70
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	1.06	4.63	1.55
C & E Loss (ft)	0.15	Cum SA (acres)	0.66	1.05	0.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2464.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.47	Wt. n-Val.	0.026	0.026	
W.S. Elev (ft)	2463.49	Reach Len. (ft)	79.67	79.67	79.67

Crit W.S. (ft)	2463.49	Flow Area (sq ft)	73.16	156.29	
E.G. Slope (ft/ft)	0.007064	Area (sq ft)	73.16	156.29	
Q Total (cfs)	2210.00	Flow (cfs)	612.25	1597.75	
Top Width (ft)	76.60	Top Width (ft)	29.96	46.64	
Vel Total (ft/s)	9.63	Avg. Vel. (ft/s)	8.37	10.22	
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	2.44	3.35	
Conv. Total (cfs)	26295.0	Conv. (cfs)	7284.7	19010.3	
Length Wtd. (ft)	79.67	Wetted Per. (ft)	31.80	49.67	
Min Ch El (ft)	2459.51	Shear (lb/sq ft)	1.01	1.39	
Alpha	1.02	Stream Power (lb/ft s)	8.49	14.19	
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	0.51	4.65	0.35
C & E Loss (ft)	0.06	Cum SA (acres)	0.16	1.05	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	64.39	128.78	3.13	2.88	10.49	0.14	0.28	1.09
2	LOB	128.78	193.18	158.68	62.86	64.54	7.18	0.98	2.52
3	LOB	193.18	257.57	150.80	60.91	64.40	6.82	0.95	2.48
4	LOB	257.57	321.96	544.59	106.35	64.45	24.64	1.65	5.12
5	Chan	321.96	331.29	201.65	25.05	9.33	9.12	2.69	8.05
6	Chan	331.29	340.62	231.43	27.20	9.33	10.47	2.92	8.51
7	Chan	340.62	349.94	263.98	29.51	9.34	11.94	3.16	8.95
8	Chan	349.94	359.27	291.07	33.44	9.35	13.17	3.58	8.70
9	Chan	359.27	368.60	240.71	29.87	9.38	10.89	3.20	8.06
10	ROB	368.60	390.78	123.96	28.42	22.36	5.61	1.28	4.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	257.57	321.96	612.25	73.16	31.80	27.70	2.44	8.37
2	Chan	321.96	331.29	276.20	27.29	9.33	12.50	2.93	10.12
3	Chan	331.29	340.62	313.55	29.45	9.33	14.19	3.16	10.65
4	Chan	340.62	349.94	354.12	31.75	9.34	16.02	3.40	11.15
5	Chan	349.94	359.27	385.07	35.68	9.35	17.42	3.83	10.79
6	Chan	359.27	368.60	268.81	32.12	12.32	12.16	3.44	8.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.5006

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2460.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.	0.032	0.028	0.029
W.S. Elev (ft)	2459.60	Reach Len. (ft)	75.00	78.14	82.00
Crit W.S. (ft)	2459.60	Flow Area (sq ft)	122.77	134.88	7.55
E.G. Slope (ft/ft)	0.007227	Area (sq ft)	122.77	134.88	7.55
Q Total (cfs)	2210.00	Flow (cfs)	813.22	1355.19	41.60
Top Width (ft)	109.74	Top Width (ft)	63.22	40.38	6.14
Vel Total (ft/s)	8.33	Avg. Vel. (ft/s)	6.62	10.05	5.51
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)	1.94	3.34	1.23
Conv. Total (cfs)	25996.9	Conv. (cfs)	9566.1	15941.5	489.3
Length Wtd. (ft)	76.59	Wetted Per. (ft)	63.90	40.58	6.58
Min Ch El (ft)	2455.77	Shear (lb/sq ft)	0.87	1.50	0.52
Alpha	1.13	Stream Power (lb/ft s)	5.74	15.07	2.85
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	0.73	4.37	1.52
C & E Loss (ft)	0.09	Cum SA (acres)	0.42	0.97	0.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2461.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.68	Wt. n-Val.	0.037	0.028	
W.S. Elev (ft)	2460.14	Reach Len. (ft)	75.00	78.14	82.00
Crit W.S. (ft)	2460.14	Flow Area (sq ft)	71.68	156.62	
E.G. Slope (ft/ft)	0.008056	Area (sq ft)	71.68	156.62	
Q Total (cfs)	2210.00	Flow (cfs)	454.40	1755.60	
Top Width (ft)	66.31	Top Width (ft)	25.93	40.38	
Vel Total (ft/s)	9.68	Avg. Vel. (ft/s)	6.34	11.21	
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	2.76	3.88	
Conv. Total (cfs)	24622.8	Conv. (cfs)	5062.7	19560.1	
Length Wtd. (ft)	76.74	Wetted Per. (ft)	30.27	43.38	
Min Ch El (ft)	2455.77	Shear (lb/sq ft)	1.19	1.82	
Alpha	1.15	Stream Power (lb/ft s)	7.55	20.35	
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	0.37	4.36	0.35
C & E Loss (ft)	0.05	Cum SA (acres)	0.11	0.97	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	300.80	376.00	813.21	122.77	63.90	36.80	1.94	6.62
2	Chan	376.00	384.08	199.80	22.64	8.15	9.04	2.80	8.83
3	Chan	384.08	392.15	318.41	29.89	8.11	14.41	3.70	10.65
4	Chan	392.15	400.23	325.27	30.22	8.08	14.72	3.74	10.76
5	Chan	400.23	408.30	313.89	29.63	8.11	14.20	3.67	10.59
6	Chan	408.30	416.38	197.81	22.50	8.14	8.95	2.79	8.79

7	ROB	416.38	425.05	41.60	7.55	6.58	1.88	1.23	5.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	300.80	376.00	454.40	71.68	30.27	20.56	2.76	6.34
2	Chan	376.00	384.08	278.76	26.99	8.15	12.61	3.34	10.33
3	Chan	384.08	392.15	415.67	34.24	8.11	18.81	4.24	12.14
4	Chan	392.15	400.23	423.64	34.57	8.08	19.17	4.28	12.25
5	Chan	400.23	408.30	410.53	33.98	8.11	18.58	4.21	12.08
6	Chan	408.30	416.38	227.01	26.85	10.94	10.27	3.32	8.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.4858

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2459.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.04	Wt. n-Val.	0.031	0.028	0.035
W.S. Elev (ft)	2458.26	Reach Len. (ft)	82.00	85.01	88.00
Crit W.S. (ft)	2458.26	Flow Area (sq ft)	220.39	58.04	13.63
E.G. Slope (ft/ft)	0.005856	Area (sq ft)	220.39	58.04	13.63
Q Total (cfs)	2210.00	Flow (cfs)	1508.39	633.38	68.23
Top Width (ft)	146.21	Top Width (ft)	126.45	13.00	6.76
Vel Total (ft/s)	7.57	Avg. Vel. (ft/s)	6.84	10.91	5.00
Max Chl Dpth (ft)	4.59	Hydr. Depth (ft)	1.74	4.46	2.02
Conv. Total (cfs)	28880.8	Conv. (cfs)	19712.0	8277.2	891.6
Length Wtd. (ft)	84.05	Wetted Per. (ft)	127.27	13.17	7.85
Min Ch El (ft)	2453.67	Shear (lb/sq ft)	0.63	1.61	0.64
Alpha	1.17	Stream Power (lb/ft s)	4.33	17.58	3.18
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	0.44	4.20	1.50
C & E Loss (ft)	0.05	Cum SA (acres)	0.25	0.92	0.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2460.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.85	Wt. n-Val.	0.028	0.028	
W.S. Elev (ft)	2458.45	Reach Len. (ft)	82.00	85.01	88.00
Crit W.S. (ft)	2458.45	Flow Area (sq ft)	142.48	60.43	
E.G. Slope (ft/ft)	0.008673	Area (sq ft)	142.48	60.43	
Q Total (cfs)	2210.00	Flow (cfs)	1523.29	686.71	
Top Width (ft)	53.51	Top Width (ft)	40.51	13.00	
Vel Total (ft/s)	10.89	Avg. Vel. (ft/s)	10.69	11.36	
Max Chl Dpth (ft)	4.78	Hydr. Depth (ft)	3.52	4.65	
Conv. Total (cfs)	23731.2	Conv. (cfs)	16357.3	7373.9	
Length Wtd. (ft)	83.97	Wetted Per. (ft)	44.78	17.33	
Min Ch El (ft)	2453.67	Shear (lb/sq ft)	1.72	1.89	
Alpha	1.00	Stream Power (lb/ft s)	18.42	21.45	
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)	0.19	4.16	0.35
C & E Loss (ft)	0.04	Cum SA (acres)	0.05	0.92	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	251.40	335.20	54.60	26.53	43.03	2.47	0.62	2.06
2	LOB	335.20	419.00	1453.79	193.86	84.24	65.78	2.31	7.50
3	Chan	419.00	421.60	116.90	11.05	2.63	5.29	4.25	10.58
4	Chan	421.60	424.20	129.92	11.74	2.61	5.88	4.51	11.07
5	Chan	424.20	426.80	131.68	11.82	2.60	5.96	4.55	11.14
6	Chan	426.80	429.40	132.83	11.89	2.60	6.01	4.57	11.18
7	Chan	429.40	432.00	122.05	11.54	2.74	5.52	4.44	10.58
8	ROB	432.00	438.60	68.23	13.62	7.65	3.09	2.07	5.01
9	ROB	438.60	445.19	0.00	0.01	0.19	0.00	0.05	0.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	335.20	419.00	1523.30	142.48	44.78	68.93	3.52	10.69
2	Chan	419.00	421.60	139.52	11.53	2.63	6.31	4.44	12.10
3	Chan	421.60	424.20	154.44	12.22	2.61	6.99	4.70	12.64
4	Chan	424.20	426.80	156.47	12.30	2.60	7.08	4.73	12.72
5	Chan	426.80	429.40	157.78	12.36	2.60	7.14	4.76	12.76
6	Chan	429.40	432.00	78.49	12.02	6.90	3.55	4.62	6.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.4697

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2457.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.54	Wt. n-Val.	0.058	0.032	0.028
W.S. Elev (ft)	2455.57	Reach Len. (ft)	141.89	141.89	141.89
Crit W.S. (ft)	2455.57	Flow Area (sq ft)	11.00	210.66	9.14
E.G. Slope (ft/ft)	0.009183	Area (sq ft)	11.00	210.66	9.14
Q Total (cfs)	2210.00	Flow (cfs)	28.56	2128.16	53.28
Top Width (ft)	81.81	Top Width (ft)	12.26	62.57	6.98
Vel Total (ft/s)	9.58	Avg. Vel. (ft/s)	2.60	10.10	5.83
Max Chl Dpth (ft)	3.72	Hydr. Depth (ft)	0.90	3.37	1.31
Conv. Total (cfs)	23061.9	Conv. (cfs)	298.1	22207.8	556.0
Length Wtd. (ft)	141.89	Wetted Per. (ft)	12.62	62.82	7.45
Min Ch El (ft)	2451.85	Shear (lb/sq ft)	0.50	1.92	0.70
Alpha	1.08	Stream Power (lb/ft s)	1.30	19.42	4.10
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	0.22	3.94	1.48
C & E Loss (ft)	0.05	Cum SA (acres)	0.12	0.85	0.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2457.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.71	Wt. n-Val.		0.031	
W.S. Elev (ft)	2455.57	Reach Len. (ft)	141.89	141.89	141.89
Crit W.S. (ft)	2455.57	Flow Area (sq ft)		210.86	
E.G. Slope (ft/ft)	0.010763	Area (sq ft)		210.86	
Q Total (cfs)	2210.00	Flow (cfs)		2210.00	
Top Width (ft)	62.57	Top Width (ft)		62.57	
Vel Total (ft/s)	10.48	Avg. Vel. (ft/s)		10.48	
Max Chl Dpth (ft)	3.72	Hydr. Depth (ft)		3.37	
Conv. Total (cfs)	21302.3	Conv. (cfs)		21302.3	
Length Wtd. (ft)	141.89	Wetted Per. (ft)		67.85	
Min Ch El (ft)	2451.85	Shear (lb/sq ft)		2.09	
Alpha	1.00	Stream Power (lb/ft s)		21.89	
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	0.06	3.90	0.35
C & E Loss (ft)	0.04	Cum SA (acres)	0.01	0.85	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	292.15	365.19	28.56	11.00	12.62	1.29	0.90	2.60
2	Chan	365.19	377.70	188.12	37.23	12.59	8.51	2.97	5.05
3	Chan	377.70	390.22	373.55	40.44	12.52	16.90	3.23	9.24
4	Chan	390.22	402.73	498.92	43.07	12.52	22.58	3.44	11.58
5	Chan	402.73	415.25	547.48	45.54	12.52	24.77	3.64	12.02
6	Chan	415.25	427.76	520.09	44.39	12.68	23.53	3.55	11.72
7	ROB	427.76	438.66	53.28	9.14	7.45	2.41	1.31	5.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	365.19	377.70	180.89	37.27	15.00	8.18	2.98	4.85
2	Chan	377.70	390.22	403.49	40.48	12.52	18.26	3.23	9.97
3	Chan	390.22	402.73	538.86	43.11	12.52	24.38	3.44	12.50
4	Chan	402.73	415.25	591.26	45.58	12.52	26.75	3.64	12.97
5	Chan	415.25	427.76	495.51	44.43	15.30	22.42	3.55	11.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.4428

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2453.83	Element			
Vel Head (ft)	1.39	Wt. n-Val.	0.040	0.028	0.042
W.S. Elev (ft)	2452.44	Reach Len. (ft)	101.00	97.68	83.93
Crit W.S. (ft)	2452.44	Flow Area (sq ft)	3.32	218.65	25.65
E.G. Slope (ft/ft)	0.007632	Area (sq ft)	3.32	218.65	25.65
Q Total (cfs)	2210.00	Flow (cfs)	10.04	2110.66	89.29
Top Width (ft)	97.55	Top Width (ft)	2.92	71.24	23.39
Vel Total (ft/s)	8.92	Avg. Vel. (ft/s)	3.02	9.65	3.48
Max Chl Dpth (ft)	3.53	Hydr. Depth (ft)	1.14	3.07	1.10
Conv. Total (cfs)	25297.9	Conv. (cfs)	115.0	24160.8	1022.2
Length Wtd. (ft)	97.18	Wetted Per. (ft)	3.70	71.63	23.49
Min Ch El (ft)	2448.91	Shear (lb/sq ft)	0.43	1.45	0.52
Alpha	1.12	Stream Power (lb/ft s)	1.29	14.04	1.81
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	0.20	3.24	1.42
C & E Loss (ft)	0.03	Cum SA (acres)	0.10	0.63	0.73

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2454.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.56	Wt. n-Val.		0.029	
W.S. Elev (ft)	2452.46	Reach Len. (ft)	101.00	97.68	83.93
Crit W.S. (ft)	2452.46	Flow Area (sq ft)		220.34	
E.G. Slope (ft/ft)	0.009079	Area (sq ft)		220.34	
Q Total (cfs)	2210.00	Flow (cfs)		2210.00	
Top Width (ft)	71.24	Top Width (ft)		71.24	
Vel Total (ft/s)	10.03	Avg. Vel. (ft/s)		10.03	
Max Chl Dpth (ft)	3.55	Hydr. Depth (ft)		3.09	
Conv. Total (cfs)	23194.0	Conv. (cfs)		23194.0	
Length Wtd. (ft)	97.68	Wetted Per. (ft)		76.09	
Min Ch El (ft)	2448.91	Shear (lb/sq ft)		1.64	
Alpha	1.00	Stream Power (lb/ft s)		16.46	
Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	0.06	3.20	0.35
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.63	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	273.04	341.30	10.04	3.32	3.70	0.45	1.14	3.02
2	Chan	341.30	355.55	475.50	47.65	14.59	21.52	3.34	9.98
3	Chan	355.55	369.80	464.50	46.29	14.26	21.02	3.25	10.04
4	Chan	369.80	384.04	433.98	44.42	14.25	19.64	3.12	9.77
5	Chan	384.04	398.29	426.72	43.98	14.26	19.31	3.09	9.70
6	Chan	398.29	412.54	309.95	36.32	14.27	14.03	2.55	8.53
7	ROB	412.54	427.57	85.35	22.24	15.09	3.86	1.48	3.84
8	ROB	427.57	442.60	3.95	3.41	8.40	0.18	0.41	1.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	341.30	355.55	496.97	47.98	16.90	22.49	3.37	10.36
2	Chan	355.55	369.80	494.61	46.62	14.26	22.38	3.27	10.61
3	Chan	369.80	384.04	462.35	44.76	14.25	20.92	3.14	10.33
4	Chan	384.04	398.29	454.67	44.32	14.26	20.57	3.11	10.26
5	Chan	398.29	412.54	301.39	36.66	16.43	13.64	2.57	8.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.4243

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2451.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.28	Wt. n-Val.	0.037	0.028	0.029
W.S. Elev (ft)	2450.23	Reach Len. (ft)	108.66	108.66	102.70
Crit W.S. (ft)	2450.23	Flow Area (sq ft)	9.93	226.16	19.98
E.G. Slope (ft/ft)	0.006884	Area (sq ft)	9.93	226.16	19.98
Q Total (cfs)	2210.00	Flow (cfs)	30.46	2099.86	79.68
Top Width (ft)	111.37	Top Width (ft)	9.20	73.38	28.79
Vel Total (ft/s)	8.63	Avg. Vel. (ft/s)	3.07	9.28	3.99
Max Chl Dpth (ft)	3.51	Hydr. Depth (ft)	1.08	3.08	0.69
Conv. Total (cfs)	26636.3	Conv. (cfs)	367.2	25308.8	960.3
Length Wtd. (ft)	108.14	Wetted Per. (ft)	11.39	73.86	28.86
Min Ch El (ft)	2446.72	Shear (lb/sq ft)	0.37	1.32	0.30
Alpha	1.11	Stream Power (lb/ft s)	1.15	12.22	1.19
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	0.18	2.74	1.38
C & E Loss (ft)	0.05	Cum SA (acres)	0.08	0.47	0.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2451.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.52	Wt. n-Val.		0.028	
W.S. Elev (ft)	2450.19	Reach Len. (ft)	108.66	108.66	102.70
Crit W.S. (ft)	2450.19	Flow Area (sq ft)		223.21	
E.G. Slope (ft/ft)	0.008527	Area (sq ft)		223.21	
Q Total (cfs)	2210.00	Flow (cfs)		2210.00	
Top Width (ft)	73.38	Top Width (ft)		73.38	
Vel Total (ft/s)	9.90	Avg. Vel. (ft/s)		9.90	
Max Chl Dpth (ft)	3.47	Hydr. Depth (ft)		3.04	
Conv. Total (cfs)	23933.1	Conv. (cfs)		23933.1	
Length Wtd. (ft)	108.46	Wetted Per. (ft)		77.72	
Min Ch El (ft)	2446.72	Shear (lb/sq ft)		1.53	
Alpha	1.00	Stream Power (lb/ft s)		15.14	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	0.06	2.70	0.35
C & E Loss (ft)	0.02	Cum SA (acres)	0.01	0.47	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	202.50	253.13	30.46	9.93	11.39	1.38	1.08	3.07
2	Chan	253.13	267.81	440.68	47.01	15.07	19.94	3.20	9.37
3	Chan	267.81	282.48	478.74	48.90	14.68	21.66	3.33	9.79

4	Chan	282.48	297.16	417.29	45.02	14.68	18.88	3.07	9.27
5	Chan	297.16	311.83	430.88	45.89	14.68	19.50	3.13	9.39
6	Chan	311.83	326.51	332.27	39.34	14.75	15.03	2.68	8.45
7	ROB	326.51	341.39	74.77	16.17	14.94	3.38	1.09	4.62
8	ROB	341.39	356.27	4.90	3.81	13.92	0.22	0.27	1.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	253.13	267.81	439.46	46.42	17.09	19.89	3.16	9.47
2	Chan	267.81	282.48	519.60	48.30	14.68	23.51	3.29	10.76
3	Chan	282.48	297.16	452.12	44.43	14.68	20.46	3.03	10.18
4	Chan	297.16	311.83	467.03	45.30	14.68	21.13	3.09	10.31
5	Chan	311.83	326.51	331.79	38.75	16.59	15.01	2.64	8.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.4037

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2449.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.	0.028	0.028	0.033
W.S. Elev (ft)	2448.12	Reach Len. (ft)	135.00	133.14	131.50
Crit W.S. (ft)	2448.12	Flow Area (sq ft)	22.01	193.62	78.16
E.G. Slope (ft/ft)	0.005362	Area (sq ft)	22.01	193.62	78.16
Q Total (cfs)	2210.00	Flow (cfs)	111.07	1791.59	307.34
Top Width (ft)	138.28	Top Width (ft)	14.57	52.56	71.15
Vel Total (ft/s)	7.52	Avg. Vel. (ft/s)	5.05	9.25	3.93
Max Chl Dpth (ft)	3.91	Hydr. Depth (ft)	1.51	3.68	1.10
Conv. Total (cfs)	30181.1	Conv. (cfs)	1516.9	24466.9	4197.3
Length Wtd. (ft)	133.04	Wetted Per. (ft)	14.88	52.69	71.37
Min Ch El (ft)	2444.21	Shear (lb/sq ft)	0.50	1.23	0.37
Alpha	1.29	Stream Power (lb/ft s)	2.50	11.38	1.44
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	0.14	2.21	1.26
C & E Loss (ft)	0.02	Cum SA (acres)	0.05	0.31	0.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2449.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.76	Wt. n-Val.		0.028	0.028
W.S. Elev (ft)	2448.07	Reach Len. (ft)	135.00	133.14	131.50
Crit W.S. (ft)	2448.07	Flow Area (sq ft)		190.72	19.48
E.G. Slope (ft/ft)	0.008050	Area (sq ft)		190.72	19.48
Q Total (cfs)	2210.00	Flow (cfs)		2063.91	146.09
Top Width (ft)	60.38	Top Width (ft)		52.56	7.82
Vel Total (ft/s)	10.51	Avg. Vel. (ft/s)		10.82	7.50
Max Chl Dpth (ft)	3.86	Hydr. Depth (ft)		3.63	2.49
Conv. Total (cfs)	24631.7	Conv. (cfs)		23003.5	1628.2
Length Wtd. (ft)	133.09	Wetted Per. (ft)		55.66	9.86
Min Ch El (ft)	2444.21	Shear (lb/sq ft)		1.72	0.99
Alpha	1.02	Stream Power (lb/ft s)		18.64	7.45
Frctn Loss (ft)	1.10	Cum Volume (acre-ft)	0.06	2.18	0.33
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.31	0.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	123.28	154.10	111.07	22.01	14.88	5.03	1.51	5.05
2	Chan	154.10	164.61	330.54	36.99	10.59	14.96	3.52	8.94
3	Chan	164.61	175.12	357.69	38.68	10.52	16.18	3.68	9.25
4	Chan	175.12	185.64	383.86	40.34	10.51	17.37	3.84	9.52
5	Chan	185.64	196.15	380.66	40.13	10.51	17.22	3.82	9.48
6	Chan	196.15	206.66	338.85	37.48	10.55	15.33	3.57	9.04
7	ROB	206.66	226.21	209.29	36.42	19.67	9.47	1.86	5.75
8	ROB	226.21	245.76	36.49	15.65	19.55	1.65	0.80	2.33
9	ROB	245.76	265.30	40.36	16.62	19.56	1.83	0.85	2.43
10	ROB	265.30	284.85	21.20	9.47	12.59	0.96	0.76	2.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	154.10	164.61	331.87	36.41	13.56	15.02	3.46	9.12
2	Chan	164.61	175.12	423.89	38.10	10.52	19.18	3.62	11.13
3	Chan	175.12	185.64	455.38	39.76	10.51	20.61	3.78	11.45
4	Chan	185.64	196.15	451.53	39.55	10.51	20.43	3.76	11.42
5	Chan	196.15	206.66	401.24	36.90	10.55	18.16	3.51	10.87
6	ROB	206.66	226.21	146.09	19.48	9.86	6.61	2.49	7.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.3785

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2446.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.36	Wt. n-Val.	0.028	0.028	0.036
W.S. Elev (ft)	2445.02	Reach Len. (ft)	141.67	141.67	140.20
Crit W.S. (ft)	2445.02	Flow Area (sq ft)	9.54	208.79	46.73
E.G. Slope (ft/ft)	0.005812	Area (sq ft)	9.54	208.79	46.73
Q Total (cfs)	2210.00	Flow (cfs)	47.37	2025.80	136.83
Top Width (ft)	137.52	Top Width (ft)	6.33	56.00	75.18
Vel Total (ft/s)	8.34	Avg. Vel. (ft/s)	4.97	9.70	2.93
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)	1.51	3.73	0.62
Conv. Total (cfs)	28989.4	Conv. (cfs)	621.3	26573.2	1794.8
Length Wtd. (ft)	141.37	Wetted Per. (ft)	7.02	56.22	75.50
Min Ch El (ft)	2441.02	Shear (lb/sq ft)	0.49	1.35	0.22
Alpha	1.26	Stream Power (lb/ft s)	2.45	13.07	0.66
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)	0.09	1.60	1.07
C & E Loss (ft)	0.11	Cum SA (acres)	0.02	0.14	0.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2446.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.81	Wt. n-Val.		0.028	
W.S. Elev (ft)	2444.94	Reach Len. (ft)	141.67	141.67	140.20
Crit W.S. (ft)	2444.94	Flow Area (sq ft)		204.75	
E.G. Slope (ft/ft)	0.008417	Area (sq ft)		204.75	
Q Total (cfs)	2210.00	Flow (cfs)		2210.00	
Top Width (ft)	56.00	Top Width (ft)		56.00	
Vel Total (ft/s)	10.79	Avg. Vel. (ft/s)		10.79	
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)		3.66	
Conv. Total (cfs)	24088.9	Conv. (cfs)		24088.9	
Length Wtd. (ft)	141.53	Wetted Per. (ft)		62.02	
Min Ch El (ft)	2441.02	Shear (lb/sq ft)		1.73	
Alpha	1.00	Stream Power (lb/ft s)		18.72	
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	0.06	1.58	0.30
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.14	0.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.80	71.00	47.37	9.54	7.02	2.14	1.51	4.97
2	Chan	71.00	82.20	402.77	41.83	11.37	18.23	3.73	9.63
3	Chan	82.20	93.40	425.55	42.98	11.20	19.26	3.84	9.90
4	Chan	93.40	104.60	444.96	44.15	11.20	20.13	3.94	10.08

5	Chan	104.60	115.80	405.56	41.76	11.20	18.35	3.73	9.71
6	Chan	115.80	127.00	346.96	38.08	11.24	15.70	3.40	9.11
7	ROB	127.00	153.10	95.30	22.59	15.73	4.31	1.46	4.22
8	ROB	153.10	179.20	0.11	0.42	13.60	0.01	0.03	0.27
9	ROB	179.20	205.30	20.96	12.57	26.11	0.95	0.48	1.67
10	ROB	205.30	231.40	20.46	11.15	20.06	0.93	0.56	1.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	71.00	82.20	397.65	41.02	14.31	17.99	3.66	9.69
2	Chan	82.20	93.40	490.27	42.17	11.20	22.18	3.77	11.63
3	Chan	93.40	104.60	513.07	43.34	11.20	23.22	3.87	11.84
4	Chan	104.60	115.80	466.80	40.95	11.20	21.12	3.66	11.40
5	Chan	115.80	127.00	342.21	37.27	14.11	15.48	3.33	9.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
rning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch RS: 0.3517

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2443.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.035	0.028	0.037
W.S. Elev (ft)	2442.41	Reach Len. (ft)	238.66	238.66	238.66
Crit W.S. (ft)	2442.41	Flow Area (sq ft)	13.09	144.54	203.17
E.G. Slope (ft/ft)	0.004386	Area (sq ft)	13.09	144.54	203.17
Q Total (cfs)	2210.00	Flow (cfs)	58.53	1397.10	754.37
Top Width (ft)	172.76	Top Width (ft)	6.90	31.40	134.46
Vel Total (ft/s)	6.13	Avg. Vel. (ft/s)	4.47	9.67	3.71
Max Chl Dpth (ft)	4.84	Hydr. Depth (ft)	1.90	4.60	1.51
Conv. Total (cfs)	33371.5	Conv. (cfs)	883.8	21096.5	11391.2
Length Wtd. (ft)	238.66	Wetted Per. (ft)	7.89	31.69	134.72
Min Ch El (ft)	2437.57	Shear (lb/sq ft)	0.45	1.25	0.41
Alpha	1.71	Stream Power (lb/ft s)	2.03	12.07	1.53
Frctn Loss (ft)	1.41	Cum Volume (acre-ft)	0.06	1.03	0.67
C & E Loss (ft)	0.04	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
rning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2444.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.91	Wt. n-Val.	0.035	0.028	0.033
W.S. Elev (ft)	2442.37	Reach Len. (ft)	238.66	238.66	238.66
Crit W.S. (ft)	2442.37	Flow Area (sq ft)	12.77	143.25	56.35
E.G. Slope (ft/ft)	0.006800	Area (sq ft)	12.77	143.25	56.35
Q Total (cfs)	2210.00	Flow (cfs)	70.78	1713.97	425.25
Top Width (ft)	55.11	Top Width (ft)	6.42	31.40	17.29
Vel Total (ft/s)	10.41	Avg. Vel. (ft/s)	5.54	11.97	7.55
Max Chl Dpth (ft)	4.80	Hydr. Depth (ft)	1.99	4.56	3.26
Conv. Total (cfs)	26799.2	Conv. (cfs)	858.4	20784.1	5156.7
Length Wtd. (ft)	238.66	Wetted Per. (ft)	7.56	31.69	20.27
Min Ch El (ft)	2437.57	Shear (lb/sq ft)	0.72	1.92	1.18
Alpha	1.14	Stream Power (lb/ft s)	3.97	22.96	8.91
Frctn Loss (ft)	1.95	Cum Volume (acre-ft)	0.03	1.01	0.20
C & E Loss (ft)	0.09	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	19.45	25.94	0.02	0.05	0.47	0.00	0.11	0.37
2	LOB	25.94	32.42	58.52	13.04	7.41	2.65	2.01	4.49
3	Chan	32.42	38.70	275.65	29.03	6.53	12.47	4.62	9.49
4	Chan	38.70	44.98	300.09	30.09	6.28	13.58	4.79	9.97
5	Chan	44.98	51.26	299.78	30.07	6.28	13.56	4.79	9.97
6	Chan	51.26	57.54	278.21	28.76	6.28	12.59	4.58	9.67
7	Chan	57.54	63.82	243.37	26.59	6.31	11.01	4.23	9.15
8	ROB	63.82	104.72	553.71	112.92	41.00	25.05	2.76	4.90
9	ROB	104.72	145.63	106.57	45.10	41.01	4.82	1.10	2.36
10	ROB	145.63	186.53	87.64	40.07	40.93	3.97	0.98	2.19
11	ROB	186.53	227.44	6.45	5.09	11.77	0.29	0.43	1.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	25.94	32.42	70.79	12.77	7.56	3.20	1.99	5.54
2	Chan	32.42	38.70	338.18	28.77	6.53	15.30	4.58	11.75
3	Chan	38.70	44.98	368.37	29.83	6.28	16.67	4.75	12.35
4	Chan	44.98	51.26	367.97	29.81	6.28	16.65	4.75	12.34
5	Chan	51.26	57.54	341.28	28.50	6.28	15.44	4.54	11.98
6	Chan	57.54	63.82	298.17	26.33	6.31	13.49	4.19	11.32
7	ROB	63.82	104.72	425.25	56.35	20.27	19.24	3.26	7.55

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.3065

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2438.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.	0.040	0.032	0.040
W.S. Elev (ft)	2436.66	Reach Len. (ft)	229.34	230.51	232.00
Crit W.S. (ft)	2436.66	Flow Area (sq ft)	7.81	229.65	41.12
E.G. Slope (ft/ft)	0.008081	Area (sq ft)	7.81	229.65	41.12
Q Total (cfs)	2423.00	Flow (cfs)	30.63	2246.75	145.62
Top Width (ft)	105.10	Top Width (ft)	5.48	62.30	37.32
Vel Total (ft/s)	8.70	Avg. Vel. (ft/s)	3.92	9.78	3.54
Max Chl Dpth (ft)	4.40	Hydr. Depth (ft)	1.42	3.69	1.10
Conv. Total (cfs)	26953.9	Conv. (cfs)	340.7	24993.3	1619.9
Length Wtd. (ft)	230.55	Wetted Per. (ft)	6.14	62.68	37.66
Min Ch El (ft)	2432.26	Shear (lb/sq ft)	0.64	1.85	0.55
Alpha	1.19	Stream Power (lb/ft s)	2.52	18.09	1.95
Frctn Loss (ft)	1.85	Cum Volume (acre-ft)	0.43	8.60	0.54
C & E Loss (ft)	0.01	Cum SA (acres)	0.45	2.61	0.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2438.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.61	Wt. n-Val.		0.033	0.040
W.S. Elev (ft)	2436.62	Reach Len. (ft)	229.34	230.51	232.00
Crit W.S. (ft)	2436.62	Flow Area (sq ft)		226.97	18.46
E.G. Slope (ft/ft)	0.009854	Area (sq ft)		226.97	18.46
Q Total (cfs)	2423.00	Flow (cfs)		2341.38	81.62
Top Width (ft)	75.47	Top Width (ft)		62.30	13.17
Vel Total (ft/s)	9.87	Avg. Vel. (ft/s)		10.32	4.42
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)		3.64	1.40
Conv. Total (cfs)	24408.7	Conv. (cfs)		23586.4	822.3
Length Wtd. (ft)	230.54	Wetted Per. (ft)		65.39	14.06
Min Ch El (ft)	2432.26	Shear (lb/sq ft)		2.14	0.81
Alpha	1.06	Stream Power (lb/ft s)		22.03	3.57
Frctn Loss (ft)	2.13	Cum Volume (acre-ft)	0.05	8.63	0.15
C & E Loss (ft)	0.02	Cum SA (acres)	0.04	2.61	0.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	37.22	46.53	30.63	7.81	6.14	1.26	1.42	3.92
2	Chan	46.53	58.99	485.36	47.45	12.72	20.03	3.81	10.23
3	Chan	58.99	71.45	563.43	50.31	12.46	23.25	4.04	11.20
4	Chan	71.45	83.91	611.57	52.91	12.50	25.24	4.25	11.56
5	Chan	83.91	96.37	340.15	41.03	12.52	14.04	3.29	8.29
6	Chan	96.37	108.83	246.24	37.94	12.48	10.16	3.05	6.49
7	ROB	108.83	140.92	141.18	38.76	32.35	5.83	1.21	3.64
8	ROB	140.92	173.01	4.44	2.36	5.31	0.18	0.45	1.88

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	46.53	58.99	490.30	46.91	15.43	20.24	3.76	10.45
2	Chan	58.99	71.45	592.85	49.78	12.46	24.47	4.00	11.91
3	Chan	71.45	83.91	644.08	52.38	12.50	26.58	4.20	12.30
4	Chan	83.91	96.37	356.56	40.49	12.52	14.72	3.25	8.81
5	Chan	96.37	108.83	257.59	37.41	12.48	10.63	3.00	6.89
6	ROB	108.83	140.92	81.62	18.46	14.06	3.37	1.40	4.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.2629

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2431.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.	0.040	0.028	0.040
W.S. Elev (ft)	2430.38	Reach Len. (ft)	190.40	190.40	191.10
Crit W.S. (ft)	2430.38	Flow Area (sq ft)	7.07	240.98	7.12
E.G. Slope (ft/ft)	0.007989	Area (sq ft)	7.07	240.98	7.12
Q Total (cfs)	2423.00	Flow (cfs)	25.35	2371.13	26.52
Top Width (ft)	89.92	Top Width (ft)	5.82	78.57	5.53
Vel Total (ft/s)	9.50	Avg. Vel. (ft/s)	3.59	9.84	3.73
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)	1.21	3.07	1.29
Conv. Total (cfs)	27108.5	Conv. (cfs)	283.6	26528.2	296.7

Length Wtd. (ft)	190.41	Wetted Per. (ft)	6.30	78.86	5.98
Min Ch El (ft)	2427.19	Shear (lb/sq ft)	0.56	1.52	0.59
Alpha	1.05	Stream Power (lb/ft s)	2.01	15.00	2.21
Frctn Loss (ft)	1.48	Cum Volume (acre-ft)	0.39	7.36	0.41
C & E Loss (ft)	0.03	Cum SA (acres)	0.42	2.23	0.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2431.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.55	Wt. n-Val.		0.028	
W.S. Elev (ft)	2430.40	Reach Len. (ft)	190.40	190.40	191.10
Crit W.S. (ft)	2430.40	Flow Area (sq ft)		242.17	
E.G. Slope (ft/ft)	0.008661	Area (sq ft)		242.17	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	78.57	Top Width (ft)		78.57	
Vel Total (ft/s)	10.01	Avg. Vel. (ft/s)		10.01	
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)		3.08	
Conv. Total (cfs)	26036.0	Conv. (cfs)		26036.0	
Length Wtd. (ft)	190.40	Wetted Per. (ft)		83.39	
Min Ch El (ft)	2427.19	Shear (lb/sq ft)		1.57	
Alpha	1.00	Stream Power (lb/ft s)		15.71	
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	0.05	7.39	0.10
C & E Loss (ft)	0.03	Cum SA (acres)	0.04	2.23	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	60.56	75.70	25.35	7.07	6.30	1.05	1.21	3.59
2	Chan	75.70	91.41	428.30	47.17	15.77	17.68	3.00	9.08
3	Chan	91.41	107.13	458.42	46.75	15.72	18.92	2.97	9.81
4	Chan	107.13	122.84	503.33	49.44	15.72	20.77	3.15	10.18
5	Chan	122.84	138.56	503.21	49.43	15.71	20.77	3.15	10.18
6	Chan	138.56	154.27	477.88	48.19	15.93	19.72	3.07	9.92
7	ROB	154.27	167.05	26.52	7.12	5.98	1.09	1.29	3.73

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	75.70	91.41	427.44	47.41	18.19	17.64	3.02	9.02
2	Chan	91.41	107.13	480.44	46.99	15.72	19.83	2.99	10.22
3	Chan	107.13	122.84	527.27	49.68	15.72	21.76	3.16	10.61
4	Chan	122.84	138.56	527.13	49.67	15.71	21.76	3.16	10.61

5	Chan	138.56	154.27	460.73	48.43	18.05	19.01	3.08	9.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.2268

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2428.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.77	Wt. n-Val.	0.058	0.029	0.040
W.S. Elev (ft)	2426.94	Reach Len. (ft)	96.00	94.01	90.00
Crit W.S. (ft)	2426.94	Flow Area (sq ft)	12.71	219.98	5.26
E.G. Slope (ft/ft)	0.007551	Area (sq ft)	12.71	219.98	5.26
Q Total (cfs)	2423.00	Flow (cfs)	34.49	2371.89	16.62
Top Width (ft)	72.32	Top Width (ft)	9.08	58.22	5.03
Vel Total (ft/s)	10.18	Avg. Vel. (ft/s)	2.71	10.78	3.16
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)	1.40	3.78	1.05
Conv. Total (cfs)	27883.1	Conv. (cfs)	396.9	27295.0	191.2
Length Wtd. (ft)	93.97	Wetted Per. (ft)	9.44	58.73	5.45
Min Ch El (ft)	2422.93	Shear (lb/sq ft)	0.63	1.77	0.46
Alpha	1.10	Stream Power (lb/ft s)	1.72	19.04	1.44
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	0.34	6.35	0.38
C & E Loss (ft)	0.01	Cum SA (acres)	0.38	1.93	0.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2428.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.90	Wt. n-Val.		0.031	
W.S. Elev (ft)	2426.92	Reach Len. (ft)	96.00	94.01	90.00
Crit W.S. (ft)	2426.92	Flow Area (sq ft)		219.07	
E.G. Slope (ft/ft)	0.009911	Area (sq ft)		219.07	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	58.22	Top Width (ft)		58.22	
Vel Total (ft/s)	11.06	Avg. Vel. (ft/s)		11.06	
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)		3.76	
Conv. Total (cfs)	24338.6	Conv. (cfs)		24338.6	
Length Wtd. (ft)	94.01	Wetted Per. (ft)		63.24	
Min Ch El (ft)	2422.93	Shear (lb/sq ft)		2.14	
Alpha	1.00	Stream Power (lb/ft s)		23.71	
Frctn Loss (ft)	1.04	Cum Volume (acre-ft)	0.05	6.39	0.10
C & E Loss (ft)	0.00	Cum SA (acres)	0.04	1.93	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	38.81	48.51	34.49	12.71	9.44	1.42	1.40	2.71
2	Chan	48.51	60.15	402.98	40.11	11.79	16.63	3.44	10.05
3	Chan	60.15	71.80	502.51	45.31	11.64	20.74	3.89	11.09
4	Chan	71.80	83.44	523.49	46.43	11.64	21.61	3.99	11.27
5	Chan	83.44	95.09	520.80	46.29	11.64	21.49	3.98	11.25
6	Chan	95.09	106.73	422.12	41.84	12.01	17.42	3.59	10.09
7	ROB	106.73	112.80	16.62	5.26	5.45	0.69	1.05	3.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	48.51	60.15	410.81	39.93	14.22	16.95	3.43	10.29
2	Chan	60.15	71.80	516.59	45.13	11.64	21.32	3.88	11.45
3	Chan	71.80	83.44	538.25	46.25	11.64	22.21	3.97	11.64
4	Chan	83.44	95.09	535.47	46.11	11.64	22.10	3.96	11.61
5	Chan	95.09	106.73	421.87	41.66	14.09	17.41	3.58	10.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.2090

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2426.62	Element			
Vel Head (ft)	1.75	Wt. n-Val.	0.058	0.032	0.040
W.S. Elev (ft)	2424.87	Reach Len. (ft)	170.00	171.22	187.00
Crit W.S. (ft)	2424.87	Flow Area (sq ft)	6.51	218.05	12.34
E.G. Slope (ft/ft)	0.009713	Area (sq ft)	6.51	218.05	12.34
Q Total (cfs)	2423.00	Flow (cfs)	18.54	2347.12	57.35
Top Width (ft)	71.78	Top Width (ft)	4.83	58.91	8.03
Vel Total (ft/s)	10.23	Avg. Vel. (ft/s)	2.85	10.76	4.65
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)	1.35	3.70	1.54
Conv. Total (cfs)	24585.5	Conv. (cfs)	188.1	23815.5	581.9
Length Wtd. (ft)	171.85	Wetted Per. (ft)	5.43	59.18	8.63
Min Ch El (ft)	2420.80	Shear (lb/sq ft)	0.73	2.23	0.87
Alpha	1.08	Stream Power (lb/ft s)	2.07	24.05	4.03
Frctn Loss (ft)	1.64	Cum Volume (acre-ft)	0.32	5.88	0.36
C & E Loss (ft)	0.03	Cum SA (acres)	0.37	1.81	0.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2426.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.89	Wt. n-Val.		0.034	
W.S. Elev (ft)	2424.90	Reach Len. (ft)	170.00	171.22	187.00
Crit W.S. (ft)	2424.90	Flow Area (sq ft)		219.78	
E.G. Slope (ft/ft)	0.012455	Area (sq ft)		219.78	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	58.91	Top Width (ft)		58.91	
Vel Total (ft/s)	11.02	Avg. Vel. (ft/s)		11.02	
Max Chl Dpth (ft)	4.10	Hydr. Depth (ft)		3.73	
Conv. Total (cfs)	21711.0	Conv. (cfs)		21711.0	
Length Wtd. (ft)	171.22	Wetted Per. (ft)		64.79	
Min Ch El (ft)	2420.80	Shear (lb/sq ft)		2.64	
Alpha	1.00	Stream Power (lb/ft s)		29.08	
Frctn Loss (ft)	2.12	Cum Volume (acre-ft)	0.05	5.91	0.10
C & E Loss (ft)	0.03	Cum SA (acres)	0.04	1.81	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	36.51	45.64	18.54	6.51	5.43	0.76	1.35	2.85
2	Chan	45.64	57.42	259.17	35.71	11.86	10.70	3.03	7.26
3	Chan	57.42	69.20	462.21	42.05	11.79	19.08	3.57	10.99
4	Chan	69.20	80.99	539.22	46.12	11.79	22.25	3.91	11.69
5	Chan	80.99	92.77	565.20	47.43	11.78	23.33	4.03	11.92
6	Chan	92.77	104.55	521.31	46.74	11.96	21.52	3.97	11.15
7	ROB	104.55	118.16	57.35	12.34	8.63	2.37	1.54	4.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	45.64	57.42	255.96	36.05	14.30	10.56	3.06	7.10
2	Chan	57.42	69.20	486.29	42.40	11.79	20.07	3.60	11.47
3	Chan	69.20	80.99	566.63	46.46	11.79	23.39	3.94	12.20
4	Chan	80.99	92.77	593.73	47.78	11.78	24.50	4.06	12.43
5	Chan	92.77	104.55	520.39	47.09	15.13	21.48	4.00	11.05

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.1766

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2423.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.09	Wt. n-Val.	0.058	0.031	0.040
W.S. Elev (ft)	2421.55	Reach Len. (ft)	80.00	68.29	70.00
Crit W.S. (ft)	2421.55	Flow Area (sq ft)	10.02	187.73	34.13
E.G. Slope (ft/ft)	0.009427	Area (sq ft)	10.02	187.73	34.13
Q Total (cfs)	2423.00	Flow (cfs)	31.80	2252.06	139.13
Top Width (ft)	82.91	Top Width (ft)	6.23	44.55	32.13
Vel Total (ft/s)	10.45	Avg. Vel. (ft/s)	3.18	12.00	4.08
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	1.61	4.21	1.06
Conv. Total (cfs)	24955.9	Conv. (cfs)	327.6	23195.3	1433.0
Length Wtd. (ft)	68.53	Wetted Per. (ft)	6.94	44.89	32.81
Min Ch El (ft)	2417.18	Shear (lb/sq ft)	0.85	2.46	0.61
Alpha	1.23	Stream Power (lb/ft s)	2.70	29.52	2.50
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)	0.29	5.08	0.26
C & E Loss (ft)	0.09	Cum SA (acres)	0.35	1.60	0.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2424.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.24	Wt. n-Val.		0.034	
W.S. Elev (ft)	2421.87	Reach Len. (ft)	80.00	68.29	70.00
Crit W.S. (ft)	2421.87	Flow Area (sq ft)		201.95	
E.G. Slope (ft/ft)	0.012290	Area (sq ft)		201.95	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	44.55	Top Width (ft)		44.55	
Vel Total (ft/s)	12.00	Avg. Vel. (ft/s)		12.00	
Max Chl Dpth (ft)	4.69	Hydr. Depth (ft)		4.53	
Conv. Total (cfs)	21856.5	Conv. (cfs)		21856.5	
Length Wtd. (ft)	68.29	Wetted Per. (ft)		52.05	
Min Ch El (ft)	2417.18	Shear (lb/sq ft)		2.98	
Alpha	1.00	Stream Power (lb/ft s)		35.71	
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	0.05	5.08	0.10
C & E Loss (ft)	0.05	Cum SA (acres)	0.04	1.60	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	52.28	65.35	31.80	10.02	6.94	1.31	1.61	3.18
2	Chan	65.35	74.26	380.76	35.72	9.15	15.71	4.01	10.66
3	Chan	74.26	83.17	474.15	37.68	8.91	19.57	4.23	12.58
4	Chan	83.17	92.08	487.42	38.31	8.91	20.12	4.30	12.72
5	Chan	92.08	100.99	496.47	38.73	8.91	20.49	4.35	12.82
6	Chan	100.99	109.90	413.27	37.29	9.02	17.06	4.19	11.08
7	ROB	109.90	146.60	123.36	27.29	19.46	5.09	1.43	4.52
8	ROB	146.60	183.30						
9	ROB	183.30	220.01						
10	ROB	220.01	256.71	15.77	6.83	13.36	0.65	0.52	2.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	65.35	74.26	402.16	38.56	12.51	16.60	4.33	10.43
2	Chan	74.26	83.17	525.13	40.52	8.91	21.67	4.55	12.96
3	Chan	83.17	92.08	538.80	41.15	8.91	22.24	4.62	13.09
4	Chan	92.08	100.99	548.10	41.58	8.91	22.62	4.67	13.18
5	Chan	100.99	109.90	408.80	40.14	12.82	16.87	4.50	10.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.1637

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2421.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.78	Wt. n-Val.	0.058	0.030	0.040
W.S. Elev (ft)	2419.93	Reach Len. (ft)	93.00	92.25	92.10
Crit W.S. (ft)	2419.93	Flow Area (sq ft)	12.06	210.73	21.69
E.G. Slope (ft/ft)	0.007282	Area (sq ft)	12.06	210.73	21.69
Q Total (cfs)	2423.00	Flow (cfs)	34.97	2307.11	80.92
Top Width (ft)	79.85	Top Width (ft)	7.10	50.59	22.16
Vel Total (ft/s)	9.91	Avg. Vel. (ft/s)	2.90	10.95	3.73
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)	1.70	4.17	0.98

Conv. Total (cfs)	28394.1	Conv. (cfs)	409.8	27036.0	948.3
Length Wtd. (ft)	92.26	Wetted Per. (ft)	7.90	50.89	22.90
Min Ch El (ft)	2415.58	Shear (lb/sq ft)	0.69	1.88	0.43
Alpha	1.17	Stream Power (lb/ft s)	2.01	20.61	1.61
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)	0.27	4.77	0.22
C & E Loss (ft)	0.03	Cum SA (acres)	0.33	1.53	0.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2421.98	Element			
Vel Head (ft)	2.05	Wt. n-Val.		0.032	
W.S. Elev (ft)	2419.93	Reach Len. (ft)	93.00	92.25	92.10
Crit W.S. (ft)	2419.93	Flow Area (sq ft)		210.71	
E.G. Slope (ft/ft)	0.011237	Area (sq ft)		210.71	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	50.59	Top Width (ft)		50.59	
Vel Total (ft/s)	11.50	Avg. Vel. (ft/s)		11.50	
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)		4.16	
Conv. Total (cfs)	22857.6	Conv. (cfs)		22857.6	
Length Wtd. (ft)	92.25	Wetted Per. (ft)		57.71	
Min Ch El (ft)	2415.58	Shear (lb/sq ft)		2.56	
Alpha	1.00	Stream Power (lb/ft s)		29.46	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	0.05	4.76	0.10
C & E Loss (ft)	0.07	Cum SA (acres)	0.04	1.53	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	146.98	183.73	34.97	12.06	7.90	1.44	1.70	2.90
2	Chan	183.73	193.85	450.60	43.13	10.33	18.60	4.26	10.45
3	Chan	193.85	203.97	504.18	43.78	10.12	20.81	4.33	11.52
4	Chan	203.97	214.08	485.63	42.81	10.12	20.04	4.23	11.34
5	Chan	214.08	224.20	459.51	41.41	10.12	18.96	4.09	11.10
6	Chan	224.20	234.32	407.19	39.59	10.21	16.81	3.91	10.29
7	ROB	234.32	272.28	70.80	16.08	9.83	2.92	1.74	4.40
8	ROB	272.28	310.24						
9	ROB	310.24	348.20	10.12	5.61	13.05	0.42	0.43	1.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	183.73	193.85	463.38	43.13	13.78	19.12	4.26	10.74
2	Chan	193.85	203.97	538.18	43.78	10.12	22.21	4.33	12.29
3	Chan	203.97	214.08	518.38	42.81	10.12	21.39	4.23	12.11
4	Chan	214.08	224.20	490.49	41.41	10.12	20.24	4.09	11.84
5	Chan	224.20	234.32	412.57	39.58	13.57	17.03	3.91	10.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.1462

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2419.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.68	Wt. n-Val.	0.058	0.030	0.040
W.S. Elev (ft)	2417.32	Reach Len. (ft)	130.00	125.85	110.00
Crit W.S. (ft)	2417.32	Flow Area (sq ft)	11.17	222.82	10.31
E.G. Slope (ft/ft)	0.008041	Area (sq ft)	11.17	222.82	10.31
Q Total (cfs)	2423.00	Flow (cfs)	29.72	2351.07	42.21
Top Width (ft)	80.93	Top Width (ft)	10.03	61.94	8.96
Vel Total (ft/s)	9.92	Avg. Vel. (ft/s)	2.66	10.55	4.09
Max Chl Dpth (ft)	3.91	Hydr. Depth (ft)	1.11	3.60	1.15
Conv. Total (cfs)	27021.6	Conv. (cfs)	331.4	26219.4	470.8
Length Wtd. (ft)	125.58	Wetted Per. (ft)	10.54	62.22	9.69
Min Ch El (ft)	2413.41	Shear (lb/sq ft)	0.53	1.80	0.53
Alpha	1.10	Stream Power (lb/ft s)	1.41	18.97	2.19
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	0.24	4.31	0.18
C & E Loss (ft)	0.06	Cum SA (acres)	0.32	1.41	0.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2419.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.81	Wt. n-Val.	0.058	0.030	0.040
W.S. Elev (ft)	2417.30	Reach Len. (ft)	130.00	125.85	110.00
Crit W.S. (ft)	2417.30	Flow Area (sq ft)	1.52	221.86	4.26
E.G. Slope (ft/ft)	0.008542	Area (sq ft)	1.52	221.86	4.26
Q Total (cfs)	2423.00	Flow (cfs)	2.24	2405.72	15.04
Top Width (ft)	64.08	Top Width (ft)	0.59	61.94	1.55

Vel Total (ft/s)	10.64	Avg. Vel. (ft/s)	1.47	10.84	3.53
Max Chl Dpth (ft)	3.89	Hydr. Depth (ft)	2.58	3.58	2.75
Conv. Total (cfs)	26216.8	Conv. (cfs)	24.2	26029.9	162.7
Length Wtd. (ft)	125.80	Wetted Per. (ft)	3.10	62.22	4.10
Min Ch El (ft)	2413.41	Shear (lb/sq ft)	0.26	1.90	0.56
Alpha	1.03	Stream Power (lb/ft s)	0.38	20.62	1.96
Frctn Loss (ft)	1.14	Cum Volume (acre-ft)	0.05	4.30	0.10
C & E Loss (ft)	0.00	Cum SA (acres)	0.04	1.41	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.54	84.82	0.23	0.24	1.48	0.01	0.17	0.98
2	LOB	84.82	113.09	0.02	0.03	0.52	0.00	0.06	0.52
3	LOB	113.09	141.36	29.47	10.91	8.54	1.22	1.34	2.70
4	Chan	141.36	153.75	389.63	41.13	12.49	16.08	3.32	9.47
5	Chan	153.75	166.14	454.35	43.16	12.39	18.75	3.48	10.53
6	Chan	166.14	178.52	482.57	44.74	12.39	19.92	3.61	10.78
7	Chan	178.52	190.91	513.01	46.42	12.39	21.17	3.75	11.05
8	Chan	190.91	203.30	511.51	47.38	12.57	21.11	3.82	10.80
9	ROB	203.30	239.96	42.14	10.17	7.33	1.74	1.54	4.14
10	ROB	239.96	276.61						
11	ROB	276.61	313.27						
12	ROB	313.27	349.92	0.07	0.14	2.36	0.00	0.06	0.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	113.09	141.36	2.24	1.52	3.10	0.09	2.58	1.47
2	Chan	141.36	153.75	398.46	40.93	12.49	16.45	3.30	9.73
3	Chan	153.75	166.14	464.79	42.96	12.39	19.18	3.47	10.82
4	Chan	166.14	178.52	493.78	44.55	12.39	20.38	3.60	11.08
5	Chan	178.52	190.91	525.07	46.22	12.39	21.67	3.73	11.36
6	Chan	190.91	203.30	523.62	47.19	12.57	21.61	3.81	11.10
7	ROB	203.30	239.96	15.04	4.26	4.10	0.62	2.75	3.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.1223

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2416.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.	0.047	0.029	0.040
W.S. Elev (ft)	2414.89	Reach Len. (ft)	100.00	105.52	120.00
Crit W.S. (ft)	2414.89	Flow Area (sq ft)	34.82	228.31	16.56
E.G. Slope (ft/ft)	0.006574	Area (sq ft)	34.82	228.31	16.56
Q Total (cfs)	2423.00	Flow (cfs)	68.86	2288.35	65.79
Top Width (ft)	136.76	Top Width (ft)	60.07	60.80	15.89
Vel Total (ft/s)	8.66	Avg. Vel. (ft/s)	1.98	10.02	3.97
Max Chl Dpth (ft)	3.80	Hydr. Depth (ft)	0.58	3.76	1.04
Conv. Total (cfs)	29883.9	Conv. (cfs)	849.3	28223.2	811.4
Length Wtd. (ft)	105.65	Wetted Per. (ft)	60.79	61.18	16.65
Min Ch El (ft)	2411.08	Shear (lb/sq ft)	0.24	1.53	0.41
Alpha	1.27	Stream Power (lb/ft s)	0.46	15.35	1.62
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	0.18	3.66	0.15
C & E Loss (ft)	0.00	Cum SA (acres)	0.21	1.23	0.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2416.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.81	Wt. n-Val.		0.030	
W.S. Elev (ft)	2414.82	Reach Len. (ft)	100.00	105.52	120.00
Crit W.S. (ft)	2414.82	Flow Area (sq ft)		224.17	
E.G. Slope (ft/ft)	0.009718	Area (sq ft)		224.17	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	60.80	Top Width (ft)		60.80	
Vel Total (ft/s)	10.81	Avg. Vel. (ft/s)		10.81	
Max Chl Dpth (ft)	3.74	Hydr. Depth (ft)		3.69	
Conv. Total (cfs)	24579.0	Conv. (cfs)		24579.0	
Length Wtd. (ft)	105.52	Wetted Per. (ft)		67.08	
Min Ch El (ft)	2411.08	Shear (lb/sq ft)		2.03	
Alpha	1.00	Stream Power (lb/ft s)		21.91	
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	0.05	3.66	0.09
C & E Loss (ft)	0.06	Cum SA (acres)	0.04	1.23	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	46.98	70.48	39.99	14.36	14.79	1.65	0.99	2.79
2	LOB	70.48	93.97	4.81	4.43	22.09	0.20	0.20	1.08

3	LOB	93.97	117.46	24.07	16.04	23.91	0.99	0.68	1.50
4	Chan	117.46	129.62	430.94	45.05	12.51	17.79	3.70	9.57
5	Chan	129.62	141.78	465.33	45.86	12.16	19.20	3.77	10.15
6	Chan	141.78	153.94	469.66	46.12	12.16	19.38	3.79	10.18
7	Chan	153.94	166.10	471.09	46.20	12.16	19.44	3.80	10.20
8	Chan	166.10	178.26	451.33	45.08	12.19	18.63	3.71	10.01
9	ROB	178.26	211.44	63.60	14.77	9.01	2.62	1.78	4.31
10	ROB	211.44	244.62						
11	ROB	244.62	277.79	0.59	0.63	3.76	0.02	0.17	0.94
12	ROB	277.79	310.97	1.60	1.16	3.88	0.07	0.30	1.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	117.46	129.62	463.23	44.22	15.21	19.12	3.64	10.47
2	Chan	129.62	141.78	508.75	45.03	12.16	21.00	3.70	11.30
3	Chan	141.78	153.94	513.57	45.29	12.16	21.20	3.72	11.34
4	Chan	153.94	166.10	515.17	45.37	12.16	21.26	3.73	11.35
5	Chan	166.10	178.26	422.29	44.25	15.39	17.43	3.64	9.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.1024

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2413.01	Element			
Vel Head (ft)	1.52	Wt. n-Val.	0.050	0.030	0.040
W.S. Elev (ft)	2411.49	Reach Len. (ft)	120.00	115.08	100.00
Crit W.S. (ft)	2411.49	Flow Area (sq ft)	8.08	241.34	3.11
E.G. Slope (ft/ft)	0.008544	Area (sq ft)	8.08	241.34	3.11
Q Total (cfs)	2423.00	Flow (cfs)	14.33	2399.38	9.29
Top Width (ft)	94.01	Top Width (ft)	15.94	74.75	3.33
Vel Total (ft/s)	9.60	Avg. Vel. (ft/s)	1.77	9.94	2.99
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)	0.51	3.23	0.93
Conv. Total (cfs)	26213.9	Conv. (cfs)	155.0	25958.3	100.6
Length Wtd. (ft)	115.02	Wetted Per. (ft)	16.49	75.34	3.81
Min Ch El (ft)	2408.13	Shear (lb/sq ft)	0.26	1.71	0.43
Alpha	1.06	Stream Power (lb/ft s)	0.46	16.99	1.30
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	0.13	3.09	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.12	1.07	0.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2413.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.61	Wt. n-Val.		0.031	
W.S. Elev (ft)	2411.44	Reach Len. (ft)	120.00	115.08	100.00
Crit W.S. (ft)	2411.44	Flow Area (sq ft)		237.96	
E.G. Slope (ft/ft)	0.010113	Area (sq ft)		237.96	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	74.75	Top Width (ft)		74.75	
Vel Total (ft/s)	10.18	Avg. Vel. (ft/s)		10.18	
Max Chl Dpth (ft)	3.31	Hydr. Depth (ft)		3.18	
Conv. Total (cfs)	24094.0	Conv. (cfs)		24094.0	
Length Wtd. (ft)	115.04	Wetted Per. (ft)		78.79	
Min Ch El (ft)	2408.13	Shear (lb/sq ft)		1.91	
Alpha	1.00	Stream Power (lb/ft s)		19.42	
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	0.05	3.10	0.09
C & E Loss (ft)	0.01	Cum SA (acres)	0.04	1.07	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	50.84	67.79	9.08	5.37	12.84	0.37	0.42	1.69
2	LOB	67.79	84.74	5.25	2.71	3.65	0.22	0.83	1.94
3	Chan	84.74	99.69	425.31	46.95	15.31	17.55	3.14	9.06
4	Chan	99.69	114.64	521.41	50.19	14.95	21.52	3.36	10.39
5	Chan	114.64	129.59	520.19	50.12	14.95	21.47	3.35	10.38
6	Chan	129.59	144.54	498.88	48.87	14.95	20.59	3.27	10.21
7	Chan	144.54	159.49	433.59	45.21	15.19	17.89	3.02	9.59
8	ROB	159.49	190.71	9.29	3.11	3.81	0.38	0.93	2.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	84.74	99.69	429.08	46.27	16.93	17.71	3.10	9.27
2	Chan	99.69	114.64	535.57	49.51	14.95	22.10	3.31	10.82
3	Chan	114.64	129.59	534.30	49.44	14.95	22.05	3.31	10.81
4	Chan	129.59	144.54	512.11	48.20	14.95	21.14	3.22	10.63
5	Chan	144.54	159.49	411.94	44.54	17.01	17.00	2.98	9.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.0806

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2410.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.58	Wt. n-Val.	0.058	0.030	0.040
W.S. Elev (ft)	2408.73	Reach Len. (ft)	80.00	86.00	92.00
Crit W.S. (ft)	2408.73	Flow Area (sq ft)	9.77	233.28	6.51
E.G. Slope (ft/ft)	0.008256	Area (sq ft)	9.77	233.28	6.51
Q Total (cfs)	2423.00	Flow (cfs)	26.38	2374.44	22.17
Top Width (ft)	85.50	Top Width (ft)	7.37	69.76	8.38
Vel Total (ft/s)	9.71	Avg. Vel. (ft/s)	2.70	10.18	3.40
Max Chl Dpth (ft)	3.54	Hydr. Depth (ft)	1.33	3.34	0.78
Conv. Total (cfs)	26666.4	Conv. (cfs)	290.4	26132.0	244.0
Length Wtd. (ft)	85.97	Wetted Per. (ft)	7.83	70.04	9.19
Min Ch El (ft)	2405.19	Shear (lb/sq ft)	0.64	1.72	0.37
Alpha	1.08	Stream Power (lb/ft s)	1.74	17.47	1.24
Frctn Loss (ft)	0.72	Cum Volume (acre-ft)	0.10	2.46	0.11
C & E Loss (ft)	0.04	Cum SA (acres)	0.09	0.88	0.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2410.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.58	Wt. n-Val.	0.058	0.030	0.040
W.S. Elev (ft)	2408.73	Reach Len. (ft)	80.00	86.00	92.00
Crit W.S. (ft)	2408.73	Flow Area (sq ft)	9.76	233.11	6.49
E.G. Slope (ft/ft)	0.008277	Area (sq ft)	9.76	233.11	6.49
Q Total (cfs)	2423.00	Flow (cfs)	26.35	2374.51	22.13
Top Width (ft)	85.47	Top Width (ft)	7.36	69.76	8.35
Vel Total (ft/s)	9.72	Avg. Vel. (ft/s)	2.70	10.19	3.41
Max Chl Dpth (ft)	3.54	Hydr. Depth (ft)	1.33	3.34	0.78
Conv. Total (cfs)	26633.2	Conv. (cfs)	289.7	26100.2	243.3
Length Wtd. (ft)	85.99	Wetted Per. (ft)	7.82	70.04	9.16
Min Ch El (ft)	2405.19	Shear (lb/sq ft)	0.64	1.72	0.37
Alpha	1.08	Stream Power (lb/ft s)	1.74	17.52	1.25
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	0.04	2.47	0.09
C & E Loss (ft)	0.00	Cum SA (acres)	0.03	0.88	0.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.59	70.74	26.38	9.77	7.83	1.09	1.33	2.70
2	Chan	70.74	84.69	464.96	47.92	14.09	19.19	3.43	9.70
3	Chan	84.69	98.64	508.57	48.03	13.95	20.99	3.44	10.59
4	Chan	98.64	112.60	489.43	46.94	13.95	20.20	3.36	10.43
5	Chan	112.60	126.55	470.63	45.85	13.95	19.42	3.29	10.26
6	Chan	126.55	140.50	440.84	44.53	14.09	18.19	3.19	9.90
7	ROB	140.50	171.86	21.47	5.83	5.11	0.89	1.34	3.68
8	ROB	171.86	203.23						
9	ROB	203.23	234.59						
10	ROB	234.59	265.96	0.71	0.69	4.07	0.03	0.17	1.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.59	70.74	26.35	9.76	7.82	1.09	1.33	2.70
2	Chan	70.74	84.69	465.00	47.89	14.09	19.19	3.43	9.71
3	Chan	84.69	98.64	508.60	48.00	13.95	20.99	3.44	10.60
4	Chan	98.64	112.60	489.45	46.91	13.95	20.20	3.36	10.43
5	Chan	112.60	126.55	470.63	45.82	13.95	19.42	3.28	10.27
6	Chan	126.55	140.50	440.83	44.49	14.09	18.19	3.19	9.91
7	ROB	140.50	171.86	21.44	5.82	5.11	0.88	1.34	3.69
8	ROB	171.86	203.23						
9	ROB	203.23	234.59						
10	ROB	234.59	265.96	0.69	0.68	4.05	0.03	0.17	1.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.0643

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2408.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.45	Wt. n-Val.	0.058	0.030	0.040
W.S. Elev (ft)	2406.96	Reach Len. (ft)	120.00	120.31	135.00
Crit W.S. (ft)	2406.96	Flow Area (sq ft)	15.08	241.04	7.26
E.G. Slope (ft/ft)	0.008597	Area (sq ft)	15.08	241.04	7.26

Q Total (cfs)	2423.00	Flow (cfs)	44.08	2358.02	20.90
Top Width (ft)	99.46	Top Width (ft)	10.74	77.50	11.22
Vel Total (ft/s)	9.20	Avg. Vel. (ft/s)	2.92	9.78	2.88
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)	1.40	3.11	0.65
Conv. Total (cfs)	26132.8	Conv. (cfs)	475.4	25432.0	225.5
Length Wtd. (ft)	120.64	Wetted Per. (ft)	11.04	77.69	11.90
Min Ch El (ft)	2403.36	Shear (lb/sq ft)	0.73	1.67	0.33
Alpha	1.10	Stream Power (lb/ft s)	2.14	16.29	0.94
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	0.08	1.99	0.10
C & E Loss (ft)	0.01	Cum SA (acres)	0.07	0.73	0.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2408.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.57	Wt. n-Val.		0.030	
W.S. Elev (ft)	2406.96	Reach Len. (ft)	120.00	120.31	135.00
Crit W.S. (ft)	2406.96	Flow Area (sq ft)		240.89	
E.G. Slope (ft/ft)	0.009387	Area (sq ft)		240.89	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	77.50	Top Width (ft)		77.50	
Vel Total (ft/s)	10.06	Avg. Vel. (ft/s)		10.06	
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)		3.11	
Conv. Total (cfs)	25008.6	Conv. (cfs)		25008.6	
Length Wtd. (ft)	120.60	Wetted Per. (ft)		82.40	
Min Ch El (ft)	2403.36	Shear (lb/sq ft)		1.71	
Alpha	1.00	Stream Power (lb/ft s)		17.23	
Frctn Loss (ft)	1.06	Cum Volume (acre-ft)	0.03	2.01	0.08
C & E Loss (ft)	0.07	Cum SA (acres)	0.02	0.73	0.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	50.40	63.00	44.08	15.08	11.04	1.82	1.40	2.92
2	Chan	63.00	78.50	521.83	51.50	15.60	21.54	3.32	10.13
3	Chan	78.50	94.00	577.97	52.30	15.50	23.85	3.37	11.05
4	Chan	94.00	109.50	519.98	49.08	15.50	21.46	3.17	10.59
5	Chan	109.50	125.00	456.39	45.95	15.50	18.84	2.96	9.93
6	Chan	125.00	140.50	281.85	42.20	15.59	11.63	2.72	6.68
7	ROB	140.50	168.40	17.27	5.03	5.04	0.71	1.11	3.44
8	ROB	168.40	196.30						
9	ROB	196.30	224.20						
10	ROB	224.20	252.10	3.63	2.23	6.86	0.15	0.33	1.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	63.00	78.50	531.54	51.47	18.08	21.94	3.32	10.33
2	Chan	78.50	94.00	603.27	52.27	15.50	24.90	3.37	11.54
3	Chan	94.00	109.50	542.71	49.05	15.50	22.40	3.16	11.06
4	Chan	109.50	125.00	476.30	45.92	15.50	19.66	2.96	10.37
5	Chan	125.00	140.50	269.18	42.17	17.81	11.11	2.72	6.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.0415

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2405.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.	0.058	0.031	0.040
W.S. Elev (ft)	2404.07	Reach Len. (ft)	145.00	132.52	130.00
Crit W.S. (ft)	2404.07	Flow Area (sq ft)	8.78	237.70	24.57
E.G. Slope (ft/ft)	0.008815	Area (sq ft)	8.78	237.70	24.57
Q Total (cfs)	2423.00	Flow (cfs)	21.62	2311.04	90.34
Top Width (ft)	105.11	Top Width (ft)	8.15	74.36	22.59
Vel Total (ft/s)	8.94	Avg. Vel. (ft/s)	2.46	9.72	3.68
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)	1.08	3.20	1.09
Conv. Total (cfs)	25807.8	Conv. (cfs)	230.3	24615.2	962.3
Length Wtd. (ft)	132.59	Wetted Per. (ft)	8.47	74.60	22.70
Min Ch El (ft)	2400.67	Shear (lb/sq ft)	0.57	1.75	0.60
Alpha	1.14	Stream Power (lb/ft s)	1.40	17.05	2.19
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	0.05	1.33	0.05
C & E Loss (ft)	0.08	Cum SA (acres)	0.05	0.52	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2405.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.34	Wt. n-Val.	0.058	0.031	0.040
W.S. Elev (ft)	2404.13	Reach Len. (ft)	145.00	132.52	130.00
Crit W.S. (ft)	2404.13	Flow Area (sq ft)	9.32	242.66	26.08
E.G. Slope (ft/ft)	0.008180	Area (sq ft)	9.32	242.66	26.08
Q Total (cfs)	2423.00	Flow (cfs)	22.90	2304.17	95.92
Top Width (ft)	105.10	Top Width (ft)	8.15	74.36	22.59
Vel Total (ft/s)	8.71	Avg. Vel. (ft/s)	2.46	9.50	3.68
Max Chl Dpth (ft)	3.46	Hydr. Depth (ft)	1.14	3.26	1.15
Conv. Total (cfs)	26790.3	Conv. (cfs)	253.2	25476.5	1060.6
Length Wtd. (ft)	132.53	Wetted Per. (ft)	8.54	74.60	22.76
Min Ch El (ft)	2400.67	Shear (lb/sq ft)	0.56	1.66	0.59
Alpha	1.14	Stream Power (lb/ft s)	1.37	15.77	2.15

Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	0.02	1.34	0.04
C & E Loss (ft)	0.05	Cum SA (acres)	0.01	0.52	0.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	54.66	68.32	21.62	8.78	8.47	0.89	1.08	2.46
2	Chan	68.32	83.19	452.56	48.46	15.05	18.68	3.26	9.34
3	Chan	83.19	98.06	515.28	49.48	14.87	21.27	3.33	10.41
4	Chan	98.06	112.94	501.40	48.67	14.87	20.69	3.27	10.30
5	Chan	112.94	127.81	488.63	47.93	14.87	20.17	3.22	10.20
6	Chan	127.81	142.68	353.17	43.16	14.94	14.58	2.90	8.18
7	ROB	142.68	165.90	90.34	24.57	22.70	3.73	1.09	3.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	54.66	68.32	22.90	9.32	8.54	0.95	1.14	2.46
2	Chan	68.32	83.19	450.81	49.45	15.05	18.61	3.32	9.12
3	Chan	83.19	98.06	513.26	50.47	14.87	21.18	3.39	10.17
4	Chan	98.06	112.94	499.69	49.67	14.87	20.62	3.34	10.06
5	Chan	112.94	127.81	487.22	48.92	14.87	20.11	3.29	9.96
6	Chan	127.81	142.68	353.19	44.16	14.94	14.58	2.97	8.00
7	ROB	142.68	165.90	95.92	26.08	22.76	3.96	1.15	3.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.0164

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2401.17	Element	Left OB	Channel	Right OB

Vel Head (ft)	1.14	Wt. n-Val.	0.058	0.029	0.040
W.S. Elev (ft)	2400.03	Reach Len. (ft)	80.00	86.57	90.00
Crit W.S. (ft)	2400.03	Flow Area (sq ft)	11.94	277.07	1.95
E.G. Slope (ft/ft)	0.009119	Area (sq ft)	11.94	277.07	1.95
Q Total (cfs)	2423.00	Flow (cfs)	26.46	2391.90	4.64
Top Width (ft)	134.73	Top Width (ft)	12.83	118.57	3.33
Vel Total (ft/s)	8.33	Avg. Vel. (ft/s)	2.22	8.63	2.39
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	0.93	2.34	0.58
Conv. Total (cfs)	25373.0	Conv. (cfs)	277.1	25047.3	48.6
Length Wtd. (ft)	86.54	Wetted Per. (ft)	13.92	118.99	3.53
Min Ch El (ft)	2397.05	Shear (lb/sq ft)	0.49	1.33	0.31
Alpha	1.06	Stream Power (lb/ft s)	1.08	11.44	0.75
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	0.01	0.55	0.01
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.23	0.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2401.22	Element			
Vel Head (ft)	1.19	Wt. n-Val.		0.029	
W.S. Elev (ft)	2400.03	Reach Len. (ft)	80.00	86.57	90.00
Crit W.S. (ft)	2400.03	Flow Area (sq ft)		277.24	
E.G. Slope (ft/ft)	0.009970	Area (sq ft)		277.24	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	118.57	Top Width (ft)		118.57	
Vel Total (ft/s)	8.74	Avg. Vel. (ft/s)		8.74	
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)		2.34	
Conv. Total (cfs)	24266.4	Conv. (cfs)		24266.4	
Length Wtd. (ft)	86.57	Wetted Per. (ft)		121.87	
Min Ch El (ft)	2397.05	Shear (lb/sq ft)		1.42	
Alpha	1.00	Stream Power (lb/ft s)		12.37	
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)		0.55	
C & E Loss (ft)	0.00	Cum SA (acres)		0.23	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	67.92	90.56	19.51	8.00	7.72	0.81	1.10	2.44
2	LOB	90.56	113.20	6.96	3.94	6.19	0.29	0.71	1.76
3	Chan	113.20	136.91	512.07	59.32	24.04	21.13	2.50	8.63
4	Chan	136.91	160.63	418.66	50.87	23.71	17.28	2.15	8.23
5	Chan	160.63	184.34	493.08	56.12	23.72	20.35	2.37	8.79
6	Chan	184.34	208.06	557.46	60.41	23.72	23.01	2.55	9.23
7	Chan	208.06	231.77	410.63	50.36	23.81	16.95	2.12	8.15
8	ROB	231.77	249.67	4.64	1.95	3.53	0.19	0.58	2.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	113.20	136.91	516.48	59.36	25.75	21.32	2.50	8.70
2	Chan	136.91	160.63	427.58	50.90	23.71	17.65	2.15	8.40
3	Chan	160.63	184.34	503.53	56.15	23.72	20.78	2.37	8.97
4	Chan	184.34	208.06	569.23	60.44	23.72	23.49	2.55	9.42
5	Chan	208.06	231.77	406.18	50.39	24.98	16.76	2.12	8.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch
REACH: GalMidBrnch Comb RS: 0.0000

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2399.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.	0.058	0.028	0.040
W.S. Elev (ft)	2398.16	Reach Len. (ft)			
Crit W.S. (ft)	2398.16	Flow Area (sq ft)	1.41	273.59	5.39
E.G. Slope (ft/ft)	0.008483	Area (sq ft)	1.41	273.59	5.39
Q Total (cfs)	2423.00	Flow (cfs)	2.15	2406.54	14.31
Top Width (ft)	122.20	Top Width (ft)	2.46	111.97	7.77
Vel Total (ft/s)	8.64	Avg. Vel. (ft/s)	1.53	8.80	2.65
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.57	2.44	0.69
Conv. Total (cfs)	26307.5	Conv. (cfs)	23.3	26128.9	155.3
Length Wtd. (ft)		Wetted Per. (ft)	2.71	112.42	7.90
Min Ch El (ft)	2395.43	Shear (lb/sq ft)	0.28	1.29	0.36
Alpha	1.03	Stream Power (lb/ft s)	0.42	11.34	0.96
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: User specified water surface is not possible for the specified flow regime. The program used critical depth as the starting water surface.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2399.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.21	Wt. n-Val.		0.028	
W.S. Elev (ft)	2398.17	Reach Len. (ft)			
Crit W.S. (ft)	2398.17	Flow Area (sq ft)		274.66	
E.G. Slope (ft/ft)	0.008656	Area (sq ft)		274.66	
Q Total (cfs)	2423.00	Flow (cfs)		2423.00	
Top Width (ft)	111.97	Top Width (ft)		111.97	
Vel Total (ft/s)	8.82	Avg. Vel. (ft/s)		8.82	
Max Chl Dpth (ft)	2.74	Hydr. Depth (ft)		2.45	
Conv. Total (cfs)	26042.5	Conv. (cfs)		26042.5	
Length Wtd. (ft)		Wetted Per. (ft)		114.97	
Min Ch El (ft)	2395.43	Shear (lb/sq ft)		1.29	
Alpha	1.00	Stream Power (lb/ft s)		11.39	

Frctn Loss (ft)	Cum Volume (acre-ft)
C & E Loss (ft)	Cum SA (acres)

Warning: User specified water surface is not possible for the specified flow regime. The program used critical depth as the starting water surface.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	22.63	28.29	2.15	1.41	2.71	0.09	0.57	1.53
2	Chan	28.29	50.68	445.79	52.34	22.67	18.40	2.34	8.52
3	Chan	50.68	73.08	428.25	50.91	22.47	17.67	2.27	8.41
4	Chan	73.08	95.47	564.37	60.00	22.39	23.29	2.68	9.41
5	Chan	95.47	117.87	534.00	58.04	22.39	22.04	2.59	9.20
6	Chan	117.87	140.26	434.14	52.30	22.48	17.92	2.34	8.30
7	ROB	140.26	156.94	14.31	5.39	7.90	0.59	0.69	2.65

Warning: User specified water surface is not possible for the specified flow regime. The program used critical depth as the starting water surface.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	28.29	50.68	438.19	52.55	23.83	18.08	2.35	8.34
2	Chan	50.68	73.08	435.23	51.13	22.47	17.96	2.28	8.51
3	Chan	73.08	95.47	572.96	60.21	22.39	23.65	2.69	9.52
4	Chan	95.47	117.87	542.24	58.25	22.39	22.38	2.60	9.31
5	Chan	117.87	140.26	434.38	52.51	23.88	17.93	2.35	8.27

Warning: User specified water surface is not possible for the specified flow regime. The program used critical depth as the starting water surface.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.2762

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2466.93	Element			
Vel Head (ft)	0.51	Wt. n-Val.	0.040	0.036	0.058
W.S. Elev (ft)	2466.42	Reach Len. (ft)	90.17	102.50	110.24
Crit W.S. (ft)	2466.42	Flow Area (sq ft)	0.74	33.16	9.65
E.G. Slope (ft/ft)	0.011909	Area (sq ft)	0.74	33.16	9.65
Q Total (cfs)	209.00	Flow (cfs)	1.51	195.81	11.67
Top Width (ft)	58.93	Top Width (ft)	1.93	22.46	34.54
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)	2.04	5.91	1.21
Max Chl Dpth (ft)	1.93	Hydr. Depth (ft)	0.38	1.48	0.28
Conv. Total (cfs)	1915.2	Conv. (cfs)	13.9	1794.3	106.9
Length Wtd. (ft)	103.06	Wetted Per. (ft)	2.08	22.64	34.58
Min Ch El (ft)	2464.49	Shear (lb/sq ft)	0.27	1.09	0.21
Alpha	1.42	Stream Power (lb/ft s)	0.54	6.43	0.25
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	0.26	1.59	0.63
C & E Loss (ft)	0.05	Cum SA (acres)	0.51	0.94	1.11

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2467.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.035	
W.S. Elev (ft)	2466.33	Reach Len. (ft)	90.17	102.50	110.24
Crit W.S. (ft)	2466.33	Flow Area (sq ft)		31.12	
E.G. Slope (ft/ft)	0.017944	Area (sq ft)		31.12	
Q Total (cfs)	209.00	Flow (cfs)		209.00	
Top Width (ft)	22.46	Top Width (ft)		22.46	
Vel Total (ft/s)	6.72	Avg. Vel. (ft/s)		6.72	
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)		1.39	
Conv. Total (cfs)	1560.2	Conv. (cfs)		1560.2	
Length Wtd. (ft)	102.50	Wetted Per. (ft)		24.08	
Min Ch El (ft)	2464.49	Shear (lb/sq ft)		1.45	
Alpha	1.00	Stream Power (lb/ft s)		9.72	
Frctn Loss (ft)	1.55	Cum Volume (acre-ft)	0.03	1.96	0.11
C & E Loss (ft)	0.10	Cum SA (acres)	0.03	0.95	0.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
[illegible]	LOB	29.13	36.41	1.51	0.74	2.08	0.72	0.38	2.04
2	Chan	36.41	40.90	26.97	5.68	4.60	12.91	1.27	4.75
3	Chan	40.90	45.39	43.53	7.06	4.50	20.83	1.57	6.17
4	Chan	45.39	49.89	55.86	8.20	4.50	26.73	1.83	6.81
5	Chan	49.89	54.38	45.35	7.25	4.52	21.70	1.61	6.26
6	Chan	54.38	58.87	24.10	4.96	4.52	11.53	1.10	4.86
7	ROB	58.87	88.61	11.63	9.49	29.77	5.56	0.32	1.22
8	ROB	88.61	118.34	0.05	0.16	4.14	0.02	0.04	0.29
9	ROB	118.34	148.08	0.00	0.00	0.67	0.00	0.00	0.11

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	36.41	40.90	26.57	5.28	5.27	12.71	1.17	5.04
2	Chan	40.90	45.39	47.71	6.65	4.50	22.83	1.48	7.17
3	Chan	45.39	49.89	62.09	7.79	4.50	29.71	1.74	7.97
4	Chan	49.89	54.38	49.84	6.84	4.52	23.84	1.52	7.28
5	Chan	54.38	58.87	22.79	4.55	5.28	10.91	1.01	5.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
[illegible]ning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.2568

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2464.63	Element			
Vel Head (ft)	0.34	Wt. n-Val.	0.040	0.037	0.040
W.S. Elev (ft)	2464.30	Reach Len. (ft)	58.44	69.35	72.94
Crit W.S. (ft)	2464.30	Flow Area (sq ft)	2.41	35.46	11.67
E.G. Slope (ft/ft)	0.016356	Area (sq ft)	2.41	35.46	11.67
Q Total (cfs)	209.00	Flow (cfs)	4.67	176.06	28.27
Top Width (ft)	80.22	Top Width (ft)	9.23	38.97	32.02
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	1.94	4.97	2.42
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)	0.26	0.91	0.36
Conv. Total (cfs)	1634.2	Conv. (cfs)	36.5	1376.7	221.0
Length Wtd. (ft)	66.40	Wetted Per. (ft)	9.24	39.05	32.03
Min Ch El (ft)	2462.69	Shear (lb/sq ft)	0.27	0.93	0.37
Alpha	1.22	Stream Power (lb/ft s)	0.52	4.60	0.90
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	0.26	1.51	0.61
C & E Loss (ft)	0.04	Cum SA (acres)	0.49	0.87	1.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2464.86	Element			
Vel Head (ft)	0.37	Wt. n-Val.		0.037	
W.S. Elev (ft)	2464.49	Reach Len. (ft)	58.44	69.35	72.94
Crit W.S. (ft)		Flow Area (sq ft)		43.08	
E.G. Slope (ft/ft)	0.012867	Area (sq ft)		43.08	
Q Total (cfs)	209.00	Flow (cfs)		209.00	
Top Width (ft)	38.97	Top Width (ft)		38.97	
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)		4.85	
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)		1.11	
Conv. Total (cfs)	1842.5	Conv. (cfs)		1842.5	
Length Wtd. (ft)	68.19	Wetted Per. (ft)		40.63	
Min Ch El (ft)	2462.69	Shear (lb/sq ft)		0.85	
Alpha	1.00	Stream Power (lb/ft s)		4.13	
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	0.03	1.88	0.11
C & E Loss (ft)	0.03	Cum SA (acres)	0.03	0.88	0.08

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	62.34	77.93	4.67	2.41	9.24	2.24	0.26	1.94
2	Chan	77.93	85.72	13.68	4.33	7.80	6.55	0.56	3.16
3	Chan	85.72	93.52	21.13	5.61	7.80	10.11	0.72	3.76
4	Chan	93.52	101.31	28.97	6.79	7.80	13.86	0.87	4.27
5	Chan	101.31	109.11	65.99	10.39	7.83	31.57	1.33	6.35
6	Chan	109.11	116.90	46.28	8.34	7.82	22.14	1.07	5.55
7	ROB	116.90	139.35	27.27	10.63	22.46	13.05	0.47	2.57

8	ROB	139.35	161.81	1.00	1.04	9.57	0.48	0.11	0.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	77.93	85.72	19.05	5.85	8.45	9.12	0.75	3.26
2	Chan	85.72	93.52	28.02	7.14	7.80	13.40	0.92	3.92
3	Chan	93.52	101.31	36.08	8.31	7.80	17.26	1.07	4.34
4	Chan	101.31	109.11	73.43	11.91	7.83	35.14	1.53	6.16
5	Chan	109.11	116.90	52.41	9.86	8.76	25.08	1.27	5.31

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.2437

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2462.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2462.65	Reach Len. (ft)	190.00	206.48	210.30
Crit W.S. (ft)	2462.59	Flow Area (sq ft)	45.21	15.87	5.99
E.G. Slope (ft/ft)	0.011476	Area (sq ft)	45.21	15.87	5.99
Q Total (cfs)	209.00	Flow (cfs)	121.57	76.06	11.37
Top Width (ft)	113.62	Top Width (ft)	81.33	14.23	18.06
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)	2.69	4.79	1.90
Max Chl Dpth (ft)	1.68	Hydr. Depth (ft)	0.56	1.12	0.33
Conv. Total (cfs)	1951.0	Conv. (cfs)	1134.8	710.0	106.2
Length Wtd. (ft)	202.95	Wetted Per. (ft)	81.42	14.41	18.18
Min Ch El (ft)	2460.97	Shear (lb/sq ft)	0.40	0.79	0.24
Alpha	1.31	Stream Power (lb/ft s)	1.07	3.78	0.45
Frctn Loss (ft)	3.58	Cum Volume (acre-ft)	0.23	1.47	0.59
C & E Loss (ft)	0.01	Cum SA (acres)	0.43	0.83	0.99

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2463.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.040	0.036	
W.S. Elev (ft)	2463.20	Reach Len. (ft)	190.00	206.48	210.30
Crit W.S. (ft)	2463.20	Flow Area (sq ft)	10.32	23.58	
E.G. Slope (ft/ft)	0.016252	Area (sq ft)	10.32	23.58	
Q Total (cfs)	209.00	Flow (cfs)	44.54	164.46	
Top Width (ft)	25.15	Top Width (ft)	10.92	14.23	
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	4.32	6.98	
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)	0.95	1.66	
Conv. Total (cfs)	1639.4	Conv. (cfs)	349.4	1290.0	
Length Wtd. (ft)	204.80	Wetted Per. (ft)	11.87	15.59	

Min Ch El (ft)	2460.97	Shear (lb/sq ft)	0.88	1.53	
Alpha	1.11	Stream Power (lb/ft s)	3.81	10.70	
Frctn Loss (ft)	3.78	Cum Volume (acre-ft)	0.02	1.82	0.11
C & E Loss (ft)	0.09	Cum SA (acres)	0.02	0.84	0.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	25.31	50.62	1.62	1.19	5.41	0.78	0.22	1.36
2	LOB	50.62	75.94	68.73	20.96	25.34	32.88	0.83	3.28
3	LOB	75.94	101.25	30.66	12.91	25.31	14.67	0.51	2.38
4	LOB	101.25	126.56	20.55	10.16	25.34	9.83	0.40	2.02
5	Chan	126.56	129.41	8.41	2.27	2.88	4.03	0.80	3.70
6	Chan	129.41	132.25	19.64	3.79	2.92	9.40	1.33	5.19
7	Chan	132.25	135.10	24.48	4.30	2.88	11.71	1.51	5.70
8	Chan	135.10	137.94	14.97	3.19	2.87	7.16	1.12	4.69
9	Chan	137.94	140.79	8.56	2.32	2.86	4.09	0.82	3.68
10	ROB	140.79	157.59	10.68	5.37	14.23	5.11	0.38	1.99
11	ROB	157.59	174.38	0.69	0.62	3.94	0.33	0.16	1.11

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	101.25	126.56	44.54	10.32	11.87	21.31	0.95	4.32
2	Chan	126.56	129.41	23.06	3.81	2.88	11.03	1.34	6.05
3	Chan	129.41	132.25	40.21	5.33	2.92	19.24	1.87	7.55
4	Chan	132.25	135.10	47.27	5.84	2.88	22.62	2.05	8.10
5	Chan	135.10	137.94	33.43	4.74	2.87	15.99	1.66	7.06
6	Chan	137.94	140.79	20.48	3.86	4.05	9.80	1.36	5.30

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.2045

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2459.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2458.98	Reach Len. (ft)	163.10	150.87	114.84
Crit W.S. (ft)	2458.98	Flow Area (sq ft)		28.70	24.13
E.G. Slope (ft/ft)	0.029062	Area (sq ft)		28.70	24.13
Q Total (cfs)	228.00	Flow (cfs)		118.28	109.72
Top Width (ft)	94.85	Top Width (ft)		53.40	41.45
Vel Total (ft/s)	4.32	Avg. Vel. (ft/s)		4.12	4.55
Max Chl Dpth (ft)	1.64	Hydr. Depth (ft)		0.54	0.58
Conv. Total (cfs)	1337.4	Conv. (cfs)		693.8	643.6
Length Wtd. (ft)	128.33	Wetted Per. (ft)		54.02	41.79
Min Ch El (ft)	2457.34	Shear (lb/sq ft)		0.96	1.05
Alpha	1.01	Stream Power (lb/ft s)		3.97	4.76
Frctn Loss (ft)	2.42	Cum Volume (acre-ft)	0.13	1.37	0.52
C & E Loss (ft)	0.00	Cum SA (acres)	0.26	0.67	0.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2459.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.		0.040	
W.S. Elev (ft)	2459.33	Reach Len. (ft)	163.10	150.87	114.84
Crit W.S. (ft)	2459.26	Flow Area (sq ft)		48.09	
E.G. Slope (ft/ft)	0.020930	Area (sq ft)		48.09	
Q Total (cfs)	228.00	Flow (cfs)		228.00	
Top Width (ft)	55.95	Top Width (ft)		55.95	
Vel Total (ft/s)	4.74	Avg. Vel. (ft/s)		4.74	
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)		0.86	
Conv. Total (cfs)	1576.0	Conv. (cfs)		1576.0	
Length Wtd. (ft)	143.70	Wetted Per. (ft)		56.96	
Min Ch El (ft)	2457.34	Shear (lb/sq ft)		1.10	
Alpha	1.00	Stream Power (lb/ft s)		5.23	
Frctn Loss (ft)	2.62	Cum Volume (acre-ft)		1.65	0.11
C & E Loss (ft)	0.03	Cum SA (acres)		0.67	0.08

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	64.51	75.70	70.29	11.95	11.31	30.83	1.12	5.88
2	Chan	75.70	86.90	18.57	5.75	11.21	8.14	0.51	3.23
3	Chan	86.90	98.09	15.16	5.09	11.19	6.65	0.45	2.98
4	Chan	98.09	109.29	12.12	4.45	11.20	5.32	0.40	2.72
5	Chan	109.29	120.48	2.15	1.45	9.11	0.94	0.16	1.48
6	ROB	120.48	149.24	38.44	10.70	22.73	16.86	0.47	3.59
7	ROB	149.24	178.00	0.03	0.04	1.07	0.01	0.04	0.66
8	ROB	178.00	206.76	2.84	1.19	4.67	1.25	0.26	2.39
9	ROB	206.76	235.52	68.40	12.20	13.31	30.00	0.93	5.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than

0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	64.51	75.70	101.88	15.78	11.89	44.68	1.41	6.46
2	Chan	75.70	86.90	41.54	9.66	11.21	18.22	0.86	4.30
3	Chan	86.90	98.09	36.95	9.00	11.19	16.21	0.80	4.10
4	Chan	98.09	109.29	32.67	8.36	11.20	14.33	0.75	3.91
5	Chan	109.29	120.48	14.96	5.29	11.48	6.56	0.47	2.83

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.1760

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2456.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.058	0.036	0.025
W.S. Elev (ft)	2455.75	Reach Len. (ft)	103.90	101.40	90.50
Crit W.S. (ft)	2455.75	Flow Area (sq ft)	0.19	12.17	41.32
E.G. Slope (ft/ft)	0.013252	Area (sq ft)	0.19	12.17	41.32
Q Total (cfs)	228.00	Flow (cfs)	0.17	52.28	175.55
Top Width (ft)	101.06	Top Width (ft)	1.16	14.68	85.22
Vel Total (ft/s)	4.25	Avg. Vel. (ft/s)	0.87	4.30	4.25
Max Chl Dpth (ft)	1.26	Hydr. Depth (ft)	0.17	0.83	0.48
Conv. Total (cfs)	1980.6	Conv. (cfs)	1.5	454.1	1525.0
Length Wtd. (ft)	94.33	Wetted Per. (ft)	1.21	14.84	85.28
Min Ch El (ft)	2454.49	Shear (lb/sq ft)	0.13	0.68	0.40
Alpha	1.01	Stream Power (lb/ft s)	0.12	2.91	1.70
Frctn Loss (ft)	1.48	Cum Volume (acre-ft)	0.13	1.30	0.43
C & E Loss (ft)	0.01	Cum SA (acres)	0.25	0.55	0.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2457.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.036	0.028
W.S. Elev (ft)	2456.37	Reach Len. (ft)	103.90	101.40	90.50
Crit W.S. (ft)	2456.37	Flow Area (sq ft)		21.36	13.75
E.G. Slope (ft/ft)	0.016005	Area (sq ft)		21.36	13.75
Q Total (cfs)	228.00	Flow (cfs)		137.32	90.68
Top Width (ft)	27.61	Top Width (ft)		14.68	12.93
Vel Total (ft/s)	6.49	Avg. Vel. (ft/s)		6.43	6.60
Max Chl Dpth (ft)	1.88	Hydr. Depth (ft)		1.46	1.06
Conv. Total (cfs)	1802.2	Conv. (cfs)		1085.4	716.8

Length Wtd. (ft)	99.23	Wetted Per. (ft)	15.80	14.08
Min Ch El (ft)	2454.49	Shear (lb/sq ft)	1.35	0.98
Alpha	1.00	Stream Power (lb/ft s)	8.68	6.44
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	1.53	0.09
C & E Loss (ft)	0.10	Cum SA (acres)	0.55	0.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	46.69	58.36	0.17	0.19	1.21	0.07	0.17	0.87
2	Chan	58.36	61.30	8.75	2.24	3.06	3.84	0.76	3.90
3	Chan	61.30	64.23	18.05	3.41	2.95	7.92	1.16	5.29
4	Chan	64.23	67.17	12.98	2.80	2.94	5.69	0.95	4.64
5	Chan	67.17	70.10	8.27	2.17	2.94	3.63	0.74	3.81
6	Chan	70.10	73.04	4.23	1.55	2.94	1.85	0.53	2.73
7	ROB	73.04	117.61	130.10	27.45	44.58	57.06	0.62	4.74
8	ROB	117.61	162.19	42.08	12.44	33.87	18.46	0.37	3.38
9	ROB	162.19	206.76						
10	ROB	206.76	251.34	3.38	1.44	6.83	1.48	0.21	2.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	58.36	61.30	21.66	4.08	4.02	9.50	1.39	5.31
2	Chan	61.30	64.23	40.53	5.25	2.95	17.78	1.79	7.72
3	Chan	64.23	67.17	32.99	4.64	2.94	14.47	1.58	7.11
4	Chan	67.17	70.10	25.06	4.01	2.94	10.99	1.37	6.25
5	Chan	70.10	73.04	17.09	3.38	2.94	7.49	1.15	5.05
6	ROB	73.04	117.61	90.68	13.75	14.08	39.77	1.06	6.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.1568

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2454.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.058	0.035	0.032
W.S. Elev (ft)	2453.81	Reach Len. (ft)	144.10	143.86	127.19
Crit W.S. (ft)	2453.81	Flow Area (sq ft)	0.45	25.00	30.57
E.G. Slope (ft/ft)	0.018860	Area (sq ft)	0.45	25.00	30.57
Q Total (cfs)	228.00	Flow (cfs)	0.69	106.72	120.59
Top Width (ft)	103.13	Top Width (ft)	1.44	39.85	61.84
Vel Total (ft/s)	4.07	Avg. Vel. (ft/s)	1.53	4.27	3.94
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)	0.31	0.63	0.49
Conv. Total (cfs)	1660.2	Conv. (cfs)	5.0	777.1	878.1
Length Wtd. (ft)	136.10	Wetted Per. (ft)	1.57	39.91	62.01
Min Ch El (ft)	2452.63	Shear (lb/sq ft)	0.34	0.74	0.58
Alpha	1.01	Stream Power (lb/ft s)	0.52	3.15	2.29
Frctn Loss (ft)	2.36	Cum Volume (acre-ft)	0.13	1.25	0.36
C & E Loss (ft)	0.00	Cum SA (acres)	0.25	0.49	0.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2454.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.		0.035	
W.S. Elev (ft)	2454.24	Reach Len. (ft)	144.10	143.86	127.19
Crit W.S. (ft)	2454.18	Flow Area (sq ft)		42.10	
E.G. Slope (ft/ft)	0.016190	Area (sq ft)		42.10	
Q Total (cfs)	228.00	Flow (cfs)		228.00	
Top Width (ft)	39.85	Top Width (ft)		39.85	
Vel Total (ft/s)	5.42	Avg. Vel. (ft/s)		5.42	
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)		1.06	
Conv. Total (cfs)	1791.9	Conv. (cfs)		1791.9	
Length Wtd. (ft)	143.29	Wetted Per. (ft)		41.95	
Min Ch El (ft)	2452.63	Shear (lb/sq ft)		1.01	
Alpha	1.00	Stream Power (lb/ft s)		5.49	
Frctn Loss (ft)	2.35	Cum Volume (acre-ft)		1.46	0.08
C & E Loss (ft)	0.08	Cum SA (acres)		0.49	0.05

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	40.47	50.59	0.69	0.45	1.57	0.30	0.31	1.53
2	Chan	50.59	58.56	14.22	4.09	7.97	6.24	0.51	3.48
3	Chan	58.56	66.53	7.33	2.75	7.97	3.21	0.34	2.67
4	Chan	66.53	74.50	12.81	3.84	7.98	5.62	0.48	3.33
5	Chan	74.50	82.47	39.21	7.52	8.00	17.20	0.94	5.21
6	Chan	82.47	90.44	33.16	6.80	7.99	14.54	0.85	4.88
7	ROB	90.44	130.99	84.59	22.20	40.56	37.10	0.55	3.81
8	ROB	130.99	171.55	35.99	8.37	21.44	15.79	0.39	4.30

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	50.59	58.56	34.97	7.51	9.03	15.34	0.94	4.66
2	Chan	58.56	66.53	27.37	6.17	7.97	12.00	0.77	4.44
3	Chan	66.53	74.50	35.92	7.26	7.98	15.75	0.91	4.95
4	Chan	74.50	82.47	71.04	10.94	8.00	31.16	1.37	6.49
5	Chan	82.47	90.44	58.70	10.22	8.98	25.75	1.28	5.74

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.1295

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2451.26	Element			
Vel Head (ft)	0.26	Wt. n-Val.	0.035	0.035	0.040
W.S. Elev (ft)	2451.00	Reach Len. (ft)	32.29	100.61	73.16
Crit W.S. (ft)	2451.00	Flow Area (sq ft)	10.90	19.48	32.90
E.G. Slope (ft/ft)	0.015987	Area (sq ft)	10.90	19.48	32.90
Q Total (cfs)	228.00	Flow (cfs)	35.02	100.77	92.20
Top Width (ft)	115.36	Top Width (ft)	23.51	20.47	71.38
Vel Total (ft/s)	3.60	Avg. Vel. (ft/s)	3.21	5.17	2.80
Max Chl Dpth (ft)	1.52	Hydr. Depth (ft)	0.46	0.95	0.46
Conv. Total (cfs)	1803.2	Conv. (cfs)	277.0	797.0	729.2
Length Wtd. (ft)	82.97	Wetted Per. (ft)	23.55	20.59	71.41
Min Ch El (ft)	2449.48	Shear (lb/sq ft)	0.46	0.94	0.46
Alpha	1.28	Stream Power (lb/ft s)	1.48	4.89	1.29
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	0.11	1.18	0.27
C & E Loss (ft)	0.02	Cum SA (acres)	0.21	0.39	0.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2452.26	Element			
Vel Head (ft)	0.71	Wt. n-Val.		0.035	0.040
W.S. Elev (ft)	2451.55	Reach Len. (ft)	32.29	100.61	73.16
Crit W.S. (ft)	2451.55	Flow Area (sq ft)		30.73	3.99
E.G. Slope (ft/ft)	0.016616	Area (sq ft)		30.73	3.99
Q Total (cfs)	228.00	Flow (cfs)		212.44	15.56
Top Width (ft)	24.97	Top Width (ft)		20.47	4.50
Vel Total (ft/s)	6.57	Avg. Vel. (ft/s)		6.91	3.90
Max Chl Dpth (ft)	2.07	Hydr. Depth (ft)		1.50	0.89
Conv. Total (cfs)	1768.8	Conv. (cfs)		1648.0	120.8
Length Wtd. (ft)	99.67	Wetted Per. (ft)		21.65	5.42
Min Ch El (ft)	2449.48	Shear (lb/sq ft)		1.47	0.76
Alpha	1.06	Stream Power (lb/ft s)		10.18	2.98
Frctn Loss (ft)	1.72	Cum Volume (acre-ft)		1.34	0.07
C & E Loss (ft)	0.02	Cum SA (acres)		0.39	0.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	49.97	66.62	2.32	1.37	6.87	1.02	0.20	1.70
2	LOB	66.62	83.28	32.70	9.53	16.68	14.34	0.57	3.43
3	Chan	83.28	87.37	8.44	2.38	4.10	3.70	0.58	3.55
4	Chan	87.37	91.47	16.99	3.62	4.11	7.45	0.88	4.69
5	Chan	91.47	95.56	31.98	5.29	4.11	14.03	1.29	6.04
6	Chan	95.56	99.66	31.32	5.24	4.13	13.74	1.28	5.98
7	Chan	99.66	103.75	12.03	2.95	4.13	5.28	0.72	4.08
8	ROB	103.75	134.03	52.77	17.26	30.30	23.15	0.57	3.06
9	ROB	134.03	164.32	37.43	14.04	30.29	16.42	0.46	2.67
10	ROB	164.32	194.60	2.00	1.60	10.82	0.88	0.15	1.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	83.28	87.37	22.71	4.63	5.16	9.96	1.13	4.91
2	Chan	87.37	91.47	39.30	5.87	4.11	17.24	1.43	6.69
3	Chan	91.47	95.56	59.66	7.54	4.11	26.17	1.84	7.91
4	Chan	95.56	99.66	58.75	7.49	4.13	25.77	1.83	7.85
5	Chan	99.66	103.75	32.00	5.20	4.13	14.04	1.27	6.15
6	ROB	103.75	134.03	15.57	3.99	5.42	6.83	0.89	3.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.1105

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2449.54	Element			
Vel Head (ft)	0.34	Wt. n-Val.	0.058	0.035	0.035
W.S. Elev (ft)	2449.20	Reach Len. (ft)	59.13	50.03	115.75
Crit W.S. (ft)	2449.20	Flow Area (sq ft)	2.31	21.89	28.44
E.G. Slope (ft/ft)	0.015473	Area (sq ft)	2.31	21.89	28.44
Q Total (cfs)	228.00	Flow (cfs)	3.15	119.10	105.76
Top Width (ft)	77.89	Top Width (ft)	8.22	20.77	48.90
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	1.36	5.44	3.72
Max Chl Dpth (ft)	1.38	Hydr. Depth (ft)	0.28	1.05	0.58
Conv. Total (cfs)	1832.9	Conv. (cfs)	25.3	957.4	850.2
Length Wtd. (ft)	64.98	Wetted Per. (ft)	8.27	20.93	48.96

Min Ch El (ft)	2447.82	Shear (lb/sq ft)	0.27	1.01	0.56
Alpha	1.17	Stream Power (lb/ft s)	0.37	5.50	2.09
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)	0.10	1.13	0.21
C & E Loss (ft)	0.01	Cum SA (acres)	0.20	0.34	0.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2450.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.		0.035	
W.S. Elev (ft)	2449.70	Reach Len. (ft)	59.13	50.03	115.75
Crit W.S. (ft)	2449.70	Flow Area (sq ft)		32.22	
E.G. Slope (ft/ft)	0.018006	Area (sq ft)		32.22	
Q Total (cfs)	228.00	Flow (cfs)		228.00	
Top Width (ft)	20.77	Top Width (ft)		20.77	
Vel Total (ft/s)	7.08	Avg. Vel. (ft/s)		7.08	
Max Chl Dpth (ft)	1.88	Hydr. Depth (ft)		1.55	
Conv. Total (cfs)	1699.1	Conv. (cfs)		1699.1	
Length Wtd. (ft)	50.03	Wetted Per. (ft)		23.27	
Min Ch El (ft)	2447.82	Shear (lb/sq ft)		1.56	
Alpha	1.00	Stream Power (lb/ft s)		11.01	
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)		1.27	0.07
C & E Loss (ft)	0.16	Cum SA (acres)		0.34	0.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	78.04	97.55	3.15	2.31	8.27	1.38	0.28	1.36
2	Chan	97.55	101.70	16.85	3.57	4.17	7.39	0.86	4.72
3	Chan	101.70	105.86	31.59	5.21	4.17	13.86	1.25	6.06
4	Chan	105.86	110.01	27.50	4.79	4.16	12.06	1.15	5.74
5	Chan	110.01	114.17	20.99	4.07	4.16	9.21	0.98	5.15
6	Chan	114.17	118.32	22.16	4.25	4.26	9.72	1.02	5.22
7	ROB	118.32	143.01	60.34	15.56	24.71	26.47	0.63	3.88
8	ROB	143.01	167.70	45.41	12.88	24.24	19.92	0.53	3.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	97.55	101.70	32.69	5.64	5.32	14.34	1.36	5.80
2	Chan	101.70	105.86	58.79	7.28	4.17	25.79	1.75	8.08
3	Chan	105.86	110.01	53.32	6.86	4.16	23.39	1.65	7.78
4	Chan	110.01	114.17	44.36	6.14	4.16	19.45	1.48	7.23
5	Chan	114.17	118.32	38.83	6.31	5.45	17.03	1.52	6.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.1010

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2448.80	Element			
Vel Head (ft)	0.40	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2448.40	Reach Len. (ft)	125.84	29.81	58.17
Crit W.S. (ft)	2448.40	Flow Area (sq ft)	2.58	46.89	0.75
E.G. Slope (ft/ft)	0.008223	Area (sq ft)	2.58	46.89	0.75
Q Total (cfs)	247.00	Flow (cfs)	4.88	240.93	1.19
Top Width (ft)	67.36	Top Width (ft)	12.36	50.34	4.65
Vel Total (ft/s)	4.92	Avg. Vel. (ft/s)	1.89	5.14	1.59
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)	0.21	0.93	0.16
Conv. Total (cfs)	2723.8	Conv. (cfs)	53.8	2656.8	13.1
Length Wtd. (ft)	43.31	Wetted Per. (ft)	12.37	50.39	4.67
Min Ch El (ft)	2447.08	Shear (lb/sq ft)	0.11	0.48	0.08
Alpha	1.07	Stream Power (lb/ft s)	0.20	2.45	0.13
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	0.10	1.09	0.18
C & E Loss (ft)	0.01	Cum SA (acres)	0.18	0.30	0.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2448.94	Element			
Vel Head (ft)	0.25	Wt. n-Val.		0.025	
W.S. Elev (ft)	2448.69	Reach Len. (ft)	125.84	29.81	58.17
Crit W.S. (ft)		Flow Area (sq ft)		61.26	
E.G. Slope (ft/ft)	0.003669	Area (sq ft)		61.26	
Q Total (cfs)	247.00	Flow (cfs)		247.00	
Top Width (ft)	50.34	Top Width (ft)		50.34	
Vel Total (ft/s)	4.03	Avg. Vel. (ft/s)		4.03	
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)		1.22	
Conv. Total (cfs)	4077.8	Conv. (cfs)		4077.8	
Length Wtd. (ft)	29.81	Wetted Per. (ft)		51.69	
Min Ch El (ft)	2447.08	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		1.09	
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)		1.21	0.07
C & E Loss (ft)	0.06	Cum SA (acres)		0.30	0.04

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	91.88	114.85	4.88	2.58	12.37	1.98	0.21	1.89
2	Chan	114.85	124.92	26.63	6.72	10.08	10.78	0.67	3.96
3	Chan	124.92	134.99	54.53	10.33	10.07	22.08	1.03	5.28
4	Chan	134.99	145.05	73.79	12.38	10.07	29.87	1.23	5.96
5	Chan	145.05	155.12	61.93	11.15	10.08	25.07	1.11	5.56
6	Chan	155.12	165.19	24.04	6.32	10.08	9.73	0.63	3.80
7	ROB	165.19	188.21	1.19	0.75	4.67	0.48	0.16	1.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	114.85	124.92	31.06	9.59	10.78	12.58	0.95	3.24
2	Chan	124.92	134.99	55.31	13.20	10.07	22.39	1.31	4.19
3	Chan	134.99	145.05	70.39	15.25	10.07	28.50	1.52	4.61
4	Chan	145.05	155.12	61.15	14.02	10.08	24.76	1.39	4.36
5	Chan	155.12	165.19	29.09	9.19	10.69	11.78	0.91	3.16

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.0954

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2448.13	Element			
Vel Head (ft)	0.38	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2447.75	Reach Len. (ft)	92.60	85.04	76.00
Crit W.S. (ft)	2447.75	Flow Area (sq ft)	25.55	31.75	2.74
E.G. Slope (ft/ft)	0.010484	Area (sq ft)	25.55	31.75	2.74
Q Total (cfs)	247.00	Flow (cfs)	62.59	178.96	5.45
Top Width (ft)	80.12	Top Width (ft)	49.20	21.34	9.58
Vel Total (ft/s)	4.11	Avg. Vel. (ft/s)	2.45	5.64	1.99
Max Chl Dpth (ft)	2.09	Hydr. Depth (ft)	0.52	1.49	0.29
Conv. Total (cfs)	2412.4	Conv. (cfs)	611.3	1747.8	53.3
Length Wtd. (ft)	85.09	Wetted Per. (ft)	49.43	21.50	9.69
Min Ch El (ft)	2445.66	Shear (lb/sq ft)	0.34	0.97	0.19
Alpha	1.45	Stream Power (lb/ft s)	0.83	5.45	0.37
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	0.06	1.07	0.17
C & E Loss (ft)	0.02	Cum SA (acres)	0.10	0.28	0.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2448.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.		0.035	
W.S. Elev (ft)	2447.86	Reach Len. (ft)	92.60	85.04	76.00
Crit W.S. (ft)	2447.86	Flow Area (sq ft)		34.10	
E.G. Slope (ft/ft)	0.017883	Area (sq ft)		34.10	
Q Total (cfs)	247.00	Flow (cfs)		247.00	
Top Width (ft)	21.34	Top Width (ft)		21.34	
Vel Total (ft/s)	7.24	Avg. Vel. (ft/s)		7.24	
Max Chl Dpth (ft)	2.20	Hydr. Depth (ft)		1.60	
Conv. Total (cfs)	1847.0	Conv. (cfs)		1847.0	
Length Wtd. (ft)	84.77	Wetted Per. (ft)		23.66	
Min Ch El (ft)	2445.66	Shear (lb/sq ft)		1.61	
Alpha	1.00	Stream Power (lb/ft s)		11.65	
Frctn Loss (ft)	1.49	Cum Volume (acre-ft)		1.18	0.07
C & E Loss (ft)	0.12	Cum SA (acres)		0.28	0.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.40	99.20	36.96	14.14	24.54	14.96	0.58	2.61
2	LOB	99.20	124.00	25.63	11.41	24.88	10.38	0.46	2.25
3	Chan	124.00	128.27	31.10	5.92	4.33	12.59	1.39	5.25
4	Chan	128.27	132.54	56.39	8.45	4.31	22.83	1.98	6.68
5	Chan	132.54	136.80	39.85	6.86	4.31	16.13	1.61	5.81
6	Chan	136.80	141.07	28.77	5.62	4.27	11.65	1.32	5.12
7	Chan	141.07	145.34	22.85	4.90	4.29	9.25	1.15	4.66
8	ROB	145.34	163.60	5.11	2.31	5.18	2.07	0.45	2.22
9	ROB	163.60	181.86	0.35	0.43	4.50	0.14	0.10	0.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	124.00	128.27	38.85	6.39	5.46	15.73	1.50	6.08
2	Chan	128.27	132.54	79.22	8.92	4.31	32.07	2.09	8.89
3	Chan	132.54	136.80	57.13	7.33	4.31	23.13	1.72	7.79
4	Chan	136.80	141.07	42.21	6.09	4.27	17.09	1.43	6.93
5	Chan	141.07	145.34	29.59	5.37	5.32	11.98	1.26	5.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.0792

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2445.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2444.93	Reach Len. (ft)	201.78	186.60	183.43
Crit W.S. (ft)	2444.93	Flow Area (sq ft)	3.41	39.57	19.15
E.G. Slope (ft/ft)	0.015474	Area (sq ft)	3.41	39.57	19.15
Q Total (cfs)	247.00	Flow (cfs)	6.81	190.52	49.67
Top Width (ft)	102.80	Top Width (ft)	11.94	45.41	45.45
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	2.00	4.82	2.59
Max Chl Dpth (ft)	1.06	Hydr. Depth (ft)	0.29	0.87	0.42
Conv. Total (cfs)	1985.6	Conv. (cfs)	54.8	1531.6	399.3
Length Wtd. (ft)	186.49	Wetted Per. (ft)	11.95	45.44	45.54
Min Ch El (ft)	2443.86	Shear (lb/sq ft)	0.28	0.84	0.41
Alpha	1.22	Stream Power (lb/ft s)	0.55	4.05	1.05
Frctn Loss (ft)	2.05	Cum Volume (acre-ft)	0.03	1.00	0.15
C & E Loss (ft)	0.01	Cum SA (acres)	0.03	0.21	0.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2445.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.		0.035	0.040
W.S. Elev (ft)	2445.01	Reach Len. (ft)	201.78	186.60	183.43
Crit W.S. (ft)	2445.01	Flow Area (sq ft)		43.35	5.32
E.G. Slope (ft/ft)	0.017285	Area (sq ft)		43.35	5.32
Q Total (cfs)	247.00	Flow (cfs)		232.21	14.79
Top Width (ft)	57.32	Top Width (ft)		45.41	11.91
Vel Total (ft/s)	5.08	Avg. Vel. (ft/s)		5.36	2.78
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)		0.95	0.45
Conv. Total (cfs)	1878.7	Conv. (cfs)		1766.2	112.5
Length Wtd. (ft)	186.50	Wetted Per. (ft)		46.10	12.37
Min Ch El (ft)	2443.86	Shear (lb/sq ft)		1.01	0.46
Alpha	1.07	Stream Power (lb/ft s)		5.44	1.29
Frctn Loss (ft)	1.09	Cum Volume (acre-ft)		1.10	0.06
C & E Loss (ft)	0.09	Cum SA (acres)		0.21	0.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	81.54	101.92	6.81	3.41	11.95	2.76	0.29	2.00
2	Chan	101.92	111.00	31.61	7.09	9.09	12.80	0.78	4.46
3	Chan	111.00	120.08	43.68	8.60	9.08	17.69	0.95	5.08
4	Chan	120.08	129.17	37.71	7.87	9.08	15.27	0.87	4.79
5	Chan	129.17	138.25	41.98	8.40	9.09	16.99	0.92	5.00
6	Chan	138.25	147.33	35.54	7.61	9.10	14.39	0.84	4.67
7	ROB	147.33	163.56	13.56	5.89	16.24	5.49	0.36	2.30
8	ROB	163.56	179.79	14.43	6.11	16.23	5.84	0.38	2.36
9	ROB	179.79	196.01	21.67	7.15	13.07	8.77	0.55	3.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	101.92	111.00	37.70	7.84	9.75	15.26	0.86	4.81
2	Chan	111.00	120.08	53.05	9.36	9.08	21.48	1.03	5.67
3	Chan	120.08	129.17	46.38	8.63	9.08	18.78	0.95	5.37
4	Chan	129.17	138.25	51.15	9.15	9.09	20.71	1.01	5.59
5	Chan	138.25	147.33	43.93	8.36	9.10	17.79	0.92	5.25
6	ROB	147.33	163.56	14.79	5.32	12.37	5.99	0.45	2.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: GalMidBrnch Trib
REACH: GalMidBrnch Trib RS: 0.0439

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2440.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2439.81	Reach Len. (ft)	236.50	236.50	236.50
Crit W.S. (ft)	2439.55	Flow Area (sq ft)	0.18	59.34	0.38
E.G. Slope (ft/ft)	0.008204	Area (sq ft)	0.18	59.34	0.38
Q Total (cfs)	247.00	Flow (cfs)	0.17	246.46	0.38
Top Width (ft)	56.27	Top Width (ft)	1.27	52.61	2.39
Vel Total (ft/s)	4.12	Avg. Vel. (ft/s)	0.91	4.15	0.99
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)	0.14	1.13	0.16
Conv. Total (cfs)	2727.0	Conv. (cfs)	1.9	2721.0	4.2
Length Wtd. (ft)	236.50	Wetted Per. (ft)	1.30	52.87	2.41
Min Ch El (ft)	2438.00	Shear (lb/sq ft)	0.07	0.57	0.08
Alpha	1.01	Stream Power (lb/ft s)	0.07	2.39	0.08
Frctn Loss (ft)	1.91	Cum Volume (acre-ft)	0.02	0.78	0.11
C & E Loss (ft)	0.11	Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2440.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.035	0.040
W.S. Elev (ft)	2440.23	Reach Len. (ft)	236.50	236.50	236.50
Crit W.S. (ft)		Flow Area (sq ft)		81.54	0.10
E.G. Slope (ft/ft)	0.002908	Area (sq ft)		81.54	0.10
Q Total (cfs)	247.00	Flow (cfs)		246.96	0.04
Top Width (ft)	52.74	Top Width (ft)		52.61	0.13
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)		3.03	0.46
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)		1.55	0.73
Conv. Total (cfs)	4580.6	Conv. (cfs)		4579.7	0.8
Length Wtd. (ft)	236.50	Wetted Per. (ft)		53.58	0.86
Min Ch El (ft)	2438.00	Shear (lb/sq ft)		0.28	0.02
Alpha	1.00	Stream Power (lb/ft s)		0.84	0.01
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)		0.84	0.05
C & E Loss (ft)	0.15	Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	82.82	103.53	0.17	0.18	1.30	0.07	0.14	0.91
2	Chan	103.53	114.05	37.54	10.21	10.62	15.20	0.97	3.68
3	Chan	114.05	124.57	58.05	13.23	10.56	23.50	1.26	4.39
4	Chan	124.57	135.10	75.23	15.45	10.55	30.46	1.47	4.87
5	Chan	135.10	145.62	39.19	10.44	10.54	15.87	0.99	3.75
6	Chan	145.62	156.14	36.44	10.02	10.60	14.75	0.95	3.64
7	ROB	156.14	170.64	0.38	0.38	2.41	0.15	0.16	0.99

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	103.53	114.05	39.33	14.64	11.33	15.92	1.39	2.69
2	Chan	114.05	124.57	56.34	17.67	10.56	22.81	1.68	3.19
3	Chan	124.57	135.10	68.67	19.89	10.55	27.80	1.89	3.45
4	Chan	135.10	145.62	42.38	14.88	10.54	17.16	1.41	2.85
5	Chan	145.62	156.14	40.23	14.46	10.60	16.29	1.37	2.78
6	ROB	156.14	170.64	0.04	0.10	0.86	0.02	0.73	0.46

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

SUMMARY OF MANNING'S N VALUES

River:GalMidBrnch

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n10

GalMidBrnch	1.6862	.032	.025	.035	.025				
GalMidBrnch	1.6631	.058	.032	.025	.035				
GalMidBrnch	1.6502	.058	.032	.025	.035				
GalMidBrnch	1.6346	.025	.032	.025	.035				
GalMidBrnch	1.6190	.058	.032	.025	.058	.04	.058	.025	.032
.025 .058									
GalMidBrnch	1.6060	.058	.025	.04	.025	.032	.025	.04	
GalMidBrnch	1.5884	.058	.025	.04	.025	.058	.025	.058	.04
GalMidBrnch	1.5702	.058	.04	.025	.04	.058	.032	.058	.025
.058 .04									
GalMidBrnch	1.5371	.04	.025	.04	.058	.032	.058	.025	.04
GalMidBrnch	1.5177	.04	.025	.04	.058	.032	.058	.025	.04
GalMidBrnch	1.4952	.04	.058	.032	.058	.025	.04		
GalMidBrnch	1.4639	.058	.04	.058	.032	.058	.04	.025	.04
GalMidBrnch	1.4317	.058	.04	.032	.058	.04	.025		
GalMidBrnch	1.4056	.058	.04	.032	.058	.032	.04	.025	
GalMidBrnch	1.3816	.04	.058	.032	.058	.04	.032	.04	.025
GalMidBrnch	1.3579	.04	.058	.032	.04	.032	.058	.025	
GalMidBrnch	1.3323	.04	.058	.032	.04	.032	.058	.025	
GalMidBrnch	1.2985	.04	.058	.032	.04	.058	.04	.032	.058
.025 .032									
GalMidBrnch	1.2690	.058	.04	.032	.058	.04	.032	.058	.04
.025 .032									
GalMidBrnch	1.2355	.04	.058	.032	.04	.032	.04	.025	.032
GalMidBrnch	1.1974	.058	.025	.058	.032	.058	.04	.025	.032
GalMidBrnch	1.1895	.058	.025	.032					
GalMidBrnch	1.1825	.058	.032	.058	.04	.028	.04	.025	.032
GalMidBrnch	1.1546	.058	.032	.058	.04	.028	.04	.025	
GalMidBrnch	1.1118	.058	.04	.058	.032	.04	.028	.04	.025
.04									
GalMidBrnch	1.0780	.058	.04	.058	.032	.04	.025	.04	
GalMidBrnch	1.0256	.058	.04	.058	.032	.04	.025	.04	
GalMidBrnch	0.9784	.058	.04	.058	.032	.04	.025	.04	
GalMidBrnch	0.9552	.058	.04	.058	.032	.04	.025	.04	
GalMidBrnch	0.9366	.058	.04	.058	.032	.058	.025	.058	
GalMidBrnch	0.9152	.058	.04	.032	.058	.032	.058	.025	.05[illegible]
.04									
GalMidBrnch	0.8808	.04	.032	.058	.025	.04			
GalMidBrnch	0.8441	.04	.032	.058	.04	.032	.058	.025	.04
GalMidBrnch	0.8041	.058	.04	.032	.058	.04	.035	.04	.025
.04									
GalMidBrnch	0.7560	.058	.04	.032	.058	.04	.025	.04	
GalMidBrnch	0.7272	.058	.032	.058	.04	.025	.04		
GalMidBrnch	0.6777	.058	.032	.058	.025	.04			
GalMidBrnch	0.6468	.025	.058	.032	.058	.025	.04		
GalMidBrnch	0.5954	.058	.025	.058	.028	.058	.04		
GalMidBrnch	0.5644	.058	.025	.04	.058	.028	.058	.04	
GalMidBrnch	0.5272	.058	.025	.04	.025	.028	.04		
GalMidBrnch	0.5212	.058	.025	.04	.025	.04			
GalMidBrnch	0.5157	.025	.04	.025	.028	.04			
GalMidBrnch	0.5006	.025	.04	.025	.04	.028	.058	.028	.04
GalMidBrnch	0.4858	.04	.025	.04	.025	.04	.058	.028	.04
GalMidBrnch	0.4697	.04	.025	.04	.025	.04	.058	.028	.04
.025									
GalMidBrnch	0.4428	.04	.025	.04	.028	.058	.025		
GalMidBrnch	0.4243	.04	.025	.04	.028	.04			
GalMidBrnch	0.4037	.04	.025	.04	.058	.028	.04		
GalMidBrnch	0.3785	.04	.028	.04					
GalMidBrnch	0.3517	.058	.04	.028	.04	.025	.04		
GalMidBrnch Comb	0.3065	.04	.028	.04	.025				
GalMidBrnch Comb	0.2629	.04	.028	.04					
GalMidBrnch Comb	0.2268	.04	.058	.028	.04				
GalMidBrnch Comb	0.2090	.04	.058	.028	.04				
GalMidBrnch Comb	0.1766	.04	.058	.028	.04				
GalMidBrnch Comb	0.1637	.04	.058	.028	.04				
GalMidBrnch Comb	0.1462	.04	.058	.028	.04				
GalMidBrnch Comb	0.1223	.04	.058	.028	.04				
GalMidBrnch Comb	0.1024	.04	.058	.028	.04				
GalMidBrnch Comb	0.0806	.025	.058	.028	.04				
GalMidBrnch Comb	0.0643	.025	.058	.028	.04				
GalMidBrnch Comb	0.0415	.058	.028	.04					

GalMidBrnch Comb	0.0164	.04	.058	.028	.04
GalMidBrnch Comb	0.0000	.058	.028	.04	

River:GalMidBrnch Trib

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7
GalMidBrnch Trib	0.2762	.04	.035	.058	.04			
GalMidBrnch Trib	0.2568	.025	.04	.035	.04			
GalMidBrnch Trib	0.2437	.025	.04	.035	.04			
GalMidBrnch Trib	0.2045	.04	.025	.058	.035	.04		
GalMidBrnch Trib	0.1760	.058	.025	.058	.035	.04	.025	.04
GalMidBrnch Trib	0.1568	.025	.058	.035	.04	.025	.04	
GalMidBrnch Trib	0.1295	.025	.058	.035	.04			
GalMidBrnch Trib	0.1105	.058	.035	.04				
GalMidBrnch Trib	0.1010	.025	.04					
GalMidBrnch Trib	0.0954	.04	.035	.04				
GalMidBrnch Trib	0.0792	.04	.035	.04				
GalMidBrnch Trib	0.0439	.04	.035	.04				

SUMMARY OF REACH LENGTHS

River: GalMidBrnch

Reach	River Sta.	Left	Channel	Right
GalMidBrnch	1.6862	205.89	121.83	115.6
GalMidBrnch	1.6631	113.07	68.33	61.66
GalMidBrnch	1.6502	102.24	82.38	78.46
GalMidBrnch	1.6346	170.62	82.17	78.25
GalMidBrnch	1.6190	221.23	68.64	63.2
GalMidBrnch	1.6060	85	92.13	97
GalMidBrnch	1.5884	96.1	96.1	96.1
GalMidBrnch	1.5702	175.21	175.01	184
GalMidBrnch	1.5371	100	102.43	106
GalMidBrnch	1.5177	118.8	118.8	118.8
GalMidBrnch	1.4952	156.42	165.35	171.61
GalMidBrnch	1.4639	134.51	169.92	207.7
GalMidBrnch	1.4317	137.81	137.81	137.81
GalMidBrnch	1.4056	126.72	126.72	126.72
GalMidBrnch	1.3816	125.14	125.14	125.14
GalMidBrnch	1.3579	135.17	135.17	135.17
GalMidBrnch	1.3323	209.05	178.15	147.07
GalMidBrnch	1.2985	155.67	155.67	155.67
GalMidBrnch	1.2690	176.88	176.88	181.64
GalMidBrnch	1.2355	214.98	201.45	191.86
GalMidBrnch	1.1974	43.12	41.71	37.95
GalMidBrnch	1.1895	36.79	36.79	36.79
GalMidBrnch	1.1825	147.45	147.45	147.45
GalMidBrnch	1.1546	230	225.98	222
GalMidBrnch	1.1118	173	178.46	184
GalMidBrnch	1.0780	275.2	276.66	276.66
GalMidBrnch	1.0256	246.2	248.96	248.96
GalMidBrnch	0.9784	180.19	122.83	107.98
GalMidBrnch	0.9552	103	98.21	94
GalMidBrnch	0.9366	112.99	112.99	112.99
GalMidBrnch	0.9152	174	181.79	183.55
GalMidBrnch	0.8808	143.83	193.76	240.82
GalMidBrnch	0.8441	133.2	210.9	324.8
GalMidBrnch	0.8041	181	254.24	302.74
GalMidBrnch	0.7560	151.9	151.9	150.6
GalMidBrnch	0.7272	288.21	261.22	169.76
GalMidBrnch	0.6777	164.17	163.01	154.02
GalMidBrnch	0.6468	282.09	271.75	262.9
GalMidBrnch	0.5954	124.62	163.51	203.49
GalMidBrnch	0.5644	139.45	196.63	211
GalMidBrnch	0.5272	31.8	31.8	42

GalMidBrnch	0.5212	28.7	28.7	30
GalMidBrnch	0.5157	79.67	79.67	79.67
GalMidBrnch	0.5006	75	78.14	82
GalMidBrnch	0.4858	82	85.01	88
GalMidBrnch	0.4697	141.89	141.89	141.89
GalMidBrnch	0.4428	101	97.68	83.93
GalMidBrnch	0.4243	108.66	108.66	102.7
GalMidBrnch	0.4037	135	133.14	131.5
GalMidBrnch	0.3785	141.67	141.67	140.2
GalMidBrnch	0.3517			
GalMidBrnch Comb	0.3065	229.34	230.51	232
GalMidBrnch Comb	0.2629	190.4	190.4	191.1
GalMidBrnch Comb	0.2268	96	94.01	90
GalMidBrnch Comb	0.2090	170	171.22	187
GalMidBrnch Comb	0.1766	80	68.29	70
GalMidBrnch Comb	0.1637	93	92.25	92.1
GalMidBrnch Comb	0.1462	130	125.85	110
GalMidBrnch Comb	0.1223	100	105.52	120
GalMidBrnch Comb	0.1024	120	115.08	100
GalMidBrnch Comb	0.0806	80	86	92
GalMidBrnch Comb	0.0643	120	120.31	135
GalMidBrnch Comb	0.0415	145	132.52	130
GalMidBrnch Comb	0.0164	80	86.57	90
GalMidBrnch Comb	0.0000	0	0	0

River: GalMidBrnch Trib

Reach	River Sta.	Left	Channel	Right
GalMidBrnch Trib	0.2762	90.17	102.5	110.24
GalMidBrnch Trib	0.2568	58.44	69.35	72.94
GalMidBrnch Trib	0.2437	190	206.48	210.3
GalMidBrnch Trib	0.2045	163.1	150.87	114.84
GalMidBrnch Trib	0.1760	103.9	101.4	90.5
GalMidBrnch Trib	0.1568	144.1	143.86	127.19
GalMidBrnch Trib	0.1295	32.29	100.61	73.16
GalMidBrnch Trib	0.1105	59.13	50.03	115.75
GalMidBrnch Trib	0.1010	125.84	29.81	58.17
GalMidBrnch Trib	0.0954	92.6	85.04	76
GalMidBrnch Trib	0.0792	201.78	186.6	183.43
GalMidBrnch Trib	0.0439			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: GalMidBrnch

Reach	River Sta.	Contr.	Expan.
GalMidBrnch	1.6862	.1	.3
GalMidBrnch	1.6631	.1	.3
GalMidBrnch	1.6502	.1	.3
GalMidBrnch	1.6346	.1	.3
GalMidBrnch	1.6190	.1	.3
GalMidBrnch	1.6060	.3	.5
GalMidBrnch	1.5884	.3	.5
GalMidBrnch	1.5702	.3	.5
GalMidBrnch	1.5371	.3	.5
GalMidBrnch	1.5177	.1	.3
GalMidBrnch	1.4952	.3	.5
GalMidBrnch	1.4639	.3	.5
GalMidBrnch	1.4317	.3	.5
GalMidBrnch	1.4056	.1	.3
GalMidBrnch	1.3816	.1	.3
GalMidBrnch	1.3579	.1	.3
GalMidBrnch	1.3323	.1	.3
GalMidBrnch	1.2985	.1	.3
GalMidBrnch	1.2690	.1	.3

GalMidBrnch	1.2355	.1	.3
GalMidBrnch	1.1974	.1	.3
GalMidBrnch	1.1895	.1	.3
GalMidBrnch	1.1825	.3	.5
GalMidBrnch	1.1546	.3	.5
GalMidBrnch	1.1118	.3	.5
GalMidBrnch	1.0780	.1	.3
GalMidBrnch	1.0256	.1	.3
GalMidBrnch	0.9784	.1	.3
GalMidBrnch	0.9552	.1	.3
GalMidBrnch	0.9366	.1	.3
GalMidBrnch	0.9152	.1	.3
GalMidBrnch	0.8808	.1	.3
GalMidBrnch	0.8441	.1	.3
GalMidBrnch	0.8041	.3	.5
GalMidBrnch	0.7560	.3	.5
GalMidBrnch	0.7272	.1	.3
GalMidBrnch	0.6777	.1	.3
GalMidBrnch	0.6468	.1	.3
GalMidBrnch	0.5954	.1	.3
GalMidBrnch	0.5644	.1	.3
GalMidBrnch	0.5272	.1	.3
GalMidBrnch	0.5212	.3	.5
GalMidBrnch	0.5157	.3	.5
GalMidBrnch	0.5006	.3	.5
GalMidBrnch	0.4858	.1	.3
GalMidBrnch	0.4697	.1	.3
GalMidBrnch	0.4428	.1	.3
GalMidBrnch	0.4243	.1	.3
GalMidBrnch	0.4037	.1	.3
GalMidBrnch	0.3785	.1	.3
GalMidBrnch	0.3517	.1	.3
GalMidBrnch Comb	0.3065	.1	.3
GalMidBrnch Comb	0.2629	.1	.3
GalMidBrnch Comb	0.2268	.1	.3
GalMidBrnch Comb	0.2090	.1	.3
GalMidBrnch Comb	0.1766	.1	.3
GalMidBrnch Comb	0.1637	.1	.3
GalMidBrnch Comb	0.1462	.1	.3
GalMidBrnch Comb	0.1223	.1	.3
GalMidBrnch Comb	0.1024	.1	.3
GalMidBrnch Comb	0.0806	.1	.3
GalMidBrnch Comb	0.0643	.1	.3
GalMidBrnch Comb	0.0415	.1	.3
GalMidBrnch Comb	0.0164	.1	.3
GalMidBrnch Comb	0.0000	.1	.3

River: GalMidBrnch Trib

Reach	River Sta.	Contr.	Expan.
GalMidBrnch Trib	0.2762	.1	.3
GalMidBrnch Trib	0.2568	.1	.3
GalMidBrnch Trib	0.2437	.1	.3
GalMidBrnch Trib	0.2045	.1	.3
GalMidBrnch Trib	0.1760	.3	.5
GalMidBrnch Trib	0.1568	.3	.5
GalMidBrnch Trib	0.1295	.3	.5
GalMidBrnch Trib	0.1105	.1	.3
GalMidBrnch Trib	0.1010	.1	.3
GalMidBrnch Trib	0.0954	.1	.3
GalMidBrnch Trib	0.0792	.1	.3
GalMidBrnch Trib	0.0439	.1	.3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 04

River: GalMidBrnch Reach: GalMidBrnch RS: 1.6862 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6862 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6631 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6631 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6502 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6502 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6346 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6346 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6190 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6190 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6060 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.6060 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5884 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5884 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5702 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5702 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5371 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5371 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5177 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.5177 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4952 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4952 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4639 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4639 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program use
critical depth

for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4317 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4317 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4056 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.4056 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.3816 Profile: PF 1

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.3816 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.3579 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.3579 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.3323 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.3323 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.2985 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.2985 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.2690 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.2690 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.2355 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.2355 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1974 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1974 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1895 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1895 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1825 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1825 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1546 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1546 Profile: PF 2
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

River: GalMidBrnch Reach: GalMidBrnch RS: 1.1118 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.1118 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.0780 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.0780 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.0256 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 1.0256 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9784 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9784 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9552 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9552 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9366 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9366 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9152 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. Th
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.9152 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.8808 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.8808 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program us
critical depth

for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.8441 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.8441 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.8041 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.8041 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.7560 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.7560 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.7272 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.7272 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.6777 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.6777 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.6468 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. Th
may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.6468 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5954 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5954 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5644 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5644 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5272 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program
ected the water

surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5272 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5212 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5212 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5157 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5157 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.5006 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

River: GalMidBrnch Reach: GalMidBrnch RS: 0.5006 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4858 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4858 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4697 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4697 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

River: GalMidBrnch Reach: GalMidBrnch RS: 0.4428 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4428 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4243 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4243 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4037 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.4037 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.3785 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.3785 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.3517 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch RS: 0.3517 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.3065 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.3065 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.2629 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.2629 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.2268 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.2268 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.2090 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.2090 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1766 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1766 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1637 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1637 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1462 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1462 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1223 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1223 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross section had to be extended vertically during the critical depth calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1024 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.1024 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0806 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0806 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0643 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0643 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program us
critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0415 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used
critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0415 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used
critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross
section
slice/secant method to find critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0164 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used
critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0164 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used
critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0000 Profile: PF 1

Warning:User specified water surface is not possible for the specified flow regime. The program used critical depth as the
starting water surface.
River: GalMidBrnch Reach: GalMidBrnch Comb RS: 0.0000 Profile: PF 2
Warning:User specified water surface is not possible for the specified flow regime. The program used critical depth as the
starting water surface.
Warning:The parabolic search method failed to converge on critical depth. The program will try the cross section
slice/secant method to find critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2762 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2762 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2568 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2568 Profile: PF 2
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2437 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2437 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2045 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.2045 Profile: PF 2
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1760 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1760 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1568 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1568 Profile: PF 2
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1295 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. Th may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1295 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1105 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1105 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1010 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.1010 Profile: PF 2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.0954 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.0954 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.0792 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.0792 Profile: PF 2
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.0439 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: GalMidBrnch Trib Reach: GalMidBrnch Trib RS: 0.0439 Profile: PF 2
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Galloway Wash Middle Branch – Encroachment
Table 3

HEC-RAS Plan: Plan 04 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)	
GalMidBrnch Trib	GalMidBrnch Trib	0.2762	PF 1	209.00	2464.49	2466.42	2466.42	2466.93	0.011909	5.91	43.55	58.93	0.86
GalMidBrnch Trib	GalMidBrnch Trib	0.2568	PF 1	209.00	2462.69	2464.30	2464.30	2464.63	0.016356	4.97	49.53	80.22	0.92
GalMidBrnch Trib	GalMidBrnch Trib	0.2437	PF 1	209.00	2460.97	2462.65	2462.59	2462.85	0.011476	4.79	67.07	113.62	0.80
GalMidBrnch Trib	GalMidBrnch Trib	0.2045	PF 1	228.00	2457.34	2458.98	2458.98	2459.27	0.029062	4.12	52.83	94.85	0.99
GalMidBrnch Trib	GalMidBrnch Trib	0.1760	PF 1	228.00	2454.49	2455.75	2455.75	2456.03	0.013252	4.30	53.69	101.06	0.83
GalMidBrnch Trib	GalMidBrnch Trib	0.1568	PF 1	228.00	2452.63	2453.81	2453.81	2454.07	0.018860	4.27	56.02	103.13	0.95
GalMidBrnch Trib	GalMidBrnch Trib	0.1295	PF 1	228.00	2449.48	2451.00	2451.00	2451.26	0.015987	5.17	63.29	115.36	0.93
GalMidBrnch Trib	GalMidBrnch Trib	0.1105	PF 1	228.00	2447.82	2449.20	2449.20	2449.54	0.015473	5.44	52.64	77.89	0.93
GalMidBrnch Trib	GalMidBrnch Trib	0.1010	PF 1	247.00	2447.08	2448.40	2448.40	2448.80	0.008223	5.14	50.22	67.36	0.94
GalMidBrnch Trib	GalMidBrnch Trib	0.0954	PF 1	247.00	2445.66	2447.75	2447.75	2448.13	0.010484	5.64	60.04	80.12	0.81
GalMidBrnch Trib	GalMidBrnch Trib	0.0792	PF 1	247.00	2443.86	2444.93	2444.93	2445.23	0.015474	4.82	62.12	102.80	0.91
GalMidBrnch Trib	GalMidBrnch Trib	0.0439	PF 1	247.00	2438.00	2439.81	2439.55	2440.08	0.008204	4.15	59.91	56.27	0.69
GalMidBrnch	GalMidBrnch	1.6862	PF 1	2094.00	2607.68	2612.78	2612.78	2613.59	0.004525	9.19	365.68	195.56	0.78
GalMidBrnch	GalMidBrnch	1.6631	PF 1	2094.00	2603.54	2608.41	2608.41	2608.92	0.004781	8.45	482.33	378.37	0.76
GalMidBrnch	GalMidBrnch	1.6502	PF 1	2094.00	2601.47	2605.94	2605.94	2606.36	0.004705	8.36	550.04	511.36	0.79
GalMidBrnch	GalMidBrnch	1.6346	PF 1	2094.00	2598.44	2603.47	2603.47	2603.95	0.002280	7.91	632.62	544.81	0.64
GalMidBrnch	GalMidBrnch	1.6190	PF 1	2094.00	2596.60	2599.95	2599.95	2600.55	0.005960	7.61	398.70	387.81	0.78
GalMidBrnch	GalMidBrnch	1.6060	PF 1	2094.00	2594.92	2596.35	2596.35	2597.24	0.010928	6.40	277.90	152.71	1.12
GalMidBrnch	GalMidBrnch	1.5884	PF 1	2124.00	2592.85	2593.49	2593.49	2594.02	0.014283	1.27	379.40	372.76	0.43
GalMidBrnch	GalMidBrnch	1.5702	PF 1	2124.00	2585.64	2590.43	2590.43	2591.61	0.010393	9.00	270.87	147.53	0.88
GalMidBrnch	GalMidBrnch	1.5371	PF 1	2124.00	2581.37	2587.34	2587.34	2587.70	0.002750	6.43	626.78	473.52	0.49
GalMidBrnch	GalMidBrnch	1.5177	PF 1	2124.00	2578.79	2584.71	2584.71	2585.21	0.004100	8.52	562.01	466.78	0.65
GalMidBrnch	GalMidBrnch	1.4952	PF 1	2124.00	2576.35	2581.75	2581.75	2582.45	0.007345	9.27	424.89	301.30	0.75
GalMidBrnch	GalMidBrnch	1.4639	PF 1	2124.00	2573.15	2578.24	2578.24	2578.90	0.004755	8.16	474.39	316.76	0.65
GalMidBrnch	GalMidBrnch	1.4317	PF 1	2153.00	2569.48	2573.67	2573.67	2574.36	0.006421	8.60	435.28	331.97	0.78
GalMidBrnch	GalMidBrnch	1.4056	PF 1	2153.00	2566.82	2570.55	2570.55	2571.18	0.008233	9.65	421.44	295.24	0.91
GalMidBrnch	GalMidBrnch	1.3816	PF 1	2153.00	2564.15	2567.77	2567.77	2568.50	0.008670	8.56	385.54	263.02	0.83
GalMidBrnch	GalMidBrnch	1.3579	PF 1	2153.00	2561.75	2565.15	2565.15	2565.82	0.009084	8.28	375.08	287.48	0.83
GalMidBrnch	GalMidBrnch	1.3323	PF 1	2153.00	2558.82	2562.27	2562.27	2562.97	0.009465	9.30	375.43	257.81	0.95
GalMidBrnch	GalMidBrnch	1.2985	PF 1	2153.00	2555.19	2558.94	2558.94	2559.58	0.011554	8.98	400.39	281.15	0.89
GalMidBrnch	GalMidBrnch	1.2690	PF 1	2153.00	2551.70	2555.13	2555.13	2555.65	0.009107	8.53	436.72	379.52	0.88
GalMidBrnch	GalMidBrnch	1.2355	PF 1	2153.00	2547.98	2551.21	2551.21	2551.74	0.008705	7.69	422.81	353.71	0.79
GalMidBrnch	GalMidBrnch	1.1974	PF 1	2153.00	2543.54	2546.81	2546.81	2547.44	0.009396	9.18	431.48	302.36	0.95
GalMidBrnch	GalMidBrnch	1.1895	PF 1	2153.00	2542.47	2545.45	2545.45	2546.06	0.004408	7.32	391.93	286.32	0.81
GalMidBrnch	GalMidBrnch	1.1825	PF 1	2153.00	2540.50	2543.69	2543.69	2544.48	0.010474	7.87	326.56	227.89	0.85
GalMidBrnch	GalMidBrnch	1.1546	PF 1	2153.00	2536.89	2539.25	2539.25	2540.15	0.008025	6.01	293.63	161.12	0.77
GalMidBrnch	GalMidBrnch	1.1118	PF 1	2153.00	2531.28	2534.97	2534.97	2536.23	0.010555	9.38	249.79	107.69	0.91
GalMidBrnch	GalMidBrnch	1.0780	PF 1	2153.00	2527.09	2532.01	2532.01	2533.22	0.006830	10.83	355.07	229.49	0.87
GalMidBrnch	GalMidBrnch	1.0256	PF 1	2153.00	2520.57	2524.78	2524.78	2525.68	0.007505	8.67	358.53	206.02	0.78
GalMidBrnch	GalMidBrnch	0.9784	PF 1	2153.00	2515.03	2519.32	2519.32	2520.30	0.007729	9.53	350.32	186.00	0.83
GalMidBrnch	GalMidBrnch	0.9552	PF 1	2153.00	2512.32	2516.30	2516.30	2516.99	0.008227	8.37	404.78	246.95	0.79
GalMidBrnch	GalMidBrnch	0.9366	PF 1	2153.00	2510.27	2513.66	2513.66	2514.41	0.008138	8.58	391.12	243.83	0.86
GalMidBrnch	GalMidBrnch	0.9152	PF 1	2179.00	2507.69	2510.67	2510.67	2511.45	0.015184	9.54	346.23	220.12	1.03
GalMidBrnch	GalMidBrnch	0.8808	PF 1	2179.00	2503.45	2506.43	2506.43	2507.43	0.010644	9.23	323.04	168.99	0.99
GalMidBrnch	GalMidBrnch	0.8441	PF 1	2179.00	2499.39	2501.84	2501.84	2502.60	0.017026	7.56	317.45	209.66	0.92
GalMidBrnch	GalMidBrnch	0.8041	PF 1	2179.00	2495.04	2496.89	2496.89	2497.44	0.019845	6.80	377.21	341.33	0.94
GalMidBrnch	GalMidBrnch	0.7560	PF 1	2179.00	2488.45	2491.34	2491.34	2492.11	0.010414	7.84	343.40	215.86	0.88
GalMidBrnch	GalMidBrnch	0.7272	PF 1	2179.00	2485.06	2487.63	2487.63	2488.43	0.011484	8.31	374.14	233.55	1.00
GalMidBrnch	GalMidBrnch	0.6777	PF 1	2179.00	2478.27	2481.71	2481.71	2482.48	0.010586	7.84	376.21	227.47	0.79
GalMidBrnch	GalMidBrnch	0.6468	PF 1	2204.00	2474.84	2477.93	2477.93	2478.82	0.011727	8.44	313.34	175.46	0.89
GalMidBrnch	GalMidBrnch	0.5954	PF 1	2204.00	2468.87	2472.24	2472.24	2473.06	0.005773	8.36	383.26	227.51	0.84
GalMidBrnch	GalMidBrnch	0.5644	PF 1	2204.00	2465.68	2468.70	2468.70	2469.47	0.007009	8.20	386.97	235.96	0.86
GalMidBrnch	GalMidBrnch	0.5272	PF 1	2210.00	2461.15	2464.27	2464.27	2464.97	0.005383	8.72	369.77	278.38	0.89
GalMidBrnch	GalMidBrnch	0.5212	PF 1	2210.00	2460.68	2463.79	2463.79	2464.54	0.004677	8.24	412.18	279.95	0.85
GalMidBrnch	GalMidBrnch	0.5157	PF 1	2210.00	2459.51	2463.25	2463.25	2463.97	0.004939	8.47	406.49	272.57	0.85
GalMidBrnch	GalMidBrnch	0.5006	PF 1	2210.00	2455.77	2459.60	2459.60	2460.82	0.007227	10.05	265.21	109.74	0.97
GalMidBrnch	GalMidBrnch	0.4858	PF 1	2210.00	2453.67	2458.26	2458.26	2459.30	0.005856	10.91	292.06	146.21	0.91
GalMidBrnch	GalMidBrnch	0.4697	PF 1	2210.00	2451.85	2455.57	2455.57	2457.11	0.009183	10.10	230.80	81.81	0.97
GalMidBrnch	GalMidBrnch	0.4428	PF 1	2210.00	2448.91	2452.44	2452.44	2453.83	0.007632	9.65	247.63	97.55	0.97
GalMidBrnch	GalMidBrnch	0.4243	PF 1	2210.00	2446.72	2450.23	2450.23	2451.51	0.006884	9.28	256.07	111.37	0.93
GalMidBrnch	GalMidBrnch	0.4037	PF 1	2210.00	2444.21	2448.12	2448.12	2449.25	0.005362	9.25	293.79	138.28	0.85
GalMidBrnch	GalMidBrnch	0.3785	PF 1	2210.00	2441.02	2445.02	2445.02	2446.37	0.005812	9.70	265.06	137.52	0.89
GalMidBrnch	GalMidBrnch	0.3517	PF 1	2210.00	2437.57	2442.41	2442.41	2443.41	0.004386	9.67	360.80	172.76	0.79
GalMidBrnch	GalMidBrnch Comb	0.3065	PF 1	2423.00	2432.26	2436.66	2436.66	2438.05	0.008081	9.78	278.58	105.10	0.90
GalMidBrnch	GalMidBrnch Comb	0.2629	PF 1	2423.00	2427.19	2430.38	2430.38	2431.86	0.007989	9.84	255.16	89.92	0.99
GalMidBrnch	GalMidBrnch Comb	0.2268	PF 1	2423.00	2422.93	2426.94	2426.94	2428.71	0.007551	10.78	237.96	72.32	0.98
GalMidBrnch	GalMidBrnch Comb	0.2090	PF 1	2423.00	2420.80	2424.87	2424.87	2426.62	0.009713	10.76	236.90	71.78	0.99
GalMidBrnch	GalMidBrnch Comb	0.1766	PF 1	2423.00	2417.18	2421.55	2421.55	2423.64	0.009427	12.00	231.87	82.91	1.03
GalMidBrnch	GalMidBrnch Comb	0.1637	PF 1	2423.00	2415.58	2419.93	2419.93	2421.71	0.007282	10.95	244.49	79.85	0.95
GalMidBrnch	GalMidBrnch Comb	0.1462	PF 1	2423.00	2413.41	2417.32	2417.32	2419.00	0.008041	10.55	244.31	80.93	0.98
GalMidBrnch	GalMidBrnch Comb	0.1223	PF 1	2423.00	2411.08	2414.89	2414.89	2416.37	0.006574	10.02	279.69	136.76	0.91
GalMidBrnch	GalMidBrnch Comb	0.1024	PF 1	2423.00	2408.13	2411.49	2411.49	2413.01	0.008544	9.94	252.52	94.01	0.98
GalMidBrnch	GalMidBrnch Comb	0.0806	PF 1	2423.00	2405.19	2408.73	2408.73	2410.31	0.008256	10.18	249.57	85.50	0.98
GalMidBrnch	GalMidBrnch Comb	0.0643	PF 1	2423.00	2403.36	2406.96	2406.96	2408.41	0.008597	9.78	263.37	99.46	0.98
GalMidBrnch	GalMidBrnch Comb	0.0415	PF 1	2423.00	2400.67	2404.07	2404.07	2405.47	0.008815	9.72	271.05	105.11	0.96
GalMidBrnch	GalMidBrnch Comb	0.0164	PF 1	2423.00	2397.05	2400.03	2400.03	2401.17	0.009119	8.63	290.96	134.73	1.00
GalMidBrnch	GalMidBrnch Comb	0.0000	PF 1	2423.00	2395.43	2398.16	2398.16	2399.35	0.008483	8.80	280.39	122.20	0.99

HEC-RAS Model Summary Tables

Galloway Wash Middle Branch

HEC-RAS Plan: Plan 04

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)	
GalMidBrnch Trib	GalMidBrnch Trib	0.2762	PF 1	209.00	2464.49	2466.42	2466.42	2466.93	0.011909	5.91	43.55	58.93	0.86
GalMidBrnch Trib	GalMidBrnch Trib	0.2762	PF 2	209.00	2464.49	2466.33	2466.33	2467.03	0.017944	6.72	31.12	22.46	1.01
GalMidBrnch Trib	GalMidBrnch Trib	0.2568	PF 1	209.00	2462.69	2464.30	2464.30	2464.63	0.016356	4.97	49.53	80.22	0.92
GalMidBrnch Trib	GalMidBrnch Trib	0.2568	PF 2	209.00	2462.69	2464.49		2464.86	0.012867	4.85	43.08	38.97	0.81
GalMidBrnch Trib	GalMidBrnch Trib	0.2437	PF 1	209.00	2460.97	2462.65	2462.59	2462.85	0.011476	4.79	67.07	113.62	0.80
GalMidBrnch Trib	GalMidBrnch Trib	0.2437	PF 2	209.00	2460.97	2463.20	2463.20	2463.85	0.016252	6.98	33.90	25.15	0.95
GalMidBrnch Trib	GalMidBrnch Trib	0.2045	PF 1	228.00	2457.34	2458.98	2458.98	2459.27	0.029062	4.12	52.83	94.85	0.99
GalMidBrnch Trib	GalMidBrnch Trib	0.2045	PF 2	228.00	2457.34	2459.33	2459.26	2459.68	0.020930	4.74	48.09	55.95	0.90
GalMidBrnch Trib	GalMidBrnch Trib	0.1760	PF 1	228.00	2454.49	2455.75	2455.75	2456.03	0.013252	4.30	53.69	101.06	0.83
GalMidBrnch Trib	GalMidBrnch Trib	0.1760	PF 2	228.00	2454.49	2456.37	2456.37	2457.03	0.016005	6.43	35.11	27.61	0.94
GalMidBrnch Trib	GalMidBrnch Trib	0.1568	PF 1	228.00	2452.63	2453.81	2453.81	2454.07	0.018860	4.27	56.02	103.13	0.95
GalMidBrnch Trib	GalMidBrnch Trib	0.1568	PF 2	228.00	2452.63	2454.24	2454.18	2454.69	0.016190	5.42	42.10	39.85	0.93
GalMidBrnch Trib	GalMidBrnch Trib	0.1295	PF 1	228.00	2449.48	2451.00	2451.00	2451.26	0.015987	5.17	63.29	115.36	0.93
GalMidBrnch Trib	GalMidBrnch Trib	0.1295	PF 2	228.00	2449.48	2451.55	2451.55	2452.26	0.016616	6.91	34.72	24.97	0.99
GalMidBrnch Trib	GalMidBrnch Trib	0.1105	PF 1	228.00	2447.82	2449.20	2449.20	2449.54	0.015473	5.44	52.64	77.89	0.93
GalMidBrnch Trib	GalMidBrnch Trib	0.1105	PF 2	228.00	2447.82	2449.70	2449.70	2450.48	0.018006	7.08	32.22	20.77	1.00
GalMidBrnch Trib	GalMidBrnch Trib	0.1010	PF 1	247.00	2447.08	2448.40	2448.40	2448.80	0.008223	5.14	50.22	67.36	0.94
GalMidBrnch Trib	GalMidBrnch Trib	0.1010	PF 2	247.00	2447.08	2448.69		2448.94	0.003669	4.03	61.26	50.34	0.64
GalMidBrnch Trib	GalMidBrnch Trib	0.0954	PF 1	247.00	2445.66	2447.75	2447.75	2448.13	0.010484	5.64	60.04	80.12	0.81
GalMidBrnch Trib	GalMidBrnch Trib	0.0954	PF 2	247.00	2445.66	2447.86	2447.86	2448.67	0.017883	7.24	34.10	21.34	1.01
GalMidBrnch Trib	GalMidBrnch Trib	0.0792	PF 1	247.00	2443.86	2444.93	2444.93	2445.23	0.015474	4.82	62.12	102.80	0.91
GalMidBrnch Trib	GalMidBrnch Trib	0.0792	PF 2	247.00	2443.86	2445.01	2445.01	2445.43	0.017285	5.36	48.67	57.32	0.97
GalMidBrnch Trib	GalMidBrnch Trib	0.0439	PF 1	247.00	2438.00	2439.81	2439.55	2440.08	0.008204	4.15	59.91	56.27	0.69
GalMidBrnch Trib	GalMidBrnch Trib	0.0439	PF 2	247.00	2438.00	2440.23		2440.37	0.002908	3.03	81.63	52.74	0.43
GalMidBrnch	GalMidBrnch	1.6862	PF 1	2094.00	2607.68	2612.78	2612.78	2613.59	0.004525	9.19	365.68	195.56	0.78
GalMidBrnch	GalMidBrnch	1.6862	PF 2	2094.00	2607.68	2613.20	2613.20	2614.59	0.006397	10.77	247.10	84.31	0.87
GalMidBrnch	GalMidBrnch	1.6631	PF 1	2094.00	2603.54	2608.41	2608.41	2608.92	0.004781	8.45	482.33	378.37	0.76
GalMidBrnch	GalMidBrnch	1.6631	PF 2	2094.00	2603.54	2609.08	2609.08	2609.92	0.005295	9.61	343.56	172.41	0.80
GalMidBrnch	GalMidBrnch	1.6502	PF 1	2094.00	2601.47	2605.94	2605.94	2606.36	0.004705	8.36	550.04	511.36	0.79
GalMidBrnch	GalMidBrnch	1.6502	PF 2	2094.00	2601.47	2606.65	2606.65	2607.35	0.005029	9.38	387.41	222.63	0.82
GalMidBrnch	GalMidBrnch	1.6346	PF 1	2094.00	2598.44	2603.47	2603.47	2603.95	0.002280	7.91	632.62	544.81	0.64
GalMidBrnch	GalMidBrnch	1.6346	PF 2	2094.00	2598.44	2604.01	2604.01	2604.94	0.003566	9.52	349.77	162.75	0.73
GalMidBrnch	GalMidBrnch	1.6190	PF 1	2094.00	2596.60	2599.95	2599.95	2600.55	0.005960	7.61	398.70	387.81	0.78
GalMidBrnch	GalMidBrnch	1.6190	PF 2	2094.00	2596.60	2600.45	2600.45	2601.55	0.007718	9.14	269.48	117.22	0.87
GalMidBrnch	GalMidBrnch	1.6060	PF 1	2094.00	2594.92	2596.35	2596.35	2597.24	0.010928	6.40	277.90	152.71	1.12
GalMidBrnch	GalMidBrnch	1.6060	PF 2	2094.00	2594.92	2597.22	2597.22	2598.24	0.008909	8.12	257.75	126.78	1.08
GalMidBrnch	GalMidBrnch	1.5884	PF 1	2124.00	2592.85	2593.49	2593.49	2594.02	0.014283	1.27	379.40	372.76	0.43
GalMidBrnch	GalMidBrnch	1.5884	PF 2	2124.00	2592.85	2594.31	2594.31	2594.96	0.014085	3.09	349.60	264.48	0.54
GalMidBrnch	GalMidBrnch	1.5702	PF 1	2124.00	2585.64	2590.43	2590.43	2591.61	0.010393	9.00	270.87	147.53	0.88
GalMidBrnch	GalMidBrnch	1.5702	PF 2	2124.00	2585.64	2590.44	2590.44	2591.81	0.011522	9.49	236.01	104.90	0.93
GalMidBrnch	GalMidBrnch	1.5371	PF 1	2124.00	2581.37	2587.34	2587.34	2587.70	0.002750	6.43	626.78	473.52	0.49
GalMidBrnch	GalMidBrnch	1.5371	PF 2	2124.00	2581.37	2587.91	2587.91	2588.88	0.004629	8.92	379.01	213.14	0.64
GalMidBrnch	GalMidBrnch	1.5177	PF 1	2124.00	2578.79	2584.71	2584.71	2585.21	0.004100	8.52	562.01	466.78	0.65
GalMidBrnch	GalMidBrnch	1.5177	PF 2	2124.00	2578.79	2585.29	2585.29	2586.21	0.005098	10.17	365.67	172.05	0.74
GalMidBrnch	GalMidBrnch	1.4952	PF 1	2124.00	2576.35	2581.75	2581.75	2582.45	0.007345	9.27	424.89	301.30	0.75
GalMidBrnch	GalMidBrnch	1.4952	PF 2	2124.00	2576.35	2581.79	2581.79	2583.35	0.013390	12.58	253.64	74.00	1.01
GalMidBrnch	GalMidBrnch	1.4639	PF 1	2124.00	2573.15	2578.24	2578.24	2578.90	0.004755	8.16	474.39	316.76	0.65
GalMidBrnch	GalMidBrnch	1.4639	PF 2	2124.00	2573.15	2578.57	2578.57	2579.90	0.006904	10.27	286.88	103.32	0.80
GalMidBrnch	GalMidBrnch	1.4317	PF 1	2153.00	2569.48	2573.67	2573.67	2574.36	0.006421	8.60	435.28	331.97	0.78
GalMidBrnch	GalMidBrnch	1.4317	PF 2	2153.00	2569.48	2574.22	2574.22	2575.36	0.008211	9.90	302.18	126.82	0.84
GalMidBrnch	GalMidBrnch	1.4056	PF 1	2153.00	2566.82	2570.55	2570.55	2571.18	0.008233	9.65	421.44	295.24	0.91
GalMidBrnch	GalMidBrnch	1.4056	PF 2	2153.00	2566.82	2571.08	2571.08	2572.19	0.010972	10.91	280.28	114.70	0.96
GalMidBrnch	GalMidBrnch	1.3816	PF 1	2153.00	2564.15	2567.77	2567.77	2568.50	0.008670	8.56	385.54	263.02	0.83
GalMidBrnch	GalMidBrnch	1.3816	PF 2	2153.00	2564.15	2568.37	2568.37	2569.50	0.010779	9.68	290.56	128.61	0.87
GalMidBrnch	GalMidBrnch	1.3579	PF 1	2153.00	2561.75	2565.15	2565.15	2565.82	0.009084	8.28	375.08	287.48	0.83
GalMidBrnch	GalMidBrnch	1.3579	PF 2	2153.00	2561.75	2565.91	2565.91	2566.82	0.010174	9.10	313.74	142.98	0.82
GalMidBrnch	GalMidBrnch	1.3323	PF 1	2153.00	2558.82	2562.27	2562.27	2562.97	0.009465	9.30	375.43	257.81	0.95
GalMidBrnch	GalMidBrnch	1.3323	PF 2	2153.00	2558.82	2562.85	2562.85	2563.94	0.010913	10.31	276.15	113.89	0.96
GalMidBrnch	GalMidBrnch	1.2985	PF 1	2153.00	2555.19	2558.94	2558.94	2559.58	0.011554	8.98	400.39	281.15	0.89
GalMidBrnch	GalMidBrnch	1.2985	PF 2	2153.00	2555.19	2559.48	2559.48	2560.58	0.014505	9.88	267.20	111.09	0.90

HEC-RAS Plan: Plan 04 (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)	
GalMidBrnch	GalMidBrnch	1.2690	PF 1	2153.00	2551.70	2555.13	2555.13	2555.65	0.009107	8.53	436.72	379.52	0.88
GalMidBrnch	GalMidBrnch	1.2690	PF 2	2153.00	2551.70	2555.73	2555.73	2556.64	0.011795	10.02	315.68	147.80	0.94
GalMidBrnch	GalMidBrnch	1.2355	PF 1	2153.00	2547.98	2551.21	2551.21	2551.74	0.008705	7.69	422.81	353.71	0.79
GalMidBrnch	GalMidBrnch	1.2355	PF 2	2153.00	2547.98	2551.48	2551.48	2552.72	0.013239	9.77	245.08	96.44	0.96
GalMidBrnch	GalMidBrnch	1.1974	PF 1	2153.00	2543.54	2546.81	2546.81	2547.44	0.009396	9.18	431.48	302.36	0.95
GalMidBrnch	GalMidBrnch	1.1974	PF 2	2153.00	2543.54	2547.33	2547.33	2548.44	0.011773	10.77	304.35	121.20	1.02
GalMidBrnch	GalMidBrnch	1.1895	PF 1	2153.00	2542.47	2545.45	2545.45	2546.06	0.004408	7.32	391.93	286.32	0.81
GalMidBrnch	GalMidBrnch	1.1895	PF 2	2153.00	2542.47	2545.70	2545.70	2546.50	0.004757	7.94	327.98	184.94	0.84
GalMidBrnch	GalMidBrnch	1.1825	PF 1	2153.00	2540.50	2543.69	2543.69	2544.48	0.010474	7.87	326.56	227.89	0.85
GalMidBrnch	GalMidBrnch	1.1825	PF 2	2153.00	2540.50	2544.64	2544.64	2545.35	0.009111	8.98	406.70	250.00	0.83
GalMidBrnch	GalMidBrnch	1.1546	PF 1	2153.00	2536.89	2539.25	2539.25	2540.15	0.008025	6.01	293.63	161.12	0.77
GalMidBrnch	GalMidBrnch	1.1546	PF 2	2153.00	2536.89	2539.37	2539.24	2540.17	0.006871	5.74	306.54	159.41	0.71
GalMidBrnch	GalMidBrnch	1.1118	PF 1	2153.00	2531.28	2534.97	2534.97	2536.23	0.010555	9.38	249.79	107.69	0.91
GalMidBrnch	GalMidBrnch	1.1118	PF 2	2153.00	2531.28	2535.08	2535.08	2537.30	0.020030	12.93	188.45	66.99	1.23
GalMidBrnch	GalMidBrnch	1.0780	PF 1	2153.00	2527.09	2532.01	2532.01	2533.22	0.006830	10.83	355.07	229.49	0.87
GalMidBrnch	GalMidBrnch	1.0780	PF 2	2153.00	2527.09	2532.53	2532.53	2534.13	0.006774	11.54	265.75	79.85	0.88
GalMidBrnch	GalMidBrnch	1.0256	PF 1	2153.00	2520.57	2524.78	2524.78	2525.68	0.007505	8.67	358.53	206.02	0.78
GalMidBrnch	GalMidBrnch	1.0256	PF 2	2153.00	2520.57	2524.81	2524.81	2526.67	0.013410	11.15	203.79	55.97	1.00
GalMidBrnch	GalMidBrnch	0.9784	PF 1	2153.00	2515.03	2519.32	2519.32	2520.30	0.007729	9.53	350.32	186.00	0.83
GalMidBrnch	GalMidBrnch	0.9784	PF 2	2153.00	2515.03	2519.66	2519.66	2521.30	0.011284	11.18	243.47	70.76	0.94
GalMidBrnch	GalMidBrnch	0.9552	PF 1	2153.00	2512.32	2516.30	2516.30	2516.99	0.008227	8.37	404.78	246.95	0.79
GalMidBrnch	GalMidBrnch	0.9552	PF 2	2153.00	2512.32	2516.51	2516.51	2517.99	0.013896	10.79	241.06	80.14	0.99
GalMidBrnch	GalMidBrnch	0.9366	PF 1	2153.00	2510.27	2513.66	2513.66	2514.41	0.008138	8.58	391.12	243.83	0.86
GalMidBrnch	GalMidBrnch	0.9366	PF 2	2153.00	2510.27	2513.95	2513.95	2515.41	0.011807	10.52	238.67	81.33	1.01
GalMidBrnch	GalMidBrnch	0.9152	PF 1	2179.00	2507.69	2510.67	2510.67	2511.45	0.015184	9.54	346.23	220.12	1.03
GalMidBrnch	GalMidBrnch	0.9152	PF 2	2179.00	2507.69	2511.08	2511.08	2512.44	0.020156	11.29	249.02	88.44	1.13
GalMidBrnch	GalMidBrnch	0.8808	PF 1	2179.00	2503.45	2506.43	2506.43	2507.43	0.010644	9.23	323.04	168.99	0.99
GalMidBrnch	GalMidBrnch	0.8808	PF 2	2179.00	2503.45	2506.91	2506.91	2508.42	0.011444	10.67	235.66	77.84	1.06
GalMidBrnch	GalMidBrnch	0.8441	PF 1	2179.00	2499.39	2501.84	2501.84	2502.60	0.017026	7.56	317.45	209.66	0.92
GalMidBrnch	GalMidBrnch	0.8441	PF 2	2179.00	2499.39	2502.32	2502.32	2503.54	0.018456	9.03	247.99	102.22	0.99
GalMidBrnch	GalMidBrnch	0.8041	PF 1	2179.00	2495.04	2496.89	2496.89	2497.44	0.019845	6.80	377.21	341.33	0.94
GalMidBrnch	GalMidBrnch	0.8041	PF 2	2179.00	2495.04	2497.40	2497.40	2498.34	0.021721	8.48	289.78	152.54	1.02
GalMidBrnch	GalMidBrnch	0.7560	PF 1	2179.00	2488.45	2491.34	2491.34	2492.11	0.010414	7.84	343.40	215.86	0.88
GalMidBrnch	GalMidBrnch	0.7560	PF 2	2179.00	2488.45	2491.39	2491.39	2492.31	0.011254	8.21	291.62	150.08	0.92
GalMidBrnch	GalMidBrnch	0.7272	PF 1	2179.00	2485.06	2487.63	2487.63	2488.43	0.011484	8.31	374.14	233.55	1.00
GalMidBrnch	GalMidBrnch	0.7272	PF 2	2179.00	2485.06	2488.09	2488.09	2489.43	0.011643	9.45	239.92	91.36	1.03
GalMidBrnch	GalMidBrnch	0.6777	PF 1	2179.00	2478.27	2481.71	2481.71	2482.48	0.010586	7.84	376.21	227.47	0.79
GalMidBrnch	GalMidBrnch	0.6777	PF 2	2179.00	2478.27	2481.71	2481.71	2483.26	0.017892	10.00	217.83	71.11	1.01
GalMidBrnch	GalMidBrnch	0.6468	PF 1	2204.00	2474.84	2477.93	2477.93	2478.82	0.011727	8.44	313.34	175.46	0.89
GalMidBrnch	GalMidBrnch	0.6468	PF 2	2204.00	2474.84	2478.34	2478.34	2479.82	0.014677	10.00	236.60	80.11	0.99
GalMidBrnch	GalMidBrnch	0.5954	PF 1	2204.00	2468.87	2472.24	2472.24	2473.06	0.005773	8.36	383.26	227.51	0.84
GalMidBrnch	GalMidBrnch	0.5954	PF 2	2204.00	2468.87	2472.47	2472.47	2474.05	0.008104	10.30	221.05	70.32	0.99
GalMidBrnch	GalMidBrnch	0.5644	PF 1	2204.00	2465.68	2468.70	2468.70	2469.47	0.007009	8.20	386.97	235.96	0.86
GalMidBrnch	GalMidBrnch	0.5644	PF 2	2204.00	2465.68	2468.97	2468.97	2470.47	0.009569	10.07	228.81	77.03	1.01
GalMidBrnch	GalMidBrnch	0.5272	PF 1	2210.00	2461.15	2464.27	2464.27	2464.97	0.005383	8.72	369.77	278.38	0.89
GalMidBrnch	GalMidBrnch	0.5272	PF 2	2210.00	2461.15	2464.49	2464.49	2465.97	0.007055	10.05	226.38	76.90	0.99
GalMidBrnch	GalMidBrnch	0.5212	PF 1	2210.00	2460.68	2463.79	2463.79	2464.54	0.004677	8.24	412.18	279.95	0.85
GalMidBrnch	GalMidBrnch	0.5212	PF 2	2210.00	2460.68	2464.03	2464.03	2465.54	0.006905	10.23	228.46	76.27	1.02
GalMidBrnch	GalMidBrnch	0.5157	PF 1	2210.00	2459.51	2463.25	2463.25	2463.97	0.004939	8.47	406.49	272.57	0.85
GalMidBrnch	GalMidBrnch	0.5157	PF 2	2210.00	2459.51	2463.49	2463.49	2464.97	0.007064	10.22	229.44	76.60	0.98
GalMidBrnch	GalMidBrnch	0.5006	PF 1	2210.00	2455.77	2459.60	2459.60	2460.82	0.007227	10.05	265.21	109.74	0.97
GalMidBrnch	GalMidBrnch	0.5006	PF 2	2210.00	2455.77	2460.14	2460.14	2461.82	0.008056	11.21	228.30	66.31	1.00
GalMidBrnch	GalMidBrnch	0.4858	PF 1	2210.00	2453.67	2458.26	2458.26	2459.30	0.005856	10.91	292.06	146.21	0.91
GalMidBrnch	GalMidBrnch	0.4858	PF 2	2210.00	2453.67	2458.45	2458.45	2460.30	0.008673	11.36	202.91	53.51	0.93
GalMidBrnch	GalMidBrnch	0.4697	PF 1	2210.00	2451.85	2455.57	2455.57	2457.11	0.009183	10.10	230.80	81.81	0.97
GalMidBrnch	GalMidBrnch	0.4697	PF 2	2210.00	2451.85	2455.57	2455.57	2457.28	0.010763	10.48	210.86	62.57	1.01
GalMidBrnch	GalMidBrnch	0.4428	PF 1	2210.00	2448.91	2452.44	2452.44	2453.83	0.007632	9.65	247.63	97.55	0.97
GalMidBrnch	GalMidBrnch	0.4428	PF 2	2210.00	2448.91	2452.46	2452.46	2454.03	0.009079	10.03	220.34	71.24	1.01
GalMidBrnch	GalMidBrnch	0.4243	PF 1	2210.00	2446.72	2450.23	2450.23	2451.51	0.006884	9.28	256.07	111.37	0.93
GalMidBrnch	GalMidBrnch	0.4243	PF 2	2210.00	2446.72	2450.19	2450.19	2451.71	0.008527	9.90	223.21	73.38	1.00

HEC-RAS Plan: Plan 04 (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)	
GalMidBrnch	GalMidBrnch	0.4037	PF 1	2210.00	2444.21	2448.12	2448.12	2449.25	0.005362	9.25	293.79	138.28	0.85
GalMidBrnch	GalMidBrnch	0.4037	PF 2	2210.00	2444.21	2448.07	2448.07	2449.82	0.008050	10.82	210.20	60.38	1.00
GalMidBrnch	GalMidBrnch	0.3785	PF 1	2210.00	2441.02	2445.02	2445.02	2446.37	0.005812	9.70	265.06	137.52	0.89
GalMidBrnch	GalMidBrnch	0.3785	PF 2	2210.00	2441.02	2444.94	2444.94	2446.75	0.008417	10.79	204.75	56.00	0.99
GalMidBrnch	GalMidBrnch	0.3517	PF 1	2210.00	2437.57	2442.41	2442.41	2443.41	0.004386	9.67	360.80	172.76	0.79
GalMidBrnch	GalMidBrnch	0.3517	PF 2	2210.00	2437.57	2442.37	2442.37	2444.28	0.006800	11.97	212.36	55.11	0.99
GalMidBrnch	GalMidBrnch Comb	0.3065	PF 1	2423.00	2432.26	2436.66	2436.66	2438.05	0.008081	9.78	278.58	105.10	0.90
GalMidBrnch	GalMidBrnch Comb	0.3065	PF 2	2423.00	2432.26	2436.62	2436.62	2438.22	0.009854	10.32	245.43	75.47	0.95
GalMidBrnch	GalMidBrnch Comb	0.2629	PF 1	2423.00	2427.19	2430.38	2430.38	2431.86	0.007989	9.84	255.16	89.92	0.99
GalMidBrnch	GalMidBrnch Comb	0.2629	PF 2	2423.00	2427.19	2430.40	2430.40	2431.95	0.008661	10.01	242.17	78.57	1.00
GalMidBrnch	GalMidBrnch Comb	0.2268	PF 1	2423.00	2422.93	2426.94	2426.94	2428.71	0.007551	10.78	237.96	72.32	0.98
GalMidBrnch	GalMidBrnch Comb	0.2268	PF 2	2423.00	2422.93	2426.92	2426.92	2428.82	0.009911	11.06	219.07	58.22	1.00
GalMidBrnch	GalMidBrnch Comb	0.2090	PF 1	2423.00	2420.80	2424.87	2424.87	2426.62	0.009713	10.76	236.90	71.78	0.99
GalMidBrnch	GalMidBrnch Comb	0.2090	PF 2	2423.00	2420.80	2424.90	2424.90	2426.79	0.012455	11.02	219.78	58.91	1.01
GalMidBrnch	GalMidBrnch Comb	0.1766	PF 1	2423.00	2417.18	2421.55	2421.55	2423.64	0.009427	12.00	231.87	82.91	1.03
GalMidBrnch	GalMidBrnch Comb	0.1766	PF 2	2423.00	2417.18	2421.87	2421.87	2424.11	0.012290	12.00	201.95	44.55	0.99
GalMidBrnch	GalMidBrnch Comb	0.1637	PF 1	2423.00	2415.58	2419.93	2419.93	2421.71	0.007282	10.95	244.49	79.85	0.95
GalMidBrnch	GalMidBrnch Comb	0.1637	PF 2	2423.00	2415.58	2419.93	2419.93	2421.98	0.011237	11.50	210.71	50.59	0.99
GalMidBrnch	GalMidBrnch Comb	0.1462	PF 1	2423.00	2413.41	2417.32	2417.32	2419.00	0.008041	10.55	244.31	80.93	0.98
GalMidBrnch	GalMidBrnch Comb	0.1462	PF 2	2423.00	2413.41	2417.30	2417.30	2419.12	0.008542	10.84	227.64	64.08	1.01
GalMidBrnch	GalMidBrnch Comb	0.1223	PF 1	2423.00	2411.08	2414.89	2414.89	2416.37	0.006574	10.02	279.69	136.76	0.91
GalMidBrnch	GalMidBrnch Comb	0.1223	PF 2	2423.00	2411.08	2414.82	2414.82	2416.63	0.009718	10.81	224.17	60.80	0.99
GalMidBrnch	GalMidBrnch Comb	0.1024	PF 1	2423.00	2408.13	2411.49	2411.49	2413.01	0.008544	9.94	252.52	94.01	0.98
GalMidBrnch	GalMidBrnch Comb	0.1024	PF 2	2423.00	2408.13	2411.44	2411.44	2413.05	0.010113	10.18	237.96	74.75	1.01
GalMidBrnch	GalMidBrnch Comb	0.0806	PF 1	2423.00	2405.19	2408.73	2408.73	2410.31	0.008256	10.18	249.57	85.50	0.98
GalMidBrnch	GalMidBrnch Comb	0.0806	PF 2	2423.00	2405.19	2408.73	2408.73	2410.31	0.008277	10.19	249.36	85.47	0.98
GalMidBrnch	GalMidBrnch Comb	0.0643	PF 1	2423.00	2403.36	2406.96	2406.96	2408.41	0.008597	9.78	263.37	99.46	0.98
GalMidBrnch	GalMidBrnch Comb	0.0643	PF 2	2423.00	2403.36	2406.96	2406.96	2408.53	0.009387	10.06	240.89	77.50	1.01
GalMidBrnch	GalMidBrnch Comb	0.0415	PF 1	2423.00	2400.67	2404.07	2404.07	2405.47	0.008815	9.72	271.05	105.11	0.96
GalMidBrnch	GalMidBrnch Comb	0.0415	PF 2	2423.00	2400.67	2404.13	2404.13	2405.47	0.008180	9.50	278.06	105.10	0.93
GalMidBrnch	GalMidBrnch Comb	0.0164	PF 1	2423.00	2397.05	2400.03	2400.03	2401.17	0.009119	8.63	290.96	134.73	1.00
GalMidBrnch	GalMidBrnch Comb	0.0164	PF 2	2423.00	2397.05	2400.03	2400.03	2401.22	0.009970	8.74	277.24	118.57	1.01
GalMidBrnch	GalMidBrnch Comb	0.0000	PF 1	2423.00	2395.43	2398.16	2398.16	2399.35	0.008483	8.80	280.39	122.20	0.99
GalMidBrnch	GalMidBrnch Comb	0.0000	PF 2	2423.00	2395.43	2398.17	2398.17	2399.38	0.008656	8.82	274.66	111.97	0.99

HEC-RAS Plan: Plan 04

River	Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
GalMidBrnch Trib	GalMidBrnch Trib	0.2762	PF 1	2466.93	2466.42	0.51	1.43	0.05	1.51	195.81	11.67	58.93
GalMidBrnch Trib	GalMidBrnch Trib	0.2762	PF 2	2467.03	2466.33	0.70	1.55	0.10		209.00		22.46
GalMidBrnch Trib	GalMidBrnch Trib	0.2568	PF 1	2464.63	2464.30	0.34	0.90	0.04	4.67	176.06	28.27	80.22
GalMidBrnch Trib	GalMidBrnch Trib	0.2568	PF 2	2464.86	2464.49	0.37	0.98	0.03		209.00		38.97
GalMidBrnch Trib	GalMidBrnch Trib	0.2437	PF 1	2462.85	2462.65	0.20	3.58	0.01	121.57	76.06	11.37	113.62
GalMidBrnch Trib	GalMidBrnch Trib	0.2437	PF 2	2463.85	2463.20	0.66	3.78	0.09	44.54	164.46		25.15
GalMidBrnch Trib	GalMidBrnch Trib	0.2045	PF 1	2459.27	2458.98	0.29	2.42	0.00		118.28	109.72	94.85
GalMidBrnch Trib	GalMidBrnch Trib	0.2045	PF 2	2459.68	2459.33	0.35	2.62	0.03		228.00		55.95
GalMidBrnch Trib	GalMidBrnch Trib	0.1760	PF 1	2456.03	2455.75	0.28	1.48	0.01	0.17	52.28	175.55	101.06
GalMidBrnch Trib	GalMidBrnch Trib	0.1760	PF 2	2457.03	2456.37	0.65	1.60	0.10		137.32	90.68	27.61
GalMidBrnch Trib	GalMidBrnch Trib	0.1568	PF 1	2454.07	2453.81	0.26	2.36	0.00	0.69	106.72	120.59	103.13
GalMidBrnch Trib	GalMidBrnch Trib	0.1568	PF 2	2454.69	2454.24	0.46	2.35	0.08		228.00		39.85
GalMidBrnch Trib	GalMidBrnch Trib	0.1295	PF 1	2451.26	2451.00	0.26	1.30	0.02	35.02	100.77	92.20	115.36
GalMidBrnch Trib	GalMidBrnch Trib	0.1295	PF 2	2452.26	2451.55	0.71	1.72	0.02		212.44	15.56	24.97
GalMidBrnch Trib	GalMidBrnch Trib	0.1105	PF 1	2449.54	2449.20	0.34	0.71	0.01	3.15	119.10	105.76	77.89
GalMidBrnch Trib	GalMidBrnch Trib	0.1105	PF 2	2450.48	2449.70	0.78	0.34	0.16		228.00		20.77
GalMidBrnch Trib	GalMidBrnch Trib	0.1010	PF 1	2448.80	2448.40	0.40	0.40	0.01	4.88	240.93	1.19	67.36
GalMidBrnch Trib	GalMidBrnch Trib	0.1010	PF 2	2448.94	2448.69	0.25	0.21	0.06		247.00		50.34
GalMidBrnch Trib	GalMidBrnch Trib	0.0954	PF 1	2448.13	2447.75	0.38	1.07	0.02	62.59	178.96	5.45	80.12
GalMidBrnch Trib	GalMidBrnch Trib	0.0954	PF 2	2448.67	2447.86	0.81	1.49	0.12		247.00		21.34
GalMidBrnch Trib	GalMidBrnch Trib	0.0792	PF 1	2445.23	2444.93	0.30	2.05	0.01	6.81	190.52	49.67	102.80
GalMidBrnch Trib	GalMidBrnch Trib	0.0792	PF 2	2445.43	2445.01	0.43	1.09	0.09		232.21	14.79	57.32
GalMidBrnch Trib	GalMidBrnch Trib	0.0439	PF 1	2440.08	2439.81	0.27	1.91	0.11	0.17	246.46	0.38	56.27
GalMidBrnch Trib	GalMidBrnch Trib	0.0439	PF 2	2440.37	2440.23	0.14	2.01	0.15		246.96	0.04	52.74
GalMidBrnch	GalMidBrnch	1.6862	PF 1	2613.59	2612.78	0.81	0.79	0.09	981.99	1107.39	4.61	195.56
GalMidBrnch	GalMidBrnch	1.6862	PF 2	2614.59	2613.20	1.39	0.92	0.17	669.41	1424.59		84.31
GalMidBrnch	GalMidBrnch	1.6631	PF 1	2608.92	2608.41	0.51	0.47	0.03	1365.53	728.47		378.37
GalMidBrnch	GalMidBrnch	1.6631	PF 2	2609.92	2609.08	0.84	0.49	0.04	1122.91	971.09		172.41
GalMidBrnch	GalMidBrnch	1.6502	PF 1	2606.36	2605.94	0.42	0.30	0.01	1500.85	593.15		511.36
GalMidBrnch	GalMidBrnch	1.6502	PF 2	2607.35	2606.65	0.70	0.39	0.02	1289.34	804.66		222.63
GalMidBrnch	GalMidBrnch	1.6346	PF 1	2603.95	2603.47	0.48	0.43	0.01	1070.86	928.27	94.87	544.81
GalMidBrnch	GalMidBrnch	1.6346	PF 2	2604.94	2604.01	0.93	0.55	0.02	848.19	1245.81		162.75
GalMidBrnch	GalMidBrnch	1.6190	PF 1	2600.55	2599.95	0.60	1.32	0.03	905.96	1184.45	3.59	387.81
GalMidBrnch	GalMidBrnch	1.6190	PF 2	2601.55	2600.45	1.11	1.11	0.02	432.57	1661.43		117.22
GalMidBrnch	GalMidBrnch	1.6060	PF 1	2597.24	2596.35	0.89	1.11	0.18	1795.80	298.20		152.71
GalMidBrnch	GalMidBrnch	1.6060	PF 2	2598.24	2597.22	1.02	0.99	0.18	1366.89	727.11		126.78
GalMidBrnch	GalMidBrnch	1.5884	PF 1	2594.02	2593.49	0.53	1.16	0.19	930.81	16.24	1176.95	372.76
GalMidBrnch	GalMidBrnch	1.5884	PF 2	2594.96	2594.31	0.65	1.22	0.22	846.79	190.59	1086.62	264.48
GalMidBrnch	GalMidBrnch	1.5702	PF 1	2591.61	2590.43	1.17	0.85	0.41	35.58	1965.53	122.89	147.53
GalMidBrnch	GalMidBrnch	1.5702	PF 2	2591.81	2590.44	1.37	1.22	0.20	38.21	2079.92	5.87	104.90
GalMidBrnch	GalMidBrnch	1.5371	PF 1	2587.70	2587.34	0.36	0.34	0.04	522.58	1043.12	558.30	473.52
GalMidBrnch	GalMidBrnch	1.5371	PF 2	2588.88	2587.91	0.96	0.50	0.02	222.24	1599.37	302.39	213.14
GalMidBrnch	GalMidBrnch	1.5177	PF 1	2585.21	2584.71	0.50	0.64	0.02	555.75	755.27	812.98	466.78
GalMidBrnch	GalMidBrnch	1.5177	PF 2	2586.21	2585.29	0.92	0.93	0.06	355.56	998.44	770.00	172.05
GalMidBrnch	GalMidBrnch	1.4952	PF 1	2582.45	2581.75	0.70	0.97	0.02	293.89	792.44	1037.67	301.30
GalMidBrnch	GalMidBrnch	1.4952	PF 2	2583.35	2581.79	1.56	1.55	0.12	75.74	1084.25	964.01	74.00
GalMidBrnch	GalMidBrnch	1.4639	PF 1	2578.90	2578.24	0.66	0.94	0.01	592.83	1232.55	298.62	316.76
GalMidBrnch	GalMidBrnch	1.4639	PF 2	2579.90	2578.57	1.33	1.30	0.09	439.77	1658.73	25.50	103.32
GalMidBrnch	GalMidBrnch	1.4317	PF 1	2574.36	2573.67	0.69	1.00	0.03	307.63	1123.32	722.05	331.97
GalMidBrnch	GalMidBrnch	1.4317	PF 2	2575.36	2574.22	1.14	1.30	0.01		1482.85	670.15	126.82
GalMidBrnch	GalMidBrnch	1.4056	PF 1	2571.18	2570.55	0.63	1.07	0.01	210.71	640.67	1301.62	295.24
GalMidBrnch	GalMidBrnch	1.4056	PF 2	2572.19	2571.08	1.11	1.38	0.00		833.77	1319.24	114.70
GalMidBrnch	GalMidBrnch	1.3816	PF 1	2568.50	2567.77	0.73	1.11	0.02	114.01	1149.16	889.83	263.02
GalMidBrnch	GalMidBrnch	1.3816	PF 2	2569.50	2568.37	1.13	1.31	0.07		1533.81	619.19	128.61
GalMidBrnch	GalMidBrnch	1.3579	PF 1	2565.82	2565.15	0.67	1.25	0.00	123.66	889.78	1139.56	287.48
GalMidBrnch	GalMidBrnch	1.3579	PF 2	2566.82	2565.91	0.91	1.42	0.02		1221.44	931.56	142.98

HEC-RAS Plan: Plan 04 (Continued)

River	Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
GalMidBrnch	GalMidBrnch	1.3323	PF 1	2562.97	2562.27	0.69	1.68	0.02	114.85	672.26	1365.89	257.81
GalMidBrnch	GalMidBrnch	1.3323	PF 2	2563.94	2562.85	1.09	2.01	0.00		889.49	1263.51	113.89
GalMidBrnch	GalMidBrnch	1.2985	PF 1	2559.58	2558.94	0.63	1.59	0.04	154.67	731.01	1267.32	281.15
GalMidBrnch	GalMidBrnch	1.2985	PF 2	2560.58	2559.48	1.10	2.03	0.06		940.63	1212.37	111.09
GalMidBrnch	GalMidBrnch	1.2690	PF 1	2555.65	2555.13	0.52	1.60	0.00	193.77	595.22	1364.01	379.52
GalMidBrnch	GalMidBrnch	1.2690	PF 2	2556.64	2555.73	0.91	2.24	0.03		841.78	1311.22	147.80
GalMidBrnch	GalMidBrnch	1.2355	PF 1	2551.74	2551.21	0.53	1.77	0.01	19.07	877.11	1256.82	353.71
GalMidBrnch	GalMidBrnch	1.2355	PF 2	2552.72	2551.48	1.25	2.46	0.04		1216.28	936.72	96.44
GalMidBrnch	GalMidBrnch	1.1974	PF 1	2547.44	2546.81	0.63	0.25	0.01	49.08	772.48	1331.44	302.36
GalMidBrnch	GalMidBrnch	1.1974	PF 2	2548.44	2547.33	1.11	0.29	0.09		1066.31	1086.69	121.20
GalMidBrnch	GalMidBrnch	1.1895	PF 1	2546.06	2545.45	0.60	0.24	0.02	62.74	1324.40	765.86	286.32
GalMidBrnch	GalMidBrnch	1.1895	PF 2	2546.50	2545.70	0.80	0.24	0.03		1580.20	572.80	184.94
GalMidBrnch	GalMidBrnch	1.1825	PF 1	2544.48	2543.69	0.78	1.35	0.03	89.22	639.69	1424.09	227.89
GalMidBrnch	GalMidBrnch	1.1825	PF 2	2545.35	2544.64	0.70	1.16	0.03	221.17	988.09	943.74	250.00
GalMidBrnch	GalMidBrnch	1.1546	PF 1	2540.15	2539.25	0.90	2.05	0.11	9.81	504.47	1638.73	161.12
GalMidBrnch	GalMidBrnch	1.1546	PF 2	2540.17	2539.37	0.80	2.45	0.43		512.24	1640.76	159.41
GalMidBrnch	GalMidBrnch	1.1118	PF 1	2536.23	2534.97	1.26	1.50	0.02	51.84	1114.25	986.91	107.69
GalMidBrnch	GalMidBrnch	1.1118	PF 2	2537.30	2535.08	2.22	1.94	0.30		1588.86	564.14	66.99
GalMidBrnch	GalMidBrnch	1.0780	PF 1	2533.22	2532.01	1.21	1.98	0.09	718.88	1345.42	88.70	229.49
GalMidBrnch	GalMidBrnch	1.0780	PF 2	2534.13	2532.53	1.61	2.56	0.03	438.64	1588.58	125.78	79.85
GalMidBrnch	GalMidBrnch	1.0256	PF 1	2525.68	2524.78	0.91	1.89	0.01	490.49	1596.93	65.58	206.02
GalMidBrnch	GalMidBrnch	1.0256	PF 2	2526.67	2524.81	1.87	3.05	0.07	83.43	2069.57		55.97
GalMidBrnch	GalMidBrnch	0.9784	PF 1	2520.30	2519.32	0.98	1.14	0.09	640.00	1376.78	136.22	186.00
GalMidBrnch	GalMidBrnch	0.9784	PF 2	2521.30	2519.66	1.64	1.69	0.05	404.41	1748.59		70.76
GalMidBrnch	GalMidBrnch	0.9552	PF 1	2516.99	2516.30	0.69	0.82	0.01	950.29	1168.89	33.82	246.95
GalMidBrnch	GalMidBrnch	0.9552	PF 2	2517.99	2516.51	1.48	1.27	0.01	556.99	1596.01		80.14
GalMidBrnch	GalMidBrnch	0.9366	PF 1	2514.41	2513.66	0.75	1.23	0.00	804.15	1247.54	101.31	243.83
GalMidBrnch	GalMidBrnch	0.9366	PF 2	2515.41	2513.95	1.46	1.72	0.03	481.66	1671.34		81.33
GalMidBrnch	GalMidBrnch	0.9152	PF 1	2511.45	2510.67	0.78	2.25	0.02	1272.68	715.30	191.02	220.12
GalMidBrnch	GalMidBrnch	0.9152	PF 2	2512.44	2511.08	1.36	2.66	0.02	1201.87	977.13		88.44
GalMidBrnch	GalMidBrnch	0.8808	PF 1	2507.43	2506.43	0.99	2.65	0.07	646.09	1078.89	454.02	168.99
GalMidBrnch	GalMidBrnch	0.8808	PF 2	2508.42	2506.91	1.51	2.75	0.09	494.74	1470.51	213.75	77.84
GalMidBrnch	GalMidBrnch	0.8441	PF 1	2502.60	2501.84	0.76	4.82	0.06	15.09	1351.84	812.07	209.66
GalMidBrnch	GalMidBrnch	0.8441	PF 2	2503.54	2502.32	1.22	4.55	0.08	35.19	1987.60	156.21	102.22
GalMidBrnch	GalMidBrnch	0.8041	PF 1	2497.44	2496.89	0.55	3.65	0.07	29.94	944.35	1204.71	341.33
GalMidBrnch	GalMidBrnch	0.8041	PF 2	2498.34	2497.40	0.95	3.80	0.02	78.78	1544.77	555.46	152.54
GalMidBrnch	GalMidBrnch	0.7560	PF 1	2492.11	2491.34	0.77	1.66	0.01	489.60	1511.31	178.10	215.86
GalMidBrnch	GalMidBrnch	0.7560	PF 2	2492.31	2491.39	0.92	1.74	0.13	559.78	1619.22		150.08
GalMidBrnch	GalMidBrnch	0.7272	PF 1	2488.43	2487.63	0.80	2.61	0.01	0.69	1502.11	676.21	233.55
GalMidBrnch	GalMidBrnch	0.7272	PF 2	2489.43	2488.09	1.34	3.70	0.02		2073.59	105.41	91.36
GalMidBrnch	GalMidBrnch	0.6777	PF 1	2482.48	2481.71	0.78	1.79	0.01	1.72	1707.09	470.19	227.47
GalMidBrnch	GalMidBrnch	0.6777	PF 2	2483.26	2481.71	1.55	2.63	0.02		2179.00		71.11
GalMidBrnch	GalMidBrnch	0.6468	PF 1	2478.82	2477.93	0.89	2.17	0.02	3.16	1523.86	676.98	175.46
GalMidBrnch	GalMidBrnch	0.6468	PF 2	2479.82	2478.34	1.48	2.90	0.01		2075.69	128.31	80.11
GalMidBrnch	GalMidBrnch	0.5954	PF 1	2473.06	2472.24	0.82	1.00	0.01	598.67	1537.84	67.49	227.51
GalMidBrnch	GalMidBrnch	0.5954	PF 2	2474.05	2472.47	1.58	1.41	0.02	172.60	2031.41		70.32
GalMidBrnch	GalMidBrnch	0.5644	PF 1	2469.47	2468.70	0.78	1.09	0.02	441.05	1518.01	244.94	235.96
GalMidBrnch	GalMidBrnch	0.5644	PF 2	2470.47	2468.97	1.50	1.48	0.01	160.31	2043.69		77.03
GalMidBrnch	GalMidBrnch	0.5272	PF 1	2464.97	2464.27	0.71	0.16	0.00	1083.18	919.63	207.19	278.38
GalMidBrnch	GalMidBrnch	0.5272	PF 2	2465.97	2464.49	1.48	0.22	0.00	1069.75	1140.25		76.90
GalMidBrnch	GalMidBrnch	0.5212	PF 1	2464.54	2463.79	0.74	0.14	0.01	626.87	1402.20	180.94	279.95
GalMidBrnch	GalMidBrnch	0.5212	PF 2	2465.54	2464.03	1.51	0.20	0.02	329.84	1880.16		76.27
GalMidBrnch	GalMidBrnch	0.5157	PF 1	2463.97	2463.25	0.72	0.47	0.15	857.20	1228.84	123.96	272.57
GalMidBrnch	GalMidBrnch	0.5157	PF 2	2464.97	2463.49	1.47	0.60	0.06	612.25	1597.75		76.60
GalMidBrnch	GalMidBrnch	0.5006	PF 1	2460.82	2459.60	1.22	0.50	0.09	813.22	1355.19	41.60	109.74
GalMidBrnch	GalMidBrnch	0.5006	PF 2	2461.82	2460.14	1.68	0.64	0.05	454.40	1755.60		66.31

HEC-RAS Plan: Plan 04 (Continued)

River	Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
GalMidBrnch	GalMidBrnch	0.4858	PF 1	2459.30	2458.26	1.04	0.61	0.05	1508.39	633.38	68.23	146.21
GalMidBrnch	GalMidBrnch	0.4858	PF 2	2460.30	2458.45	1.85	0.81	0.04	1523.29	686.71		53.51
GalMidBrnch	GalMidBrnch	0.4697	PF 1	2457.11	2455.57	1.54	1.19	0.05	28.56	2128.16	53.28	81.81
GalMidBrnch	GalMidBrnch	0.4697	PF 2	2457.28	2455.57	1.71	1.40	0.04		2210.00		62.57
GalMidBrnch	GalMidBrnch	0.4428	PF 1	2453.83	2452.44	1.39	0.70	0.03	10.04	2110.66	89.29	97.55
GalMidBrnch	GalMidBrnch	0.4428	PF 2	2454.03	2452.46	1.56	0.86	0.01		2210.00		71.24
GalMidBrnch	GalMidBrnch	0.4243	PF 1	2451.51	2450.23	1.28	0.65	0.05	30.46	2099.86	79.68	111.37
GalMidBrnch	GalMidBrnch	0.4243	PF 2	2451.71	2450.19	1.52	0.90	0.02		2210.00		73.38
GalMidBrnch	GalMidBrnch	0.4037	PF 1	2449.25	2448.12	1.13	0.74	0.02	111.07	1791.59	307.34	138.28
GalMidBrnch	GalMidBrnch	0.4037	PF 2	2449.82	2448.07	1.76	1.10	0.01		2063.91	146.09	60.38
GalMidBrnch	GalMidBrnch	0.3785	PF 1	2446.37	2445.02	1.36	0.71	0.11	47.37	2025.80	136.83	137.52
GalMidBrnch	GalMidBrnch	0.3785	PF 2	2446.75	2444.94	1.81	1.07	0.01		2210.00		56.00
GalMidBrnch	GalMidBrnch	0.3517	PF 1	2443.41	2442.41	1.00	1.41	0.04	58.53	1397.10	754.37	172.76
GalMidBrnch	GalMidBrnch	0.3517	PF 2	2444.28	2442.37	1.91	1.95	0.09	70.78	1713.97	425.25	55.11
GalMidBrnch	GalMidBrnch Comb	0.3065	PF 1	2438.05	2436.66	1.39	1.85	0.01	30.63	2246.75	145.62	105.10
GalMidBrnch	GalMidBrnch Comb	0.3065	PF 2	2438.22	2436.62	1.61	2.13	0.02		2341.38	81.62	75.47
GalMidBrnch	GalMidBrnch Comb	0.2629	PF 1	2431.86	2430.38	1.48	1.48	0.03	25.35	2371.13	26.52	89.92
GalMidBrnch	GalMidBrnch Comb	0.2629	PF 2	2431.95	2430.40	1.55	1.76	0.03		2423.00		78.57
GalMidBrnch	GalMidBrnch Comb	0.2268	PF 1	2428.71	2426.94	1.77	0.80	0.01	34.49	2371.89	16.62	72.32
GalMidBrnch	GalMidBrnch Comb	0.2268	PF 2	2428.82	2426.92	1.90	1.04	0.00		2423.00		58.22
GalMidBrnch	GalMidBrnch Comb	0.2090	PF 1	2426.62	2424.87	1.75	1.64	0.03	18.54	2347.12	57.35	71.78
GalMidBrnch	GalMidBrnch Comb	0.2090	PF 2	2426.79	2424.90	1.89	2.12	0.03		2423.00		58.91
GalMidBrnch	GalMidBrnch Comb	0.1766	PF 1	2423.64	2421.55	2.09	0.57	0.09	31.80	2252.06	139.13	82.91
GalMidBrnch	GalMidBrnch Comb	0.1766	PF 2	2424.11	2421.87	2.24	0.80	0.05		2423.00		44.55
GalMidBrnch	GalMidBrnch Comb	0.1637	PF 1	2421.71	2419.93	1.78	0.71	0.03	34.97	2307.11	80.92	79.85
GalMidBrnch	GalMidBrnch Comb	0.1637	PF 2	2421.98	2419.93	2.05	0.90	0.07		2423.00		50.59
GalMidBrnch	GalMidBrnch Comb	0.1462	PF 1	2419.00	2417.32	1.68	0.91	0.06	29.72	2351.07	42.21	80.93
GalMidBrnch	GalMidBrnch Comb	0.1462	PF 2	2419.12	2417.30	1.81	1.14	0.00	2.24	2405.72	15.04	64.08
GalMidBrnch	GalMidBrnch Comb	0.1223	PF 1	2416.37	2414.89	1.48	0.79	0.00	68.86	2288.35	65.79	136.76
GalMidBrnch	GalMidBrnch Comb	0.1223	PF 2	2416.63	2414.82	1.81	1.05	0.06		2423.00		60.80
GalMidBrnch	GalMidBrnch Comb	0.1024	PF 1	2413.01	2411.49	1.52	0.97	0.01	14.33	2399.38	9.29	94.01
GalMidBrnch	GalMidBrnch Comb	0.1024	PF 2	2413.05	2411.44	1.61	1.05	0.01		2423.00		74.75
GalMidBrnch	GalMidBrnch Comb	0.0806	PF 1	2410.31	2408.73	1.58	0.72	0.04	26.38	2374.44	22.17	85.50
GalMidBrnch	GalMidBrnch Comb	0.0806	PF 2	2410.31	2408.73	1.58	0.76	0.00	26.35	2374.51	22.13	85.47
GalMidBrnch	GalMidBrnch Comb	0.0643	PF 1	2408.41	2406.96	1.45	1.05	0.01	44.08	2358.02	20.90	99.46
GalMidBrnch	GalMidBrnch Comb	0.0643	PF 2	2408.53	2406.96	1.57	1.06	0.07		2423.00		77.50
GalMidBrnch	GalMidBrnch Comb	0.0415	PF 1	2405.47	2404.07	1.41	1.19	0.08	21.62	2311.04	90.34	105.11
GalMidBrnch	GalMidBrnch Comb	0.0415	PF 2	2405.47	2404.13	1.34	1.19	0.05	22.90	2304.17	95.92	105.10
GalMidBrnch	GalMidBrnch Comb	0.0164	PF 1	2401.17	2400.03	1.14	0.76	0.01	26.46	2391.90	4.64	134.73
GalMidBrnch	GalMidBrnch Comb	0.0164	PF 2	2401.22	2400.03	1.19	0.80	0.00		2423.00		118.57
GalMidBrnch	GalMidBrnch Comb	0.0000	PF 1	2399.35	2398.16	1.19			2.15	2406.54	14.31	122.20
GalMidBrnch	GalMidBrnch Comb	0.0000	PF 2	2399.38	2398.17	1.21				2423.00		111.97

Eastern Pima Wash

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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

PROJECT DATA
Project Title: Eastern Pima Wash
Project File : PM_Final.prj
Run Date and Time: 04/19/2004 12:51:56 PM

Project in English units

Project Description:
Eastern Pima Road Wash
Leaves Town of Carefree at Section Corner between
sections 31/36/1/6, which is intersection of Pima Road and Stagecoach
Pass
Prepared by CH2M HILL for the Flood Control District of Maricopa
County
Contract No. FCD 2000C037.
Topographic Mapping Source: Flown and
Mapped by M&B Aerial, Flight Date: 8/2/2001
2' Contour Interval, Datum: NAD
83/NGVD29 from GDACS Control Network (established and maintained by
MCDOT).
Discharge information obtained from the Carefree Drainage Master Plan
Final Data Collection Report, dated November 2002.
Study Limits: Town of
Carefree boundary downstream, upstream limits are point where flow exceeds 50
cfs.
Discharge: 71 cfs @ R.S. 1.10178, 134 cfs @ R.S. 0.5548, 295 cfs @
0.2246, and 323 cfs @ 0.0069
Dip roadway crossings at R.S. 0.8111, 0.5494,
0.2757, and 0.2095
Final Model Run: April 2003

PLAN DATA

Plan Title: Plan 06
Plan File : c:\Carefree\HEC-RAS Files\Report 4-9-04\PM_Final.p06

Geometry Title: Eastern Pima Wash
Geometry File : c:\Carefree\HEC-RAS Files\Report 4-9-04\PM_Final.g01

Flow Title : Flow Data
Flow File : c:\Carefree\HEC-RAS Files\Report 4-9-04\PM_Final.f01

Plan Summary Information:

Number of:	Cross Sections =	51	Mulitple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information

```
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow


FLOW DATA

Flow Title: Flow Data
Flow File : c:\Carefree\HEC-RAS Files\Report 4-9-04\PM_Final.f01

Flow Data (cfs)

  River           Reach           RS                  PF 1
  Unnamed Eastern Pima            1.0178                71
  Unnamed Eastern Pima            0.5548               134
  Unnamed Eastern Pima            0.2246               295
  Unnamed Eastern Pima            0.0069               323


Boundary Conditions

  River           Reach           Profile                       Upstream                Downstream

  Unnamed Eastern Pima            PF 1                          Critical                Known WS = 2560.5


GEOMETRY DATA

Geometry Title: Eastern Pima Wash
Geometry File : c:\Carefree\HEC-RAS Files\Report 4-9-04\PM_Final.g01

CROSS SECTION


RIVER: Unnamed Eastern
REACH: Pima                RS: 1.0178

INPUT
Description: R.S. 1.0178, Farthest Upstream, Boundary Condition only
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2673.86     .32 2673.84    4.36 2673.43   15.17 2672.39   18.45 2672.09
   29.82  2669.1   38.79 2667.26   54.72 2663.67   65.71 2661.81    71.7 2662.18
   74.77 2662.11   81.26 2662.25    88.9 2660.78   90.65 2660.44   90.74 2660.42
   91.93 2660.19   93.01 2660.29    96.3 2660.65   97.17 2660.75  100.42 2661.55
  110.37 2664.15  124.27 2667.08   134.8 2668.33   141.4 2669.46  154.04 2671.31
  164.82 2674.47  165.58 2674.58   168.5 2674.94  177.47 2676.46  183.65 2676.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   81.26    .045   93.01     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          88.9    96.3            131.24  131.24  131.24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1

  E.G. Elev (ft)          2662.16    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.45    Wt. n-Val.                0.045      0.043      0.040
```

W.S. Elev (ft)	2661.71	Reach Len. (ft)	131.24	131.24	131.24
Crit W.S. (ft)	2661.71	Flow Area (sq ft)	2.23	9.36	2.73
E.G. Slope (ft/ft)	0.020909	Area (sq ft)	2.23	9.36	2.73
Q Total (cfs)	71.00	Flow (cfs)	6.31	54.66	10.03
Top Width (ft)	16.94	Top Width (ft)	4.82	7.40	4.72
Vel Total (ft/s)	4.96	Avg. Vel. (ft/s)	2.83	5.84	3.67
Max Chl Dpth (ft)	1.52	Hydr. Depth (ft)	0.46	1.26	0.58
Conv. Total (cfs)	491.0	Conv. (cfs)	43.6	378.0	69.3
Length Wtd. (ft)	131.24	Wetted Per. (ft)	4.91	7.48	4.84
Min Ch El (ft)	2660.19	Shear (lb/sq ft)	0.59	1.63	0.74
Alpha	1.18	Stream Power (lb/ft s)	1.68	9.54	2.70
Frctn Loss (ft)	2.71	Cum Volume (acre-ft)	0.85	1.76	1.70
C & E Loss (ft)	0.01	Cum SA (acres)	1.38	1.18	2.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	71.12	88.90	6.31	2.23	4.91	8.89	0.46	2.83
2	Chan	88.90	90.38	7.77	1.58	1.51	10.94	1.07	4.90
3	Chan	90.38	91.86	11.57	2.01	1.51	16.30	1.36	5.75
4	Chan	91.86	93.34	13.39	2.15	1.49	18.86	1.45	6.22
5	Chan	93.34	94.82	12.18	1.92	1.49	17.15	1.30	6.33
6	Chan	94.82	96.30	9.76	1.68	1.49	13.74	1.14	5.79
7	ROB	96.30	113.77	10.03	2.73	4.84	14.12	0.58	3.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.9929

INPUT
Description: R.S. 0.9929, Boundary Condition Only
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2674.58	9.67	2674.1	17.46	2673.85	22.34	2673.58	35.08	2672.19
40.02	2671.93	47.7	2670.91	59.16	2670.33	67.37	2669.86	79.31	2667.18
98.27	2662.59	114.44	2658.14	122.19	2656.38	123.2	2656.12	123.77	2655.97
124.58	2655.73	125.46	2655.9	126	2656.01	126.78	2656.16	127	2656.2
130.79	2656.87	141.07	2657.96	142.33	2658.06	146.99	2658.77	157.25	2660.07
161.16	2660.08	185.09	2663.44	185.57	2663.46	190.34	2663.93	206.76	2665.18
212.11	2665.58	221.68	2665.69						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	79.31	.058	122.19	.045	130.79	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
123.2	127	150	145.52	141	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2657.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.051	0.045	0.044
W.S. Elev (ft)	2657.50	Reach Len. (ft)	150.00	145.52	141.00
Crit W.S. (ft)	2657.50	Flow Area (sq ft)	4.01	5.87	5.50
E.G. Slope (ft/ft)	0.020457	Area (sq ft)	4.01	5.87	5.50
Q Total (cfs)	71.00	Flow (cfs)	13.47	36.38	21.15
Top Width (ft)	19.44	Top Width (ft)	5.93	3.80	9.71
Vel Total (ft/s)	4.62	Avg. Vel. (ft/s)	3.36	6.20	3.84
Max Chl Dpth (ft)	1.77	Hydr. Depth (ft)	0.68	1.54	0.57
Conv. Total (cfs)	496.4	Conv. (cfs)	94.2	254.4	147.9
Length Wtd. (ft)	145.22	Wetted Per. (ft)	6.09	3.90	9.80
Min Ch El (ft)	2655.73	Shear (lb/sq ft)	0.84	1.92	0.72
Alpha	1.23	Stream Power (lb/ft s)	2.83	11.92	2.76
Frctn Loss (ft)	3.11	Cum Volume (acre-ft)	0.84	1.73	1.69
C & E Loss (ft)	0.03	Cum SA (acres)	1.36	1.16	2.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	98.56	123.20	13.47	4.01	6.09	18.97	0.68	3.36
2	Chan	123.20	123.96	6.70	1.12	0.79	9.44	1.48	5.97
3	Chan	123.96	124.72	8.37	1.28	0.79	11.78	1.69	6.51
4	Chan	124.72	125.48	8.28	1.27	0.77	11.67	1.67	6.54
5	Chan	125.48	126.24	7.07	1.15	0.78	9.95	1.52	6.13
6	Chan	126.24	127.00	5.96	1.04	0.77	8.40	1.37	5.74
7	ROB	127.00	145.94	21.15	5.50	9.80	29.79	0.57	3.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.9653

INPUT
Description: R.S. 0.9653, Boundary Condition only
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2665.63	1.31	2665.71	15.09	2664.99	15.35	2664.98	28.07	2663.08
29.33	2662.86	41.73	2660.95	44.07	2660.5	46.96	2659.91	56.42	2658.04
66.82	2656.3	78.07	2652.83	83.8	2652.15	86.55	2651.83	86.96	2651.78
87.18	2651.8	87.53	2651.82	93	2652.24	102.07	2652.93	106.97	2653.33
120.7	2655.13	122.94	2655.46	127.24	2656.18	145.34	2658.69	145.63	2658.74
147.86	2659.18	170.25	2664.01	172.94	2664.37	185.33	2665.77		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	78.07	.045	102.07	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
83.8	93	214	214.56	220	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2653.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.045	0.045	0.045
W.S. Elev (ft)	2653.04	Reach Len. (ft)	214.00	214.56	220.00
Crit W.S. (ft)	2653.04	Flow Area (sq ft)	3.20	9.59	4.16
E.G. Slope (ft/ft)	0.022509	Area (sq ft)	3.20	9.59	4.16
Q Total (cfs)	71.00	Flow (cfs)	10.38	48.67	11.95
Top Width (ft)	25.96	Top Width (ft)	6.40	9.20	10.37
Vel Total (ft/s)	4.19	Avg. Vel. (ft/s)	3.25	5.08	2.87
Max Chl Dpth (ft)	1.26	Hydr. Depth (ft)	0.50	1.04	0.40
Conv. Total (cfs)	473.2	Conv. (cfs)	69.2	324.4	79.6
Length Wtd. (ft)	215.32	Wetted Per. (ft)	6.47	9.24	10.40
Min Ch El (ft)	2651.78	Shear (lb/sq ft)	0.69	1.46	0.56
Alpha	1.17	Stream Power (lb/ft s)	2.26	7.40	1.61
Frctn Loss (ft)	2.47	Cum Volume (acre-ft)	0.83	1.71	1.67
C & E Loss (ft)	0.04	Cum SA (acres)	1.34	1.14	2.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	67.04	83.80	10.38	3.20	6.47	14.62	0.50	3.25
2	Chan	83.80	85.64	8.91	1.83	1.85	12.54	0.99	4.87
3	Chan	85.64	87.48	12.11	2.20	1.85	17.06	1.19	5.51
4	Chan	87.48	89.32	11.39	2.11	1.85	16.04	1.15	5.39
5	Chan	89.32	91.16	9.15	1.85	1.85	12.89	1.01	4.94
6	Chan	91.16	93.00	7.12	1.59	1.85	10.02	0.87	4.46
7	ROB	93.00	111.47	11.95	4.16	10.40	16.82	0.40	2.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.9247

INPUT
Description: R.S. 0.9247
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2656.81	19.77	2656.87	39.32	2656.85	40.48	2656.77	42.47	2656.49
47.25	2655.48	51.98	2653.24	60.9	2650.49	81.08	2647.02	81.15	2647.02
82.35	2646.86	86.6	2646.26	89.61	2645.83	89.62	2645.83	90.89	2645.64
91.79	2645.82	92.9	2645.82	95	2646.2	105.3	2648.08	108.47	2648.42
128.47	2649.92	141.32	2650.88	155.59	2652.96	159.9	2653.7	177.43	2656
182.33	2656.56	199.93	2657.33	206.4	2657.44	207.79	2657.43		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	51.98	.04	81.15	.045	92.9	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
86.6	95	80	83.94	90	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2647.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.045	0.044	0.040
W.S. Elev (ft)	2647.48	Reach Len. (ft)	80.00	83.94	90.00
Crit W.S. (ft)		Flow Area (sq ft)	5.19	13.04	4.48
E.G. Slope (ft/ft)	0.006924	Area (sq ft)	5.19	13.04	4.48
Q Total (cfs)	71.00	Flow (cfs)	11.76	49.08	10.16
Top Width (ft)	23.59	Top Width (ft)	8.19	8.40	7.00
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)	2.26	3.76	2.27
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)	0.63	1.55	0.64
Conv. Total (cfs)	853.3	Conv. (cfs)	141.4	589.8	122.1
Length Wtd. (ft)	84.34	Wetted Per. (ft)	8.28	8.50	7.12
Min Ch El (ft)	2645.64	Shear (lb/sq ft)	0.27	0.66	0.27
Alpha	1.16	Stream Power (lb/ft s)	0.61	2.50	0.62
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	0.81	1.65	1.65
C & E Loss (ft)	0.03	Cum SA (acres)	1.30	1.09	2.53

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	69.28	86.60	11.76	5.19	8.28	16.57	0.63	2.26
2	Chan	86.60	88.28	7.42	2.25	1.70	10.45	1.34	3.30
3	Chan	88.28	89.96	9.76	2.65	1.70	13.75	1.58	3.68
4	Chan	89.96	91.64	11.74	2.97	1.71	16.54	1.77	3.96
5	Chan	91.64	93.32	10.87	2.77	1.69	15.30	1.65	3.92
6	Chan	93.32	95.00	9.29	2.40	1.71	13.08	1.43	3.86
7	ROB	95.00	117.56	10.16	4.48	7.12	14.31	0.64	2.27

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.9088

INPUT
Description: R.S. 0.9088
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2656.36	6.3	2656.04	21.43	2654.55	21.46	2654.54	21.47	2654.54
34.68	2653.38	39.46	2651.81	44.18	2650.37	57.7	2644.91	59.39	2644.23
61.01	2644.58	62.8	2644.96	71.37	2646.79	75.36	2646.69	82.41	2647.68
83.7	2647.71	99.51	2648	104.45	2648.24	107.42	2648.22	111.53	2648.83
130.24	2650.02	133.82	2650.38	154.1	2651.4	160.12	2651.68	170.92	2652.33
183.16	2652.85	189.36	2653.07						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	34.68	.04	59.39	.045	71.37	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
57.7	62.8	50.17	50.17	50.17	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2646.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.040	0.043	0.045
W.S. Elev (ft)	2646.19	Reach Len. (ft)	50.17	50.17	50.17

Crit W.S. (ft)	2646.19	Flow Area (sq ft)	2.03	8.17	3.54
E.G. Slope (ft/ft)	0.019416	Area (sq ft)	2.03	8.17	3.54
Q Total (cfs)	71.00	Flow (cfs)	7.40	52.01	11.59
Top Width (ft)	14.02	Top Width (ft)	3.17	5.10	5.76
Vel Total (ft/s)	5.17	Avg. Vel. (ft/s)	3.65	6.37	3.28
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)	0.64	1.60	0.61
Conv. Total (cfs)	509.5	Conv. (cfs)	53.1	373.3	83.2
Length Wtd. (ft)	50.17	Wetted Per. (ft)	3.42	5.31	5.89
Min Ch El (ft)	2644.23	Shear (lb/sq ft)	0.72	1.86	0.73
Alpha	1.23	Stream Power (lb/ft s)	2.63	11.88	2.39
Frctn Loss (ft)	1.04	Cum Volume (acre-ft)	0.80	1.63	1.64
C & E Loss (ft)	0.05	Cum SA (acres)	1.29	1.08	2.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	46.16	57.70	7.40	2.03	3.42	10.42	0.64	3.65
2	Chan	57.70	58.72	9.60	1.51	1.10	13.52	1.48	6.34
3	Chan	58.72	59.74	13.55	1.89	1.08	19.09	1.86	7.15
4	Chan	59.74	60.76	11.88	1.81	1.04	16.74	1.77	6.57
5	Chan	60.76	61.78	9.54	1.58	1.04	13.44	1.55	6.02
6	Chan	61.78	62.80	7.43	1.36	1.04	10.47	1.34	5.45
7	ROB	62.80	88.11	11.59	3.54	5.89	16.32	0.61	3.28

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8993

INPUT
Description: R.S. 0.8993
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2651.21	7.14	2651.48	16.87	2651.6	19.09	2651.48	24.75	2650.83
33.71	2649.89	38.27	2648.7	41.24	2648	59.19	2645.34	62.8	2643.41
63.54	2643.01	66.68	2643.06	72.7	2643.17	74.18	2643.2	76	2643.4
77.31	2643.54	81.29	2643.69	87.71	2644.6	99.52	2645.25	106.08	2645.72
110.81	2646.02	122.75	2647.22	127.59	2647.85	135.77	2648.56	140.16	2648.85
145.64	2648.95	151.21	2649.21	156.91	2649.38	162.33	2649.56	174.81	2650.74
175.74	2650.8	177	2650.92	179.01	2650.95	190.15	2651.16		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	59.19	.045	66.68	.04	135.77	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
62.8	76	140	129.91	122	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2644.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.045	0.042	0.040
W.S. Elev (ft)	2644.06	Reach Len. (ft)	140.00	129.91	122.00
Crit W.S. (ft)	2644.06	Flow Area (sq ft)	0.40	12.22	3.03
E.G. Slope (ft/ft)	0.022012	Area (sq ft)	0.40	12.22	3.03
Q Total (cfs)	71.00	Flow (cfs)	0.84	61.36	8.79
Top Width (ft)	22.32	Top Width (ft)	1.22	13.20	7.90
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)	2.13	5.02	2.90
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)	0.33	0.93	0.38
Conv. Total (cfs)	478.5	Conv. (cfs)	5.7	413.6	59.3
Length Wtd. (ft)	128.43	Wetted Per. (ft)	1.38	13.31	7.94
Min Ch El (ft)	2643.01	Shear (lb/sq ft)	0.39	1.26	0.52
Alpha	1.11	Stream Power (lb/ft s)	0.84	6.33	1.52
Frctn Loss (ft)	2.12	Cum Volume (acre-ft)	0.80	1.62	1.64
C & E Loss (ft)	0.05	Cum SA (acres)	1.29	1.07	2.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	50.24	62.80	0.84	0.40	1.38	1.19	0.33	2.13
2	Chan	62.80	65.44	12.24	2.60	2.74	17.24	0.98	4.71
3	Chan	65.44	68.08	13.70	2.64	2.64	19.30	1.00	5.20
4	Chan	68.08	70.72	13.34	2.51	2.64	18.79	0.95	5.31
5	Chan	70.72	73.36	12.23	2.38	2.64	17.22	0.90	5.13
6	Chan	73.36	76.00	9.86	2.10	2.65	13.88	0.79	4.70
7	ROB	76.00	98.83	8.79	3.03	7.94	12.38	0.38	2.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8747

INPUT
Description: R.S. 0.8747
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2654.52	4.36	2654.21	22.13	2654.56	24.04	2654.35	30.16	2653.9
48.04	2652.49	51.64	2651.3	59.23	2649.58	69.42	2646.03	76.09	2644.51
81.31	2642.74	86.7	2641.36	87.5	2641.15	89.91	2640.53	89.96	2640.52
98.8	2641.1	105.13	2641.52	105.21	2641.53	106.3	2641.53	138.63	2641.69
141.88	2641.74	146.76	2643.58	154.42	2645.96	159.64	2646.86	160.9	2646.89
178.31	2647.11	190.36	2647.24	196.96	2647.31				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	81.31	.045	89.96	.04	141.88	.032	154.42	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

87.5	98.8		105	98.82	94	.1	.3

OSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2642.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.045	0.041	0.040
W.S. Elev (ft)	2641.85	Reach Len. (ft)	105.00	98.82	94.00
Crit W.S. (ft)	2641.85	Flow Area (sq ft)	0.93	11.64	11.82
E.G. Slope (ft/ft)	0.012840	Area (sq ft)	0.93	11.64	11.82
Q Total (cfs)	71.00	Flow (cfs)	1.68	48.34	20.97
Top Width (ft)	57.36	Top Width (ft)	2.70	11.30	43.36
Vel Total (ft/s)	2.91	Avg. Vel. (ft/s)	1.80	4.15	1.77
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.35	1.03	0.27
Conv. Total (cfs)	626.6	Conv. (cfs)	14.9	426.6	185.1
Length Wtd. (ft)	97.96	Wetted Per. (ft)	2.79	11.40	43.39
Min Ch El (ft)	2640.52	Shear (lb/sq ft)	0.27	0.82	0.22
Alpha	1.50	Stream Power (lb/ft s)	0.48	3.40	0.39
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	0.80	1.58	1.62
C & E Loss (ft)	0.00	Cum SA (acres)	1.28	1.03	2.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	70.00	87.50	1.68	0.93	2.79	2.37	0.35	1.81
2	Chan	87.50	89.76	7.96	2.23	2.33	11.21	0.99	3.57
3	Chan	89.76	92.02	13.61	2.85	2.27	19.16	1.26	4.77
4	Chan	92.02	94.28	11.22	2.52	2.26	15.81	1.12	4.45
5	Chan	94.28	96.54	8.85	2.19	2.26	12.47	0.97	4.05
6	Chan	96.54	98.80	6.71	1.85	2.26	9.45	0.82	3.62
7	ROB	98.80	118.43	14.76	7.23	19.65	20.79	0.37	2.04
8	ROB	118.43	138.06	5.66	4.06	19.63	7.97	0.21	1.39
9	ROB	138.06	157.70	0.55	0.53	4.12	0.77	0.13	1.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8560

INPUT
Description: R.S. 0.8560
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2648.38	5.28	2647.95	7.63	2647.82	19.7	2647.57	22.1	2647.32
22.68	2647.27	26.1	2647.28	46.25	2646.8	53.07	2646.64	63.83	2645.08
71.79	2643.94	84.93	2642.34	94.8	2641.36	105.61	2640.58	113.19	2639.8
120.89	2639.24	126.66	2639.62	130.7	2638.85	131.3	2638.73	134.82	2638.55
135.16	2638.54	135.73	2638.54	140.37	2638.71	144	2638.88	155.5	2639.43
170.75	2646.35	171.55	2646.68	172	2646.68	184.49	2646.79	225.18	2647.16

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	126.66	.045	140.37	.04	155.5	.032	184.49	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
130.7	144	120	115.1	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2639.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.043	0.044	0.040
W.S. Elev (ft)	2639.61	Reach Len. (ft)	120.00	115.10	110.00
Crit W.S. (ft)	2639.56	Flow Area (sq ft)	3.44	12.36	5.22
E.G. Slope (ft/ft)	0.015941	Area (sq ft)	3.44	12.36	5.22
Q Total (cfs)	71.00	Flow (cfs)	6.16	50.49	14.35
Top Width (ft)	39.75	Top Width (ft)	14.56	13.30	11.89
Vel Total (ft/s)	3.38	Avg. Vel. (ft/s)	1.79	4.09	2.75
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)	0.24	0.93	0.44
Conv. Total (cfs)	562.3	Conv. (cfs)	48.8	399.9	113.6
Length Wtd. (ft)	114.80	Wetted Per. (ft)	14.66	13.32	11.94
Min Ch El (ft)	2638.54	Shear (lb/sq ft)	0.23	0.92	0.44
Alpha	1.20	Stream Power (lb/ft s)	0.42	3.77	1.20
Frctn Loss (ft)	2.19	Cum Volume (acre-ft)	0.79	1.56	1.60
C & E Loss (ft)	0.01	Cum SA (acres)	1.26	1.01	2.37

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	104.56	130.70	6.16	3.44	14.66	8.68	0.24	1.79
2	Chan	130.70	133.36	9.31	2.40	2.67	13.12	0.90	3.88
3	Chan	133.36	136.02	11.79	2.76	2.66	16.61	1.04	4.27
4	Chan	136.02	138.68	11.19	2.68	2.66	15.76	1.01	4.18
5	Chan	138.68	141.34	9.82	2.41	2.66	13.83	0.91	4.07
6	Chan	141.34	144.00	8.38	2.10	2.66	11.80	0.79	3.99
7	ROB	144.00	160.24	14.35	5.22	11.94	20.21	0.44	2.75

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8342

INPUT
Description: R.S. 0.8342
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2646.06	12.25	2645.26	28.91	2644.54	36.31	2644.08	38.59	2643.98
51.43	2643.29	53.2	2643.19	68.1	2641.58	72.56	2640.98	75.74	2640.5
83.12	2639.88	102.4	2637.48	117.91	2637.24	120.03	2637.15	126	2636.67
130.13	2636.33	137.35	2636.19	138	2636.38	138.46	2636.52	139.4	2636.63
140.33	2636.74	141.51	2636.88	145.35	2637.32	155.58	2638.58	170.36	2639.78
177.52	2640.47	181.55	2641.09	189.72	2642.26	224.4	2642.87	232.95	2643.04

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	130.13	.045	141.51	.04	189.72	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
126	139.4	85	91.99	97	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2637.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.040	0.044	0.044
W.S. Elev (ft)	2637.29	Reach Len. (ft)	85.00	91.99	97.00
Crit W.S. (ft)	2637.29	Flow Area (sq ft)	2.51	12.36	1.84
E.G. Slope (ft/ft)	0.023140	Area (sq ft)	2.51	12.36	1.84
Q Total (cfs)	71.00	Flow (cfs)	5.26	60.66	5.08
Top Width (ft)	30.13	Top Width (ft)	11.07	13.40	5.65
Vel Total (ft/s)	4.25	Avg. Vel. (ft/s)	2.10	4.91	2.76
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)	0.23	0.92	0.33
Conv. Total (cfs)	466.7	Conv. (cfs)	34.6	398.8	33.4
Length Wtd. (ft)	91.65	Wetted Per. (ft)	11.09	13.47	5.69
Min Ch El (ft)	2636.19	Shear (lb/sq ft)	0.33	1.33	0.47
Alpha	1.19	Stream Power (lb/ft s)	0.68	6.51	1.29
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	0.79	1.52	1.59
C & E Loss (ft)	0.08	Cum SA (acres)	1.23	0.97	2.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	100.80	126.00	5.26	2.51	11.09	7.41	0.23	2.10
2	Chan	126.00	128.68	8.84	1.95	2.69	12.45	0.73	4.54
3	Chan	128.68	131.36	12.62	2.49	2.69	17.77	0.93	5.07
4	Chan	131.36	134.04	13.54	2.70	2.68	19.07	1.01	5.02
5	Chan	134.04	136.72	14.73	2.84	2.68	20.75	1.06	5.19
6	Chan	136.72	139.40	10.94	2.39	2.73	15.41	0.89	4.58
7	ROB	139.40	158.11	5.08	1.84	5.69	7.15	0.33	2.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8168

INPUT
Description: R.S. 0.8168, Imm. Upstream Twilight Trail
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2647.2	1.67	2647.12	8.08	2647.1	12.7	2647.12	12.8	2647.11
38.43	2643.97	40.71	2643.64	54.15	2641.78	60.95	2641.01	76.62	2639.58
82.4	2638.92	86.56	2638.64	105.85	2637.19	106.31	2637.12	106.45	2637.09
110.46	2636.61	119.11	2635.48	120.32	2635.42	126.9	2635.53	127.15	2635.52
142.27	2634.83	142.38	2634.83	148.5	2634.76	149.13	2634.75	157.14	2634.43
157.15	2634.43	158.31	2634.38	164.03	2634.4	169.9	2634.41	177.75	2634.69
180	2634.8	187.69	2635.16	188.63	2635.04	206.39	2637.05	211.88	2637.52
229.52	2639.07	243.54	2640.07	248.78	2640.34	249.09	2640.18	249.48	2640.28
257.9	2640.77	265.17	2640.91	270.25	2641.48	273.43	2642.05	276.72	2642.58

283.75 2642.59 287.68 2642.59 293 2642.57 306.7 2642.56

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	142.27	.045	158.31	.04	188.63	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
148.5	180	30.03	30.03	30.03	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2635.46	Element			
Vel Head (ft)	0.06	Wt. n-Val.	0.043	0.041	0.038
W.S. Elev (ft)	2635.40	Reach Len. (ft)	30.03	30.03	30.03
Crit W.S. (ft)		Flow Area (sq ft)	7.35	27.87	4.10
E.G. Slope (ft/ft)	0.003777	Area (sq ft)	7.35	27.87	4.10
Q Total (cfs)	71.00	Flow (cfs)	9.02	56.89	5.09
Top Width (ft)	62.07	Top Width (ft)	18.75	31.50	11.82
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)	1.23	2.04	1.24
Max Chl Dpth (ft)	1.02	Hydr. Depth (ft)	0.39	0.88	0.35
Conv. Total (cfs)	1155.3	Conv. (cfs)	146.8	925.7	82.9
Length Wtd. (ft)	30.03	Wetted Per. (ft)	18.76	31.52	11.86
Min Ch El (ft)	2634.38	Shear (lb/sq ft)	0.09	0.21	0.08
Alpha	1.12	Stream Power (lb/ft s)	0.11	0.43	0.10
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	0.78	1.48	1.58
C & E Loss (ft)	0.02	Cum SA (acres)	1.20	0.92	2.33

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	118.80	148.50	9.02	7.35	18.76	12.70	0.39	1.23
2	Chan	148.50	154.80	7.89	4.74	6.30	11.12	0.75	1.66
3	Chan	154.80	161.10	12.96	6.17	6.30	18.25	0.98	2.10
4	Chan	161.10	167.40	14.32	6.31	6.30	20.16	1.00	2.27
5	Chan	167.40	173.70	13.12	5.99	6.30	18.48	0.95	2.19
6	Chan	173.70	180.00	8.60	4.65	6.31	12.11	0.74	1.85
7	ROB	180.00	205.34	5.09	4.10	11.86	7.17	0.35	1.24

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8111

INPUT
Description: R.S. 0.8111, Centerline of Twilight Trail
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2641.79	30.83	2640.64	73.89	2638.73	115.2	2636.53	139.41	2635.47
148	2635.06	161.96	2634.4	168.54	2634.33	171.9	2634.35	178.25	2634.4
190	2635.03	199.87	2635.55	234.16	2638.26	260.93	2640.11	281.9	2641.3
282.58	2641.34	285.98	2641.54	288.99	2641.71	292.6	2641.76	295.53	2641.88
306.56	2641.83	309.5	2641.86						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
148	190	29	29	29	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2635.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.025	
W.S. Elev (ft)	2635.02	Reach Len. (ft)	29.00	29.00	29.00
Crit W.S. (ft)	2635.02	Flow Area (sq ft)		18.51	
E.G. Slope (ft/ft)	0.012085	Area (sq ft)		18.51	
Q Total (cfs)	71.00	Flow (cfs)		71.00	
Top Width (ft)	41.13	Top Width (ft)		41.13	
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)		3.84	
Max Chl Dpth (ft)	0.69	Hydr. Depth (ft)		0.45	
Conv. Total (cfs)	645.9	Conv. (cfs)		645.9	
Length Wtd. (ft)	29.00	Wetted Per. (ft)		41.16	
Min Ch El (ft)	2634.33	Shear (lb/sq ft)		0.34	
Alpha	1.00	Stream Power (lb/ft s)		1.30	
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	0.77	1.47	1.58
C & E Loss (ft)	0.00	Cum SA (acres)	1.19	0.90	2.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	148.00	156.40	2.58	1.38	7.65	3.64	0.18	1.87
2	Chan	156.40	164.80	17.74	4.56	8.41	24.98	0.54	3.89
3	Chan	164.80	173.20	25.71	5.69	8.40	36.21	0.68	4.52
4	Chan	173.20	181.60	21.01	5.04	8.40	29.60	0.60	4.17
5	Chan	181.60	190.00	3.96	1.84	8.30	5.57	0.22	2.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.8056

INPUT
Description: R.S. 0.8056, Imm. Downstream of Twilight Trail
Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2640.91	5.84	2640.55	19.46	2640.78	26.54	2640.6	32.15	2639.9
37.52	2639.89	39.59	2640.14	44.77	2640.38	47.88	2640.29	49.26	2640.3
66.79	2640.22	68.08	2640.28	68.71	2640.24	92.54	2637.41	95.49	2637.18
103.48	2636.33	119.89	2635.34	122.15	2635.36	144.82	2634.13	144.88	2634.13
150.82	2633.89	153	2633.72	159.26	2633.24	159.68	2633.21	172.04	2633.44
172.38	2633.45	173.54	2633.4	174.43	2633.41	182	2633.71	189.12	2634
197.62	2634.69	212.46	2636.21	218.22	2636.78	231.71	2638.21	240.05	2638.49
249.6	2639.47	256.55	2640.55	258.79	2640.71	272.94	2642.33	277.55	2642.57
277.67	2642.58	278.27	2642.61	279	2642.61	280.26	2642.58	291.2	2642.06
296.34	2641.8	301.09	2641.44	308.72	2641.35				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	26.54	.025	49.26	.04	159.68	.045	174.43	.04

212.46 .032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
153	182	112	105.53	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2634.25	Element			
Vel Head (ft)	0.24	Wt. n-Val.	0.040	0.043	0.040
W.S. Elev (ft)	2634.01	Reach Len. (ft)	112.00	105.53	100.00
Crit W.S. (ft)	2634.01	Flow Area (sq ft)	0.64	16.99	1.12
E.G. Slope (ft/ft)	0.026732	Area (sq ft)	0.64	16.99	1.12
Q Total (cfs)	71.00	Flow (cfs)	0.95	68.10	1.95
Top Width (ft)	41.47	Top Width (ft)	5.20	29.00	7.27
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)	1.49	4.01	1.74
Max Chl Dpth (ft)	0.80	Hydr. Depth (ft)	0.12	0.59	0.15
Conv. Total (cfs)	434.3	Conv. (cfs)	5.8	416.5	11.9
Length Wtd. (ft)	105.66	Wetted Per. (ft)	5.21	29.03	7.27
Min Ch El (ft)	2633.21	Shear (lb/sq ft)	0.20	0.98	0.26
Alpha	1.08	Stream Power (lb/ft s)	0.30	3.92	0.45
Frctn Loss (ft)	2.37	Cum Volume (acre-ft)	0.77	1.45	1.58
C & E Loss (ft)	0.03	Cum SA (acres)	1.19	0.87	2.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	122.40	153.00	0.95	0.64	5.21	1.34	0.12	1.49
2	Chan	153.00	158.80	11.52	2.98	5.82	16.22	0.51	3.86
3	Chan	158.80	164.60	19.96	4.40	5.80	28.11	0.76	4.54
4	Chan	164.60	170.40	15.40	3.81	5.80	21.69	0.66	4.04
5	Chan	170.40	176.20	13.09	3.38	5.80	18.44	0.58	3.87
6	Chan	176.20	182.00	8.13	2.42	5.80	11.45	0.42	3.36
7	ROB	182.00	207.34	1.95	1.12	7.27	2.75	0.15	1.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.7856

INPUT
Description: R.S. 0.7856
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2636.59	20.75	2636.78	31.95	2636.79	45.95	2636.94	54.87	2636.98
57.48	2636.95	65.97	2634.64	81.36	2629.48	83.82	2628.65	83.93	2628.67
85.5	2629.45	96.34	2634.86	97.64	2635.05	102.42	2636.1	120.1	2635.98
122.83	2636.37	149.35	2636.99	155.75	2636.97	167.56	2636.93	170.19	2636.9
193.34	2636.61	194.72	2636.59	194.82	2636.59	199.13	2636.59		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

0	.025	45.95	.04	65.97	.045	83.93	.04	149.35	.032

k Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
81.36	85.5	100	103.21	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2631.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.045	0.043	0.040
W.S. Elev (ft)	2630.90	Reach Len. (ft)	100.00	103.21	110.00
Crit W.S. (ft)	2630.90	Flow Area (sq ft)	3.01	7.65	2.11
E.G. Slope (ft/ft)	0.019149	Area (sq ft)	3.01	7.65	2.11
Q Total (cfs)	71.00	Flow (cfs)	10.56	52.33	8.12
Top Width (ft)	11.28	Top Width (ft)	4.24	4.14	2.91
Vel Total (ft/s)	5.56	Avg. Vel. (ft/s)	3.51	6.84	3.85
Max Chl Dpth (ft)	2.25	Hydr. Depth (ft)	0.71	1.85	0.73
Conv. Total (cfs)	513.1	Conv. (cfs)	76.3	378.1	58.7
Length Wtd. (ft)	103.69	Wetted Per. (ft)	4.47	4.46	3.25
Min Ch El (ft)	2628.65	Shear (lb/sq ft)	0.80	2.05	0.78
Alpha	1.23	Stream Power (lb/ft s)	2.83	14.02	2.99
Frctn Loss (ft)	2.02	Cum Volume (acre-ft)	0.77	1.42	1.58
C & E Loss (ft)	0.05	Cum SA (acres)	1.18	0.83	2.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	65.09	81.36	10.56	3.01	4.47	14.87	0.71	3.51
2	Chan	81.36	82.19	7.58	1.29	0.87	10.68	1.56	5.87
3	Chan	82.19	83.02	9.98	1.52	0.87	14.06	1.84	6.55
4	Chan	83.02	83.84	12.64	1.75	0.87	17.80	2.12	7.21
5	Chan	83.84	84.67	13.05	1.71	0.92	18.37	2.07	7.63
6	Chan	84.67	85.50	9.08	1.37	0.92	12.78	1.66	6.62
7	ROB	85.50	108.23	8.12	2.11	3.25	11.43	0.73	3.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.7661

INPUT
Description: R.S. 0.7661
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2634.22	14.01	2632.55	16.78	2632.17	23.75	2631.48	34.7	2629.79
37.05	2629.56	40	2629.32	44.63	2628.68	48.15	2627.92	51.51	2628.57
62.56	2629.8	65.74	2629.86	78.78	2629.4	92.15	2629.13	98.04	2628.99
121.32	2628.36	123.47	2627.95	125	2627.55	126	2627.29	128.76	2626.57
128.87	2626.59	133	2627.25	140.06	2628.38	140.16	2628.4	141.02	2628.46
148.96	2628.97	159.32	2631.7	168.13	2634.09	169.85	2634.57	174.14	2634.71

190 2635.25 217.55 2636.18 242.03 2636

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	121.32	.045	140.06	.04	190	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
126	133	180	163.18	150	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2628.70	Element			
Vel Head (ft)	0.41	Wt. n-Val.	0.044	0.045	0.045
W.S. Elev (ft)	2628.29	Reach Len. (ft)	180.00	163.18	150.00
Crit W.S. (ft)	2628.29	Flow Area (sq ft)	2.68	9.61	3.39
E.G. Slope (ft/ft)	0.019743	Area (sq ft)	2.68	9.61	3.39
Q Total (cfs)	71.00	Flow (cfs)	6.61	54.30	10.09
Top Width (ft)	21.46	Top Width (ft)	7.96	7.00	6.51
Vel Total (ft/s)	4.53	Avg. Vel. (ft/s)	2.47	5.65	2.98
Max Chl Dpth (ft)	1.72	Hydr. Depth (ft)	0.34	1.37	0.52
Conv. Total (cfs)	505.3	Conv. (cfs)	47.0	386.5	71.8
Length Wtd. (ft)	162.17	Wetted Per. (ft)	8.15	7.15	6.59
Min Ch El (ft)	2626.57	Shear (lb/sq ft)	0.41	1.66	0.63
Alpha	1.28	Stream Power (lb/ft s)	1.00	9.37	1.89
Frctn Loss (ft)	3.32	Cum Volume (acre-ft)	0.76	1.40	1.57
C & E Loss (ft)	0.00	Cum SA (acres)	1.17	0.82	2.30

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	25.20	50.40	1.13	0.68	3.71	1.59	0.19	1.68
2	LOB	50.40	75.60						
3	LOB	75.60	100.80						
4	LOB	100.80	126.00	5.48	2.00	4.44	7.71	0.46	2.73
5	Chan	126.00	127.40	8.34	1.66	1.45	11.74	1.18	5.03
6	Chan	127.40	128.80	13.05	2.17	1.45	18.38	1.55	6.02
7	Chan	128.80	130.20	13.97	2.24	1.42	19.67	1.60	6.23
8	Chan	130.20	131.60	10.87	1.93	1.42	15.31	1.38	5.64
9	Chan	131.60	133.00	8.09	1.61	1.42	11.39	1.15	5.01
10	ROB	133.00	154.81	10.09	3.39	6.59	14.21	0.52	2.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.7351

INPUT
Description: R.S. 0.7351
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2637.58	7.07	2636.62	10.71	2636.23	27.54	2634.44	34.94	2633.4
42.29	2632.66	56.34	2630.29	61.27	2629.86	77.09	2627.73	78.68	2627.53
97.97	2624.58	98.57	2624.51	100.3	2623.88	100.5	2623.81	102.72	2623.08
102.73	2623.08	102.86	2623.03	103.71	2623.1	109.2	2623.68	116.1	2624.4
128.2	2625.48	139.2	2626.14	166.78	2628.35	172.73	2629.39	175.44	2629.61
192.51	2630.96	202.6	2631.84	206.76	2631.75	210.75	2631.74	220.02	2631.8
230.53	2631.68	250.66	2631.52						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	56.34	.04	100.3	.045	116.1	.04	172.73	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
100.5	109.2	159.77	159.77	159.77	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2624.97	Element			
Vel Head (ft)	0.39	Wt. n-Val.	0.041	0.045	0.045
W.S. Elev (ft)	2624.58	Reach Len. (ft)	159.77	159.77	159.77
Crit W.S. (ft)	2624.58	Flow Area (sq ft)	0.83	10.53	3.88
E.G. Slope (ft/ft)	0.021291	Area (sq ft)	0.83	10.53	3.88
Q Total (cfs)	71.00	Flow (cfs)	2.13	56.92	11.95
Top Width (ft)	20.09	Top Width (ft)	2.50	8.70	8.89
Vel Total (ft/s)	4.66	Avg. Vel. (ft/s)	2.58	5.41	3.08
Max Chl Dpth (ft)	1.55	Hydr. Depth (ft)	0.33	1.21	0.44
Conv. Total (cfs)	486.6	Conv. (cfs)	14.6	390.1	81.9
Length Wtd. (ft)	159.77	Wetted Per. (ft)	2.63	8.86	8.93
Min Ch El (ft)	2623.03	Shear (lb/sq ft)	0.42	1.58	0.58
Alpha	1.16	Stream Power (lb/ft s)	1.08	8.54	1.78
Frctn Loss (ft)	3.32	Cum Volume (acre-ft)	0.75	1.37	1.56
C & E Loss (ft)	0.00	Cum SA (acres)	1.14	0.79	2.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	80.40	100.50	2.13	0.83	2.63	3.01	0.33	2.58
2	Chan	100.50	102.24	8.72	1.83	1.83	12.28	1.05	4.76
3	Chan	102.24	103.98	15.65	2.57	1.78	22.05	1.48	6.08
4	Chan	103.98	105.72	13.70	2.36	1.75	19.30	1.36	5.80
5	Chan	105.72	107.46	10.75	2.04	1.75	15.14	1.17	5.27
6	Chan	107.46	109.20	8.09	1.72	1.75	11.40	0.99	4.70
7	ROB	109.20	137.49	11.95	3.88	8.93	16.83	0.44	3.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.7049

INPUT
Description: R.S. 0.7049
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2627.36	8.94	2627.61	17.91	2627.02	30.7	2626.8	35.73	2626.64
61.68	2623.23	63.26	2623.18	66.2	2622.73	73.83	2620.58	76.28	2620.23
79.81	2620.22	80	2620.17	80.26	2620.11	81.15	2619.63	81.31	2619.55
83	2619.94	84	2620.17	84.12	2620.2	88.84	2620.93	99.08	2622.81
127.3	2627.24	136.38	2627.11	163.61	2626.85	173.01	2626.88		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	17.91	.032	79.81	.045	88.84	.04	136.38	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
80	84	100	104.01	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2621.58	Element			
Vel Head (ft)	0.40	Wt. n-Val.	0.032	0.045	0.045
W.S. Elev (ft)	2621.18	Reach Len. (ft)	100.00	104.01	110.00
Crit W.S. (ft)	2621.18	Flow Area (sq ft)	6.08	5.23	3.18
E.G. Slope (ft/ft)	0.020268	Area (sq ft)	6.08	5.23	3.18
Q Total (cfs)	71.00	Flow (cfs)	32.10	28.42	10.47
Top Width (ft)	18.49	Top Width (ft)	8.29	4.00	6.19
Vel Total (ft/s)	4.90	Avg. Vel. (ft/s)	5.28	5.43	3.29
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.73	1.31	0.51
Conv. Total (cfs)	498.7	Conv. (cfs)	225.5	199.6	73.6
Length Wtd. (ft)	104.22	Wetted Per. (ft)	8.41	4.22	6.28
Min Ch El (ft)	2619.55	Shear (lb/sq ft)	0.92	1.57	0.64
Alpha	1.08	Stream Power (lb/ft s)	4.83	8.53	2.11
Frctn Loss (ft)	1.78	Cum Volume (acre-ft)	0.74	1.34	1.54
C & E Loss (ft)	0.00	Cum SA (acres)	1.12	0.77	2.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	64.00	80.00	32.10	6.08	8.41	45.22	0.73	5.28
2	Chan	80.00	80.80	4.46	0.93	0.88	6.28	1.16	4.82
3	Chan	80.80	81.60	7.15	1.23	0.87	10.07	1.53	5.84
4	Chan	81.60	82.40	6.95	1.18	0.82	9.80	1.47	5.92
5	Chan	82.40	83.20	5.56	1.03	0.82	7.83	1.28	5.41
6	Chan	83.20	84.00	4.30	0.88	0.82	6.05	1.10	4.88
7	ROB	84.00	101.80	10.47	3.18	6.28	14.75	0.51	3.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.6852

INPUT
Description: R.S. 0.6852
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2623.63	7.13	2623.47	16.38	2622.86	31.11	2622.84	44.26	2623
46.11	2623.12	66.69	2623.01	73.67	2622.85	73.9	2622.85	81.88	2622.39
108.02	2620.99	116.47	2618.45	118.6	2617.78	118.94	2617.67	119.75	2617.41
121.2	2617.69	121.5	2617.73	130.49	2619.05	137.14	2619.61	154.1	2620.93
170.51	2623.7	170.7	2623.73	170.73	2623.73	175.36	2623.87	200.96	2624.33

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	16.38	.04	116.47	.035	121.2	.04	175.36	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
118.6	121.5	163.92	163.92	163.92	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2619.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.036	0.035	0.040
W.S. Elev (ft)	2619.19	Reach Len. (ft)	163.92	163.92	163.92
Crit W.S. (ft)	2619.19	Flow Area (sq ft)	3.19	4.65	7.29
E.G. Slope (ft/ft)	0.014611	Area (sq ft)	3.19	4.65	7.29
Q Total (cfs)	71.00	Flow (cfs)	13.96	31.72	25.31
Top Width (ft)	18.12	Top Width (ft)	4.59	2.90	10.64
Vel Total (ft/s)	4.69	Avg. Vel. (ft/s)	4.37	6.82	3.47
Max Chl Dpth (ft)	1.78	Hydr. Depth (ft)	0.70	1.60	0.69
Conv. Total (cfs)	587.4	Conv. (cfs)	115.5	262.5	209.4
Length Wtd. (ft)	163.92	Wetted Per. (ft)	4.80	2.99	10.74
Min Ch El (ft)	2617.41	Shear (lb/sq ft)	0.61	1.42	0.62
Alpha	1.31	Stream Power (lb/ft s)	2.65	9.69	2.15
Frctn Loss (ft)	2.33	Cum Volume (acre-ft)	0.73	1.33	1.53
C & E Loss (ft)	0.01	Cum SA (acres)	1.11	0.76	2.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	94.88	118.60	13.96	3.19	4.80	19.67	0.70	4.37
2	Chan	118.60	119.18	5.67	0.87	0.61	7.98	1.50	6.50
3	Chan	119.18	119.76	6.89	0.98	0.61	9.71	1.69	7.03
4	Chan	119.76	120.34	7.25	1.00	0.59	10.22	1.72	7.27
5	Chan	120.34	120.92	6.48	0.93	0.59	9.13	1.61	6.95
6	Chan	120.92	121.50	5.43	0.87	0.59	7.65	1.50	6.24
7	ROB	121.50	137.39	25.31	7.29	10.74	35.65	0.69	3.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.6541

INPUT
Description: R.S. 0.6541
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2626.84	11.67	2625.83	12.64	2625.75	12.75	2625.73	13.25	2625.66
34.61	2622.21	47.87	2619.61	48.5	2619.49	48.87	2619.2	51.02	2617.84
56.5	2615.1	57.36	2614.67	57.37	2614.66	57.6	2614.54	62	2615.23
62.12	2615.25	70.41	2616.61	72.58	2616.74	74.6	2616.85	91.95	2617.03
102.58	2617.56	126.9	2618.27	127.56	2618.3	132.27	2618.77	161.52	2621.13
167.04	2621.63	176.96	2622.44	188.31	2622.83				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	57.36	.035	62.12	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
56.5	62	78	81.39	85	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2616.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2616.40	Reach Len. (ft)	78.00	81.39	85.00
Crit W.S. (ft)	2616.40	Flow Area (sq ft)	1.69	8.40	4.17
E.G. Slope (ft/ft)	0.013829	Area (sq ft)	1.69	8.40	4.17
Q Total (cfs)	71.00	Flow (cfs)	5.14	53.04	12.82
Top Width (ft)	15.23	Top Width (ft)	2.60	5.50	7.13
Vel Total (ft/s)	4.98	Avg. Vel. (ft/s)	3.04	6.32	3.08
Max Chl Dpth (ft)	1.86	Hydr. Depth (ft)	0.65	1.53	0.58
Conv. Total (cfs)	603.8	Conv. (cfs)	43.7	451.1	109.0
Length Wtd. (ft)	82.15	Wetted Per. (ft)	2.91	5.69	7.22
Min Ch El (ft)	2614.54	Shear (lb/sq ft)	0.50	1.27	0.50
Alpha	1.30	Stream Power (lb/ft s)	1.53	8.05	1.53
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	0.72	1.30	1.51
C & E Loss (ft)	0.05	Cum SA (acres)	1.10	0.74	2.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.20	56.50	5.14	1.69	2.91	7.24	0.65	3.04
2	Chan	56.50	57.60	9.74	1.73	1.24	13.72	1.58	5.62
3	Chan	57.60	58.70	13.95	1.95	1.11	19.65	1.77	7.15
4	Chan	58.70	59.80	11.77	1.76	1.11	16.57	1.60	6.68
5	Chan	59.80	60.90	9.73	1.57	1.11	13.70	1.43	6.19
6	Chan	60.90	62.00	7.85	1.38	1.11	11.06	1.26	5.68
7	ROB	62.00	87.26	12.82	4.17	7.22	18.05	0.58	3.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.6387

INPUT
Description: R.S. 0.6387
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2624.93	2	2624.96	9.17	2624.9	14.36	2624.61	21.1	2623.74
35.48	2621.75	44.51	2620.17	53.93	2618.85	71.19	2615.9	73.01	2615.5
85.58	2615.45	86.41	2615.37	86.77	2615.2	90.6	2613.04	90.85	2612.9
90.9	2612.87	91.54	2612.51	93.4	2613.14	97.44	2614.5	99.17	2615.08
107.43	2614.43	116.22	2613.87	125.1	2615.42	126.07	2615.55	137.6	2615.98
140.62	2616.08	154.97	2617.14	156.88	2617.27	157.49	2617.35	174.09	2619.32
192.73	2621.85	199.39	2622.8	203.67	2623.03	210.12	2623.52		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	86.77	.035	97.44	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
90.6	93.4	144	152.82	162	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2615.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.035	0.035	0.038
W.S. Elev (ft)	2614.73	Reach Len. (ft)	144.00	152.82	162.00
Crit W.S. (ft)	2614.73	Flow Area (sq ft)	2.53	5.38	11.50
E.G. Slope (ft/ft)	0.009479	Area (sq ft)	2.53	5.38	11.50
Q Total (cfs)	71.00	Flow (cfs)	8.51	32.47	30.02
Top Width (ft)	28.01	Top Width (ft)	2.99	2.80	22.21
Vel Total (ft/s)	3.66	Avg. Vel. (ft/s)	3.37	6.04	2.61
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.84	1.92	0.52
Conv. Total (cfs)	729.2	Conv. (cfs)	87.4	333.5	308.4
Length Wtd. (ft)	155.87	Wetted Per. (ft)	3.44	3.04	22.58
Min Ch El (ft)	2612.51	Shear (lb/sq ft)	0.44	1.05	0.30
Alpha	1.56	Stream Power (lb/ft s)	1.46	6.32	0.79
Frctn Loss (ft)	1.58	Cum Volume (acre-ft)	0.72	1.29	1.49
C & E Loss (ft)	0.00	Cum SA (acres)	1.09	0.74	2.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	72.48	90.60	8.51	2.53	3.44	11.98	0.84	3.37
2	Chan	90.60	91.16	5.84	1.03	0.64	8.23	1.85	5.65
3	Chan	91.16	91.72	7.58	1.20	0.63	10.68	2.14	6.34
4	Chan	91.72	92.28	7.43	1.15	0.59	10.47	2.06	6.43
5	Chan	92.28	92.84	6.33	1.05	0.59	8.91	1.87	6.03
6	Chan	92.84	93.40	5.29	0.94	0.59	7.46	1.68	5.62
7	ROB	93.40	116.74	26.82	9.82	18.12	37.78	0.55	2.73
8	ROB	116.74	140.09	3.20	1.68	4.46	4.51	0.38	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.6098

INPUT
Description: R.S. 0.6098
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2624.58	3.92	2624.63	4.8	2624.63	5.07	2624.63	6.73	2624.61
26.01	2624.27	31.71	2624.19	38.67	2621.47	40.15	2621.99	43.83	2621.9
59.35	2619.28	79.17	2617.47	80.6	2617.21	81.33	2617.08	83.71	2616.73
105.01	2613.86	114.39	2612.91	118.97	2612.61	119.89	2612.53	120.78	2612.28
123.9	2610.87	124.37	2610.66	124.39	2610.65	124.92	2610.41	126.7	2610.91
127	2610.99	129.89	2611.79	132.53	2612.34	136.15	2611.47	144.46	2611.94
162.04	2613.95	163.07	2614.24	182.27	2618.73	183.14	2618.72	202.76	2618.9

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	120.78	.035	129.89	.04	182.27	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
123.9	126.7	88.24	88.24	88.24	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2612.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.035	0.035	0.038
W.S. Elev (ft)	2612.35	Reach Len. (ft)	88.24	88.24	88.24
Crit W.S. (ft)	2612.35	Flow Area (sq ft)	2.43	4.76	11.70
E.G. Slope (ft/ft)	0.010889	Area (sq ft)	2.43	4.76	11.70
Q Total (cfs)	71.00	Flow (cfs)	8.54	28.88	33.59
Top Width (ft)	27.54	Top Width (ft)	3.38	2.80	21.37
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)	3.51	6.07	2.87
Max Chl Dpth (ft)	1.94	Hydr. Depth (ft)	0.72	1.70	0.55
Conv. Total (cfs)	680.4	Conv. (cfs)	81.8	276.7	321.9
Length Wtd. (ft)	88.24	Wetted Per. (ft)	3.69	2.97	21.68
Min Ch El (ft)	2610.41	Shear (lb/sq ft)	0.45	1.09	0.37
Alpha	1.44	Stream Power (lb/ft s)	1.57	6.61	1.05
Frctn Loss (ft)	1.12	Cum Volume (acre-ft)	0.71	1.27	1.45
C & E Loss (ft)	0.01	Cum SA (acres)	1.08	0.73	2.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	99.12	123.90	8.54	2.43	3.69	12.03	0.72	3.51
2	Chan	123.90	124.46	5.13	0.90	0.61	7.23	1.61	5.70
3	Chan	124.46	125.02	6.55	1.04	0.61	9.22	1.85	6.30
4	Chan	125.02	125.58	6.64	1.03	0.58	9.35	1.84	6.45
5	Chan	125.58	126.14	5.71	0.94	0.58	8.05	1.68	6.08
6	Chan	126.14	126.70	4.85	0.85	0.58	6.83	1.52	5.69
7	ROB	126.70	141.91	30.06	9.72	15.50	42.33	0.64	3.09

8	ROB	141.91	157.12	3.53	1.98	6.18	4.97	0.32	1.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.5931

INPUT
Description: R.S. 0.5931
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2615.15	17.41	2614.38	22.58	2614.77	30.77	2615.66	38.27	2616.63
46.35	2617.8	54.39	2618.29	61.79	2618.85	64.42	2618.21	89.65	2610.49
96.8	2609.68	98.15	2609.53	100.21	2609.29	100.38	2609.27	102	2609.66
102.6	2609.81	110.7	2611.78	111.51	2611.93	112.85	2612.06	114.1	2612.09
121.98	2612.27	122.8	2612.27	132.47	2611.94	141.49	2611.79	151.82	2611.7
158.4	2611.89	176.01	2613.48	182.94	2614.1	193.64	2614.92	206.04	2617.5
208.6	2618.29	217.04	2618.46						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	17.41	.058	98.15	.035	110.7	.04	208.6	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
96.8	102	130	118.13	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2611.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.058	0.038	0.035
W.S. Elev (ft)	2610.90	Reach Len. (ft)	130.00	118.13	110.00
Crit W.S. (ft)	2610.87	Flow Area (sq ft)	6.08	7.40	3.13
E.G. Slope (ft/ft)	0.015080	Area (sq ft)	6.08	7.40	3.13
Q Total (cfs)	71.00	Flow (cfs)	15.19	44.22	11.59
Top Width (ft)	18.75	Top Width (ft)	8.48	5.20	5.07
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	2.50	5.97	3.71
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.72	1.42	0.62
Conv. Total (cfs)	578.2	Conv. (cfs)	123.7	360.1	94.4
Length Wtd. (ft)	118.37	Wetted Per. (ft)	8.59	5.27	5.22
Min Ch El (ft)	2609.27	Shear (lb/sq ft)	0.67	1.32	0.56
Alpha	1.41	Stream Power (lb/ft s)	1.67	7.90	2.09
Frctn Loss (ft)	1.58	Cum Volume (acre-ft)	0.70	1.26	1.44
C & E Loss (ft)	0.04	Cum SA (acres)	1.07	0.72	2.06

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	77.44	96.80	15.19	6.08	8.59	21.39	0.72	2.50
2	Chan	96.80	97.84	4.88	1.33	1.05	6.87	1.28	3.68
3	Chan	97.84	98.88	8.30	1.45	1.05	11.69	1.39	5.73
4	Chan	98.88	99.92	10.74	1.57	1.05	15.13	1.51	6.83
5	Chan	99.92	100.96	11.41	1.64	1.06	16.07	1.58	6.96
6	Chan	100.96	102.00	8.89	1.42	1.07	12.53	1.36	6.28
7	ROB	102.00	125.01	11.59	3.13	5.22	16.32	0.62	3.71

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.5707

INPUT
Description: R.S. 0.5707
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2621.47	4.68	2621.34	11.43	2620.34	26.76	2618.27	33.89	2617.55
43.2	2616.14	56.07	2613.92	65.34	2612.39	77.41	2611.08	80.72	2610.69
89.14	2609.92	106.79	2608.94	109.7	2608.62	110.38	2608.54	116.8	2608.1
116.89	2608.12	116.9	2608.12	119	2608.4	119.9	2608.52	123.74	2609.03
124.23	2609.08	126.15	2609.08	129.26	2609.07	143.5	2609.47	148.73	2609.61
152.95	2609.98	155.03	2610.22	166.08	2611.09	175.87	2612.16	177.14	2612.26
188.08	2613.48	192.62	2614.23	198.52	2615.3	205.76	2615.73	215.17	2618.06
219.47	2618.25	222.5	2618.27	230.55	2618.44				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	110.38	.035	123.74	.04	215.17	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
109.7	119.9	90	83.73	79	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2609.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.058	0.036	0.037
W.S. Elev (ft)	2609.41	Reach Len. (ft)	90.00	83.73	79.00
Crit W.S. (ft)	2609.41	Flow Area (sq ft)	3.78	10.92	6.26
E.G. Slope (ft/ft)	0.011929	Area (sq ft)	3.78	10.92	6.26
Q Total (cfs)	71.00	Flow (cfs)	5.08	52.04	13.88
Top Width (ft)	42.83	Top Width (ft)	11.30	10.20	21.32
Vel Total (ft/s)	3.39	Avg. Vel. (ft/s)	1.35	4.77	2.22
Max Chl Dpth (ft)	1.31	Hydr. Depth (ft)	0.33	1.07	0.29
Conv. Total (cfs)	650.1	Conv. (cfs)	46.5	476.5	127.1
Length Wtd. (ft)	83.52	Wetted Per. (ft)	11.33	10.25	21.36
Min Ch El (ft)	2608.10	Shear (lb/sq ft)	0.25	0.79	0.22
Alpha	1.55	Stream Power (lb/ft s)	0.33	3.78	0.48
Frctn Loss (ft)	1.20	Cum Volume (acre-ft)	0.69	1.23	1.42
C & E Loss (ft)	0.00	Cum SA (acres)	1.04	0.70	2.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	87.76	109.70	5.08	3.78	11.33	7.16	0.33	1.35
2	Chan	109.70	111.74	6.74	1.80	2.05	9.50	0.88	3.74
3	Chan	111.74	113.78	9.85	2.10	2.04	13.87	1.03	4.69
4	Chan	113.78	115.82	12.18	2.38	2.04	17.15	1.17	5.11
5	Chan	115.82	117.86	13.58	2.55	2.05	19.12	1.25	5.33
6	Chan	117.86	119.90	9.69	2.08	2.06	13.65	1.02	4.65
7	ROB	119.90	142.03	13.88	6.26	21.36	19.55	0.29	2.22

rning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.5548

INPUT
Description: R.S. 0.5548, Imm. Upstream Milky Way
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2617.04	1.92	2617.05	6.92	2616.71	25.78	2614.91	28.29	2614.41
31.2	2613.67	44.68	2610.68	56.39	2609.06	59.6	2608.84	60.58	2608.77
65.87	2608.06	67.89	2607.93	74.5	2607.79	79.8	2607.43	82.95	2607.2
84.5	2607.09	86.86	2606.91	88.88	2606.95	94.45	2606.9	99.11	2606.86
102.93	2606.97	104	2607.05	107.76	2607.33	113.26	2608.28	119.45	2609.41
122.88	2609.64	132.25	2610.22	137.97	2611.06	138.56	2611.11	157.07	2612.74
163.4	2613.2	179.41	2614.43	182.51	2614.57	196.01	2615.51	201.29	2615.85
207.16	2617.18	211.91	2618.38	220.07	2620.06	227.72	2620.27	228.48	2620.27

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	94.45	.035	107.76	.04	196.01	.025	211.91	.04

k Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
84.5 104 28.55 28.55 28.55 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2608.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.058	0.044	0.036
W.S. Elev (ft)	2608.05	Reach Len. (ft)	28.55	28.55	28.55
Crit W.S. (ft)	2607.97	Flow Area (sq ft)	7.41	21.90	4.73
E.G. Slope (ft/ft)	0.015934	Area (sq ft)	7.41	21.90	4.73
Q Total (cfs)	134.00	Flow (cfs)	13.03	101.81	19.16
Top Width (ft)	45.90	Top Width (ft)	18.47	19.50	7.93
Vel Total (ft/s)	3.94	Avg. Vel. (ft/s)	1.76	4.65	4.05
Max Chl Dpth (ft)	1.19	Hydr. Depth (ft)	0.40	1.12	0.60
Conv. Total (cfs)	1061.5	Conv. (cfs)	103.3	806.5	151.8
Length Wtd. (ft)	28.55	Wetted Per. (ft)	18.50	19.51	8.00
Min Ch El (ft)	2606.86	Shear (lb/sq ft)	0.40	1.12	0.59
Alpha	1.23	Stream Power (lb/ft s)	0.70	5.19	2.38
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	0.68	1.20	1.41
C & E Loss (ft)	0.00	Cum SA (acres)	1.01	0.67	2.00

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	50.70	67.60	0.03	0.08	1.57	0.03	0.05	0.42
2	LOB	67.60	84.50	13.00	7.34	16.93	9.70	0.43	1.77
3	Chan	84.50	88.40	14.30	4.21	3.91	10.67	1.08	3.40
4	Chan	88.40	92.30	15.09	4.34	3.90	11.26	1.11	3.47
5	Chan	92.30	96.20	20.61	4.48	3.90	15.38	1.15	4.60
6	Chan	96.20	100.10	27.40	4.59	3.90	20.45	1.18	5.97
7	Chan	100.10	104.00	24.41	4.28	3.90	18.22	1.10	5.70
8	ROB	104.00	128.90	19.16	4.73	8.00	14.30	0.60	4.05

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.5494

INPUT
Description: R.S. 0.5494, Centerline of Milky Way
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2612.15	13.69	2612.15	16.62	2611.86	26.53	2611.31	29.22	2611.02
32.6	2610.68	33.28	2610.62	42.53	2609.74	48.66	2608.95	66.8	2607.17
67.44	2607.11	77.7	2606.93	86.81	2607.01	106.63	2607.18	108	2607.23
117.5	2607.59	125.86	2608.35	129.3	2608.66	141.74	2610.25	151.31	2611.6
164.31	2612.63	177.57	2613.6	189.73	2614.38	204.91	2615.2	207.76	2615.34
215.54	2615.66	226.31	2615.96						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
66.8	108	35.47	35.47	35.47	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2608.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2607.73	Reach Len. (ft)	35.47	35.47	35.47
Crit W.S. (ft)	2607.73	Flow Area (sq ft)	1.59	27.82	3.13
E.G. Slope (ft/ft)	0.009253	Area (sq ft)	1.59	27.82	3.13
Q Total (cfs)	134.00	Flow (cfs)	3.87	122.41	7.72
Top Width (ft)	57.91	Top Width (ft)	5.69	41.20	11.02
Vel Total (ft/s)	4.12	Avg. Vel. (ft/s)	2.43	4.40	2.47
Max Chl Dpth (ft)	0.80	Hydr. Depth (ft)	0.28	0.68	0.28
Conv. Total (cfs)	1393.0	Conv. (cfs)	40.2	1272.6	80.2
Length Wtd. (ft)	35.47	Wetted Per. (ft)	5.72	41.21	11.03
Min Ch El (ft)	2606.93	Shear (lb/sq ft)	0.16	0.39	0.16
Alpha	1.07	Stream Power (lb/ft s)	0.39	1.72	0.40
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	0.67	1.18	1.41
C & E Loss (ft)	0.02	Cum SA (acres)	1.00	0.65	1.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	53.44	66.80	3.87	1.59	5.72	2.89	0.28	2.43
2	Chan	66.80	75.04	24.47	5.58	8.24	18.26	0.68	4.38
3	Chan	75.04	83.28	30.57	6.38	8.24	22.82	0.77	4.79
4	Chan	83.28	91.52	26.68	5.88	8.24	19.91	0.71	4.54
5	Chan	91.52	99.76	22.41	5.29	8.24	16.73	0.64	4.23
6	Chan	99.76	108.00	18.28	4.69	8.24	13.64	0.57	3.90
7	ROB	108.00	131.66	7.72	3.13	11.03	5.76	0.28	2.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.5427

INPUT
Description: R.S. 0.5427, Imm. Downstream of Milky Way
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2612.8	.1	2612.8	6.98	2612.38	23.35	2609.6	26.58	2609.07
35.07	2608.25	47.76	2607.27	58.45	2606.39	66.29	2606.32	69.77	2605.92
74.5	2605.06	76	2604.69	78.33	2604.12	79.63	2604.35	81	2604.59
82.88	2604.91	91.22	2605.96	111.6	2608.3	119.6	2608.8	123.34	2608.95
124.85	2609.06	131.05	2609.95	140.92	2610.84	148.22	2611.75	162.06	2613.28
181.11	2615.6	185.61	2616.21	191.14	2615.83	198.83	2614.72	205.32	2614.89
220.27	2615.04	222.79	2615.05						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	6.98	.058	69.77	.045	79.63	.04	148.22	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
76	81	92	102.19	112	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2606.77	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.045	0.044	0.040
W.S. Elev (ft)	2606.28	Reach Len. (ft)	92.00	102.19	112.00
Crit W.S. (ft)	2606.28	Flow Area (sq ft)	6.39	9.50	10.35
E.G. Slope (ft/ft)	0.017813	Area (sq ft)	6.39	9.50	10.35
Q Total (cfs)	134.00	Flow (cfs)	24.88	65.30	43.82
Top Width (ft)	27.34	Top Width (ft)	9.34	5.00	12.99
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	3.89	6.88	4.24
Max Chl Dpth (ft)	2.16	Hydr. Depth (ft)	0.68	1.90	0.80
Conv. Total (cfs)	1004.0	Conv. (cfs)	186.4	489.2	328.3
Length Wtd. (ft)	104.07	Wetted Per. (ft)	9.49	5.11	13.10
Min Ch El (ft)	2604.12	Shear (lb/sq ft)	0.75	2.07	0.88
Alpha	1.22	Stream Power (lb/ft s)	2.92	14.21	3.72
Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	0.67	1.17	1.41
C & E Loss (ft)	0.07	Cum SA (acres)	0.99	0.63	1.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	60.80	76.00	24.88	6.39	9.49	18.57	0.68	3.89
2	Chan	76.00	77.00	10.54	1.71	1.03	7.87	1.71	6.16
3	Chan	77.00	78.00	13.18	1.95	1.03	9.83	1.95	6.74
4	Chan	78.00	79.00	14.99	2.10	1.02	11.19	2.10	7.12
5	Chan	79.00	80.00	13.84	1.95	1.02	10.33	1.95	7.09
6	Chan	80.00	81.00	12.74	1.78	1.02	9.51	1.78	7.18
7	ROB	81.00	109.36	43.82	10.35	13.10	32.70	0.80	4.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.5234

INPUT
Description: R.S. 0.5234
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2608.14	3.16	2608.48	7.83	2609.02	10.4	2609.17	15.25	2609.76
35.68	2608.47	37.16	2608.39	39.32	2608.18	59.89	2606.81	73.57	2605.09
74.32	2604.88	75.24	2604.3	78.34	2602.7	80	2601.85	81.05	2601.31
88.4	2601.85	94.57	2602.3	95	2602.38	103.42	2603.91	107.13	2604.18
110.63	2604.34	126.7	2605.45	131.71	2606.39	138.54	2606.5	157.51	2606.95

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	73.57	.045	81.05	.058	138.54	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
80	88.4	122	129.67	138	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2603.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.045	0.056	0.058
W.S. Elev (ft)	2603.69	Reach Len. (ft)	122.00	129.67	138.00
Crit W.S. (ft)		Flow Area (sq ft)	3.29	17.70	15.22
E.G. Slope (ft/ft)	0.011182	Area (sq ft)	3.29	17.70	15.22
Q Total (cfs)	134.00	Flow (cfs)	10.04	80.21	43.75
Top Width (ft)	25.76	Top Width (ft)	3.57	8.40	13.79
Vel Total (ft/s)	3.70	Avg. Vel. (ft/s)	3.05	4.53	2.87
Max Chl Dpth (ft)	2.38	Hydr. Depth (ft)	0.92	2.11	1.10
Conv. Total (cfs)	1267.2	Conv. (cfs)	95.0	758.5	413.7
Length Wtd. (ft)	132.00	Wetted Per. (ft)	4.02	8.55	13.93
Min Ch El (ft)	2601.31	Shear (lb/sq ft)	0.57	1.44	0.76
Alpha	1.15	Stream Power (lb/ft s)	1.75	6.55	2.19
Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	0.66	1.14	1.37
C & E Loss (ft)	0.02	Cum SA (acres)	0.98	0.61	1.95

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	64.00	80.00	10.04	3.29	4.02	7.49	0.92	3.05
2	Chan	80.00	81.68	18.71	3.69	1.81	13.96	2.20	5.06
3	Chan	81.68	83.36	17.68	3.81	1.68	13.19	2.27	4.64
4	Chan	83.36	85.04	16.10	3.60	1.68	12.02	2.15	4.47
5	Chan	85.04	86.72	14.59	3.40	1.68	10.89	2.02	4.30
6	Chan	86.72	88.40	13.14	3.19	1.68	9.80	1.90	4.12
7	ROB	88.40	102.22	43.75	15.22	13.93	32.65	1.10	2.87

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern

REACH: Pima RS: 0.4988

PUT
Description: R.S. 0.4988
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2612.33	2.7	2612.27	4.69	2612.05	21.91	2609.93	23.98	2609.67
35.65	2609.08	40.65	2608.71	43.8	2608.27	47.71	2607.83	58.89	2606.4
65.53	2605.43	75.84	2604.17	79.69	2603.38	86.18	2602.82	87.84	2602.57
89.04	2602.16	92.3	2600.3	93.71	2599.5	93.97	2599.36	97.89	2600.07
98.3	2600.16	98.6	2600.22	103.01	2601.16	135.2	2601.97	136.47	2602
137.25	2602.02	166.39	2602.51	166.93	2602.53	167.99	2602.66	183.83	2604.4
190.43	2604.67	194.14	2604.92	206.04	2605.32				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	86.18	.045	103.01	.04	166.93	.058	183.83	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
92.3	98.6	102	98.5	96	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2602.30	Element			
Vel Head (ft)	0.40	Wt. n-Val.	0.045	0.045	0.042
W.S. Elev (ft)	2601.90	Reach Len. (ft)	102.00	98.50	96.00
Crit W.S. (ft)	2601.90	Flow Area (sq ft)	2.24	13.26	16.17
E.G. Slope (ft/ft)	0.013405	Area (sq ft)	2.24	13.26	16.17
Q Total (cfs)	134.00	Flow (cfs)	6.71	80.53	46.76
Top Width (ft)	42.86	Top Width (ft)	2.80	6.30	33.76
Vel Total (ft/s)	4.23	Avg. Vel. (ft/s)	3.00	6.07	2.89
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)	0.80	2.11	0.48
Conv. Total (cfs)	1157.4	Conv. (cfs)	58.0	695.5	403.9
Length Wtd. (ft)	98.33	Wetted Per. (ft)	3.23	6.63	33.87
Min Ch El (ft)	2599.36	Shear (lb/sq ft)	0.58	1.68	0.40
Alpha	1.43	Stream Power (lb/ft s)	1.74	10.17	1.16
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	0.65	1.09	1.32
C & E Loss (ft)	0.00	Cum SA (acres)	0.97	0.59	1.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.84	92.30	6.71	2.24	3.23	5.01	0.80	3.00
2	Chan	92.30	93.56	13.31	2.46	1.45	9.94	1.96	5.40
3	Chan	93.56	94.82	20.50	3.09	1.33	15.30	2.45	6.64
4	Chan	94.82	96.08	18.53	2.86	1.28	13.83	2.27	6.48
5	Chan	96.08	97.34	15.53	2.57	1.28	11.59	2.04	6.04
6	Chan	97.34	98.60	12.64	2.28	1.28	9.43	1.81	5.55
7	ROB	98.60	120.09	44.58	14.27	21.59	33.27	0.66	3.12
8	ROB	120.09	141.58	2.19	1.89	12.27	1.63	0.15	1.16

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.4801

INPUT
Description: R.S. 0.4801
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2608.48	2.87	2608.3	44.07	2606.17	59.27	2603.36	65.44	2602.52
78.42	2601.27	86.43	2600.57	104.57	2599.49	104.94	2599.36	108	2598.07
108.65	2597.8	109.78	2597.32	111.7	2598.12	111.9	2598.2	113.8	2598.99
115.58	2599.8	126.85	2599.87	134.31	2600.78	144.74	2601.88	146.8	2601.98
165.56	2602.76	176.41	2602.55						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	59.27	.04	104.57	.045	115.58	.058

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
108	111.7	106.21	106.21	106.21	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2600.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.043	0.045	0.049
W.S. Elev (ft)	2600.30	Reach Len. (ft)	106.21	106.21	106.21
Crit W.S. (ft)	2600.30	Flow Area (sq ft)	10.75	9.60	11.34
E.G. Slope (ft/ft)	0.012838	Area (sq ft)	10.75	9.60	11.34
Q Total (cfs)	134.00	Flow (cfs)	37.08	64.26	32.65
Top Width (ft)	39.50	Top Width (ft)	17.10	3.70	18.70
Vel Total (ft/s)	4.23	Avg. Vel. (ft/s)	3.45	6.69	2.88
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	0.63	2.59	0.61
Conv. Total (cfs)	1182.7	Conv. (cfs)	327.3	567.2	288.2
Length Wtd. (ft)	106.21	Wetted Per. (ft)	17.40	4.01	19.08
Min Ch El (ft)	2597.32	Shear (lb/sq ft)	0.49	1.92	0.48
Alpha	1.50	Stream Power (lb/ft s)	1.71	12.84	1.37
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)	0.64	1.07	1.29
C & E Loss (ft)	0.01	Cum SA (acres)	0.95	0.58	1.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	86.40	108.00	37.08	10.75	17.40	27.67	0.63	3.45
2	Chan	108.00	108.74	11.15	1.77	0.80	8.32	2.39	6.31
3	Chan	108.74	109.48	13.66	2.00	0.80	10.19	2.70	6.84
4	Chan	109.48	110.22	15.44	2.15	0.80	11.52	2.90	7.19
5	Chan	110.22	110.96	13.24	1.96	0.80	9.88	2.65	6.76
6	Chan	110.96	111.70	10.77	1.73	0.80	8.04	2.34	6.23
7	ROB	111.70	124.64	30.40	9.60	13.29	22.68	0.74	3.17
8	ROB	124.64	137.58	2.26	1.74	5.79	1.68	0.30	1.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.4600

INPUT
Description: R.S. 0.4600
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2602.57	6.4	2602.94	8.88	2603.04	20.89	2599.88	29.91	2598.73
31.27	2598.21	32.42	2597.64	34.1	2596.91	35.15	2596.45	35.9	2596.13
38.72	2596.83	38.9	2596.87	46.17	2598.25	52.84	2598.22	55.2	2598.22
62.67	2598.11	68.56	2598.52	77.61	2598.26	86.39	2598.41	90.07	2596.97
92.38	2595.96	96.84	2596.89	101.78	2598.2	101.81	2597.44	107.7	2598.58
111.52	2598.72	126.11	2599.55	139.11	2599.84	143.33	2600.34	144.92	2600.43

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	29.91	.045	38.72	.058	101.78	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
34.1	38.9	110	117	125	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2598.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.045	0.046	0.057
W.S. Elev (ft)	2598.00	Reach Len. (ft)	110.00	117.00	125.00
Crit W.S. (ft)	2598.00	Flow Area (sq ft)	1.35	7.17	18.48
E.G. Slope (ft/ft)	0.030453	Area (sq ft)	1.35	7.17	18.48
Q Total (cfs)	134.00	Flow (cfs)	4.99	51.63	77.38
Top Width (ft)	29.70	Top Width (ft)	2.41	4.80	22.49
Vel Total (ft/s)	4.96	Avg. Vel. (ft/s)	3.69	7.20	4.19
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)	0.56	1.49	0.82
Conv. Total (cfs)	767.9	Conv. (cfs)	28.6	295.9	443.4
Length Wtd. (ft)	120.07	Wetted Per. (ft)	2.65	5.05	23.84
Min Ch El (ft)	2596.13	Shear (lb/sq ft)	0.97	2.70	1.47
Alpha	1.24	Stream Power (lb/ft s)	3.58	19.43	6.17
Frctn Loss (ft)	2.60	Cum Volume (acre-ft)	0.62	1.05	1.26
C & E Loss (ft)	0.01	Cum SA (acres)	0.92	0.57	1.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	27.28	34.10	4.99	1.35	2.65	3.72	0.56	3.69
2	Chan	34.10	35.06	7.98	1.25	1.05	5.95	1.30	6.38
3	Chan	35.06	36.02	12.69	1.65	1.04	9.47	1.71	7.71
4	Chan	36.02	36.98	13.22	1.65	0.99	9.87	1.72	7.99
5	Chan	36.98	37.94	10.31	1.43	0.99	7.70	1.48	7.24
6	Chan	37.94	38.90	7.44	1.20	0.99	5.55	1.25	6.21

7	ROB	38.90	60.10	10.20	3.38	6.07	7.61	0.57	3.02
8	ROB	60.10	81.31						
9	ROB	81.31	102.51	65.46	14.63	15.53	48.85	1.02	4.47
10	ROB	102.51	123.72	1.72	0.47	2.24	1.28	0.21	3.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.4379

INPUT
Description: R.S. 0.4379
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2601.27	1.7	2601.18	7.59	2600.97	46.65	2596	48.65	2595.73
48.83	2595.59	54.03	2592.85	55.25	2592.2	57.39	2592.64	58	2592.8
63.68	2594.28	64.85	2594.58	65.34	2594.62	67.59	2594.72	92.68	2595.9
102.11	2596.38	116.7	2596.94	121.91	2597.33	144.69	2598.64		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	48.65	.045	63.68	.058	92.68	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
54.03	58	178.93	178.93	178.93	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2595.55	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.045	0.045	0.046
W.S. Elev (ft)	2594.96	Reach Len. (ft)	178.93	178.93	178.93
Crit W.S. (ft)	2594.96	Flow Area (sq ft)	4.24	9.79	10.18
E.G. Slope (ft/ft)	0.016202	Area (sq ft)	4.24	9.79	10.18
Q Total (cfs)	134.00	Flow (cfs)	17.03	72.33	44.63
Top Width (ft)	22.75	Top Width (ft)	4.01	3.97	14.77
Vel Total (ft/s)	5.54	Avg. Vel. (ft/s)	4.02	7.39	4.38
Max Chl Dpth (ft)	2.76	Hydr. Depth (ft)	1.06	2.47	0.69
Conv. Total (cfs)	1052.7	Conv. (cfs)	133.8	568.2	350.7
Length Wtd. (ft)	178.93	Wetted Per. (ft)	4.53	4.20	15.01
Min Ch El (ft)	2592.20	Shear (lb/sq ft)	0.95	2.36	0.69
Alpha	1.24	Stream Power (lb/ft s)	3.80	17.43	3.01
Frctn Loss (ft)	1.93	Cum Volume (acre-ft)	0.61	1.02	1.22
C & E Loss (ft)	0.05	Cum SA (acres)	0.92	0.56	1.71

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	43.22	54.03	17.03	4.24	4.53	12.71	1.06	4.02
2	Chan	54.03	54.82	12.48	1.85	0.90	9.32	2.33	6.76
3	Chan	54.82	55.62	16.38	2.13	0.86	12.22	2.69	7.68
4	Chan	55.62	56.41	16.19	2.07	0.81	12.08	2.61	7.82
5	Chan	56.41	57.21	14.54	1.94	0.81	10.85	2.44	7.49
6	Chan	57.21	58.00	12.74	1.80	0.82	9.51	2.27	7.08
7	ROB	58.00	75.34	44.63	10.18	15.01	33.31	0.69	4.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.4040

INPUT
Description: R.S. 0.4040
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2601.52	.6	2601.48	5.71	2600.62	8.74	2600.06	29.1	2596.91
34.97	2596.37	43.83	2594.68	51.42	2593.82	58.4	2592.5	59.8	2591.81
61.6	2590.27	61.91	2590	62	2589.99	64.29	2589.75	66.04	2589.57
68	2590.03	74.08	2591.44	74.3	2591.47	78.45	2591.61	89.7	2591.64
97.27	2591.73	105.07	2592.17	135.01	2593.71	138.64	2593.92	142.43	2594.14
152.69	2594.6	161	2594.93	163.17	2595	180.56	2596.78	182.93	2596.85
191.81	2597.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	59.8	.035	74.08	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
62	68	85	89.94	95	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2592.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.035	0.035	0.036
W.S. Elev (ft)	2591.97	Reach Len. (ft)	85.00	89.94	95.00
Crit W.S. (ft)	2591.97	Flow Area (sq ft)	2.45	13.12	16.03
E.G. Slope (ft/ft)	0.007683	Area (sq ft)	2.45	13.12	16.03
Q Total (cfs)	134.00	Flow (cfs)	8.08	81.55	44.37
Top Width (ft)	42.09	Top Width (ft)	2.53	6.00	33.56
Vel Total (ft/s)	4.24	Avg. Vel. (ft/s)	3.30	6.22	2.77
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	0.97	2.19	0.48
Conv. Total (cfs)	1528.8	Conv. (cfs)	92.2	930.4	506.2
Length Wtd. (ft)	90.49	Wetted Per. (ft)	3.24	6.08	33.74
Min Ch El (ft)	2589.57	Shear (lb/sq ft)	0.36	1.04	0.23
Alpha	1.49	Stream Power (lb/ft s)	1.20	6.44	0.63
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	0.60	0.98	1.16
C & E Loss (ft)	0.01	Cum SA (acres)	0.90	0.54	1.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	49.60	62.00	8.08	2.45	3.24	6.03	0.97	3.30
2	Chan	62.00	63.20	14.64	2.45	1.21	10.92	2.05	5.96
3	Chan	63.20	64.40	16.17	2.60	1.21	12.07	2.17	6.21
4	Chan	64.40	65.60	17.74	2.75	1.21	13.24	2.30	6.44
5	Chan	65.60	66.80	18.12	2.80	1.22	13.52	2.34	6.46
6	Chan	66.80	68.00	14.88	2.50	1.23	11.10	2.08	5.95
7	ROB	68.00	92.76	42.48	14.30	24.93	31.70	0.58	2.97
8	ROB	92.76	117.52	1.89	1.73	8.81	1.41	0.20	1.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.3869

INPUT
Description: R.S. 0.3869
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2601.31	1.92	2600.96	24.12	2596.71	33.26	2595.73	48.95	2594.18
69.8	2592.04	79.57	2591.16	83.41	2591.23	105.22	2590.2	111.17	2589.66
113.6	2589.06	114.38	2588.87	114.63	2588.81	114.65	2588.81	116.62	2588.35
118	2588.8	118.02	2588.81	118.5	2588.98	120.49	2589.68	125.99	2591.43
133.95	2591.72	157.2	2592.74	162.44	2592.92	185.26	2594.61	190.28	2594.69
200.29	2594.79	202.03	2594.79	204.1	2594.85	207.12	2594.97	224.38	2596.3
227.74	2596.56								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.058	114.38	.035	125.99	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
113.6	118.5	80	77.98	76	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2591.44	Element			
Vel Head (ft)	0.50	Wt. n-Val.	0.058	0.039	0.035
W.S. Elev (ft)	2590.94	Reach Len. (ft)	80.00	77.98	76.00
Crit W.S. (ft)	2590.94	Flow Area (sq ft)	15.69	11.05	5.71
E.G. Slope (ft/ft)	0.011781	Area (sq ft)	15.69	11.05	5.71
Q Total (cfs)	134.00	Flow (cfs)	32.69	76.59	24.72
Top Width (ft)	34.95	Top Width (ft)	24.09	4.90	5.96
Vel Total (ft/s)	4.13	Avg. Vel. (ft/s)	2.08	6.93	4.33
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)	0.65	2.26	0.96
Conv. Total (cfs)	1234.6	Conv. (cfs)	301.2	705.6	227.7
Length Wtd. (ft)	78.05	Wetted Per. (ft)	24.20	5.09	6.27
Min Ch El (ft)	2588.35	Shear (lb/sq ft)	0.48	1.60	0.67
Alpha	1.87	Stream Power (lb/ft s)	0.99	11.08	2.90
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	0.58	0.95	1.14
C & E Loss (ft)	0.03	Cum SA (acres)	0.88	0.53	1.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	68.16	90.88	0.01	0.04	1.37	0.01	0.03	0.27
2	LOB	90.88	113.60	32.68	15.65	22.83	24.39	0.69	2.09
3	Chan	113.60	114.58	9.15	1.96	1.01	6.83	2.00	4.67
4	Chan	114.58	115.56	15.89	2.19	1.01	11.86	2.23	7.27
5	Chan	115.56	116.54	18.69	2.41	1.01	13.95	2.46	7.76
6	Chan	116.54	117.52	18.39	2.41	1.03	13.72	2.46	7.64
7	Chan	117.52	118.50	14.47	2.09	1.04	10.80	2.13	6.92
8	ROB	118.50	140.35	24.72	5.71	6.27	18.45	0.96	4.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.3722

INPUT
Description: R.S. 0.3722
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2596.09	5.2	2596	20.38	2595.38	30	2594.96	34.58	2593.48
37.46	2592.04	46.42	2591.58	54.99	2590.97	58.52	2590.48	65.29	2589.44
70.59	2589.59	75.28	2589.12	77.82	2589.02	87.83	2588.58	92.3	2587.85
92.7	2587.78	94.98	2587.21	95	2587.21	95.09	2587.19	99.4	2587.83
104.53	2588.59	107.02	2589	113.33	2589.28	146.72	2590.29	158.36	2590.83
170.25	2591.41	178.78	2591.65	188.42	2592.43	193.45	2592.88	196.9	2592.38

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	20.38	.04	92.7	.035	104.53	.058	158.36	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
92.3	99.4	96	92.55	86	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2589.72	Element			
Vel Head (ft)	0.40	Wt. n-Val.	0.040	0.035	0.037
W.S. Elev (ft)	2589.32	Reach Len. (ft)	96.00	92.55	86.00
Crit W.S. (ft)	2589.32	Flow Area (sq ft)	10.99	12.80	8.17
E.G. Slope (ft/ft)	0.009754	Area (sq ft)	10.99	12.80	8.17
Q Total (cfs)	134.00	Flow (cfs)	27.89	78.24	27.87
Top Width (ft)	41.39	Top Width (ft)	19.02	7.10	15.27
Vel Total (ft/s)	4.19	Avg. Vel. (ft/s)	2.54	6.11	3.41
Max Chl Dpth (ft)	2.13	Hydr. Depth (ft)	0.58	1.80	0.54
Conv. Total (cfs)	1356.8	Conv. (cfs)	282.4	792.2	282.2
Length Wtd. (ft)	92.26	Wetted Per. (ft)	19.10	7.23	15.37
Min Ch El (ft)	2587.19	Shear (lb/sq ft)	0.35	1.08	0.32
Alpha	1.45	Stream Power (lb/ft s)	0.89	6.59	1.10
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	0.56	0.93	1.13
C & E Loss (ft)	0.00	Cum SA (acres)	0.84	0.52	1.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	55.38	73.84	0.01	0.02	0.56	0.00	0.03	0.33
2	LOB	73.84	92.30	27.88	10.97	18.54	20.81	0.59	2.54
3	Chan	92.30	93.72	12.65	2.30	1.46	9.44	1.62	5.49
4	Chan	93.72	95.14	18.03	2.80	1.46	13.46	1.97	6.44
5	Chan	95.14	96.56	18.96	2.87	1.44	14.15	2.02	6.62
6	Chan	96.56	97.98	15.77	2.57	1.44	11.77	1.81	6.15
7	Chan	97.98	99.40	12.83	2.27	1.44	9.57	1.60	5.66
8	ROB	99.40	118.90	27.87	8.17	15.37	20.80	0.54	3.41

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.3547

INPUT
Description: R.S. 0.3547
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2595.18	7.21	2595.44	11.76	2595.46	14.43	2595.46	24.18	2591.54
26.16	2590.79	26.67	2590.75	39.79	2590.21	67.36	2589.14	71.07	2588.93
71.88	2588.88	76.24	2588.06	85.9	2586.93	91.06	2586.73	93.4	2586.27
93.87	2586.18	94.51	2586	96.28	2585.5	98.41	2585.97	99	2586.09
99.4	2586.17	104.7	2587.28	111.29	2587.72	114.17	2587.72	142.04	2589.98
165.34	2590.84	174.69	2592.48	181.62	2593.26	192.58	2594.83	194.53	2595.11
200.42	2595.85	211.19	2596.52	216.7	2596.94	223.04	2597.05		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	14.43	.04	91.06	.035	98.41	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
93.4	99.4	87.61	87.61	87.61	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2588.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.038	0.036	0.040
W.S. Elev (ft)	2587.82	Reach Len. (ft)	87.61	87.61	87.61
Crit W.S. (ft)	2587.82	Flow Area (sq ft)	11.61	11.70	8.29
E.G. Slope (ft/ft)	0.010037	Area (sq ft)	11.61	11.70	8.29
Q Total (cfs)	134.00	Flow (cfs)	39.76	74.47	19.77
Top Width (ft)	37.15	Top Width (ft)	15.12	6.00	16.03
Vel Total (ft/s)	4.24	Avg. Vel. (ft/s)	3.42	6.36	2.39
Max Chl Dpth (ft)	2.32	Hydr. Depth (ft)	0.77	1.95	0.52
Conv. Total (cfs)	1337.5	Conv. (cfs)	396.8	743.3	197.4
Length Wtd. (ft)	87.61	Wetted Per. (ft)	15.22	6.17	16.16
Min Ch El (ft)	2585.50	Shear (lb/sq ft)	0.48	1.19	0.32
Alpha	1.49	Stream Power (lb/ft s)	1.64	7.56	0.77
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	0.53	0.90	1.11
C & E Loss (ft)	0.03	Cum SA (acres)	0.80	0.50	1.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.72	93.40	39.76	11.61	15.22	29.67	0.77	3.42
2	Chan	93.40	94.60	11.81	2.02	1.24	8.81	1.69	5.84
3	Chan	94.60	95.80	15.82	2.42	1.25	11.81	2.02	6.54
4	Chan	95.80	97.00	19.06	2.70	1.24	14.22	2.25	7.07
5	Chan	97.00	98.20	16.16	2.44	1.23	12.06	2.03	6.63
6	Chan	98.20	99.40	11.62	2.13	1.23	8.67	1.77	5.46
7	ROB	99.40	124.13	19.77	8.29	16.16	14.76	0.52	2.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

VER: Unnamed Eastern
REACH: Pima RS: 0.3381

INPUT
Description: R.S. 0.3381
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2590.38	.22	2590.37	10.49	2589.54	18.91	2589.61	73.35	2587.24
78.35	2586.99	83.3	2586.84	99.26	2586.31	100.98	2585.58	104.4	2584.32
105.03	2584.09	105.83	2583.8	108	2584.38	115.26	2586.31	119.03	2586.98
120.49	2586.94	146.39	2587.23	162.68	2588.46	169.2	2589.07	175.34	2589.29
184.8	2589.8	197.26	2590.71	197.43	2590.72	197.64	2590.74	198.09	2590.78
203.87	2591.48	214.18	2591.46	222.26	2591.9	229.57	2592.43	240.02	2594.16
243.84	2594.57	247.45	2594.87	249.35	2595.21				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	78.35	.04	99.26	.035	105.83	.04	214.18	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
104.4	108	60.88	60.88	60.88	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2587.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.036	0.038	0.040
W.S. Elev (ft)	2586.85	Reach Len. (ft)	60.88	60.88	60.88
Crit W.S. (ft)		Flow Area (sq ft)	12.54	9.99	11.79
E.G. Slope (ft/ft)	0.006001	Area (sq ft)	12.54	9.99	11.79
Q Total (cfs)	134.00	Flow (cfs)	39.64	57.99	36.37
Top Width (ft)	35.49	Top Width (ft)	21.57	3.60	10.32
Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)	3.16	5.80	3.09
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)	0.58	2.78	1.14
Conv. Total (cfs)	1729.7	Conv. (cfs)	511.7	748.5	469.5
Length Wtd. (ft)	60.88	Wetted Per. (ft)	21.95	3.77	10.62

Min Ch El (ft)	2583.80	Shear (lb/sq ft)	0.21	0.99	0.42
Alpha	1.32	Stream Power (lb/ft s)	0.68	5.77	1.28
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	0.51	0.88	1.09
C & E Loss (ft)	0.04	Cum SA (acres)	0.76	0.49	1.49

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	62.64	83.52	0.00	0.01	0.69	0.00	0.01	0.14
2	LOB	83.52	104.40	39.64	12.53	21.26	29.58	0.60	3.16
3	Chan	104.40	105.12	11.57	1.92	0.77	8.63	2.67	6.03
4	Chan	105.12	105.84	13.51	2.11	0.77	10.08	2.93	6.41
5	Chan	105.84	106.56	12.25	2.13	0.75	9.14	2.96	5.76
6	Chan	106.56	107.28	10.95	1.99	0.75	8.17	2.76	5.50
7	Chan	107.28	108.00	9.71	1.85	0.75	7.25	2.57	5.25
8	ROB	108.00	136.27	36.37	11.79	10.62	27.15	1.14	3.09

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.3265

INPUT
Description: R.S. 0.3265
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2588.94	5.53	2588.82	26.3	2588.83	28.02	2588.81	34.47	2588.8
39.41	2588.76	52.45	2588.88	58.66	2588.88	71.02	2589.2	72.07	2588.29
73.62	2585.71	76.43	2585.85	78.18	2585.98	81.36	2583.58	82.36	2582.61
85	2583.53	92.86	2586.28	94.74	2586.92	95.34	2586.95	106.02	2588.33
119.02	2589.24	120.67	2589.22	121.48	2589.21	123.41	2589.1	142.61	2588.19
146.86	2588.25	155.49	2588.1	163.88	2589.04	177.72	2589.83	178.02	2589.84
178.53	2589.87	193.44	2591						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	58.66	.04	78.18	.035	82.36	.04	119.02	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
81.36	85	127.96	127.96	127.96	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2586.61	Element			
Vel Head (ft)	0.72	Wt. n-Val.	0.035	0.038	0.040
W.S. Elev (ft)	2585.89	Reach Len. (ft)	127.96	127.96	127.96
Crit W.S. (ft)	2585.89	Flow Area (sq ft)	3.88	10.25	7.98
E.G. Slope (ft/ft)	0.012800	Area (sq ft)	3.88	10.25	7.98
Q Total (cfs)	134.00	Flow (cfs)	16.43	81.53	36.05
Top Width (ft)	16.95	Top Width (ft)	6.56	3.64	6.75
Vel Total (ft/s)	6.06	Avg. Vel. (ft/s)	4.23	7.95	4.52
Max Chl Dpth (ft)	3.28	Hydr. Depth (ft)	0.59	2.82	1.18
Conv. Total (cfs)	1184.4	Conv. (cfs)	145.2	720.6	318.6
Length Wtd. (ft)	127.96	Wetted Per. (ft)	7.44	4.19	7.15
Min Ch El (ft)	2582.61	Shear (lb/sq ft)	0.42	1.96	0.89
Alpha	1.26	Stream Power (lb/ft s)	1.76	15.55	4.03
Frctn Loss (ft)	1.48	Cum Volume (acre-ft)	0.50	0.87	1.08
C & E Loss (ft)	0.11	Cum SA (acres)	0.74	0.49	1.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	65.09	81.36	16.43	3.88	7.44	12.26	0.59	4.23
2	Chan	81.36	82.09	14.29	1.94	1.01	10.67	2.67	7.37
3	Chan	82.09	82.82	19.83	2.32	0.86	14.80	3.18	8.56
4	Chan	82.82	83.54	18.25	2.18	0.77	13.62	3.00	8.37
5	Chan	83.54	84.27	15.75	2.00	0.77	11.75	2.74	7.89
6	Chan	84.27	85.00	13.40	1.81	0.77	10.00	2.49	7.39
7	ROB	85.00	106.69	36.05	7.98	7.15	26.90	1.18	4.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.3023

INPUT
Description: R.S. 0.3023
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2586.5	7.13	2584.82	22.22	2584.06	35.8	2583.35	41.18	2583.07
44.63	2582.57	61.18	2582.36	64.32	2582.32	66.22	2582.44	67.08	2582.17
71.27	2581.5	75	2580.91	75.98	2580.76	77.85	2580.54	78.43	2580.47
81.4	2580.9	83.28	2581.17	88.95	2582.24	110.19	2584.59	113.32	2584.84
115.14	2584.97	127.39	2586.36	132.26	2586.31	136.26	2586.57	141.36	2586.22
150.77	2585.95	153.4	2585.85	154.52	2586.02	162.17	2587.42		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.058	77.85	.035	88.95	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
75	81.4	70	78.08	90	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2583.02	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.058	0.042	0.035
W.S. Elev (ft)	2582.66	Reach Len. (ft)	70.00	78.08	90.00
Crit W.S. (ft)	2582.66	Flow Area (sq ft)	13.97	12.66	9.26
E.G. Slope (ft/ft)	0.010560	Area (sq ft)	13.97	12.66	9.26
Q Total (cfs)	134.00	Flow (cfs)	21.55	71.65	40.80
Top Width (ft)	48.73	Top Width (ft)	30.99	6.40	11.34
Vel Total (ft/s)	3.73	Avg. Vel. (ft/s)	1.54	5.66	4.40
Max Chl Dpth (ft)	2.19	Hydr. Depth (ft)	0.45	1.98	0.82
Conv. Total (cfs)	1304.0	Conv. (cfs)	209.7	697.2	397.0
Length Wtd. (ft)	84.76	Wetted Per. (ft)	31.14	6.46	11.49

Min Ch El (ft)	2580.47	Shear (lb/sq ft)	0.30	1.29	0.53
Alpha	1.68	Stream Power (lb/ft s)	0.46	7.31	2.34
Frctn Loss (ft)	1.39	Cum Volume (acre-ft)	0.47	0.83	1.05
C & E Loss (ft)	0.04	Cum SA (acres)	0.69	0.47	1.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	30.00	45.00	0.02	0.06	0.99	0.02	0.06	0.34
2	LOB	45.00	60.00	2.04	2.84	15.00	1.52	0.19	0.72
3	LOB	60.00	75.00	19.50	11.07	15.15	14.55	0.74	1.76
4	Chan	75.00	76.28	9.28	2.36	1.29	6.93	1.85	3.93
5	Chan	76.28	77.56	10.72	2.57	1.29	8.00	2.01	4.17
6	Chan	77.56	78.84	18.05	2.75	1.29	13.47	2.14	6.58
7	Chan	78.84	80.12	18.13	2.61	1.29	13.53	2.04	6.95
8	Chan	80.12	81.40	15.47	2.37	1.29	11.54	1.85	6.52
9	ROB	81.40	97.55	40.80	9.26	11.49	30.45	0.82	4.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2875

INPUT
Description: R.S. 0.2875, Imm. Upstream of Venus Drive
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2587.88	2.56	2587.66	14.2	2587.08	22.05	2586.42	22.79	2586.44
26.35	2586.16	43.79	2584.3	44.89	2584.46	62.98	2582.89	64.4	2582.74
65.82	2582.63	82.2	2581.65	82.56	2581.05	84.93	2581.39	88.87	2580.61
93	2579.76	93.31	2579.7	104.27	2579.31	104.28	2579.31	104.94	2579.29
107.78	2579.72	107.9	2579.72	122.76	2579.6	133.19	2579.21	139.55	2578.84
161.35	2579.08	163.92	2579.07	165.43	2579.16	166.78	2579.21	184.05	2580.37
189.6	2580.73	190.67	2580.8	202.36	2581.7	204.68	2582	227.8	2584.79
229.17	2585.02	237.13	2585.83	247.8	2586.85	249.35	2586.93		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.058	93.31	.035	104.94	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
93	107.9	62.12	62.12	62.12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2579.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.036	0.040

W.S. Elev (ft)	2579.75	Reach Len. (ft)	62.12	62.12	62.12
Crit W.S. (ft)	2579.75	Flow Area (sq ft)		3.61	32.03
E.G. Slope (ft/ft)	0.028961	Area (sq ft)		3.61	32.03
Q Total (cfs)	134.00	Flow (cfs)		10.03	123.97
Top Width (ft)	81.66	Top Width (ft)		14.82	66.84
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)		2.78	3.87
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.24	0.48
Conv. Total (cfs)	787.4	Conv. (cfs)		58.9	728.5
Length Wtd. (ft)	62.12	Wetted Per. (ft)		14.86	66.88
Min Ch El (ft)	2579.29	Shear (lb/sq ft)		0.44	0.87
Alpha	1.02	Stream Power (lb/ft s)		1.22	3.35
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	0.46	0.82	1.01
C & E Loss (ft)	0.04	Cum SA (acres)	0.66	0.45	1.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	93.00	95.98	0.33	0.25	2.91	0.25	0.09	1.32
2	Chan	95.98	98.96	1.26	0.57	2.98	0.94	0.19	2.19
3	Chan	98.96	101.94	2.61	0.89	2.98	1.95	0.30	2.93
4	Chan	101.94	104.92	4.32	1.20	2.98	3.23	0.40	3.59
5	Chan	104.92	107.90	1.50	0.69	3.01	1.12	0.23	2.17
6	ROB	107.90	136.19	13.89	6.66	28.30	10.37	0.24	2.08
7	ROB	136.19	164.48	100.91	21.90	28.30	75.31	0.77	4.61
8	ROB	164.48	192.77	9.17	3.47	10.28	6.85	0.34	2.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2757

INPUT
Description: R.S. 0.2757, Centerline of Venus Drive
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2588.7	39.98	2585.45	57.14	2583.96	66.49	2583.02	72.25	2582.4
123.79	2579.35	131.59	2578.95	143.51	2578.82	159.06	2578.55	170.24	2578.23
177	2578.03	187.86	2577.72	201.43	2577.64	218.34	2577.73	221.5	2578
227.5	2578.52	238.44	2580.24	255.13	2582.13	263.58	2582.37	266.19	2582.67
269.29	2582.96	273.83	2582.76						

Manning's n Values num= 1

Sta	n Val
0	.025

Bnk Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
177	221.5	56.52	56.52	56.52	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2578.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2578.76	Reach Len. (ft)	56.52	56.52	56.52
Crit W.S. (ft)		Flow Area (sq ft)	9.71	45.34	3.19
E.G. Slope (ft/ft)	0.001861	Area (sq ft)	9.71	45.34	3.19
Q Total (cfs)	134.00	Flow (cfs)	11.70	117.69	4.60
Top Width (ft)	82.15	Top Width (ft)	30.12	44.50	7.54
Vel Total (ft/s)	2.30	Avg. Vel. (ft/s)	1.21	2.60	1.44
Max Chl Dpth (ft)	1.12	Hydr. Depth (ft)	0.32	1.02	0.42
Conv. Total (cfs)	3106.1	Conv. (cfs)	271.3	2728.1	106.7
Length Wtd. (ft)	56.52	Wetted Per. (ft)	30.13	44.52	7.58
Min Ch El (ft)	2577.64	Shear (lb/sq ft)	0.04	0.12	0.05
Alpha	1.16	Stream Power (lb/ft s)	0.05	0.31	0.07
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	0.45	0.78	0.98
C & E Loss (ft)	0.01	Cum SA (acres)	0.64	0.41	1.32

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	141.60	177.00	11.70	9.71	30.13	8.73	0.32	1.21
2	Chan	177.00	185.90	17.62	7.64	8.90	13.15	0.86	2.31
3	Chan	185.90	194.80	24.70	9.36	8.90	18.43	1.05	2.64
4	Chan	194.80	203.70	26.86	9.84	8.90	20.04	1.11	2.73
5	Chan	203.70	212.60	26.06	9.66	8.90	19.45	1.09	2.70
6	Chan	212.60	221.50	22.46	8.84	8.91	16.76	0.99	2.54
7	ROB	221.50	231.97	4.60	3.19	7.58	3.44	0.42	1.44

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2650

INPUT
Description: R.S. 0.2650, Imm. Downstream of Venus Drive
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2588.96	3.14	2588.71	20.55	2587.24	33.3	2586.06	36.77	2585.62
41.75	2584.6	45.27	2584.06	48.64	2583.16	100.34	2582.23	114	2581.41
131.03	2580.3	144.8	2579.64	164.26	2579.07	177.58	2579.04	190.17	2578.86
199.45	2578.03	205.44	2577.51	208.8	2577.04	211.56	2576.66	212.62	2576.52
220.12	2576.8	222	2577.02	233.23	2578.31	247.25	2580.03	255.26	2580.72
258.54	2581.09	262.47	2581.49	269.27	2581.49	282.24	2582.21		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	48.64	.04	199.45	.035	220.12	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
208.8	222	56	51.92	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2578.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.035	0.036	0.040
W.S. Elev (ft)	2578.51	Reach Len. (ft)	56.00	51.92	50.00
Crit W.S. (ft)		Flow Area (sq ft)	9.90	23.53	9.68
E.G. Slope (ft/ft)	0.004062	Area (sq ft)	9.90	23.53	9.68
Q Total (cfs)	134.00	Flow (cfs)	23.11	92.03	18.86

Top Width (ft)	40.81	Top Width (ft)	14.74	13.20	12.88
Vel Total (ft/s)	3.11	Avg. Vel. (ft/s)	2.33	3.91	1.95
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)	0.67	1.78	0.75
Conv. Total (cfs)	2102.4	Conv. (cfs)	362.6	1443.9	295.8
Length Wtd. (ft)	52.43	Wetted Per. (ft)	14.81	13.25	12.96
Min Ch El (ft)	2576.52	Shear (lb/sq ft)	0.17	0.45	0.19
Alpha	1.24	Stream Power (lb/ft s)	0.40	1.76	0.37
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	0.44	0.74	0.97
C & E Loss (ft)	0.02	Cum SA (acres)	0.61	0.37	1.31

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	167.04	208.80	23.11	9.90	14.81	17.25	0.67	2.33
2	Chan	208.80	211.44	16.39	4.37	2.66	12.23	1.65	3.75
3	Chan	211.44	214.08	21.49	5.13	2.65	16.04	1.94	4.19
4	Chan	214.08	216.72	20.56	4.98	2.64	15.34	1.89	4.12
5	Chan	216.72	219.36	18.80	4.72	2.64	14.03	1.79	3.98
6	Chan	219.36	222.00	14.80	4.32	2.65	11.04	1.64	3.42
7	ROB	222.00	234.05	18.84	9.64	12.13	14.06	0.80	1.96
8	ROB	234.05	246.10	0.01	0.04	0.83	0.01	0.05	0.31

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2552

INPUT
Description: R.S. 0.2552
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2588.26	.81	2588.48	2.04	2588.78	2.52	2586.46	2.83	2584.92
4.69	2584.92	9.41	2584.94	34.01	2581.62	40.84	2580.64	44.11	2580.55
57.83	2579.98	73.58	2579.17	83.35	2578.56	94.14	2578.26	116.64	2577.67
126	2576.52	128.5	2576.21	129.37	2576.07	130.37	2576.17	131.56	2576.29
133	2576.46	151.74	2578.73	163.12	2579.61	186.84	2579.87	188.57	2579.93

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	4.69	.04	116.64	.035	131.56	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
126	133	168	161.76	158	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2578.34	Element			
Vel Head (ft)	0.41	Wt. n-Val.	0.035	0.036	0.040
W.S. Elev (ft)	2577.93	Reach Len. (ft)	168.00	161.76	158.00
Crit W.S. (ft)	2577.93	Flow Area (sq ft)	9.17	11.57	8.96
E.G. Slope (ft/ft)	0.011577	Area (sq ft)	9.17	11.57	8.96
Q Total (cfs)	134.00	Flow (cfs)	33.10	71.81	29.09
Top Width (ft)	38.58	Top Width (ft)	19.41	7.00	12.17
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	3.61	6.21	3.24
Max Chl Dpth (ft)	1.86	Hydr. Depth (ft)	0.47	1.65	0.74
Conv. Total (cfs)	1245.4	Conv. (cfs)	307.6	667.4	270.3
Length Wtd. (ft)	161.12	Wetted Per. (ft)	19.49	7.05	12.25
Min Ch El (ft)	2576.07	Shear (lb/sq ft)	0.34	1.19	0.53
Alpha	1.29	Stream Power (lb/ft s)	1.23	7.36	1.72
Frctn Loss (ft)	2.17	Cum Volume (acre-ft)	0.43	0.72	0.96
C & E Loss (ft)	0.00	Cum SA (acres)	0.59	0.36	1.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	100.80	126.00	33.10	9.17	19.49	24.70	0.47	3.61
2	Chan	126.00	127.40	12.48	2.10	1.41	9.32	1.50	5.94
3	Chan	127.40	128.80	14.99	2.35	1.41	11.19	1.68	6.39
4	Chan	128.80	130.20	17.22	2.55	1.41	12.85	1.82	6.76
5	Chan	130.20	131.60	15.50	2.39	1.41	11.57	1.71	6.47
6	Chan	131.60	133.00	11.62	2.18	1.41	8.67	1.56	5.33
7	ROB	133.00	144.11	29.05	8.90	11.20	21.68	0.80	3.26
8	ROB	144.11	155.23	0.04	0.07	1.06	0.03	0.06	0.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2246

INPUT
Description: R.S. 0.2246, Imm. Upstream of Placid Place
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2582.97	2.76	2582.76	19.08	2581.29	26.65	2580.28	44.2	2578.65
49.32	2578.14	66.89	2577.67	66.97	2577.66	67.07	2577.66	88.62	2575.67
97.95	2574.17	99.4	2573.96	103.12	2573.42	103.13	2573.42	103.18	2573.41
111.1	2573.98	115.3	2574.28	115.8	2574.32	117.92	2574.45	123.12	2574.5
139.9	2574.59	155.37	2574.58	158.37	2574.6	161.43	2574.68	176.03	2575.25
182.06	2575.41	199.27	2576.04	203.49	2576.15	222.82	2576.72	224.01	2576.75
229.14	2577								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	103.12	.035	115.3	.058	222.82	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
99.4	111.1	85	79.82	75	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2575.79	Element			
Vel Head (ft)	0.41	Wt. n-Val.	0.040	0.036	0.053
W.S. Elev (ft)	2575.38	Reach Len. (ft)	85.00	79.82	75.00
Crit W.S. (ft)	2575.38	Flow Area (sq ft)	6.41	19.69	49.56
E.G. Slope (ft/ft)	0.014457	Area (sq ft)	6.41	19.69	49.56
Q Total (cfs)	295.00	Flow (cfs)	22.76	136.09	136.15
Top Width (ft)	90.28	Top Width (ft)	8.94	11.70	69.63
Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)	3.55	6.91	2.75

Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)	0.72	1.68	0.71
Conv. Total (cfs)	2453.4	Conv. (cfs)	189.3	1131.8	1132.3
Length Wtd. (ft)	78.29	Wetted Per. (ft)	9.06	11.76	69.66
Min Ch El (ft)	2573.41	Shear (lb/sq ft)	0.64	1.51	0.64
Alpha	1.74	Stream Power (lb/ft s)	2.27	10.44	1.76
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	0.40	0.66	0.86
C & E Loss (ft)	0.00	Cum SA (acres)	0.54	0.33	1.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	79.52	99.40	22.76	6.41	9.06	7.72	0.72	3.55
2	Chan	99.40	101.74	22.26	3.71	2.36	7.54	1.58	6.00
3	Chan	101.74	104.08	31.67	4.42	2.36	10.74	1.89	7.17
4	Chan	104.08	106.42	32.09	4.25	2.35	10.88	1.82	7.55
5	Chan	106.42	108.76	27.28	3.86	2.35	9.25	1.65	7.08
6	Chan	108.76	111.10	22.79	3.46	2.35	7.73	1.48	6.59
7	ROB	111.10	134.71	75.77	22.32	23.62	25.69	0.95	3.40
8	ROB	134.71	158.32	47.08	18.67	23.61	15.96	0.79	2.52
9	ROB	158.32	181.92	13.29	8.57	22.43	4.51	0.38	1.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2095

INPUT
Description: R.S. 0.2095, Centerline of Placid Place
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2580.97	5.33	2580.54	16.65	2579.57	44.93	2577.48	53.68	2576.59
61.39	2575.68	64.43	2575.47	80.98	2573.83	84.23	2573.64	87.45	2573.31
91.5	2573.07	93.12	2572.97	96.35	2572.86	96.62	2572.85	105.12	2572.82
107.12	2572.88	110.66	2572.96	112	2572.99	122.9	2573.21	150.81	2573.98
166.08	2574.45	184.56	2574.89	219.83	2575.82	239.82	2576.34	244.19	2576.49

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
91.5	112	27.45	27.45	27.45	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2574.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2574.18	Reach Len. (ft)	27.45	27.45	27.45
Crit W.S. (ft)	2574.18	Flow Area (sq ft)	8.27	26.39	28.53
E.G. Slope (ft/ft)	0.007315	Area (sq ft)	8.27	26.39	28.53
Q Total (cfs)	295.00	Flow (cfs)	29.55	158.70	106.75

Top Width (ft)	79.65	Top Width (ft)	14.00	20.50	45.15
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)	3.57	6.01	3.74
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.59	1.29	0.63
Conv. Total (cfs)	3449.3	Conv. (cfs)	345.6	1855.6	1248.2
Length Wtd. (ft)	27.45	Wetted Per. (ft)	14.05	20.51	45.16
Min Ch El (ft)	2572.82	Shear (lb/sq ft)	0.27	0.59	0.29
Alpha	1.18	Stream Power (lb/ft s)	0.96	3.53	1.08
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	0.38	0.62	0.79
C & E Loss (ft)	0.06	Cum SA (acres)	0.51	0.30	1.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.20	91.50	29.55	8.27	14.05	10.02	0.59	3.57
2	Chan	91.50	95.60	28.62	4.96	4.10	9.70	1.21	5.76
3	Chan	95.60	99.70	33.26	5.43	4.10	11.27	1.32	6.12
4	Chan	99.70	103.80	34.04	5.51	4.10	11.54	1.34	6.18
5	Chan	103.80	107.90	33.34	5.44	4.10	11.30	1.33	6.13
6	Chan	107.90	112.00	29.44	5.05	4.10	9.98	1.23	5.83
7	ROB	112.00	138.44	96.96	23.38	26.45	32.87	0.88	4.15
8	ROB	138.44	164.88	9.78	5.14	18.72	3.32	0.27	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.2043

INPUT
Description: R.S. 0.2043, Imm. downstream of Placid Place
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2580.48	6.75	2580.4	9.68	2580.39	26.28	2579.94	31.85	2579.75
39.48	2579.32	51.91	2577.96	69.75	2572.93	70.5	2572.73	71.87	2572.36
72	2572.35	72.09	2572.35	72.35	2572.34	81.63	2572.01	82.61	2572.06
85.54	2572.23	87.68	2572.01	90.02	2571.93	93	2572.31	100.31	2573.23
106.99	2573.7	107.36	2573.72	117.89	2573.59	122.63	2573.74	137.22	2572.86
141.73	2572.64	154.19	2573.03	164.4	2573.14	180.93	2573.22	182.91	2573.16
189.68	2573.45	203.67	2574.26	211.07	2574.18	228.56	2574.66	237.46	2574.94
245.38	2575.8	247.19	2575.89	250.07	2575.86				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	81.63	.045	100.31	.058	106.99	.04	164.4	.025
189.68	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
72	93	142	139.6	138	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2573.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.040	0.043	0.036
W.S. Elev (ft)	2573.72	Reach Len. (ft)	142.00	139.60	138.00
Crit W.S. (ft)	2573.59	Flow Area (sq ft)	3.58	33.43	51.30
E.G. Slope (ft/ft)	0.008332	Area (sq ft)	3.58	33.43	51.30

Q Total (cfs)	295.00	Flow (cfs)	9.39	144.66	140.95
Top Width (ft)	126.62	Top Width (ft)	5.06	21.00	100.55
Vel Total (ft/s)	3.34	Avg. Vel. (ft/s)	2.63	4.33	2.75
Max Chl Dpth (ft)	1.79	Hydr. Depth (ft)	0.71	1.59	0.51
Conv. Total (cfs)	3231.7	Conv. (cfs)	102.8	1584.7	1544.2
Length Wtd. (ft)	139.47	Wetted Per. (ft)	5.25	21.05	100.69
Min Ch El (ft)	2571.93	Shear (lb/sq ft)	0.35	0.83	0.27
Alpha	1.17	Stream Power (lb/ft s)	0.93	3.58	0.73
Frctn Loss (ft)	1.34	Cum Volume (acre-ft)	0.38	0.60	0.77
C & E Loss (ft)	0.02	Cum SA (acres)	0.51	0.29	1.00

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	57.60	72.00	9.39	3.58	5.25	3.18	0.71	2.63
2	Chan	72.00	76.20	26.26	6.07	4.20	8.90	1.44	4.33
3	Chan	76.20	80.40	30.94	6.70	4.20	10.49	1.59	4.62
4	Chan	80.40	84.60	30.21	6.93	4.21	10.24	1.65	4.36
5	Chan	84.60	88.80	28.16	6.80	4.21	9.55	1.62	4.14
6	Chan	88.80	93.00	29.08	6.94	4.22	9.86	1.65	4.19
7	ROB	93.00	124.41	22.10	9.75	30.66	7.49	0.32	2.27
8	ROB	124.41	155.83	60.92	22.67	31.45	20.65	0.72	2.69
9	ROB	155.83	187.24	55.37	17.45	31.42	18.77	0.56	3.17
10	ROB	187.24	218.66	2.57	1.43	7.16	0.87	0.20	1.79

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.1778

INPUT
Description: R.S. 0.1778
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2579.51	1.94	2579.54	6.21	2579.21	31.23	2576.16	32.69	2577.3
32.83	2576.02	33.38	2576.27	33.92	2575.92	34.04	2575.91	35.91	2575.72
54.93	2573.86	55.7	2573.8	58.6	2573.74	76.32	2572.83	86	2572.28
92.93	2571.6	97.14	2571.28	110.16	2571.35	114.71	2571.09	118.52	2570.43
120.35	2569.86	122.85	2569.09	127.5	2569.89	138.29	2571.75	141.52	2572.25
142.66	2572.22	151.33	2571.78	153.57	2571.73	154.9	2571.6	155.48	2571.53
157.83	2571.8	165.18	2572.4	176.31	2573.38	180.77	2573.51	190.94	2572.92
194.23	2573.02	200.3	2573.35	208.5	2573.74	221.84	2574.62		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	35.91	.04	114.71	.045	122.85	.04	176.31	.025
190.94	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
120.35	127.5	109	111.68	115	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2572.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.042	0.042	0.040
W.S. Elev (ft)	2572.11	Reach Len. (ft)	109.00	111.68	115.00
Crit W.S. (ft)	2572.11	Flow Area (sq ft)	27.28	18.77	18.74
E.G. Slope (ft/ft)	0.011176	Area (sq ft)	27.28	18.77	18.74
Q Total (cfs)	295.00	Flow (cfs)	96.81	131.92	66.27

Top Width (ft)	69.68	Top Width (ft)	32.62	7.15	29.91
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	3.55	7.03	3.54
Max Chl Dpth (ft)	3.02	Hydr. Depth (ft)	0.84	2.63	0.63
Conv. Total (cfs)	2790.4	Conv. (cfs)	915.8	1247.8	626.8
Length Wtd. (ft)	112.43	Wetted Per. (ft)	32.80	7.33	30.15
Min Ch El (ft)	2569.09	Shear (lb/sq ft)	0.58	1.79	0.43
Alpha	1.40	Stream Power (lb/ft s)	2.06	12.55	1.53
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	0.33	0.52	0.65
C & E Loss (ft)	0.03	Cum SA (acres)	0.45	0.24	0.79

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	72.21	96.28	7.22	3.46	8.58	2.45	0.40	2.09
2	LOB	96.28	120.35	89.60	23.82	24.22	30.37	0.99	3.76
3	Chan	120.35	121.78	21.67	3.53	1.50	7.35	2.47	6.13
4	Chan	121.78	123.21	29.25	4.13	1.48	9.91	2.89	7.08
5	Chan	123.21	124.64	31.30	4.05	1.45	10.61	2.83	7.72
6	Chan	124.64	126.07	26.91	3.70	1.45	9.12	2.59	7.27
7	Chan	126.07	127.50	22.79	3.35	1.45	7.72	2.34	6.80
8	ROB	127.50	146.37	58.48	14.40	14.84	19.82	0.98	4.06
9	ROB	146.37	165.24	7.79	4.35	15.30	2.64	0.28	1.79

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.1567

INPUT
Description: R.S. 0.1567
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2579.77	17.2	2579.95	25.16	2580.07	27.63	2580.1	29.27	2579.99
31.44	2579.91	32.23	2579.89	33.42	2579.88	36.08	2579.73	50.53	2579.16
61.43	2577.86	63.58	2577.87	65.38	2577.86	66.4	2577.86	67.73	2577.86
69.27	2576.71	69.59	2576.45	69.88	2576.43	77.14	2575.2	86.5	2572.42
88.85	2571.96	91.11	2570.25	91.49	2569.96	92.3	2567.91	92.63	2567.07
99	2567.98	103.68	2568.65	111.61	2569.96	129	2570.47	131.55	2570.57
133.22	2570.64	148.26	2570.93	159.19	2571.12	161.14	2571.14	164.89	2571.1
179.02	2570.95	190.15	2571.11	195.75	2571.07	198.88	2571.13	200.74	2571.14
205.13	2571.61	217.43	2572.6	228.99	2573.83				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	69.88	.04	88.85	.045	103.68	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
92.3	99	216.91	216.91	216.91	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2571.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.045	0.045	0.042
W.S. Elev (ft)	2571.03	Reach Len. (ft)	216.91	216.91	216.91
Crit W.S. (ft)	2570.60	Flow Area (sq ft)	2.44	23.47	46.79
E.G. Slope (ft/ft)	0.007073	Area (sq ft)	2.44	23.47	46.79
Q Total (cfs)	295.00	Flow (cfs)	4.90	141.47	148.63
Top Width (ft)	76.11	Top Width (ft)	2.22	6.70	67.20
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)	2.01	6.03	3.18
Max Chl Dpth (ft)	3.96	Hydr. Depth (ft)	1.10	3.50	0.70
Conv. Total (cfs)	3507.8	Conv. (cfs)	58.3	1682.2	1767.3
Length Wtd. (ft)	216.91	Wetted Per. (ft)	3.97	7.34	67.37
Min Ch El (ft)	2567.07	Shear (lb/sq ft)	0.27	1.41	0.31
Alpha	1.37	Stream Power (lb/ft s)	0.55	8.51	0.97
Frctn Loss (ft)	2.32	Cum Volume (acre-ft)	0.29	0.46	0.57
C & E Loss (ft)	0.03	Cum SA (acres)	0.40	0.22	0.66

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.84	92.30	4.90	2.44	3.97	1.66	1.10	2.01
2	Chan	92.30	93.64	26.84	5.09	1.92	9.10	3.80	5.27
3	Chan	93.64	94.98	32.70	4.98	1.35	11.08	3.72	6.57
4	Chan	94.98	96.32	29.94	4.72	1.35	10.15	3.52	6.34
5	Chan	96.32	97.66	27.28	4.47	1.35	9.25	3.33	6.11
6	Chan	97.66	99.00	24.72	4.21	1.35	8.38	3.14	5.87
7	ROB	99.00	125.00	137.83	37.98	26.16	46.72	1.46	3.63
8	ROB	125.00	151.00	10.63	8.27	26.01	3.60	0.32	1.28
9	ROB	151.00	176.99	0.05	0.21	7.90	0.02	0.03	0.24
10	ROB	176.99	202.99	0.12	0.33	7.30	0.04	0.05	0.35

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.1156

INPUT
Description: R.S. 0.1156
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2576.25	5.09	2575.6	9.2	2575.16	17.9	2575.13	18.88	2574.56
20.24	2573.81	20.61	2573.19	21.02	2572.69	48.73	2570.32	71.44	2569.25
74.32	2569.07	74.82	2569.07	76.75	2569.06	81.27	2569.1	87.48	2569.19
111.52	2569.09	114.12	2569.1	117.47	2568.85	121.51	2568.76	139.37	2568.44
154.67	2567.37	165.3	2566.14	165.5	2566.12	167.27	2565.92	169.65	2565.65
172	2566.24	177.95	2567.74	184.56	2568.79	188.82	2569.66	204.52	2573.45
216.46	2574.77	217.1	2574.76	217.29	2574.76	222.76	2575.04		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	20.24	.04	114.12	.058	154.67	.045	184.56	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
165.3	172	159.4	159.4	159.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2569.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.047	0.045	0.045
W.S. Elev (ft)	2568.38	Reach Len. (ft)	159.40	159.40	159.40
Crit W.S. (ft)	2568.38	Flow Area (sq ft)	24.60	16.53	9.57
E.G. Slope (ft/ft)	0.018071	Area (sq ft)	24.60	16.53	9.57
Q Total (cfs)	295.00	Flow (cfs)	121.61	132.71	40.67
Top Width (ft)	41.78	Top Width (ft)	25.09	6.70	9.99
Vel Total (ft/s)	5.82	Avg. Vel. (ft/s)	4.94	8.03	4.25
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.98	2.47	0.96
Conv. Total (cfs)	2194.5	Conv. (cfs)	904.7	987.2	302.6
Length Wtd. (ft)	159.40	Wetted Per. (ft)	25.20	6.80	10.22
Min Ch El (ft)	2565.65	Shear (lb/sq ft)	1.10	2.74	1.06
Alpha	1.23	Stream Power (lb/ft s)	5.44	22.02	4.49
Frctn Loss (ft)	2.18	Cum Volume (acre-ft)	0.23	0.36	0.43
C & E Loss (ft)	0.11	Cum SA (acres)	0.33	0.19	0.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	132.24	165.30	121.61	24.60	25.20	41.23	0.98	4.94
2	Chan	165.30	166.64	23.95	3.10	1.35	8.12	2.31	7.72
3	Chan	166.64	167.98	26.61	3.30	1.35	9.02	2.47	8.05
4	Chan	167.98	169.32	29.40	3.51	1.35	9.97	2.62	8.38
5	Chan	169.32	170.66	29.29	3.53	1.37	9.93	2.63	8.31
6	Chan	170.66	172.00	23.47	3.09	1.38	7.96	2.31	7.58
7	ROB	172.00	182.15	40.67	9.57	10.22	13.79	0.96	4.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.0854

INPUT
Description: R.S. 0.0854
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2570.36	6.08	2570.09	11.8	2569.97	19.29	2569.3	30.14	2569.4
31.67	2568.97	34.23	2568	38.2	2565.9	40.53	2565.31	51.96	2564.64
54.8	2563.95	55.76	2563.71	55.81	2563.71	56.83	2563.76	70	2563.98
76.63	2564.09	85.74	2564.19	95.98	2565.85	107.45	2567.93	110.16	2567.88
121.6	2567.85	135.47	2567.81						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	30.14	.058	51.96	.045	76.63	.058	95.98	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
54.8	70	80	73.4	70	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2566.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.052	0.045	0.052
W.S. Elev (ft)	2565.71	Reach Len. (ft)	80.00	73.40	70.00
Crit W.S. (ft)		Flow Area (sq ft)	12.69	28.11	32.47
E.G. Slope (ft/ft)	0.010742	Area (sq ft)	12.69	28.11	32.47
Q Total (cfs)	295.00	Flow (cfs)	34.50	144.74	115.75
Top Width (ft)	56.14	Top Width (ft)	15.84	15.20	25.10
Vel Total (ft/s)	4.03	Avg. Vel. (ft/s)	2.72	5.15	3.57
Max Chl Dpth (ft)	2.00	Hydr. Depth (ft)	0.80	1.85	1.29
Conv. Total (cfs)	2846.3	Conv. (cfs)	332.9	1396.5	1116.9
Length Wtd. (ft)	72.73	Wetted Per. (ft)	15.99	15.23	25.22
Min Ch El (ft)	2563.71	Shear (lb/sq ft)	0.53	1.24	0.86
Alpha	1.16	Stream Power (lb/ft s)	1.45	6.37	3.08
Frctn Loss (ft)	0.72	Cum Volume (acre-ft)	0.16	0.28	0.35
C & E Loss (ft)	0.01	Cum SA (acres)	0.26	0.15	0.41

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	32.88	43.84	2.70	1.95	4.93	0.92	0.40	1.39
2	LOB	43.84	54.80	31.80	10.75	11.06	10.78	0.98	2.96
3	Chan	54.80	57.84	30.94	5.87	3.07	10.49	1.93	5.27
4	Chan	57.84	60.88	30.44	5.79	3.04	10.32	1.91	5.26
5	Chan	60.88	63.92	29.10	5.64	3.04	9.86	1.85	5.16
6	Chan	63.92	66.96	27.78	5.48	3.04	9.42	1.80	5.07
7	Chan	66.96	70.00	26.49	5.33	3.04	8.98	1.75	4.97
8	ROB	70.00	83.09	88.35	21.31	13.10	29.95	1.63	4.15
9	ROB	83.09	96.19	27.40	11.15	12.13	9.29	0.93	2.46

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.0715

INPUT
Description: R.S. 0.0715
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2571	12.16	2564.47	15.2	2563.04	15.57	2562.86	17.65	2562.85
27.6	2562.7	28.24	2562.69	32	2562.91	39.31	2563.34	40.28	2563.38
42.83	2563.63	65.93	2565.8	80.22	2566.87	81.58	2567.09	99.89	2567.06
115.13	2567.23								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	17.65	.045	39.31	.058	65.93	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
15.2	32	160	170.83	185	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2565.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.040	0.044	0.049
W.S. Elev (ft)	2564.93	Reach Len. (ft)	160.00	170.83	185.00
Crit W.S. (ft)		Flow Area (sq ft)	3.77	35.92	27.34
E.G. Slope (ft/ft)	0.009133	Area (sq ft)	3.77	35.92	27.34
Q Total (cfs)	295.00	Flow (cfs)	12.19	191.03	91.78
Top Width (ft)	45.36	Top Width (ft)	3.90	16.80	24.67
Vel Total (ft/s)	4.40	Avg. Vel. (ft/s)	3.24	5.32	3.36
Max Chl Dpth (ft)	2.24	Hydr. Depth (ft)	0.97	2.14	1.11
Conv. Total (cfs)	3086.8	Conv. (cfs)	127.5	1998.9	960.4
Length Wtd. (ft)	172.47	Wetted Per. (ft)	4.33	16.85	24.75
Min Ch El (ft)	2562.69	Shear (lb/sq ft)	0.50	1.22	0.63
Alpha	1.15	Stream Power (lb/ft s)	1.60	6.46	2.11
Frctn Loss (ft)	2.02	Cum Volume (acre-ft)	0.14	0.23	0.30

C & E Loss (ft)	0.00	Cum SA (acres)	0.24	0.12	0.37

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9.12	12.16	0.22	0.20	0.97	0.07	0.23	1.11
2	LOB	12.16	15.20	11.97	3.57	3.36	4.06	1.17	3.35
3	Chan	15.20	18.56	38.47	6.95	3.40	13.04	2.07	5.54
4	Chan	18.56	21.92	37.05	7.12	3.36	12.56	2.12	5.20
5	Chan	21.92	25.28	38.54	7.29	3.36	13.06	2.17	5.29
6	Chan	25.28	28.64	39.99	7.45	3.36	13.56	2.22	5.37
7	Chan	28.64	32.00	36.99	7.12	3.37	12.54	2.12	5.20
8	ROB	32.00	48.63	88.08	24.30	16.68	29.86	1.46	3.62
9	ROB	48.63	65.25	3.70	3.04	8.07	1.25	0.38	1.22

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.0391

INPUT
Description: R.S. 0.0391
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2566.65	14.31	2566.54	20.55	2566.18	25.46	2566.05	50.14	2565.84
50.41	2565.84	68.49	2563.39	70.86	2562.99	91.82	2562.01	93.3	2562.02
96.56	2562.05	106.07	2562.23	114	2562.66	114.47	2562.68	121.52	2562.62
123.54	2562.33	129.5	2561.58	129.62	2561.56	131.76	2561.18	132.65	2560.94
133.03	2560.84	142	2561.4	142.14	2561.41	142.5	2561.44	143	2561.48
145.58	2561.69	147.99	2562.11	154.12	2563.7	155.42	2563.48	156.79	2563.25
164.53	2561.79	164.57	2561.78	164.63	2561.79	166.49	2562.03	176.85	2563.43
186.35	2563.69	191.91	2563.7	198.25	2563.93	213.79	2565.39	217.41	2565.6
224.15	2565.99	232.81	2566.98	256.68	2568.86	265.34	2570.09	267.37	2570.35
279.43	2570.82	282.26	2570.83						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	121.52	.045	142.14	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
129.5	142	170.13	170.13	170.13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2563.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.041	0.045	0.040
W.S. Elev (ft)	2562.91	Reach Len. (ft)	170.13	170.13	170.13
Crit W.S. (ft)	2562.91	Flow Area (sq ft)	32.21	21.89	16.65
E.G. Slope (ft/ft)	0.015643	Area (sq ft)	32.21	21.89	16.65
Q Total (cfs)	295.00	Flow (cfs)	101.10	130.69	63.21
Top Width (ft)	92.81	Top Width (ft)	56.87	12.50	23.44
Vel Total (ft/s)	4.17	Avg. Vel. (ft/s)	3.14	5.97	3.80
Max Chl Dpth (ft)	2.07	Hydr. Depth (ft)	0.57	1.75	0.71
Conv. Total (cfs)	2358.7	Conv. (cfs)	808.3	1044.9	505.4
Length Wtd. (ft)	170.13	Wetted Per. (ft)	56.97	12.60	23.77
Min Ch El (ft)	2560.84	Shear (lb/sq ft)	0.55	1.70	0.68
Alpha	1.28	Stream Power (lb/ft s)	1.73	10.13	2.60
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	0.08	0.11	0.21
C & E Loss (ft)	0.08	Cum SA (acres)	0.13	0.06	0.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	51.80	77.70	0.64	0.60	5.08	0.22	0.12	1.06
2	LOB	77.70	103.60	60.49	17.74	25.92	20.51	0.68	3.41
3	LOB	103.60	129.50	39.97	13.87	25.98	13.55	0.54	2.88
4	Chan	129.50	132.00	21.05	3.87	2.54	7.14	1.55	5.44
5	Chan	132.00	134.50	31.84	4.96	2.54	10.79	1.98	6.42
6	Chan	134.50	137.00	29.83	4.74	2.50	10.11	1.90	6.29
7	Chan	137.00	139.50	25.85	4.35	2.50	8.76	1.74	5.94
8	Chan	139.50	142.00	22.11	3.96	2.50	7.49	1.59	5.58
9	ROB	142.00	170.05	62.31	16.07	20.81	21.12	0.78	3.88
10	ROB	170.05	198.10	0.90	0.58	2.96	0.31	0.20	1.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Pima RS: 0.0069

INPUT
Description: R.S. 0.0069, Imm. Upstream Stagecoach Pass, starting WSE determined from culvert backwater
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2565.97	2.85	2565.7	3.98	2564.8	10.64	2563.78	26.88	2562.69
29.15	2563.47	37.68	2563.2	38.97	2563.13	43.4	2564.27	51.98	2565.03
62.29	2564.89	67.77	2563.46	68.93	2563.28	76.55	2561.26	83.7	2560.53
93.3	2559.09	96.35	2558.63	96.73	2558.58	100.35	2558.66	102.4	2558.59
108.24	2558.84	113.71	2558.95	114	2559.15	115.35	2560.09	121.07	2560.45
127.72	2561.11	130.2	2561.13	133.41	2561.04	138.94	2560.86	146.59	2560.76
153.31	2560.64	161.95	2560.39	174.08	2560.05	179.22	2559.99	183.15	2559.92
188.76	2559.83	195.79	2559.71	196.97	2559.68	201.17	2559.91	205.32	2560
217.3	2560.43	220.62	2560.58	221.81	2560.33	223.86	2560.06	232.5	2559.08
233.78	2558.87	244.65	2558.23	247.08	2557.77	261.72	2560.09	265.84	2560.67
266.59	2560.74	268.34	2560.78	271.47	2560.75	273.16	2560.8	284.3	2560.67
286.82	2560.78	297.04	2562.25	297.09	2562.25				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	96.35	.045	113.71	.058	130.2	.025	223.86	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
93.3	114	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2560.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.040	0.045	0.037
W.S. Elev (ft)	2560.50	Reach Len. (ft)			
Crit W.S. (ft)	2559.86	Flow Area (sq ft)	6.63	36.00	90.54
E.G. Slope (ft/ft)	0.003089	Area (sq ft)	6.63	36.00	90.54
Q Total (cfs)	323.00	Flow (cfs)	10.76	96.23	216.01
Top Width (ft)	142.01	Top Width (ft)	9.40	20.70	111.91
Vel Total (ft/s)	2.43	Avg. Vel. (ft/s)	1.62	2.67	2.39
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.70	1.74	0.81
Conv. Total (cfs)	5811.5	Conv. (cfs)	193.5	1731.5	3886.4
Length Wtd. (ft)		Wetted Per. (ft)	9.50	20.81	112.63
Min Ch El (ft)	2558.58	Shear (lb/sq ft)	0.13	0.33	0.16
Alpha	1.02	Stream Power (lb/ft s)	0.22	0.89	0.37
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Divided flow computed for this cross-section.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.64	93.30	10.76	6.63	9.50	3.33	0.70	1.62
2	Chan	93.30	97.44	19.96	7.08	4.18	6.18	1.71	2.82
3	Chan	97.44	101.58	21.39	7.74	4.14	6.62	1.87	2.76
4	Chan	101.58	105.72	21.02	7.66	4.14	6.51	1.85	2.74
5	Chan	105.72	109.86	18.02	6.98	4.14	5.58	1.69	2.58
6	Chan	109.86	114.00	15.84	6.54	4.20	4.91	1.58	2.42
7	ROB	114.00	150.62	1.62	2.52	7.88	0.50	0.33	0.64
8	ROB	150.62	187.24	17.58	10.72	29.10	5.44	0.37	1.64
9	ROB	187.24	223.85	32.09	16.47	34.52	9.93	0.48	1.95
10	ROB	223.85	260.47	163.64	59.61	36.92	50.66	1.63	2.75
11	ROB	260.47	297.09	1.08	1.23	4.20	0.34	0.30	0.88

Warning: Divided flow computed for this cross-section.
Note: Manning's n values were composited to a single value in the main channel.

SUMMARY OF MANNING'S N VALUES

River:Unnamed Eastern

Reach	River Sta.	n1	n2	n3	n4	n5	n6
Pima	1.0178	.04	.045	.04			
Pima	0.9929	.04	.058	.045	.04		
Pima	0.9653	.04	.045	.04			
Pima	0.9247	.025	.04	.045	.04		
Pima	0.9088	.025	.04	.045	.04		
Pima	0.8993	.04	.045	.04	.032		
Pima	0.8747	.04	.045	.04	.032	.025	
Pima	0.8560	.04	.045	.04	.032	.025	
Pima	0.8342	.04	.045	.04	.025		
Pima	0.8168	.04	.045	.04	.025		
Pima	0.8111	.025					
Pima	0.8056	.04	.025	.04	.045	.04	.032
Pima	0.7856	.025	.04	.045	.04	.032	
Pima	0.7661	.04	.045	.04	.032		
Pima	0.7351	.032	.04	.045	.04	.025	
Pima	0.7049	.025	.032	.045	.04	.025	
Pima	0.6852	.025	.04	.035	.04	.025	
Pima	0.6541	.04	.035	.04			
Pima	0.6387	.04	.035	.04			
Pima	0.6098	.058	.035	.04	.025		
Pima	0.5931	.025	.058	.035	.04	.025	
Pima	0.5707	.058	.035	.04	.025		
Pima	0.5548	.058	.035	.04	.025	.04	

Pima	0.5494	.025					
Pima	0.5427	.04	.058	.045	.04	.025	
Pima	0.5234	.04	.045	.058	.025		
Pima	0.4988	.04	.045	.04	.058	.04	
Pima	0.4801	.025	.04	.045	.058		
Pima	0.4600	.04	.045	.058	.025		
Pima	0.4379	.04	.045	.058	.04		
Pima	0.4040	.04	.035	.04			
Pima	0.3869	.058	.035	.04			
Pima	0.3722	.025	.04	.035	.058	.04	
Pima	0.3547	.025	.04	.035	.04		
Pima	0.3381	.025	.04	.035	.04	.032	
Pima	0.3265	.025	.04	.035	.04	.032	
Pima	0.3023	.058	.035	.032			
Pima	0.2875	.058	.035	.04			
Pima	0.2757	.025					
Pima	0.2650	.058	.04	.035	.04		
Pima	0.2552	.025	.04	.035	.04		
Pima	0.2246	.04	.035	.058	.04		
Pima	0.2095	.025					
Pima	0.2043	.04	.045	.058	.04	.025	.04
Pima	0.1778	.032	.04	.045	.04	.025	.04
Pima	0.1567	.025	.04	.045	.04		
Pima	0.1156	.025	.04	.058	.045	.04	
Pima	0.0854	.04	.058	.045	.058	.04	
Pima	0.0715	.04	.045	.058	.04		
Pima	0.0391	.04	.045	.04			
Pima	0.0069	.04	.045	.058	.025	.04	

SUMMARY OF REACH LENGTHS

River: Unnamed Eastern

Reach	River Sta.	Left	Channel	Right
Pima	1.0178	131.24	131.24	131.24
Pima	0.9929	150	145.52	141
Pima	0.9653	214	214.56	220
Pima	0.9247	80	83.94	90
Pima	0.9088	50.17	50.17	50.17
Pima	0.8993	140	129.91	122
Pima	0.8747	105	98.82	94
Pima	0.8560	120	115.1	110
Pima	0.8342	85	91.99	97
Pima	0.8168	30.03	30.03	30.03
Pima	0.8111	29	29	29
Pima	0.8056	112	105.53	100
Pima	0.7856	100	103.21	110
Pima	0.7661	180	163.18	150
Pima	0.7351	159.77	159.77	159.77
Pima	0.7049	100	104.01	110
Pima	0.6852	163.92	163.92	163.92
Pima	0.6541	78	81.39	85
Pima	0.6387	144	152.82	162
Pima	0.6098	88.24	88.24	88.24
Pima	0.5931	130	118.13	110
Pima	0.5707	90	83.73	79
Pima	0.5548	28.55	28.55	28.55
Pima	0.5494	35.47	35.47	35.47
Pima	0.5427	92	102.19	112
Pima	0.5234	122	129.67	138
Pima	0.4988	102	98.5	96
Pima	0.4801	106.21	106.21	106.21
Pima	0.4600	110	117	125
Pima	0.4379	178.93	178.93	178.93
Pima	0.4040	85	89.94	95
Pima	0.3869	80	77.98	76
Pima	0.3722	96	92.55	86

Pima	0.3547	87.61	87.61	87.61
Pima	0.3381	60.88	60.88	60.88
Pima	0.3265	127.96	127.96	127.96
Pima	0.3023	70	78.08	90
Pima	0.2875	62.12	62.12	62.12
Pima	0.2757	56.52	56.52	56.52
Pima	0.2650	56	51.92	50
Pima	0.2552	168	161.76	158
Pima	0.2246	85	79.82	75
Pima	0.2095	27.45	27.45	27.45
Pima	0.2043	142	139.6	138
Pima	0.1778	109	111.68	115
Pima	0.1567	216.91	216.91	216.91
Pima	0.1156	159.4	159.4	159.4
Pima	0.0854	80	73.4	70
Pima	0.0715	160	170.83	185
Pima	0.0391	170.13	170.13	170.13
Pima	0.0069	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Unnamed Eastern

Reach	River Sta.	Contr.	Expan.
Pima	1.0178	.1	.3
Pima	0.9929	.1	.3
Pima	0.9653	.1	.3
Pima	0.9247	.1	.3
Pima	0.9088	.1	.3
Pima	0.8993	.1	.3
Pima	0.8747	.1	.3
Pima	0.8560	.1	.3
Pima	0.8342	.1	.3
Pima	0.8168	.1	.3
Pima	0.8111	.1	.3
Pima	0.8056	.1	.3
Pima	0.7856	.1	.3
Pima	0.7661	.1	.3
Pima	0.7351	.1	.3
Pima	0.7049	.1	.3
Pima	0.6852	.1	.3
Pima	0.6541	.1	.3
Pima	0.6387	.1	.3
Pima	0.6098	.1	.3
Pima	0.5931	.1	.3
Pima	0.5707	.1	.3
Pima	0.5548	.1	.3
Pima	0.5494	.1	.3
Pima	0.5427	.1	.3
Pima	0.5234	.1	.3
Pima	0.4988	.1	.3
Pima	0.4801	.1	.3
Pima	0.4600	.1	.3
Pima	0.4379	.1	.3
Pima	0.4040	.1	.3
Pima	0.3869	.1	.3
Pima	0.3722	.1	.3
Pima	0.3547	.1	.3
Pima	0.3381	.1	.3
Pima	0.3265	.1	.3
Pima	0.3023	.1	.3
Pima	0.2875	.1	.3
Pima	0.2757	.1	.3
Pima	0.2650	.1	.3
Pima	0.2552	.1	.3
Pima	0.2246	.1	.3
Pima	0.2095	.1	.3

Pima	0.2043	.1	.3
Pima	0.1778	.1	.3
Pima	0.1567	.1	.3
Pima	0.1156	.1	.3
Pima	0.0854	.1	.3
Pima	0.0715	.1	.3
Pima	0.0391	.1	.3
Pima	0.0069	.1	.3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 06

River: Unnamed Eastern Reach: Pima RS: 1.0178 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.9929 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.9653 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.9247 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.9088 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

River: Unnamed Eastern Reach: Pima RS: 0.8993 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.8747 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.8560 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.8342 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.8168 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.8111 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.8056 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.7856 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.7661 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.7351 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.7049 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.6852 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.6541 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.6387 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.6098 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.5931 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.5707 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.5494 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.5427 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.5234 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.4988 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.4801 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.4600 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.4379 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.4040 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.3869 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.3722 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.3547 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.3381 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.3265 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.3023 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.2875 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.2757 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.2650 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.2552 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.2246 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.2095 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.2043 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.1778 Profile: PF 1

Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. Th
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Pima RS: 0.1567 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or
greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.1156 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used
critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.0715 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
River: Unnamed Eastern Reach: Pima RS: 0.0391 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program us
critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or
greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This
may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Pima RS: 0.0069 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Note: Manning's n values were composited to a single value in the main channel.

HEC-RAS Model Summary Tables

Eastern Pima Wash

HEC-RAS Plan: Plan 06 River: Unnamed Eastern Reach: Pima 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)	
Pima	1.0178	PF 1	71.00	2660.19	2661.71	2661.71	2662.16	0.020909	5.84	14.32	16.94	0.92
Pima	0.9929	PF 1	71.00	2655.73	2657.50	2657.50	2657.91	0.020457	6.20	15.38	19.44	0.88
Pima	0.9653	PF 1	71.00	2651.78	2653.04	2653.04	2653.36	0.022509	5.08	16.94	25.96	0.88
Pima	0.9247	PF 1	71.00	2645.64	2647.48		2647.66	0.006924	3.76	22.71	23.59	0.53
Pima	0.9088	PF 1	71.00	2644.23	2646.19	2646.19	2646.70	0.019416	6.37	13.73	14.02	0.89
Pima	0.8993	PF 1	71.00	2643.01	2644.06	2644.06	2644.42	0.022012	5.02	15.65	22.32	0.92
Pima	0.8747	PF 1	71.00	2640.52	2641.85	2641.85	2642.04	0.012840	4.15	24.40	57.36	0.72
Pima	0.8560	PF 1	71.00	2638.54	2639.61	2639.56	2639.82	0.015941	4.09	21.02	39.75	0.75
Pima	0.8342	PF 1	71.00	2636.19	2637.29	2637.29	2637.62	0.023140	4.91	16.71	30.13	0.90
Pima	0.8168	PF 1	71.00	2634.38	2635.40		2635.46	0.003777	2.04	39.32	62.07	0.38
Pima	0.8111	PF 1	71.00	2634.33	2635.02	2635.02	2635.25	0.012085	3.84	18.51	41.13	1.01
Pima	0.8056	PF 1	71.00	2633.21	2634.01	2634.01	2634.25	0.026732	4.01	18.74	41.47	0.92
Pima	0.7856	PF 1	71.00	2628.65	2630.90	2630.90	2631.49	0.019149	6.84	12.76	11.28	0.89
Pima	0.7661	PF 1	71.00	2626.57	2628.29	2628.29	2628.70	0.019743	5.65	15.68	21.46	0.85
Pima	0.7351	PF 1	71.00	2623.03	2624.58	2624.58	2624.97	0.021291	5.41	15.24	20.09	0.87
Pima	0.7049	PF 1	71.00	2619.55	2621.18	2621.18	2621.58	0.020268	5.43	14.50	18.49	0.84
Pima	0.6852	PF 1	71.00	2617.41	2619.19	2619.19	2619.64	0.014611	6.82	15.14	18.12	0.95
Pima	0.6541	PF 1	71.00	2614.54	2616.40	2616.40	2616.90	0.013829	6.32	14.25	15.23	0.90
Pima	0.6387	PF 1	71.00	2612.51	2614.73	2614.73	2615.05	0.009479	6.04	19.40	28.01	0.77
Pima	0.6098	PF 1	71.00	2610.41	2612.35	2612.35	2612.67	0.010889	6.07	18.89	27.54	0.82
Pima	0.5931	PF 1	71.00	2609.27	2610.90	2610.87	2611.30	0.015080	5.97	16.61	18.75	0.88
Pima	0.5707	PF 1	71.00	2608.10	2609.41	2609.41	2609.68	0.011929	4.77	20.96	42.83	0.81
Pima	0.5548	PF 1	134.00	2606.86	2608.05	2607.97	2608.35	0.015934	4.65	34.05	45.90	0.77
Pima	0.5494	PF 1	134.00	2606.93	2607.73	2607.73	2608.01	0.009253	4.40	32.54	57.91	0.94
Pima	0.5427	PF 1	134.00	2604.12	2606.28	2606.28	2606.77	0.017813	6.88	26.23	27.34	0.88
Pima	0.5234	PF 1	134.00	2601.31	2603.69		2603.93	0.011182	4.53	36.21	25.76	0.55
Pima	0.4988	PF 1	134.00	2599.36	2601.90	2601.90	2602.30	0.013405	6.07	31.67	42.86	0.74
Pima	0.4801	PF 1	134.00	2597.32	2600.30	2600.30	2600.72	0.012838	6.69	31.69	39.50	0.73
Pima	0.4600	PF 1	134.00	2596.13	2598.00	2598.00	2598.48	0.030453	7.20	27.01	29.70	1.04
Pima	0.4379	PF 1	134.00	2592.20	2594.96	2594.96	2595.55	0.016202	7.39	24.21	22.75	0.83
Pima	0.4040	PF 1	134.00	2589.57	2591.97	2591.97	2592.39	0.007683	6.22	31.60	42.09	0.74
Pima	0.3869	PF 1	134.00	2588.35	2590.94	2590.94	2591.44	0.011781	6.93	32.46	34.95	0.81
Pima	0.3722	PF 1	134.00	2587.19	2589.32	2589.32	2589.72	0.009754	6.11	31.96	41.39	0.80
Pima	0.3547	PF 1	134.00	2585.50	2587.82	2587.82	2588.24	0.010037	6.36	31.61	37.15	0.80
Pima	0.3381	PF 1	134.00	2583.80	2586.85		2587.17	0.006001	5.80	34.32	35.49	0.61
Pima	0.3265	PF 1	134.00	2582.61	2585.89	2585.89	2586.61	0.012800	7.95	22.11	16.95	0.84
Pima	0.3023	PF 1	134.00	2580.47	2582.66	2582.66	2583.02	0.010560	5.66	35.89	48.73	0.71
Pima	0.2875	PF 1	134.00	2579.29	2579.75	2579.75	2579.97	0.028961	2.78	35.65	81.66	0.99
Pima	0.2757	PF 1	134.00	2577.64	2578.76		2578.86	0.001861	2.60	58.24	82.15	0.45
Pima	0.2650	PF 1	134.00	2576.52	2578.51		2578.70	0.004062	3.91	43.10	40.81	0.52
Pima	0.2552	PF 1	134.00	2576.07	2577.93	2577.93	2578.34	0.011577	6.21	29.71	38.58	0.85
Pima	0.2246	PF 1	295.00	2573.41	2575.38	2575.38	2575.79	0.014457	6.91	75.66	90.28	0.94
Pima	0.2095	PF 1	295.00	2572.82	2574.18	2574.18	2574.58	0.007315	6.01	63.19	79.65	0.93
Pima	0.2043	PF 1	295.00	2571.93	2573.72	2573.59	2573.93	0.008332	4.33	88.30	126.62	0.60
Pima	0.1778	PF 1	295.00	2569.09	2572.11	2572.11	2572.56	0.011176	7.03	64.79	69.68	0.76
Pima	0.1567	PF 1	295.00	2567.07	2571.03	2570.60	2571.38	0.007073	6.03	72.70	76.11	0.57
Pima	0.1156	PF 1	295.00	2565.65	2568.38	2568.38	2569.03	0.018071	8.03	50.71	41.78	0.90
Pima	0.0854	PF 1	295.00	2563.71	2565.71		2566.00	0.010742	5.15	73.27	56.14	0.67
Pima	0.0715	PF 1	295.00	2562.69	2564.93		2565.28	0.009133	5.32	67.03	45.36	0.64
Pima	0.0391	PF 1	295.00	2560.84	2562.91	2562.91	2563.25	0.015643	5.97	70.75	92.81	0.79
Pima	0.0069	PF 1	323.00	2558.58	2560.50	2559.86	2560.59	0.003089	2.67	133.17	142.01	0.36

HEC-RAS Plan: Plan 06 River: Unnamed Eastern Reach: Pima Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Pima	1.0178	PF 1	2662.16	2661.71	0.45	2.71	0.01	6.31	54.66	10.03	16.94
Pima	0.9929	PF 1	2657.91	2657.50	0.41	3.11	0.03	13.47	36.38	21.15	19.44
Pima	0.9653	PF 1	2653.36	2653.04	0.32	2.47	0.04	10.38	48.67	11.95	25.96
Pima	0.9247	PF 1	2647.66	2647.48	0.18	0.92	0.03	11.76	49.08	10.16	23.59
Pima	0.9088	PF 1	2646.70	2646.19	0.51	1.04	0.05	7.40	52.01	11.59	14.02
Pima	0.8993	PF 1	2644.42	2644.06	0.36	2.12	0.05	0.84	61.36	8.79	22.32
Pima	0.8747	PF 1	2642.04	2641.85	0.20	1.40	0.00	1.68	48.34	20.97	57.36
Pima	0.8560	PF 1	2639.82	2639.61	0.21	2.19	0.01	6.16	50.49	14.35	39.75
Pima	0.8342	PF 1	2637.62	2637.29	0.33	0.70	0.08	5.26	60.66	5.08	30.13
Pima	0.8168	PF 1	2635.46	2635.40	0.06	0.19	0.02	9.02	56.89	5.09	62.07
Pima	0.8111	PF 1	2635.25	2635.02	0.23	0.50	0.00		71.00		41.13
Pima	0.8056	PF 1	2634.25	2634.01	0.24	2.37	0.03	0.95	68.10	1.95	41.47
Pima	0.7856	PF 1	2631.49	2630.90	0.59	2.02	0.05	10.56	52.33	8.12	11.28
Pima	0.7661	PF 1	2628.70	2628.29	0.41	3.32	0.00	6.61	54.30	10.09	21.46
Pima	0.7351	PF 1	2624.97	2624.58	0.39	3.32	0.00	2.13	56.92	11.95	20.09
Pima	0.7049	PF 1	2621.58	2621.18	0.40	1.78	0.00	32.10	28.42	10.47	18.49
Pima	0.6852	PF 1	2619.64	2619.19	0.45	2.33	0.01	13.96	31.72	25.31	18.12
Pima	0.6541	PF 1	2616.90	2616.40	0.50	0.93	0.05	5.14	53.04	12.82	15.23
Pima	0.6387	PF 1	2615.05	2614.73	0.32	1.58	0.00	8.51	32.47	30.02	28.01
Pima	0.6098	PF 1	2612.67	2612.35	0.32	1.12	0.01	8.54	28.88	33.59	27.54
Pima	0.5931	PF 1	2611.30	2610.90	0.40	1.58	0.04	15.19	44.22	11.59	18.75
Pima	0.5707	PF 1	2609.68	2609.41	0.28	1.20	0.00	5.08	52.04	13.88	42.83
Pima	0.5548	PF 1	2608.35	2608.05	0.30	0.34	0.00	13.03	101.81	19.16	45.90
Pima	0.5494	PF 1	2608.01	2607.73	0.28	0.44	0.02	3.87	122.41	7.72	57.91
Pima	0.5427	PF 1	2606.77	2606.28	0.49	1.45	0.07	24.88	65.30	43.82	27.34
Pima	0.5234	PF 1	2603.93	2603.69	0.24	1.61	0.02	10.04	80.21	43.75	25.76
Pima	0.4988	PF 1	2602.30	2601.90	0.40	1.29	0.00	6.71	80.53	46.76	42.86
Pima	0.4801	PF 1	2600.72	2600.30	0.42	2.01	0.01	37.08	64.26	32.65	39.50
Pima	0.4600	PF 1	2598.48	2598.00	0.48	2.60	0.01	4.99	51.63	77.38	29.70
Pima	0.4379	PF 1	2595.55	2594.96	0.59	1.93	0.05	17.03	72.33	44.63	22.75
Pima	0.4040	PF 1	2592.39	2591.97	0.41	0.85	0.01	8.08	81.55	44.37	42.09
Pima	0.3869	PF 1	2591.44	2590.94	0.50	0.83	0.03	32.69	76.59	24.72	34.95
Pima	0.3722	PF 1	2589.72	2589.32	0.40	0.91	0.00	27.89	78.24	27.87	41.39
Pima	0.3547	PF 1	2588.24	2587.82	0.42	0.67	0.03	39.76	74.47	19.77	37.15
Pima	0.3381	PF 1	2587.17	2586.85	0.31	0.51	0.04	39.64	57.99	36.37	35.49
Pima	0.3265	PF 1	2586.61	2585.89	0.72	1.48	0.11	16.43	81.53	36.05	16.95
Pima	0.3023	PF 1	2583.02	2582.66	0.36	1.39	0.04	21.55	71.65	40.80	48.73
Pima	0.2875	PF 1	2579.97	2579.75	0.22	0.29	0.04		10.03	123.97	81.66
Pima	0.2757	PF 1	2578.86	2578.76	0.09	0.15	0.01	11.70	117.69	4.60	82.15
Pima	0.2650	PF 1	2578.70	2578.51	0.19	0.34	0.02	23.11	92.03	18.86	40.81
Pima	0.2552	PF 1	2578.34	2577.93	0.41	2.17	0.00	33.10	71.81	29.09	38.58
Pima	0.2246	PF 1	2575.79	2575.38	0.41	0.78	0.00	22.76	136.09	136.15	90.28
Pima	0.2095	PF 1	2574.58	2574.18	0.40	0.21	0.06	29.55	158.70	106.75	79.65
Pima	0.2043	PF 1	2573.93	2573.72	0.20	1.34	0.02	9.39	144.66	140.95	126.62
Pima	0.1778	PF 1	2572.56	2572.11	0.45	0.99	0.03	96.81	131.92	66.27	69.68
Pima	0.1567	PF 1	2571.38	2571.03	0.35	2.32	0.03	4.90	141.47	148.63	76.11
Pima	0.1156	PF 1	2569.03	2568.38	0.65	2.18	0.11	121.61	132.71	40.67	41.78
Pima	0.0854	PF 1	2566.00	2565.71	0.29	0.72	0.01	34.50	144.74	115.75	56.14
Pima	0.0715	PF 1	2565.28	2564.93	0.35	2.02	0.00	12.19	191.03	91.78	45.36
Pima	0.0391	PF 1	2563.25	2562.91	0.35	0.97	0.08	101.10	130.69	63.21	92.81
Pima	0.0069	PF 1	2560.59	2560.50	0.09			10.76	96.23	216.01	142.01

Unnamed Tributary to Stagecoach Pass Wash

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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

PROJECT DATA
Project Title: Unnamed Trib to Stagecoach Pass Wash
Project File : SCP_Final.prj
Run Date and Time: 05/24/2004 10:16:40 AM

Project in English units

Project Description:
Unnamed Tributary to Stagecoach Pass Wash
Prepared By CH2M HILL for the Flood
Control District of Maricopa County
(Contract No. FCD 2000C037), December
2002.
Topographic Mapping Source: Flown and Mapped by M&B Aerial, Flight
Date: 8/2/2001, 2' Contour Interval, Datum: NAD 83/ NGVD29 from GDACS Control
Network (established and maintained by MCDOT).
Discharge Information obtained
from hydrology for the Carefree Drainage Master Plan Data Collection Report,
dated November 2002.
Discharge: 84 cfs from RS 0.8707 to 0.625, 152 cfs from
RS 0.625 to 0.3828, 225 cfs from 0.3828 to 0.0816
Study Limits = Town of
Carefree boundary, at R.S. 0.8171
Split flow occurs at 0.7626, 34 cfs in
parallel ditch (modeled with all flow in main ditch)
Downstream Starting WSEL
from North Scottsdale Delineation Study, FP=2617.1 feet, between cross sections
4.24 and 4.30, Prepared by DEI for FCDMC
Final Model Run: April 2003

PLAN DATA

Plan Title: Plan 01
Plan File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\SCP_Final.p01

Geometry Title: Unnamed Trib to Stagecoach Pass Wash
Geometry File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\SCP_Final.g01

Flow Title : Flow Data
Flow File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\SCP_Final.f01

Plan Summary Information:

Number of:	Cross Sections	= 42	Mulitple Openings	=	0
	Culverts	= 5	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01

```
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow



FLOW DATA

Flow Title: Flow Data
Flow File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\SCP_Final.f01

Flow Data (cfs)

  River           Reach           RS                    PF 1
  Unnamed Eastern Trib to Stagecoa0.8707                 84
  Unnamed Eastern Trib to Stagecoa0.6025                152
  Unnamed Eastern Trib to Stagecoa0.3828                225


Boundary Conditions

  River           Reach           Profile                       Upstream                 Downstream

  Unnamed Eastern Trib to StagecoaPF 1                           Critical           Known WS = 2617.1



GEOMETRY DATA

Geometry Title: Unnamed Trib to Stagecoach Pass Wash
Geometry File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\SCP_Final.g01

CROSS SECTION


RIVER: Unnamed Eastern
REACH: Trib to Stagecoa   RS: 0.8707

INPUT
Description: R.S. 0.8707, Est. Boundary Conditions Only
Only for determination
             of boundary condition
Not to be mapped
Station Elevation Data    num=      48
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2721.76    4.72 2721.69    9.38 2721.57   13.81 2721.63   20.39 2719.67
   32.79 2717.25   46.83 2714.21   62.61 2713.64   67.74 2713.46   73.12 2711.69
   74.06 2711.34   75.89 2710.67   76.41 2710.48   79.24 2711.38   83.55 2712.74
   85.63 2713.43  105.12 2713.84  126.65 2714.75  132.03 2714.85  136.39 2714.92
  147.77  2715.4  151.36 2715.59  153.75 2715.79  161.04 2716.21  172.36 2717.34
  180.02 2716.26  193.98 2714.13  195.29    2714  204.44 2713.44  210.09 2711.98
  213.35 2711.47  218.95 2712.78  224.18 2714.47  230.52 2714.15   236.6 2714.81
  241.46 2714.87  255.49 2715.84  261.35 2716.03  262.32 2716.11  269.06 2716.64
  283.19 2717.95  289.32 2718.32     292 2718.56  309.16  2720.4  313.32    2721
  328.35 2722.44  331.06 2722.73  333.89 2722.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .032   73.12    .035   79.24    .032

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         74.06   79.24           141.07  141.07   136.9            .1        .3
```

ght Levee Station= 172.36 Elevation= 2717.34

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2713.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.034	0.035	0.032
W.S. Elev (ft)	2712.74	Reach Len. (ft)	141.07	141.07	136.90
Crit W.S. (ft)	2712.74	Flow Area (sq ft)	2.81	9.40	2.92
E.G. Slope (ft/ft)	0.011720	Area (sq ft)	2.81	9.40	2.92
Q Total (cfs)	84.00	Flow (cfs)	11.02	62.02	10.96
Top Width (ft)	13.60	Top Width (ft)	4.12	5.18	4.30
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)	3.92	6.59	3.76
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)	0.68	1.82	0.68
Conv. Total (cfs)	775.9	Conv. (cfs)	101.8	572.8	101.2
Length Wtd. (ft)	140.52	Wetted Per. (ft)	4.35	5.47	4.51
Min Ch El (ft)	2710.48	Shear (lb/sq ft)	0.47	1.26	0.47
Alpha	1.17	Stream Power (lb/ft s)	1.85	8.29	1.78
Frctn Loss (ft)	1.57	Cum Volume (acre-ft)	1.06	2.33	0.97
C & E Loss (ft)	0.00	Cum SA (acres)	1.33	1.39	1.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	59.25	74.06	11.02	2.81	4.35	13.12	0.68	3.92
2	Chan	74.06	75.10	9.76	1.64	1.10	11.61	1.59	5.94
3	Chan	75.10	76.13	13.95	2.04	1.10	16.61	1.97	6.85
4	Chan	76.13	77.17	16.38	2.23	1.09	19.50	2.15	7.34
5	Chan	77.17	78.20	12.74	1.92	1.09	15.17	1.85	6.65
6	Chan	78.20	79.24	9.19	1.58	1.09	10.94	1.52	5.83
7	ROB	79.24	125.80	10.96	2.92	4.51	13.05	0.68	3.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.8440

INPUT
Description: R.S. 0.8440, Est. Boundary Conditions Only
Only to establish
boundary conditions
not to be mapped
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2720.97	7.14	2720.79	12.35	2720.39	16.54	2719.68	29.37	2718.07
38.38	2716.63	51.24	2715.71	55.28	2715.32	64.12	2713.94	72.26	2712.15
73.55	2711.83	82.47	2710.72	90.79	2710.35	92.84	2709.37	94.54	2708.68
95.79	2708.18	96.67	2707.83	99.66	2708.75	103.03	2709.78	103.87	2709.91

104.55	2710.12	138.39	2712.36	140.57	2712.54	142.47	2712.68	143.93	2712.59
155.9	2712.17	157.28	2711.45	161.81	2709.24	168.96	2711.86	170.25	2712.24
185.93	2712.17	198.37	2712.1	206.92	2712.66	218.35	2713.69	222.64	2714.18
228.95	2714.97	239.91	2716.12	251.81	2718.19	261.04	2719.92	263.9	2720.2
267.41	2720.43	274.33	2720.96	277.99	2721.14	288.88	2721.72	295.89	2721.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	95.79	.035	104.55	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
94.54	99.66	142.22	142.22	146.2	.1	.3

Right Levee Station= 142.47 Elevation= 2712.68

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2710.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.032	0.034	0.035
W.S. Elev (ft)	2710.16	Reach Len. (ft)	142.22	142.22	146.20
Crit W.S. (ft)	2710.16	Flow Area (sq ft)	2.57	9.63	3.37
E.G. Slope (ft/ft)	0.010632	Area (sq ft)	2.57	9.63	3.37
Q Total (cfs)	84.00	Flow (cfs)	9.71	63.13	11.15
Top Width (ft)	13.89	Top Width (ft)	3.34	5.12	5.43
Vel Total (ft/s)	5.40	Avg. Vel. (ft/s)	3.78	6.56	3.31
Max Chl Dpth (ft)	2.33	Hydr. Depth (ft)	0.77	1.88	0.62
Conv. Total (cfs)	814.7	Conv. (cfs)	94.2	612.3	108.2
Length Wtd. (ft)	143.57	Wetted Per. (ft)	3.66	5.42	5.63
Min Ch El (ft)	2707.83	Shear (lb/sq ft)	0.47	1.18	0.40
Alpha	1.22	Stream Power (lb/ft s)	1.76	7.73	1.32
Frctn Loss (ft)	1.92	Cum Volume (acre-ft)	1.05	2.30	0.96
C & E Loss (ft)	0.04	Cum SA (acres)	1.32	1.37	1.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	75.63	94.54	9.71	2.57	3.66	11.56	0.77	3.78
2	Chan	94.54	95.56	11.01	1.72	1.10	13.10	1.68	6.40
3	Chan	95.56	96.59	14.75	2.14	1.10	17.56	2.09	6.89
4	Chan	96.59	97.61	15.94	2.24	1.07	18.97	2.19	7.10
5	Chan	97.61	98.64	12.35	1.92	1.07	14.70	1.88	6.42
6	Chan	98.64	99.66	9.09	1.60	1.07	10.83	1.56	5.68
7	ROB	99.66	142.47	11.15	3.37	5.63	13.28	0.62	3.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.8171

INPUT
Description: R.S. 0.8171, At Scottsdale/Carefree Border
At Carefree Town
Boundary
This section is only for determination of
upstream
boundary conditions, not to be mapped
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2716.14	5.22	2716.32	12.17	2715.67	20.38	2714.82	37.59	2713.37
39.36	2713.2	46.81	2712.72	52.13	2712.14	53.6	2711.89	65.26	2710.19
68.21	2709.01	73.75	2706.2	75.59	2705.26	76	2705.34	80.21	2706.13
83.67	2706.84	86.04	2706.84	89.77	2705.65	91.68	2705.12	93.86	2705.88
96.54	2706.87	98.03	2707.12	122.96	2706.92	127.05	2706.92	134.92	2707.42
157.05	2710.08	159.68	2710.35	162.47	2710.84	175.97	2712.41	178.24	2712.6
190.02	2713.05	192.38	2713.13	204.43	2710.82	212.51	2709.61	212.9	2709.63
231.61	2709.87	234.57	2709.86						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	73.75	.035	86.04	.032	122.96	.04	190.02	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
73.75	80.21	124.7	124.74	124.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2707.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.	0.032	0.035	0.032
W.S. Elev (ft)	2706.75	Reach Len. (ft)	124.70	124.74	124.80
Crit W.S. (ft)	2706.75	Flow Area (sq ft)	0.30	6.75	9.19
E.G. Slope (ft/ft)	0.017367	Area (sq ft)	0.30	6.75	9.19
Q Total (cfs)	84.00	Flow (cfs)	0.72	37.66	45.62
Top Width (ft)	20.46	Top Width (ft)	1.08	6.46	12.92
Vel Total (ft/s)	5.17	Avg. Vel. (ft/s)	2.40	5.58	4.96
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.28	1.04	0.71
Conv. Total (cfs)	637.4	Conv. (cfs)	5.4	285.8	346.2
Length Wtd. (ft)	124.76	Wetted Per. (ft)	1.22	6.77	13.51
Min Ch El (ft)	2705.26	Shear (lb/sq ft)	0.27	1.08	0.74
Alpha	1.02	Stream Power (lb/ft s)	0.64	6.03	3.66
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	1.05	2.27	0.93
C & E Loss (ft)	0.02	Cum SA (acres)	1.31	1.35	1.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	59.00	73.75	0.72	0.30	1.22	0.85	0.28	2.40
2	Chan	73.75	75.04	5.26	1.14	1.45	6.26	0.88	4.62
3	Chan	75.04	76.33	11.67	1.80	1.37	13.89	1.39	6.50
4	Chan	76.33	77.63	9.76	1.58	1.31	11.62	1.23	6.16
5	Chan	77.63	78.92	6.76	1.27	1.31	8.05	0.98	5.32
6	Chan	78.92	80.21	4.22	0.96	1.31	5.02	0.74	4.40
7	ROB	80.21	111.08	45.62	9.19	13.51	54.31	0.71	4.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.7934

INPUT
Description: R.S. 0.7934
First section inside of Carefree Town Boundary
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2714.14	7.05	2714.07	14.35	2714.36	20.73	2714.29	26.34	2713.04
31.34	2712.38	33.08	2712.23	41.51	2710.71	54.9	2708.12	68.83	2705.06
73.95	2705.21	88.18	2705.33	106.31	2705.59	107.86	2705.61	108.53	2705.62
118.7	2705.52	119.86	2705.51	121.92	2704.99	128.33	2703.46	130.45	2702.95
133.37	2703.37	140.51	2704.41	141.48	2704.65	143.52	2704.58	145.19	2704.61
154.18	2704.77	175.99	2705.12	176.5	2705.08	178.49	2705	187.86	2704.65
189.9	2704.53	196.08	2704.9	203.81	2705.53	211.38	2706.09	212.2	2706.16
212.57	2706.11	214.43	2705.94	217.19	2705.67	247.41	2709.16	252.84	2709.78
253.2	2709.81	253.69	2709.81	273.75	2709.87	284.05	2709.95		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	54.9	.04	130.45	.035	140.51	.04	214.43	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
128.33	133.37	162.6	162.59	161.4	.3	.5

Right Levee Station= 175.99 Elevation= 2705.12

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2705.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.040	0.037	0.035
W.S. Elev (ft)	2704.78	Reach Len. (ft)	162.60	162.59	161.40
Crit W.S. (ft)	2704.78	Flow Area (sq ft)	3.67	8.09	8.14
E.G. Slope (ft/ft)	0.010868	Area (sq ft)	3.67	8.09	8.14
Q Total (cfs)	84.00	Flow (cfs)	10.61	45.68	27.71
Top Width (ft)	32.28	Top Width (ft)	5.55	5.04	21.69
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	2.89	5.65	3.40
Max Chl Dpth (ft)	1.83	Hydr. Depth (ft)	0.66	1.61	0.38
Conv. Total (cfs)	805.8	Conv. (cfs)	101.8	438.2	265.8
Length Wtd. (ft)	162.23	Wetted Per. (ft)	5.70	5.13	21.80
Min Ch El (ft)	2702.95	Shear (lb/sq ft)	0.44	1.07	0.25
Alpha	1.25	Stream Power (lb/ft s)	1.26	6.04	0.86
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	1.04	2.25	0.91
C & E Loss (ft)	0.15	Cum SA (acres)	1.30	1.34	1.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	102.66	128.33	10.61	3.67	5.70	12.63	0.66	2.89
2	Chan	128.33	129.34	7.00	1.46	1.04	8.33	1.45	4.80
3	Chan	129.34	130.35	9.06	1.70	1.04	10.79	1.69	5.33
4	Chan	130.35	131.35	11.23	1.79	1.02	13.37	1.77	6.28
5	Chan	131.35	132.36	9.91	1.64	1.02	11.79	1.63	6.02
6	Chan	132.36	133.37	8.48	1.50	1.02	10.10	1.49	5.66
7	ROB	133.37	175.99	27.71	8.14	21.80	32.99	0.38	3.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: *Trib to Stagecoa* RS: 0.7626

INPUT
Description: R.S. 0.7626, Imm. upstream of Romping Road Culvert
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2713.87	4.09	2714.08	13.3	2713.09	18.33	2712	30.93	2708.5
37.8	2706.61	45.46	2704.42	53.58	2702.16	60.2	2702.17	76.5	2701.48
79.24	2701.12	86.13	2700.74	86.14	2700.74	87.13	2700.69	89.87	2700.84
95.11	2701.58	96.43	2701.77	98.62	2701.96	103.75	2701.75	107.17	2701.7
111.94	2701.58	125.17	2701.91	133.76	2702.4	135.14	2702.44	141.7	2703.29
143.38	2703.47	154.48	2703.32	166.36	2704	169.35	2704.01	186.14	2703.4
194.55	2703.42	213.91	2704.7	214.46	2704.71	218.92	2704.89	224.38	2705.07
224.44	2705.07	224.77	2705.06	233.22	2704.95	251.02	2704.61	252.41	2704.58
266.92	2703.7	271	2703.77	278.68	2703.17	280.37	2703.01	281.02	2702.92
281.72	2702.99	296.89	2704.54	298.76	2704.66	306.49	2705.07	309.08	2705.24
318.83	2705.95	324.74	2706.7	330.35	2707.07	341.75	2708.2	344.62	2708.29
346.57	2708.58	350.75	2708.8						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	30.93	.04	79.24	.035	103.75	.04	194.55	.025
214.46	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
76.5	95.11	93.97	93.97	114.9	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	75	2701.73	F
96	350.75	2701.73	F

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2702.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.040	0.035	0.039
W.S. Elev (ft)	2702.49	Reach Len. (ft)	93.97	93.97	114.90
Crit W.S. (ft)	2701.95	Flow Area (sq ft)	13.13	27.17	25.12
E.G. Slope (ft/ft)	0.001136	Area (sq ft)	13.13	27.17	25.12
Q Total (cfs)	84.00	Flow (cfs)	10.95	49.39	23.66
Top Width (ft)	83.10	Top Width (ft)	24.10	18.61	40.40
Vel Total (ft/s)	1.28	Avg. Vel. (ft/s)	0.83	1.82	0.94
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)	0.54	1.46	0.62
Conv. Total (cfs)	2492.6	Conv. (cfs)	324.8	1465.7	702.1
Length Wtd. (ft)	93.97	Wetted Per. (ft)	24.16	18.70	40.45

Min Ch El (ft)	2700.69	Shear (lb/sq ft)	0.04	0.10	0.04
Alpha	1.38	Stream Power (lb/ft s)	0.03	0.19	0.04
Frctn Loss (ft)		Cum Volume (acre-ft)	1.01	2.18	0.85
C & E Loss (ft)		Cum SA (acres)	1.25	1.29	1.12

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.00	60.00	1.18	2.26	7.64	1.41	0.30	0.52
2	LOB	60.00	75.00	8.07	9.40	15.01	9.61	0.63	0.86
3	LOB	75.00	76.50	1.69	1.46	1.50	2.01	0.98	1.15
4	Chan	76.50	80.22	6.92	4.62	3.75	8.23	1.24	1.50
5	Chan	80.22	83.94	10.63	5.67	3.73	12.66	1.52	1.87
6	Chan	83.94	87.67	13.06	6.42	3.73	15.54	1.72	2.03
7	Chan	87.67	91.39	11.98	6.10	3.74	14.26	1.64	1.96
8	Chan	91.39	95.11	6.81	4.36	3.76	8.10	1.17	1.56
9	ROB	95.11	96.00	0.95	0.75	0.90	1.13	0.84	1.27
10	ROB	96.00	146.95	22.71	24.36	39.55	27.04	0.62	0.93

CULVERT

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.7537

INPUT
Description: Culvert #153, Suppl. Survey performed 11-01-02
Crosses Romping
Drive near Wildflower Drive
Survey invert point numbers 1556,
1557, 1573, 1574
Sediment blocking per field surveys, ref. TDN
Distance from Upstream XS = 17.4
Deck/Roadway Width = 60.1
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 39

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2705.77	2694	5.32	2705.73	2694	11.92	2705.6	2694
56.79	2704.27	2694	58.33	2704.21	2694	59.68	2704.14	2694
60.71	2704.08	2694	69.59	2703.67	2694	70.29	2703.62	2694
82.33	2703.1	2694	82.95	2703.06	2694	85.56	2702.89	2694
89.12	2702.82	2694	92.41	2702.68	2694	100.27	2702.44	2694
100.63	2702.44	2694	112.35	2702.12	2694	113.3	2702.13	2694
117.82	2702.02	2694	125.25	2701.89	2694	126.06	2701.9	2694
138.18	2701.73	2694	138.97	2701.74	2694	156.02	2701.97	2694
167.2	2702.11	2694	174.87	2702.16	2694	240.6	2702.86	2694
248.72	2703.09	2694	253.36	2703.27	2694	286.9	2704.56	2694
299.19	2705.03	2694	300.56	2705.11	2694	303.88	2705.33	2694
307.15	2705.57	2694	328.34	2707.17	2694	330.25	2707.3	2694
330.93	2707.35	2694	351.8	2708.87	2694	353.56	2708.99	2694

Upstream Bridge Cross Section Data
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2713.87	4.09	2714.08	13.3	2713.09	18.33	2712	30.93	2708.5
37.8	2706.61	45.46	2704.42	53.58	2702.16	60.2	2702.17	76.5	2701.48
79.24	2701.12	86.13	2700.74	86.14	2700.74	87.13	2700.69	89.87	2700.84
95.11	2701.58	96.43	2701.77	98.62	2701.96	103.75	2701.75	107.17	2701.7
111.94	2701.58	125.17	2701.91	133.76	2702.4	135.14	2702.44	141.7	2703.29
143.38	2703.47	154.48	2703.32	166.36	2704	169.35	2704.01	186.14	2703.4
194.55	2703.42	213.91	2704.7	214.46	2704.71	218.92	2704.89	224.38	2705.07
224.44	2705.07	224.77	2705.06	233.22	2704.95	251.02	2704.61	252.41	2704.58
266.92	2703.7	271	2703.77	278.68	2703.17	280.37	2703.01	281.02	2702.92
281.72	2702.99	296.89	2704.54	298.76	2704.66	306.49	2705.07	309.08	2705.24
318.83	2705.95	324.74	2706.7	330.35	2707.07	341.75	2708.2	344.62	2708.29
346.57	2708.58	350.75	2708.8						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.058	30.93	.04	79.24	.035	103.75	.04	194.55	.025
214.46	.04								

Bank Sta: Left Right Coeff Contr. Expan.
76.5 95.11 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	75	2701.73	F
96	350.75	2701.73	F

Downstream Deck/Roadway Coordinates
num= 35

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2705.57	2694	28.26	2705.04	2694	32.69	2704.91	2694
42.03	2704.53	2694	50.24	2704.13	2694	56.59	2703.77	2694
59.81	2703.61	2694	65.02	2703.28	2694	70.47	2703.04	2694
74.93	2702.72	2694	94.14	2701.47	2694	95.74	2701.44	2694
115.38	2701.3	2694	118.59	2701.19	2694	121.48	2701.21	2694
124.38	2701.12	2694	130.39	2701.19	2694	133.21	2701.26	2694
134.56	2701.24	2694	144.03	2701.42	2694	145.18	2701.41	2694
154.91	2701.51	2694	159.01	2701.57	2694	160.3	2701.59	2694
227.24	2702.01	2694	236.49	2702.11	2694	237.81	2702.15	2694
288.18	2703.56	2694	296.52	2703.89	2694	304.97	2704.42	2694
306.62	2704.53	2694	325.79	2705.74	2694	326.15	2705.77	2694
328.16	2705.92	2694	337	2706.51	2694			

Downstream Bridge Cross Section Data
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2712.67	2.88	2712.82	5.07	2712.95	10.65	2711.76	15.9	2710.8
23.22	2708.92	34.87	2706.28	50.67	2703.61	52.12	2703.11	52.81	2702.88
54.36	2702.25	61.43	2698.62	65.42	2696.57	67.82	2695.34	73.72	2698.57
74.43	2699.16	75.89	2700.58	79.47	2700.31	81.35	2700.17	106.12	2698.64
107.29	2698.11	108.76	2697.83	112.69	2697.4	118.35	2698.24	125.34	2698.92
134.71	2699.77	140.2	2700.13	143.23	2700.39	155.45	2701.45	161.01	2701.75
178.4	2702.87	182.68	2703.08	201.95	2704.97	208.6	2705.52	222.04	2706.76
225.94	2707.01	234.41	2708.04	235.16	2708.1				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	61.43	.045	67.82	.04	75.89	.025	108.76	.04

Bank Sta: Left Right Coeff Contr. Expan.
61.43 73.72 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	56	2697.5	F
79	235.16	2697.5	F

Right Levee Station= 75.89 Elevation= 2700.58

Upstream Embankment side slope = 2 horiz. to 1.0 vertical
Downstream Embankment side slope = 2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 2701
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
Culvert #1 Circular 3
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 1 - Headwall
Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
	8.3	79.3	.024	.024	.5	.5	1

Number of Barrels = 2
Upstream Elevation = 2699.3

Centerline Stations
Sta. Sta.
83.03 87.56
Downstream Elevation = 2696.8
Centerline Stations
Sta. Sta.
66.09 70.08

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	62.08	Culv Full Len (ft)	
# Barrels	2	Culv Vel US (ft/s)	7.10
Q Barrel (cfs)	31.04	Culv Vel DS (ft/s)	8.77
E.G. US. (ft)	2702.52	Culv Inv El Up (ft)	2699.30
W.S. US. (ft)	2702.49	Culv Inv El Dn (ft)	2696.80
E.G. DS (ft)	2698.61	Culv Frctn Ls (ft)	2.38
W.S. DS (ft)	2697.97	Culv Exit Loss (ft)	1.14
Delta EG (ft)	3.91	Culv Entr Loss (ft)	0.39
Delta WS (ft)	4.52	Q Weir (cfs)	21.92
E.G. IC (ft)	2702.28	Weir Sta Lft (ft)	97.30
E.G. OC (ft)	2702.52	Weir Sta Rgt (ft)	135.84
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2701.35	Weir Max Depth (ft)	0.63
Culv WS Outlet (ft)	2698.56	Weir Avg Depth (ft)	0.34
Culv Nml Depth (ft)	1.76	Weir Flow Area (sq ft)	13.19
Culv Crt Depth (ft)	2.05	Min El Weir Flow (ft)	2701.91

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.7448

INPUT
Description: R.S. 0.7448; Imm. Downstream Romping Road Culvert
Wildflower Road
located in middle of cross section
Levee added, although 34 cfs
will occupy northern ditch
Assume all flow in main ditch
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2712.67	2.88	2712.82	5.07	2712.95	10.65	2711.76	15.9	2710.8
23.22	2708.92	34.87	2706.28	50.67	2703.61	52.12	2703.11	52.81	2702.88
54.36	2702.25	61.43	2698.62	65.42	2696.57	67.82	2695.34	73.72	2698.57
74.43	2699.16	75.89	2700.58	79.47	2700.31	81.35	2700.17	106.12	2698.64
107.29	2698.11	108.76	2697.83	112.69	2697.4	118.35	2698.24	125.34	2698.92
134.71	2699.77	140.2	2700.13	143.23	2700.39	155.45	2701.45	161.01	2701.75
178.4	2702.87	182.68	2703.08	201.95	2704.97	208.6	2705.52	222.04	2706.76
225.94	2707.01	234.41	2708.04	235.16	2708.1				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	61.43	.045	67.82	.04	75.89	.025	108.76	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
61.43	73.72	96.73	96.73	96.73	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	56	2697.5	F
79	235.16	2697.5	F

Right Levee Station= 75.89 Elevation= 2700.58

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2698.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.043	
W.S. Elev (ft)	2697.97	Reach Len. (ft)	96.73	96.73	96.73
Crit W.S. (ft)	2697.97	Flow Area (sq ft)		13.03	
E.G. Slope (ft/ft)	0.027993	Area (sq ft)		13.03	

Q Total (cfs)	84.00	Flow (cfs)		84.00	
Top Width (ft)	9.92	Top Width (ft)		9.92	
Vel Total (ft/s)	6.45	Avg. Vel. (ft/s)		6.45	
Max Chl Dpth (ft)	2.63	Hydr. Depth (ft)		1.31	
Conv. Total (cfs)	502.1	Conv. (cfs)		502.1	
Length Wtd. (ft)	96.73	Wetted Per. (ft)		11.22	
Min Ch El (ft)	2695.34	Shear (lb/sq ft)		2.03	
Alpha	1.00	Stream Power (lb/ft s)		13.08	
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	1.00	2.14	0.82
C & E Loss (ft)	0.05	Cum SA (acres)	1.22	1.26	1.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	61.43	63.89	0.72	0.36	1.33	0.86	0.30	1.99
2	Chan	63.89	66.35	15.46	3.05	2.76	18.41	1.24	5.07
3	Chan	66.35	68.80	45.09	5.64	2.78	53.68	2.29	8.00
4	Chan	68.80	71.26	21.46	3.48	2.80	25.54	1.42	6.17
5	Chan	71.26	73.72	1.27	0.50	1.55	1.52	0.37	2.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.7265

INPUT
Description: R.S. 0.7265
Wildflower Road located in approximately middle of
cross section

Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2707.47	15.7	2707.05	27.75	2709.28	30.1	2708.83	34.23	2709.1
35.05	2709.04	35.89	2708.87	50.56	2706.03	60.79	2701.81	70.25	2695.49
72.24	2694.25	76.26	2691.74	77.73	2692.22	83.62	2694.16	85.73	2694.85
90.64	2696.33	91.81	2696.75	93.24	2696.68	120.09	2695.63	126.3	2694.39
127.58	2694.13	132.31	2695.12	134.91	2695.68	146.9	2697.42	157.86	2698.93
158.39	2698.94	164.79	2699.15	170.58	2699.19	182.55	2699.23	193.98	2699.8
215.32	2700.46								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	15.7	.04	70.25	.045	93.24	.025	120.09	.04
157.86	.025								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

72.24	83.62	258.1	258.33	258.9	.3	.5	

Right Levee Station= 91.81 Elevation= 2696.68

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2694.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.045	0.000
W.S. Elev (ft)	2694.21	Reach Len. (ft)	258.10	258.33	258.90
Crit W.S. (ft)	2694.15	Flow Area (sq ft)		14.12	0.00
E.G. Slope (ft/ft)	0.027293	Area (sq ft)		14.12	0.00
Q Total (cfs)	84.00	Flow (cfs)		84.00	0.00
Top Width (ft)	11.45	Top Width (ft)		11.31	0.14
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)		5.95	0.42
Max Chl Dpth (ft)	2.47	Hydr. Depth (ft)		1.25	0.02
Conv. Total (cfs)	508.5	Conv. (cfs)		508.4	0.0
Length Wtd. (ft)	258.34	Wetted Per. (ft)		12.40	0.15
Min Ch El (ft)	2691.74	Shear (lb/sq ft)		1.94	
Alpha	1.00	Stream Power (lb/ft s)		11.54	
Frctn Loss (ft)	5.51	Cum Volume (acre-ft)	1.00	2.11	0.82
C & E Loss (ft)	0.02	Cum SA (acres)	1.22	1.24	1.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	72.24	74.52	5.03	1.52	2.60	5.99	0.69	3.32
2	Chan	74.52	76.79	32.00	4.62	2.62	38.09	2.03	6.93
3	Chan	76.79	79.07	30.95	4.37	2.40	36.84	1.92	7.08
4	Chan	79.07	81.34	13.56	2.66	2.40	16.14	1.17	5.09
5	Chan	81.34	83.62	2.46	0.96	2.40	2.93	0.42	2.57
6	ROB	83.62	91.81	0.00	0.00	0.15	0.00	0.02	0.42

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.6776

INPUT
Description: R.S. 0.6776
Wildflower Road located in approx. center of cross section
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2699.1	17.73	2696.75	19.38	2696.54	19.69	2696.49	45.58	2693.55
46.3	2693.48	47.59	2693.4	55.08	2692	57.78	2691.53	58.04	2691.54
58.69	2691.59	71.96	2691.64	77.89	2692.56	83.07	2692.23	86.57	2691.37
91.13	2688.1	93.94	2686.08	94.06	2685.98	99.38	2687.93	105.93	2690.45
127.03	2690.27	134.77	2690.16	136	2689.5	136.83	2689.5	139.73	2688.97
150.23	2688.28	154.3	2687.82	158.29	2688.43	171.36	2689.72	192.53	2692.87
206.67	2697.93	209.01	2698.68	209.89	2698.89	231.3	2699.05	238.99	2699.06
258.98	2699.85	266.15	2699.78						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	83.07	.045	105.93	.025	136.83	.04	209.89	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
91.13	99.38	172.5	172.55	172.6	.1	.3

ight Levee Station= 105.93 Elevation= 2690.45

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2689.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.045	0.045	0.045
W.S. Elev (ft)	2688.71	Reach Len. (ft)	172.50	172.55	172.60
Crit W.S. (ft)	2688.51	Flow Area (sq ft)	0.26	14.23	0.80
E.G. Slope (ft/ft)	0.017135	Area (sq ft)	0.26	14.23	0.80
Q Total (cfs)	84.00	Flow (cfs)	0.45	81.79	1.76
Top Width (ft)	11.14	Top Width (ft)	0.85	8.25	2.03
Vel Total (ft/s)	5.49	Avg. Vel. (ft/s)	1.71	5.75	2.21
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.31	1.73	0.39
Conv. Total (cfs)	641.7	Conv. (cfs)	3.4	624.8	13.4
Length Wtd. (ft)	172.55	Wetted Per. (ft)	1.05	9.28	2.18
Min Ch El (ft)	2685.98	Shear (lb/sq ft)	0.27	1.64	0.39
Alpha	1.07	Stream Power (lb/ft s)	0.46	9.43	0.86
Frctn Loss (ft)	3.32	Cum Volume (acre-ft)	1.00	2.03	0.81
C & E Loss (ft)	0.02	Cum SA (acres)	1.22	1.18	1.06

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	72.90	91.13	0.45	0.26	1.05	0.53	0.31	1.71
2	Chan	91.13	92.78	8.04	1.99	2.03	9.57	1.21	4.04
3	Chan	92.78	94.43	24.89	3.88	1.98	29.63	2.35	6.42
4	Chan	94.43	96.08	25.89	3.79	1.76	30.82	2.29	6.84
5	Chan	96.08	97.73	15.55	2.79	1.76	18.51	1.69	5.58
6	Chan	97.73	99.38	7.43	1.79	1.76	8.85	1.09	4.15
7	ROB	99.38	105.93	1.76	0.80	2.18	2.09	0.39	2.21

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.6449

INPUT
Description: R.S. 0.6449
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2694.33	3.7	2694.18	14.04	2693.48	29.9	2693.23	38.85	2692.24
39.23	2692.22	39.55	2692.21	48.73	2692.98	65.73	2692.19	71.62	2692.05
81.21	2690.36	89.69	2689.06	104.19	2688.39	108.26	2688.22	112.43	2688.05
115.75	2685.39	118.18	2683.67	118.19	2683.66	119.79	2682.53	122.87	2683.76
125.27	2684.71	128.21	2686.09	129.81	2686.64	130.03	2686.82	138.37	2686.74
158.32	2686.17	163.47	2684.98	164.92	2684.61	166.94	2684.61	179.03	2686.65
179.81	2686.78	184.78	2686.97	200.63	2687.96	205.44	2688.23	211.76	2688.82
231.6	2690.1	237.16	2690.57	259.43	2693.01	261.44	2693.23	271.08	2693.73
282.75	2694.22	286.8	2694.42	288.42	2694.53				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	48.73	.04	112.43	.045	130.03	.025	164.92	.04

nk Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
118.19 122.87 109.59 109.59 109.59 .1 .3
Right Levee Station= 130.03 Elevation= 2686.82

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2685.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.045	0.045	0.045
W.S. Elev (ft)	2685.17	Reach Len. (ft)	109.59	109.59	109.59
Crit W.S. (ft)	2685.17	Flow Area (sq ft)	1.60	9.55	2.47
E.G. Slope (ft/ft)	0.021755	Area (sq ft)	1.60	9.55	2.47
Q Total (cfs)	84.00	Flow (cfs)	5.64	69.13	9.23
Top Width (ft)	10.19	Top Width (ft)	2.13	4.68	3.38
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	3.52	7.24	3.74
Max Chl Dpth (ft)	2.64	Hydr. Depth (ft)	0.75	2.04	0.73
Conv. Total (cfs)	569.5	Conv. (cfs)	38.2	468.7	62.6
Length Wtd. (ft)	109.59	Wetted Per. (ft)	2.61	5.28	3.66
Min Ch El (ft)	2682.53	Shear (lb/sq ft)	0.83	2.46	0.91
Alpha	1.20	Stream Power (lb/ft s)	2.94	17.80	3.42
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	0.99	1.98	0.81
C & E Loss (ft)	0.00	Cum SA (acres)	1.21	1.15	1.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	94.55	118.19	5.64	1.60	2.61	6.72	0.75	3.52
2	Chan	118.19	119.13	10.85	1.72	1.15	12.92	1.84	6.30
3	Chan	119.13	120.06	18.00	2.30	1.11	21.43	2.46	7.83
4	Chan	120.06	121.00	17.70	2.19	1.01	21.07	2.34	8.07
5	Chan	121.00	121.93	13.25	1.84	1.01	15.77	1.97	7.19
6	Chan	121.93	122.87	9.33	1.49	1.01	11.11	1.60	6.24
7	ROB	122.87	130.03	9.23	2.47	3.66	10.99	0.73	3.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.6242

INPUT
Description: R.S. 0.6242
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2696.41	3.53	2696.35	23.09	2696.32	25.54	2696.21	33.56	2692.75
34.92	2692.12	37.26	2691.44	54.35	2685.25	57.02	2684.24	63.33	2681.34
67.8	2682.61	74.34	2684.72	82.66	2687.08	94.11	2688.19	101.78	2688.66
108.63	2688.09	116.62	2687.78	123.21	2682.48	124.69	2681.29	126.34	2679.9
127.55	2680.45	131.4	2682.62	133.59	2683.86	134.32	2683.71	135.28	2683.89
141.97	2683.78	163.95	2683.1	166.72	2684.34	167.98	2684.01	171.54	2685.09

174.33 2685.26 183.37 2685.18 193 2685.18 201.23 2685.07 212.9 2685.01
223.6 2683.37 227.26 2682.91 230.98 2682.33 235.86 2681.7 237.68 2681.87
245.56 2683.6 249.29 2684.09

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	23.09	.04	123.21	.035	133.59	.025	163.95	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
123.21	131.4	114.2	114.29	114.4	.1	.3

Left Levee Station= 101.78 Elevation= 2688.66
Right Levee Station= 174.33 Elevation= 2685.26

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2683.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.	0.040	0.035	0.035
W.S. Elev (ft)	2682.71	Reach Len. (ft)	114.20	114.29	114.40
Crit W.S. (ft)	2682.71	Flow Area (sq ft)	0.03	12.26	0.01
E.G. Slope (ft/ft)	0.019332	Area (sq ft)	0.03	12.26	0.01
Q Total (cfs)	84.00	Flow (cfs)	0.03	83.96	0.00
Top Width (ft)	8.62	Top Width (ft)	0.28	8.19	0.15
Vel Total (ft/s)	6.83	Avg. Vel. (ft/s)	1.02	6.85	0.65
Max Chl Dpth (ft)	2.80	Hydr. Depth (ft)	0.11	1.50	0.04
Conv. Total (cfs)	604.2	Conv. (cfs)	0.2	603.9	0.0
Length Wtd. (ft)	114.29	Wetted Per. (ft)	0.36	9.81	0.17
Min Ch El (ft)	2679.90	Shear (lb/sq ft)	0.11	1.51	0.04
Alpha	1.00	Stream Power (lb/ft s)	0.11	10.33	0.03
Frctn Loss (ft)	1.67	Cum Volume (acre-ft)	0.99	1.95	0.80
C & E Loss (ft)	0.09	Cum SA (acres)	1.21	1.14	1.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	101.78	123.21	0.03	0.03	0.36	0.04	0.11	1.02
2	Chan	123.21	124.85	5.87	1.45	2.11	6.99	0.88	4.06
3	Chan	124.85	126.49	27.41	3.65	2.11	32.63	2.23	7.51
4	Chan	126.49	128.12	33.07	3.86	1.83	39.36	2.36	8.57
5	Chan	128.12	129.76	14.78	2.41	1.88	17.60	1.47	6.14
6	Chan	129.76	131.40	2.84	0.89	1.88	3.38	0.55	3.17
7	ROB	131.40	152.87	0.00	0.01	0.17	0.00	0.04	0.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.6025

INPUT
Description: R.S. 0.6025
Imm. Upstream of intersection of Wildflower and Tree
Lined Trail
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2694.29	8.69	2692.62	32.2	2686.99	50.51	2681.81	52.7	2681.12
56.2	2680.95	72.81	2680.54	75.32	2680.1	81.91	2678.56	88.65	2676.98
88.95	2676.96	89.54	2676.92	97.55	2678.61	102.38	2679.63	105.53	2680.27
106.99	2680.33	117.23	2680.66	124.03	2680.64	136.66	2680.65	148.48	2680.55
149.64	2681.09	150.17	2680.69	150.83	2681.32	154.58	2682.13	157.74	2682.82
179.2	2686.04	181.85	2686.44	183.32	2686.66	196.65	2688.18	202.33	2688.03
204.34	2688.21	221.56	2688.12	224.82	2686.98	228.99	2690.01	242.83	2689.72

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	72.81	.058	88.65	.035	97.55	.04	117.23	.025
150.17	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
81.91	97.55	104.8	102.81	100.1	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2679.89	Element			
Vel Head (ft)	0.41	Wt. n-Val.	0.058	0.046	0.040
W.S. Elev (ft)	2679.48	Reach Len. (ft)	104.80	102.81	100.10
Crit W.S. (ft)		Flow Area (sq ft)	1.80	27.48	1.78
E.G. Slope (ft/ft)	0.012733	Area (sq ft)	1.80	27.48	1.78
Q Total (cfs)	152.00	Flow (cfs)	3.05	144.73	4.22
Top Width (ft)	23.68	Top Width (ft)	3.93	15.64	4.11
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	1.69	5.27	2.37
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	0.46	1.76	0.43
Conv. Total (cfs)	1347.0	Conv. (cfs)	27.0	1282.6	37.4
Length Wtd. (ft)	102.77	Wetted Per. (ft)	4.03	16.00	4.20
Min Ch El (ft)	2676.92	Shear (lb/sq ft)	0.36	1.37	0.34
Alpha	1.11	Stream Power (lb/ft s)	0.60	7.19	0.80
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	0.99	1.90	0.80
C & E Loss (ft)	0.15	Cum SA (acres)	1.20	1.11	1.04

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	65.53	81.91	3.05	1.80	4.03	2.00	0.46	1.69
2	Chan	81.91	85.04	11.86	4.02	3.21	7.81	1.28	2.95
3	Chan	85.04	88.17	25.18	6.31	3.21	16.57	2.02	3.99
4	Chan	88.17	91.29	53.64	7.59	3.18	35.29	2.43	7.06
5	Chan	91.29	94.42	36.49	5.81	3.20	24.00	1.86	6.28
6	Chan	94.42	97.55	17.56	3.75	3.20	11.55	1.20	4.69
7	ROB	97.55	126.61	4.22	1.78	4.20	2.78	0.43	2.37

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.5830

INPUT
Description: R.S. 0.5830, Romping/Tree Lined Intersection, Imm. upstream of culverts

Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2689.78	18.9	2688.23	28.35	2686.34	43.19	2683.36	49.33	2682.3
67.9	2680.02	71.05	2679.86	78.66	2679.35	94.33	2678.06	97.03	2677.78
101.67	2678.64	104.59	2679	109.29	2675.91	113.06	2674.44	113.18	2674.39
118.09	2676.11	128.24	2679.66	129.88	2680.15	130.27	2680.07	130.53	2680.12
130.76	2680.14	137.51	2679.05	145.3	2679.12	146.45	2679.15	177.39	2680.02
199.74	2681.05	200.31	2681.24	206.92	2682.81	215.81	2683.87	227.74	2685.38
229.94	2685.59	239.47	2686.97	254.68	2687.63	256.66	2687.56	276.57	2687.43
284.64	2688.25								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	18.9	.058	130.27	.04	137.51	.025	206.92	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
109.29	118.09	111.4	109.24	109	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	107	2678.09	F
124.45	284.64	2678.09	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2679.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.058	0.058	0.058
W.S. Elev (ft)	2679.15	Reach Len. (ft)	111.40	109.24	109.00
Crit W.S. (ft)	2677.34	Flow Area (sq ft)	23.87	34.72	13.79
E.G. Slope (ft/ft)	0.002408	Area (sq ft)	23.87	34.72	13.79
Q Total (cfs)	152.00	Flow (cfs)	26.17	104.43	21.40
Top Width (ft)	55.33	Top Width (ft)	28.22	8.80	18.32
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)	1.10	3.01	1.55
Max Chl Dpth (ft)	4.76	Hydr. Depth (ft)	0.85	3.94	0.75
Conv. Total (cfs)	3097.5	Conv. (cfs)	533.3	2128.1	436.1
Length Wtd. (ft)	109.24	Wetted Per. (ft)	29.30	9.38	18.84
Min Ch El (ft)	2674.39	Shear (lb/sq ft)	0.12	0.56	0.11
Alpha	1.53	Stream Power (lb/ft s)	0.13	1.67	0.17
Frctn Loss (ft)		Cum Volume (acre-ft)	0.96	1.83	0.78
C & E Loss (ft)		Cum SA (acres)	1.17	1.08	1.02

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	64.20	85.60	0.30	0.84	4.54	0.19	0.19	0.35
2	LOB	85.60	107.00	15.88	17.32	22.02	10.45	0.81	0.92
3	LOB	107.00	109.29	9.99	5.70	2.74	6.57	2.49	1.75
4	Chan	109.29	111.05	17.60	6.31	1.89	11.58	3.58	2.79
5	Chan	111.05	112.81	23.57	7.52	1.89	15.51	4.27	3.14
6	Chan	112.81	114.57	26.39	8.01	1.87	17.36	4.55	3.29
7	Chan	114.57	116.33	21.01	6.98	1.86	13.82	3.97	3.01
8	Chan	116.33	118.09	15.86	5.90	1.86	10.43	3.35	2.69
9	ROB	118.09	124.45	20.61	12.27	6.74	13.56	1.93	1.68
10	ROB	124.45	156.49	0.79	1.52	12.10	0.52	0.13	0.52

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Unnamed Eastern

REACH: Trib to Stagecoa RS: 0.5727

INPUT
Description: Triple 30" CMP culverts under Wildflower Road @ intersection of
Tree Lined Trail, Site #147
Sediment blocking per field study,
see TDN and
Picture #4 of Data Collection Report
Distance from Upstream XS = 30
Deck/Roadway Width = 53.2
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2686.85	2670	25.97	2681.67	2670	56.89	2679.74	2670
70.12	2679.14	2670	96.65	2678.21	2670	103.84	2678.09	2670
112.08	2678.31	2670	130.23	2678.31	2670	138.58	2678.82	2670
183.34	2680.84	2670	205.25	2682.22	2670	216.27	2685.83	2670
220.46	2686.2	2670	262.07	2687.33	2670			

Upstream Bridge Cross Section Data
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2689.78	18.9	2688.23	28.35	2686.34	43.19	2683.36	49.33	2682.3
67.9	2680.02	71.05	2679.86	78.66	2679.35	94.33	2678.06	97.03	2677.78
101.67	2678.64	104.59	2679	109.29	2675.91	113.06	2674.44	113.18	2674.39
118.09	2676.11	128.24	2679.66	129.88	2680.15	130.27	2680.07	130.53	2680.12
130.76	2680.14	137.51	2679.05	145.3	2679.12	146.45	2679.15	177.39	2680.02
199.74	2681.05	200.31	2681.24	206.92	2682.81	215.81	2683.87	227.74	2685.38
229.94	2685.59	239.47	2686.97	254.68	2687.63	256.66	2687.56	276.57	2687.43
284.64	2688.25								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	18.9	.058	130.27	.04	137.51	.025	206.92	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
109.29	118.09	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	107	2678.09	F
124.45	284.64	2678.09	F

Downstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2686.85	2670	25.97	2681.67	2670	56.89	2679.74	2670
70.12	2679.14	2670	96.65	2678.21	2670	103.84	2678.09	2670
112.08	2678.31	2670	130.23	2678.31	2670	138.58	2678.82	2670
183.34	2680.84	2670	205.25	2682.22	2670	216.27	2685.83	2670
220.46	2686.2	2670	262.07	2687.33	2670			

Downstream Bridge Cross Section Data
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2683.74	7.62	2681.97	16.61	2681.02	30.33	2679.62	53.15	2677.1
54.2	2676.9	58.16	2676.98	67.77	2677.6	69.54	2677.32	76.53	2675.91
77.35	2675.78	78.23	2675.63	99.94	2675.59	112.3	2675.56	112.72	2675.82
114.48	2675.92	115.36	2676.03	125.71	2673.48	127.44	2673.05	127.48	2673.04
127.49	2673.04	127.51	2673.04	132.65	2672.43	133.15	2672.53	137.9	2673.41
141.08	2674.18	143.76	2673.92	149.23	2674.58	156.58	2676.2	158.82	2676.74
171.55	2679.24	178.94	2680.56	190.3	2683.21	201	2685.24		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	115.36	.04	132.65	.035	143.76	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
125.71	137.9	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent

0	117	2674	F
147	201	2674	F

Upstream Embankment side slope = 6 horiz. to 1.0 vertical
Downstream Embankment side slope = 3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 2678
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Circular	2.5	

FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
	2.6	99.6	.024	.03	1	.9	1

Number of Barrels = 3
Upstream Elevation = 2672.09
Centerline Stations

Sta.	Sta.	Sta.
113.8	117	120.2

Downstream Elevation = 2671.19
Centerline Stations

Sta.	Sta.	Sta.
127.7	130.9	134.1

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	57.67	Culv Full Len (ft)	99.60
# Barrels	3	Culv Vel US (ft/s)	6.25
Q Barrel (cfs)	19.22	Culv Vel DS (ft/s)	6.25
E.G. US. (ft)	2679.26	Culv Inv El Up (ft)	2672.09
W.S. US. (ft)	2679.15	Culv Inv El Dn (ft)	2671.19
E.G. DS (ft)	2675.10	Culv Frctn Ls (ft)	3.54
W.S. DS (ft)	2674.56	Culv Exit Loss (ft)	0.07
Delta EG (ft)	4.16	Culv Entr Loss (ft)	0.55
Delta WS (ft)	4.59	Q Weir (cfs)	94.33
E.G. IC (ft)	2679.07	Weir Sta Lft (ft)	79.45
E.G. OC (ft)	2679.26	Weir Sta Rgt (ft)	148.88
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2674.59	Weir Max Depth (ft)	1.14
Culv WS Outlet (ft)	2673.69	Weir Avg Depth (ft)	0.66
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	40.08
Culv Crt Depth (ft)	2.17	Min El Weir Flow (ft)	2678.16

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.5624

INPUT
Description: R.S. 0.5624, Imm. Downstream of culverts
Imm. Downstream of
Romping/Tree Lined Trail Intersection
Ditch on other side of
street
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2683.74	7.62	2681.97	16.61	2681.02	30.33	2679.62	53.15	2677.1
54.2	2676.9	58.16	2676.98	67.77	2677.6	69.54	2677.32	76.53	2675.91
77.35	2675.78	78.23	2675.63	99.94	2675.59	112.3	2675.56	112.72	2675.82
114.48	2675.92	115.36	2676.03	125.71	2673.48	127.44	2673.05	127.48	2673.04
127.49	2673.04	127.51	2673.04	132.65	2672.43	133.15	2672.53	137.9	2673.41
141.08	2674.18	143.76	2673.92	149.23	2674.58	156.58	2676.2	158.82	2676.74
171.55	2679.24	178.94	2680.56	190.3	2683.21	201	2685.24		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	115.36	.04	132.65	.035	143.76	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
125.71	137.9	120.8	121.38	123.9	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	117	2674	F
147	201	2674	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2675.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.040	0.038	0.036
W.S. Elev (ft)	2674.56	Reach Len. (ft)	120.80	121.38	123.90
Crit W.S. (ft)	2674.56	Flow Area (sq ft)	2.38	20.37	5.54
E.G. Slope (ft/ft)	0.013142	Area (sq ft)	2.38	20.37	5.54
Q Total (cfs)	152.00	Flow (cfs)	6.62	128.14	17.24
Top Width (ft)	27.78	Top Width (ft)	4.40	12.19	11.19
Vel Total (ft/s)	5.37	Avg. Vel. (ft/s)	2.78	6.29	3.11
Max Chl Dpth (ft)	2.13	Hydr. Depth (ft)	0.54	1.67	0.49
Conv. Total (cfs)	1325.9	Conv. (cfs)	57.7	1117.8	150.4
Length Wtd. (ft)	121.40	Wetted Per. (ft)	4.53	12.37	11.34
Min Ch El (ft)	2672.43	Shear (lb/sq ft)	0.43	1.35	0.40
Alpha	1.21	Stream Power (lb/ft s)	1.20	8.50	1.25
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	0.92	1.76	0.76
C & E Loss (ft)	0.12	Cum SA (acres)	1.12	1.05	0.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	117.00	125.71	6.62	2.38	4.53	4.35	0.54	2.78
2	Chan	125.71	128.15	17.12	3.35	2.50	11.26	1.37	5.11
3	Chan	128.15	130.59	25.76	4.25	2.46	16.95	1.74	6.06
4	Chan	130.59	133.02	33.75	4.94	2.46	22.20	2.02	6.84
5	Chan	133.02	135.46	31.72	4.46	2.48	20.87	1.83	7.11
6	Chan	135.46	137.90	19.79	3.36	2.48	13.02	1.38	5.88
7	ROB	137.90	147.00	16.97	5.27	9.23	11.16	0.58	3.22
8	ROB	147.00	160.50	0.27	0.26	2.11	0.18	0.13	1.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.5394

INPUT
Description: R.S. 0.5394
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	2681.41	.15	2681.4	5.38	2680.62	9.97	2679.83	16.16	2678.99
30.22	2677.22	33.67	2676.85	48.56	2675.17	49.37	2675.05	49.77	2674.99
50.83	2674.83	59.73	2674.44	66.76	2674.11	75.11	2673.46	76.84	2673.15
78.29	2673.39	83.11	2672.9	99.28	2671.88	118.24	2671.4	128.97	2671.04
130.73	2671.64	131.38	2671.83	136.08	2671.18	142.53	2670.22	142.74	2670.26
147.04	2671.2	153.76	2672.66	155.71	2673.26	161.04	2673.58	162.13	2673.68
162.25	2673.69	178.89	2677.08	180.21	2677.37	200.08	2682.11	203.64	2682.98
217.22	2685.34								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	9.97	.04	99.28	.025	130.73	.04	136.08	.035
153.76	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
136.08	147.04	102.9	103.26	104.2	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2672.33	Element			
Vel Head (ft)	0.31	Wt. n-Val.	0.026	0.035	0.035
W.S. Elev (ft)	2672.02	Reach Len. (ft)	102.90	103.26	104.20
Crit W.S. (ft)	2672.02	Flow Area (sq ft)	19.84	14.46	1.56
E.G. Slope (ft/ft)	0.010267	Area (sq ft)	19.84	14.46	1.56
Q Total (cfs)	152.00	Flow (cfs)	74.33	74.03	3.64
Top Width (ft)	53.80	Top Width (ft)	39.06	10.96	3.78
Vel Total (ft/s)	4.24	Avg. Vel. (ft/s)	3.75	5.12	2.34
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)	0.51	1.32	0.41
Conv. Total (cfs)	1500.1	Conv. (cfs)	733.6	730.6	36.0
Length Wtd. (ft)	103.09	Wetted Per. (ft)	39.24	11.14	3.87
Min Ch El (ft)	2670.22	Shear (lb/sq ft)	0.32	0.83	0.26
Alpha	1.10	Stream Power (lb/ft s)	1.21	4.26	0.60
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	0.89	1.71	0.75
C & E Loss (ft)	0.09	Cum SA (acres)	1.06	1.02	0.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	81.65	108.86	6.00	2.69	11.85	3.94	0.23	2.23
2	LOB	108.86	136.08	68.33	17.15	27.40	44.96	0.63	3.98
3	Chan	136.08	138.27	9.25	2.20	2.22	6.09	1.01	4.20
4	Chan	138.27	140.46	14.78	2.92	2.22	9.72	1.33	5.06
5	Chan	140.46	142.66	21.26	3.63	2.22	13.99	1.66	5.85
6	Chan	142.66	144.85	18.69	3.38	2.24	12.30	1.54	5.53
7	Chan	144.85	147.04	10.05	2.33	2.24	6.61	1.06	4.32
8	ROB	147.04	161.08	3.64	1.56	3.87	2.40	0.41	2.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.5198

INPUT
Description: R.S. 0.5198; Imm. upstream driveway culvert
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2679.68	2.2	2679.19	4.89	2679.11	33.35	2677.51	34.52	2677.46
40.97	2676.54	66.26	2672.7	72.88	2671.33	74.59	2670.85	75.74	2670.62
90.42	2670.17	104.01	2669.69	104.96	2669.85	105.97	2670	108.02	2670.23
109.97	2669.58	111.21	2669.3	115.12	2668.41	115.35	2668.36	118.03	2669.43
121.62	2670.87	122.62	2671.38	135.4	2671.91	155.65	2672.9	165.13	2673.45
169.1	2673.95	192.98	2678.18	195.29	2678.53	195.8	2678.58	196.08	2678.6
218.85	2680.64								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	4.89	.04	75.74	.025	109.97	.035	122.62	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
111.21	118.03	29.43	29.43	29.43	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	106	2670.23	F
123	218.85	2670.23	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2671.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.026	0.035	0.035
W.S. Elev (ft)	2671.10	Reach Len. (ft)	29.43	29.43	29.43
Crit W.S. (ft)	2670.69	Flow Area (sq ft)	35.66	15.32	3.46
E.G. Slope (ft/ft)	0.002185	Area (sq ft)	35.66	15.32	3.46
Q Total (cfs)	152.00	Flow (cfs)	95.52	50.60	5.88
Top Width (ft)	48.37	Top Width (ft)	37.51	6.82	4.04
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)	2.68	3.30	1.70
Max Chl Dpth (ft)	2.74	Hydr. Depth (ft)	0.95	2.25	0.86
Conv. Total (cfs)	3251.8	Conv. (cfs)	2043.5	1082.4	125.9
Length Wtd. (ft)	29.43	Wetted Per. (ft)	37.76	7.13	4.38
Min Ch El (ft)	2668.36	Shear (lb/sq ft)	0.13	0.29	0.11
Alpha	1.06	Stream Power (lb/ft s)	0.35	0.97	0.18
Frctn Loss (ft)		Cum Volume (acre-ft)	0.83	1.67	0.74
C & E Loss (ft)		Cum SA (acres)	0.97	1.00	0.95

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	63.60	84.80	11.42	6.14	11.16	7.51	0.55	1.86
2	LOB	84.80	106.00	66.45	23.14	21.24	43.72	1.09	2.87
3	LOB	106.00	111.21	17.65	6.38	5.36	11.61	1.22	2.77
4	Chan	111.21	112.57	8.07	2.67	1.40	5.31	1.96	3.03
5	Chan	112.57	113.94	10.32	3.09	1.40	6.79	2.27	3.34
6	Chan	113.94	115.30	12.79	3.51	1.40	8.41	2.58	3.64
7	Chan	115.30	116.67	11.68	3.39	1.47	7.68	2.49	3.44
8	Chan	116.67	118.03	7.73	2.65	1.47	5.09	1.94	2.92
9	ROB	118.03	123.00	5.88	3.46	4.38	3.87	0.86	1.70

CULVERT

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.5170

INPUT
Description: Driveway Culvert off of Wildflower Drive
Sediment blocking per

```
            field survey, see TDN
Distance from Upstream XS =      7.5
Deck/Roadway Width        =     13.7
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  108.02 2670.23    2660  122.62 2671.38    2660

Upstream Bridge Cross Section Data
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2679.68     2.2 2679.19    4.89 2679.11   33.35 2677.51   34.52 2677.46
   40.97 2676.54   66.26  2672.7   72.88 2671.33   74.59 2670.85   75.74 2670.62
   90.42 2670.17  104.01 2669.69  104.96 2669.85  105.97    2670  108.02 2670.23
  109.97 2669.58  111.21  2669.3  115.12 2668.41  115.35 2668.36  118.03 2669.43
  121.62 2670.87  122.62 2671.38   135.4 2671.91  155.65  2672.9  165.13 2673.45
   169.1 2673.95  192.98 2678.18  195.29 2678.53   195.8 2678.58  196.08  2678.6
  218.85 2680.64

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025    4.89     .04   75.74    .025  109.97    .035  122.62     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        111.21  118.03             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     106 2670.23       F
     123  218.85 2670.23       F

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  109.73 2669.82    2660  123.92 2671.28    2660

Downstream Bridge Cross Section Data
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2678.92    1.56 2678.93   13.91 2675.17   14.48 2675.03   14.71 2675.04
   23.25 2675.74   37.03 2675.38   41.69 2675.19   53.86 2673.18   64.41  2671.7
   74.34 2671.02   77.85 2670.74   78.77 2670.61   79.13 2670.56   79.58 2670.48
   81.96 2670.39  107.68 2669.48  109.66 2669.82  109.73 2669.82  112.07 2669.03
  113.48 2668.58  116.07 2667.74  116.53 2667.95  118.03 2668.63  122.42 2670.63
  123.92 2671.28  128.57 2671.41  147.29 2671.64  149.85 2671.67  152.27 2671.81
  163.55 2672.24  166.82 2672.35  176.82  2672.8  180.04 2672.94  181.61 2673.07
  184.49 2673.51  199.07 2674.93  206.24 2675.73  209.97 2675.86  212.41 2676.28
  229.93 2677.19

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025   23.25     .04   64.41    .025  109.73    .035  116.53     .04
  149.85    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
        113.48  118.03             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     106 2669.57       F
     126  229.93 2669.57       F

Upstream Embankment side slope              =       1 horiz. to 1.0 vertical
Downstream Embankment side slope            =       1 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =  2669.9
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1
```

```
Culvert Name      Shape      Rise    Span
Culvert #1       Circular     2.5
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                  5    19.9     .024      .03       .75                  .9                 1
Number of Barrels =  3
Upstream   Elevation =  2666.74
Centerline Stations
    Sta.    Sta.    Sta.
     112     115     118
Downstream Elevation =  2666.4
Centerline Stations
    Sta.    Sta.    Sta.
     114     117     120

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)          40.65    Culv Full Len (ft)          19.90
  # Barrels                       3    Culv Vel US (ft/s)           3.69
  Q Barrel (cfs)              13.55    Culv Vel DS (ft/s)           3.69
  E.G. US. (ft)             2671.24    Culv Inv El Up (ft)       2666.74
  W.S. US. (ft)             2671.10    Culv Inv El Dn (ft)       2666.40
  E.G. DS (ft)              2670.84    Culv Frctn Ls (ft)           0.21
  W.S. DS (ft)              2670.47    Culv Exit Loss (ft)
  Delta EG (ft)                0.40    Culv Entr Loss (ft)          0.19
  Delta WS (ft)                0.63    Q Weir (cfs)               111.35
  E.G. IC (ft)              2671.01    Weir Sta Lft (ft)           73.20
  E.G. OC (ft)              2671.24    Weir Sta Rgt (ft)          120.85
  Culvert Control            Outlet    Weir Submerg                 0.28
  Culv WS Inlet (ft)        2669.24    Weir Max Depth (ft)          1.55
  Culv WS Outlet (ft)       2668.90    Weir Avg Depth (ft)          0.89
  Culv Nml Depth (ft)                  Weir Flow Area (sq ft)      42.60
  Culv Crt Depth (ft)          1.72    Min El Weir Flow (ft)     2670.01


CROSS SECTION


RIVER: Unnamed Eastern
REACH: Trib to Stagecoa   RS: 0.5142

INPUT
Description: R.S. 0.5142; Imm. Downstream Driveway Culvert
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2678.92    1.56 2678.93   13.91 2675.17   14.48 2675.03   14.71 2675.04
   23.25 2675.74   37.03 2675.38   41.69 2675.19   53.86 2673.18   64.41  2671.7
   74.34 2671.02   77.85 2670.74   78.77 2670.61   79.13 2670.56   79.58 2670.48
   81.96 2670.39  107.68 2669.48  109.66 2669.82  109.73 2669.82  112.07 2669.03
  113.48 2668.58  116.07 2667.74  116.53 2667.95  118.03 2668.63  122.42 2670.63
  123.92 2671.28  128.57 2671.41  147.29 2671.64  149.85 2671.67  152.27 2671.81
  163.55 2672.24  166.82 2672.35  176.82  2672.8  180.04 2672.94  181.61 2673.07
  184.49 2673.51  199.07 2674.93  206.24 2675.73  209.97 2675.86  212.41 2676.28
  229.93 2677.19

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025   23.25     .04   64.41    .025  109.73    .035  116.53     .04
  149.85    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        113.48  118.03             47.41   47.41   47.41             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     106 2669.57       F
     126  229.93 2669.57       F

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2670.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.028	0.037	0.040
W.S. Elev (ft)	2670.47	Reach Len. (ft)	47.41	47.41	47.41
Crit W.S. (ft)	2670.47	Flow Area (sq ft)	20.25	10.45	3.71
E.G. Slope (ft/ft)	0.008499	Area (sq ft)	20.25	10.45	3.71
Q Total (cfs)	152.00	Flow (cfs)	75.90	64.82	11.28
Top Width (ft)	42.18	Top Width (ft)	33.59	4.55	4.04
Vel Total (ft/s)	4.42	Avg. Vel. (ft/s)	3.75	6.20	3.04
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.60	2.30	0.92
Conv. Total (cfs)	1648.8	Conv. (cfs)	823.3	703.1	122.3
Length Wtd. (ft)	47.41	Wetted Per. (ft)	33.84	4.88	4.43
Min Ch El (ft)	2667.74	Shear (lb/sq ft)	0.32	1.14	0.44
Alpha	1.24	Stream Power (lb/ft s)	1.19	7.05	1.35
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	0.81	1.67	0.74
C & E Loss (ft)	0.01	Cum SA (acres)	0.95	0.99	0.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	63.60	84.80	0.46	0.45	4.91	0.30	0.09	1.03
2	LOB	84.80	106.00	40.39	11.74	21.21	26.57	0.55	3.44
3	LOB	106.00	113.48	35.06	8.06	7.71	23.07	1.08	4.35
4	Chan	113.48	114.39	11.08	1.85	0.96	7.29	2.04	5.98
5	Chan	114.39	115.30	13.88	2.12	0.96	9.13	2.33	6.55
6	Chan	115.30	116.21	16.77	2.38	0.96	11.03	2.62	7.04
7	Chan	116.21	117.12	13.60	2.24	1.00	8.95	2.46	6.08
8	Chan	117.12	118.03	9.49	1.86	1.00	6.24	2.04	5.10
9	ROB	118.03	126.00	11.28	3.71	4.43	7.42	0.92	3.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.5053

INPUT
Description: R.S. 0.5053
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2677.98	7.44	2677.83	13.32	2677.51	22.24	2676.42	25.59	2675.91
32.38	2674.3	35.87	2673.53	40.59	2672.3	43.97	2672.4	58.69	2673.58
70.99	2672.52	81.18	2671.55	82.26	2671.08	87.27	2670.15	102.91	2669.59
115.36	2669.31	116.78	2669.32	118.65	2669.3	119.16	2669.11	124.23	2667.76
126.82	2667.07	127.05	2667.01	128.48	2667.4	129.69	2667.78	137.74	2670.31
151.44	2670.57	163.31	2670.67	170.1	2670.51	175.75	2670.38	181.77	2672.07
184.66	2673.01	194.59	2673.02	216.81	2672.83	236.45	2674.03	251.63	2674.56

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	35.87	.04	87.27	.025	126.82	.035	137.74	.04
184.66	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
124.23	129.69	59.29	59.29	59.29	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2670.28	Element			
Vel Head (ft)	0.42	Wt. n-Val.	0.025	0.030	0.035
W.S. Elev (ft)	2669.86	Reach Len. (ft)	59.29	59.29	59.29
Crit W.S. (ft)	2669.86	Flow Area (sq ft)	15.34	13.50	6.85
E.G. Slope (ft/ft)	0.005445	Area (sq ft)	15.34	13.50	6.85
Q Total (cfs)	152.00	Flow (cfs)	44.08	86.60	21.32
Top Width (ft)	40.79	Top Width (ft)	28.73	5.46	6.60
Vel Total (ft/s)	4.26	Avg. Vel. (ft/s)	2.87	6.42	3.11
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)	0.53	2.47	1.04
Conv. Total (cfs)	2059.8	Conv. (cfs)	597.4	1173.5	288.9
Length Wtd. (ft)	59.29	Wetted Per. (ft)	28.95	5.67	6.92
Min Ch El (ft)	2667.01	Shear (lb/sq ft)	0.18	0.81	0.34
Alpha	1.50	Stream Power (lb/ft s)	0.52	5.19	1.05
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	0.79	1.65	0.73
C & E Loss (ft)	0.18	Cum SA (acres)	0.92	0.99	0.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.54	99.38	0.19	0.27	3.88	0.12	0.07	0.69
2	LOB	99.38	124.23	43.90	15.07	25.06	28.88	0.61	2.91
3	Chan	124.23	125.32	17.32	2.45	1.13	11.40	2.24	7.08
4	Chan	125.32	126.41	21.23	2.76	1.13	13.97	2.53	7.68
5	Chan	126.41	127.51	20.18	3.03	1.13	13.28	2.77	6.67
6	Chan	127.51	128.60	15.54	2.81	1.13	10.22	2.57	5.53
7	Chan	128.60	129.69	12.32	2.45	1.14	8.11	2.25	5.02
8	ROB	129.69	154.08	21.32	6.85	6.92	14.03	1.04	3.11

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4940

INPUT
Description: R.S. 0.4940;Imm. upstream driveway culvert
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2675.26	1.82	2675.24	36.29	2676	43.32	2676.32	53.13	2675.12
60.33	2674.79	85.29	2672.8	88.26	2670.87	92.45	2670.2	107.33	2669.71
120.14	2669.42	121.83	2669.44	123.29	2669.45	124.44	2669.42	131.74	2666
133.08	2665.37	134.02	2664.97	134.14	2664.99	135.01	2665.24	135.03	2665.24
137.88	2666.06	138.82	2666.33	140.47	2666.61	150.75	2668.11	162.24	2668.44

168.96	2669.37	180.59	2670.7	180.62	2670.7	180.66	2670.7	180.77	2670.7
197.28	2671	202.67	2670.98	217.02	2671.1	226.51	2671.22	234.41	2671.34
247.4	2671.45	263.25	2671.42	264.97	2671.38				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	53.13	.04	92.45	.025	133.08	.035	140.47	.04
180.77	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
131.74	137.88	31.7	31.71	31.75	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	128	2669.12	F
142	264.97	2669.12	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2669.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.025	0.033	0.039
W.S. Elev (ft)	2669.64	Reach Len. (ft)	31.70	31.71	31.75
Crit W.S. (ft)	2667.81	Flow Area (sq ft)	15.93	25.43	52.68
E.G. Slope (ft/ft)	0.000551	Area (sq ft)	15.93	25.43	52.68
Q Total (cfs)	152.00	Flow (cfs)	17.99	66.89	67.12
Top Width (ft)	60.64	Top Width (ft)	21.10	6.14	33.40
Vel Total (ft/s)	1.62	Avg. Vel. (ft/s)	1.13	2.63	1.27
Max Chl Dpth (ft)	4.67	Hydr. Depth (ft)	0.75	4.14	1.58
Conv. Total (cfs)	6475.9	Conv. (cfs)	766.5	2849.6	2859.7
Length Wtd. (ft)	31.71	Wetted Per. (ft)	21.86	6.51	33.65
Min Ch El (ft)	2664.97	Shear (lb/sq ft)	0.03	0.13	0.05
Alpha	1.50	Stream Power (lb/ft s)	0.03	0.35	0.07
Frctn Loss (ft)		Cum Volume (acre-ft)	0.77	1.63	0.69
C & E Loss (ft)		Cum SA (acres)	0.88	0.98	0.91

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	102.40	128.00	2.17	5.61	17.73	1.43	0.32	0.39
2	LOB	128.00	131.74	15.82	10.32	4.13	10.41	2.76	1.53
3	Chan	131.74	132.97	15.40	4.82	1.36	10.13	3.92	3.20
4	Chan	132.97	134.20	14.35	5.49	1.33	9.44	4.47	2.61
5	Chan	134.20	135.42	14.16	5.47	1.28	9.31	4.45	2.59
6	Chan	135.42	136.65	12.35	5.04	1.28	8.12	4.10	2.45
7	Chan	136.65	137.88	10.63	4.61	1.28	6.99	3.75	2.31
8	ROB	137.88	142.00	24.49	12.91	4.20	16.11	3.13	1.90
9	ROB	142.00	166.59	42.17	38.45	24.73	27.74	1.56	1.10
10	ROB	166.59	191.19	0.46	1.32	4.72	0.30	0.28	0.35

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4910

INPUT
Description: Driveway Culverts off of Wildflower Drive
Sediment blocking per
field survey, see TDN
Distance from Upstream XS = 7
Deck/Roadway Width = 12.5
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates

```
    num=        3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  124.44 2669.42    2660   138.5 2669.12    2660  168.96 2669.37    2660

Upstream Bridge Cross Section Data
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2675.26    1.82 2675.24   36.29    2676   43.32 2676.32   53.13 2675.12
   60.33 2674.79   85.29  2672.8   88.26 2670.87   92.45  2670.2  107.33 2669.71
  120.14 2669.42  121.83 2669.44  123.29 2669.45  124.44 2669.42  131.74    2666
  133.08 2665.37  134.02 2664.97  134.14 2664.99  135.01 2665.24  135.03 2665.24
  137.88 2666.06  138.82 2666.33  140.47 2666.61  150.75 2668.11  162.24 2668.44
  168.96 2669.37  180.59  2670.7  180.62  2670.7  180.66  2670.7  180.77  2670.7
  197.28    2671  202.67 2670.98  217.02  2671.1  226.51 2671.22  234.41 2671.34
   247.4 2671.45  263.25 2671.42  264.97 2671.38

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025   53.13     .04   92.45    .025  133.08    .035  140.47     .04
  180.77    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
        131.74  137.88             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     128 2669.12       F
     142  264.97 2669.12       F

Downstream  Deck/Roadway Coordinates
    num=        3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  115.52  2669.2    2660  151.62 2669.12    2660  187.17 2669.23    2660

Downstream Bridge Cross Section Data
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2674.59    26.4  2674.3    37.4 2674.55   41.77 2674.76   49.03 2674.47
   51.58 2674.46   54.54 2674.55   73.23 2674.26   74.49 2674.26   81.42 2671.24
   83.26 2670.32  110.72 2669.49  110.78 2669.48   110.8 2669.49  110.81 2669.49
  110.88 2669.48  115.52  2669.2  122.02 2667.19  130.72 2664.91  133.64 2664.14
  134.13 2664.16  140.96 2664.47  141.07 2664.48  141.33 2664.51  143.69 2664.93
  156.24 2667.18  168.12 2668.38  172.46 2668.88  179.08 2668.98  187.17 2669.23
  191.03 2669.28  197.19 2669.26  209.65 2669.23  222.04 2669.52  233.75 2669.83
  249.39 2669.82  251.86 2669.78  252.86 2669.77  253.04 2669.76

Manning's n Values        num=       6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025   54.54     .04   81.42    .025  110.88    .058  133.64    .035
  141.33     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        130.72  143.69             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     124  2665.5       F
     150  253.04  2665.5       F

Upstream Embankment side slope              =       1 horiz. to 1.0 vertical
Downstream Embankment side slope            =       1 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         = 2669.12
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     2.5
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
```

Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
	3.9	19.4	.024	.03	.2	.9	1

Number of Barrels = 3
Upstream Elevation = 2664.65
Centerline Stations

Sta.	Sta.	Sta.
132	135	138

Downstream Elevation = 2664.32
Centerline Stations

Sta.	Sta.	Sta.
133	136	139

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	114.76	Culv Full Len (ft)	
# Barrels	3	Culv Vel US (ft/s)	8.10
Q Barrel (cfs)	38.25	Culv Vel DS (ft/s)	8.90
E.G. US. (ft)	2669.70	Culv Inv El Up (ft)	2664.65
W.S. US. (ft)	2669.64	Culv Inv El Dn (ft)	2664.32
E.G. DS (ft)	2666.64	Culv Frctn Ls (ft)	1.09
W.S. DS (ft)	2666.04	Culv Exit Loss (ft)	1.06
Delta EG (ft)	3.06	Culv Entr Loss (ft)	0.92
Delta WS (ft)	3.60	Q Weir (cfs)	37.24
E.G. IC (ft)	2669.70	Weir Sta Lft (ft)	108.15
E.G. OC (ft)	2669.37	Weir Sta Rgt (ft)	171.77
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2667.15	Weir Max Depth (ft)	0.57
Culv WS Outlet (ft)	2666.47	Weir Avg Depth (ft)	0.36
Culv Nml Depth (ft)	2.50	Weir Flow Area (sq ft)	22.70
Culv Crt Depth (ft)	2.14	Min El Weir Flow (ft)	2669.13

Note: The normal depth exceeds the height of the culvert. The program assumes that the normal depth is equal to the height of the culvert.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4880

INPUT
Description: R.S. 0.4880; Imm. Downstream Driveway Culvert
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2674.59	26.4	2674.3	37.4	2674.55	41.77	2674.76	49.03	2674.47
51.58	2674.46	54.54	2674.55	73.23	2674.26	74.49	2674.26	81.42	2671.24
83.26	2670.32	110.72	2669.49	110.78	2669.48	110.8	2669.49	110.81	2669.49
110.88	2669.48	115.52	2669.2	122.02	2667.19	130.72	2664.91	133.64	2664.14
134.13	2664.16	140.96	2664.47	141.07	2664.48	141.33	2664.51	143.69	2664.93
156.24	2667.18	168.12	2668.38	172.46	2668.88	179.08	2668.98	187.17	2669.23
191.03	2669.28	197.19	2669.26	209.65	2669.23	222.04	2669.52	233.75	2669.83
249.39	2669.82	251.86	2669.78	252.86	2669.77	253.04	2669.76		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	54.54	.04	81.42	.025	110.88	.058	133.64	.035
141.33	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
130.72	143.69	79.2	79.2	79.2	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	124	2665.5	F
150	253.04	2665.5	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2666.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.058	0.042	0.040

W.S. Elev (ft)	2666.04	Reach Len. (ft)	79.20	79.20	79.20
Crit W.S. (ft)	2666.04	Flow Area (sq ft)	2.41	20.75	3.40
E.G. Slope (ft/ft)	0.018126	Area (sq ft)	2.41	20.75	3.40
Q Total (cfs)	152.00	Flow (cfs)	5.55	135.11	11.34
Top Width (ft)	23.42	Top Width (ft)	4.29	12.97	6.16
Vel Total (ft/s)	5.72	Avg. Vel. (ft/s)	2.30	6.51	3.33
Max Chl Dpth (ft)	1.89	Hydr. Depth (ft)	0.56	1.60	0.55
Conv. Total (cfs)	1129.0	Conv. (cfs)	41.2	1003.6	84.2
Length Wtd. (ft)	79.20	Wetted Per. (ft)	4.44	13.12	6.26
Min Ch El (ft)	2664.14	Shear (lb/sq ft)	0.62	1.79	0.62
Alpha	1.18	Stream Power (lb/ft s)	1.41	11.66	2.05
Frctn Loss (ft)	1.38	Cum Volume (acre-ft)	0.76	1.61	0.67
C & E Loss (ft)	0.00	Cum SA (acres)	0.87	0.97	0.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	124.00	130.72	5.55	2.41	4.44	3.65	0.56	2.30
2	Chan	130.72	133.31	15.24	3.80	2.68	10.03	1.47	4.00
3	Chan	133.31	135.91	35.90	4.79	2.61	23.62	1.85	7.50
4	Chan	135.91	138.50	34.14	4.50	2.60	22.46	1.74	7.59
5	Chan	138.50	141.10	30.36	4.20	2.60	19.98	1.62	7.24
6	Chan	141.10	143.69	19.46	3.46	2.63	12.80	1.33	5.62
7	ROB	143.69	150.00	11.34	3.40	6.26	7.46	0.55	3.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4730

INPUT
Description: R.S. 0.4730
Wildflower Road in cross section
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2671.64	.23	2671.64	1.16	2671.64	20.82	2671.14	20.99	2671.13
33.64	2670.61	35.82	2670.58	58.74	2671.37	66.87	2670.29	68.81	2669.65
86.31	2669.5	94.32	2669.09	97.42	2669.32	97.86	2669.3	98.26	2669.29
101.33	2667.97	109.86	2664.66	120.47	2663.72	120.79	2663.69	122.92	2663.61
127.1	2662.13	127.56	2661.97	128.53	2661.63	130.38	2662.12	141.31	2665.04
142.73	2665.42	145.1	2665.49	163	2665.43	169.72	2665.53	181.61	2665.83
193.72	2665.85	197.11	2665.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	68.81	.025	98.26	.058	128.53	.035	141.31	.04

nk Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
127.1	130.38	89.9	86.33	85.4	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2665.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.058	0.046	0.035
W.S. Elev (ft)	2664.42	Reach Len. (ft)	89.90	86.33	85.40
Crit W.S. (ft)	2664.42	Flow Area (sq ft)	11.11	8.34	9.90
E.G. Slope (ft/ft)	0.016754	Area (sq ft)	11.11	8.34	9.90
Q Total (cfs)	152.00	Flow (cfs)	30.42	63.23	58.35
Top Width (ft)	26.42	Top Width (ft)	14.53	3.28	8.61
Vel Total (ft/s)	5.18	Avg. Vel. (ft/s)	2.74	7.58	5.89
Max Chl Dpth (ft)	2.79	Hydr. Depth (ft)	0.76	2.54	1.15
Conv. Total (cfs)	1174.3	Conv. (cfs)	235.0	488.5	450.8
Length Wtd. (ft)	86.52	Wetted Per. (ft)	14.82	3.43	8.91
Min Ch El (ft)	2661.63	Shear (lb/sq ft)	0.78	2.54	1.16
Alpha	1.45	Stream Power (lb/ft s)	2.15	19.29	6.85
Frctn Loss (ft)	1.26	Cum Volume (acre-ft)	0.75	1.58	0.66
C & E Loss (ft)	0.01	Cum SA (acres)	0.86	0.96	0.88

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	101.68	127.10	30.42	11.11	14.82	20.01	0.76	2.74
2	Chan	127.10	127.76	8.30	1.58	0.69	5.46	2.40	5.26
3	Chan	127.76	128.41	9.66	1.73	0.70	6.35	2.63	5.59
4	Chan	128.41	129.07	15.95	1.79	0.68	10.50	2.73	8.92
5	Chan	129.07	129.72	15.52	1.68	0.68	10.21	2.56	9.24
6	Chan	129.72	130.38	13.80	1.57	0.68	9.08	2.39	8.82
7	ROB	130.38	143.73	58.35	9.90	8.91	38.39	1.15	5.89

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4567

INPUT
Description: R.S. 0.4567
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2664.29	5.04	2664.55	6.91	2664.53	23.45	2666.73	30.6	2667.95
37.75	2668.81	44.62	2669.56	56.45	2669.99	58.49	2670.03	59.88	2669.85
65.64	2668.7	67.32	2668.32	67.47	2668.32	69.04	2668.38	77.31	2668.73
78.18	2668.78	98.3	2672.1	98.38	2672.11	98.46	2672.11	122.17	2661.33
122.87	2661.04	124.83	2660.21	126.74	2660.49	130.55	2661.06	134.18	2661.6
143.43	2663.09	151.06	2662.83	154.83	2662.64	169.35	2663.87	172.68	2664.14

174.69 2664.26 185.41 2664.25 203.03 2664.29 208.19 2664.13 212.33 2664.33
220.53 2664.86 226.8 2665.12

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	65.64	.025	78.18	.04	124.83	.035	143.43	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
122.87	130.55	90.6	88.82	84.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2663.27	Element			
Vel Head (ft)	0.64	Wt. n-Val.	0.040	0.036	0.035
W.S. Elev (ft)	2662.62	Reach Len. (ft)	90.60	88.82	84.60
Crit W.S. (ft)	2662.62	Flow Area (sq ft)	2.85	15.31	7.95
E.G. Slope (ft/ft)	0.012776	Area (sq ft)	2.85	15.31	7.95
Q Total (cfs)	152.00	Flow (cfs)	9.73	109.74	32.53
Top Width (ft)	21.21	Top Width (ft)	3.55	7.68	9.99
Vel Total (ft/s)	5.82	Avg. Vel. (ft/s)	3.42	7.17	4.09
Max Chl Dpth (ft)	2.41	Hydr. Depth (ft)	0.80	1.99	0.80
Conv. Total (cfs)	1344.8	Conv. (cfs)	86.1	970.9	287.8
Length Wtd. (ft)	87.85	Wetted Per. (ft)	3.88	7.91	10.11
Min Ch El (ft)	2660.21	Shear (lb/sq ft)	0.59	1.54	0.63
Alpha	1.22	Stream Power (lb/ft s)	2.00	11.06	2.57
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	0.73	1.56	0.64
C & E Loss (ft)	0.09	Cum SA (acres)	0.84	0.95	0.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	98.30	122.87	9.73	2.85	3.88	6.40	0.80	3.42
2	Chan	122.87	124.41	17.68	2.93	1.67	11.63	1.91	6.03
3	Chan	124.41	125.94	28.19	3.58	1.58	18.55	2.33	7.88
4	Chan	125.94	127.48	25.59	3.28	1.55	16.83	2.14	7.79
5	Chan	127.48	129.01	21.18	2.93	1.55	13.93	1.91	7.22
6	Chan	129.01	130.55	17.10	2.58	1.55	11.25	1.68	6.63
7	ROB	130.55	149.80	32.53	7.95	10.11	21.40	0.80	4.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4398

INPUT
Description: R.S. 0.4398
Split determination cross section - split will not occur
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2665.8	8.03	2666.01	15.93	2666.23	36.36	2666.84	57.82	2667.29
63.26	2667.4	68.01	2666.31	78.88	2663.63	83.42	2664.3	91.51	2660.26
91.94	2660.04	94.13	2659	101.93	2660.24	103.06	2660.42	106.57	2661.04
123.44	2661.17	130.08	2661.2	143.94	2660.84	144.69	2660.89	150.53	2661.49
152.58	2661.9	165.74	2662.41	170.82	2662.51	183.06	2664.17	185.13	2664.32
195.93	2664.71								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	63.26	.04	91.51	.035	103.06	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
91.51	101.93	83.5	80.3	78.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2661.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.040	0.035	0.039
W.S. Elev (ft)	2661.51	Reach Len. (ft)	83.50	80.30	78.90
Crit W.S. (ft)	2661.51	Flow Area (sq ft)	1.56	19.68	22.20
E.G. Slope (ft/ft)	0.007169	Area (sq ft)	1.56	19.68	22.20
Q Total (cfs)	152.00	Flow (cfs)	3.34	105.53	43.14
Top Width (ft)	61.62	Top Width (ft)	2.50	10.42	48.70
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)	2.13	5.36	1.94
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	0.62	1.89	0.46
Conv. Total (cfs)	1795.2	Conv. (cfs)	39.4	1246.3	509.5
Length Wtd. (ft)	79.98	Wetted Per. (ft)	2.80	10.81	48.81
Min Ch El (ft)	2659.00	Shear (lb/sq ft)	0.25	0.82	0.20
Alpha	1.73	Stream Power (lb/ft s)	0.53	4.37	0.40
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	0.73	1.52	0.61
C & E Loss (ft)	0.02	Cum SA (acres)	0.83	0.93	0.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.21	91.51	3.34	1.56	2.80	2.20	0.62	2.13
2	Chan	91.51	93.59	17.60	3.67	2.31	11.58	1.76	4.80
3	Chan	93.59	95.68	30.62	4.97	2.16	20.14	2.39	6.16
4	Chan	95.68	97.76	25.11	4.37	2.11	16.52	2.10	5.74
5	Chan	97.76	99.85	18.86	3.68	2.11	12.41	1.77	5.12
6	Chan	99.85	101.93	13.34	2.99	2.11	8.78	1.44	4.46
7	ROB	101.93	120.73	21.94	9.95	18.87	14.43	0.53	2.21
8	ROB	120.73	139.53	11.86	7.19	18.80	7.80	0.38	1.65
9	ROB	139.53	158.33	9.34	5.05	11.13	6.14	0.46	1.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4246

INPUT
Description: R.S. 0.4246
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2667.94	5	2668.33	7.89	2668.5	10.94	2668.51	22.22	2667.8
28.75	2667.32	31.44	2665.79	45.33	2658.81	47	2657.98	48.81	2658.22
56.54	2658.85	58.3	2658.99	62.6	2658.94	64.78	2659.01	93.53	2662.07
93.71	2662.08	94.11	2662.14	108.66	2662.86	119.51	2663.41	133.51	2664.38
137.52	2664.68								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	45.33	.035	58.3	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
45.33	56.54	90.6	121.06	145.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2660.43	Element			
Vel Head (ft)	0.51	Wt. n-Val.	0.040	0.035	0.039
W.S. Elev (ft)	2659.92	Reach Len. (ft)	90.60	121.06	145.20
Crit W.S. (ft)	2659.92	Flow Area (sq ft)	1.22	16.49	11.74
E.G. Slope (ft/ft)	0.014148	Area (sq ft)	1.22	16.49	11.74
Q Total (cfs)	152.00	Flow (cfs)	3.35	106.26	42.39
Top Width (ft)	30.15	Top Width (ft)	2.20	11.21	16.75
Vel Total (ft/s)	5.16	Avg. Vel. (ft/s)	2.76	6.44	3.61
Max Chl Dpth (ft)	1.94	Hydr. Depth (ft)	0.55	1.47	0.70
Conv. Total (cfs)	1277.9	Conv. (cfs)	28.2	893.3	356.4
Length Wtd. (ft)	124.38	Wetted Per. (ft)	2.46	11.45	16.80
Min Ch El (ft)	2657.98	Shear (lb/sq ft)	0.44	1.27	0.62
Alpha	1.23	Stream Power (lb/ft s)	1.20	8.20	2.23
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)	0.73	1.49	0.58
C & E Loss (ft)	0.12	Cum SA (acres)	0.83	0.91	0.75

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	36.26	45.33	3.35	1.22	2.46	2.21	0.55	2.76
2	Chan	45.33	47.57	23.59	3.62	2.44	15.52	1.62	6.51
3	Chan	47.57	49.81	27.64	3.86	2.26	18.19	1.72	7.16
4	Chan	49.81	52.06	22.54	3.41	2.25	14.83	1.52	6.61
5	Chan	52.06	54.30	18.22	3.00	2.25	11.98	1.34	6.07
6	Chan	54.30	56.54	14.26	2.59	2.25	9.38	1.16	5.50
7	ROB	56.54	72.74	42.38	11.72	16.25	27.88	0.72	3.62
8	ROB	72.74	88.93	0.01	0.02	0.55	0.00	0.03	0.41

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.4017

INPUT
Description: R.S. 0.4017
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2666.57	10.26	2666.55	13.97	2666.2	36.86	2662.9	40.14	2661.96
48.48	2660.48	52.11	2660.31	64.56	2656.86	65.7	2656.54	65.85	2656.51
66.4	2656.52	76.64	2656.8	80.09	2656.71	87.03	2656.56	89.47	2656.49
96.17	2656.3	98.59	2656.3	99.03	2656.34	99.38	2656.32	100.13	2656.28
104.66	2656.8	112.35	2657.69	115.56	2658.16	123.48	2659.26	126.52	2659.36
150.95	2660.14	160.79	2660.76	168.81	2661.62	178.83	2662.24	181.27	2662.4
183.96	2662.46	188.47	2662.73	193.25	2663.16	207.14	2665.48		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	76.64	.035	100.13	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
64.56	104.66	41	44.35	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2657.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.040	0.037	0.040
W.S. Elev (ft)	2657.81	Reach Len. (ft)	41.00	44.35	50.00
Crit W.S. (ft)		Flow Area (sq ft)	1.63	50.09	4.40
E.G. Slope (ft/ft)	0.003726	Area (sq ft)	1.63	50.09	4.40
Q Total (cfs)	152.00	Flow (cfs)	2.20	143.41	6.39
Top Width (ft)	52.04	Top Width (ft)	3.43	40.10	8.51
Vel Total (ft/s)	2.71	Avg. Vel. (ft/s)	1.35	2.86	1.45
Max Chl Dpth (ft)	1.53	Hydr. Depth (ft)	0.48	1.25	0.52
Conv. Total (cfs)	2490.2	Conv. (cfs)	36.0	2349.5	104.7
Length Wtd. (ft)	44.46	Wetted Per. (ft)	3.56	40.19	8.57
Min Ch El (ft)	2656.28	Shear (lb/sq ft)	0.11	0.29	0.12
Alpha	1.07	Stream Power (lb/ft s)	0.14	0.83	0.17
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	0.72	1.40	0.56
C & E Loss (ft)	0.02	Cum SA (acres)	0.82	0.84	0.71

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	51.65	64.56	2.20	1.63	3.56	1.44	0.48	1.35
2	Chan	64.56	72.58	24.41	9.62	8.07	16.06	1.20	2.54
3	Chan	72.58	80.60	21.47	8.53	8.02	14.12	1.06	2.52
4	Chan	80.60	88.62	27.98	9.62	8.02	18.41	1.20	2.91
5	Chan	88.62	96.64	36.63	11.31	8.02	24.10	1.41	3.24
6	Chan	96.64	104.66	32.93	11.01	8.05	21.66	1.37	2.99
7	ROB	104.66	125.16	6.39	4.40	8.57	4.21	0.52	1.45

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.3933

INPUT
Description: R.S. 0.3933
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2665.1	1.62	2665.04	7.71	2664.49	17.54	2662.73	23.19	2661.71
27.48	2661.31	34.91	2660.24	42.9	2659.22	48.06	2658.63	51.86	2658.55
64.61	2658.74	73.14	2658.86	75.3	2658.47	80.56	2657.69	87	2656.69
88.87	2656.4	91.58	2655.89	94.21	2655.86	103.13	2656.17	108.89	2656.01
110.09	2655.98	111.72	2656.3	113	2656.63	121.84	2658.92	138.67	2659.15
139.18	2659.15	139.19	2659.15	165.72	2658.84	171.18	2656.82	171.78	2656.64
172.12	2656.77	175.65	2657.97	178.74	2658.89	179.07	2659.01	195.38	2659.2
197.9	2659.23	198.12	2659.21	198.28	2659.25	208.61	2660.4	211.05	2660.42
213.22	2660.38								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	103.13	.035	121.84	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
87	113	51	55.44	60	.1	.3

Right Levee Station= 139.19 Elevation= 2659.15

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2657.64	Element			
Vel Head (ft)	0.34	Wt. n-Val.	0.040	0.038	0.035
W.S. Elev (ft)	2657.30	Reach Len. (ft)	51.00	55.44	60.00
Crit W.S. (ft)	2657.14	Flow Area (sq ft)	1.22	31.36	0.88
E.G. Slope (ft/ft)	0.011437	Area (sq ft)	1.22	31.36	0.88
Q Total (cfs)	152.00	Flow (cfs)	2.18	147.93	1.89
Top Width (ft)	32.56	Top Width (ft)	3.96	26.00	2.60
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)	1.79	4.72	2.15
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)	0.31	1.21	0.34
Conv. Total (cfs)	1421.3	Conv. (cfs)	20.4	1383.2	17.7
Length Wtd. (ft)	56.45	Wetted Per. (ft)	4.00	26.15	2.69
Min Ch El (ft)	2655.86	Shear (lb/sq ft)	0.22	0.86	0.23
Alpha	1.05	Stream Power (lb/ft s)	0.39	4.04	0.50
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	0.72	1.36	0.55
C & E Loss (ft)	0.03	Cum SA (acres)	0.82	0.80	0.70

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	69.60	87.00	2.18	1.22	4.00	1.44	0.31	1.79
2	Chan	87.00	92.20	21.97	5.44	5.27	14.45	1.05	4.04
3	Chan	92.20	97.40	36.25	7.31	5.20	23.85	1.41	4.96
4	Chan	97.40	102.60	29.52	6.46	5.20	19.42	1.24	4.57
5	Chan	102.60	107.80	31.16	6.21	5.20	20.50	1.19	5.02
6	Chan	107.80	113.00	29.03	5.94	5.27	19.10	1.14	4.89
7	ROB	113.00	139.19	1.89	0.88	2.69	1.24	0.34	2.15

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.3828

INPUT
Description: R.S. 0.3828
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2664.29	7.13	2663.47	26.62	2661.38	30.21	2660.61	34.37	2660.13
46.17	2658.72	49.53	2658.23	52.13	2658.18	72.09	2658.44	75.12	2658.44
93.08	2657.73	94.37	2657.48	104.21	2655.53	109.65	2654.45	110.24	2654.53
116.72	2655.49	118.37	2655.74	120.56	2656.14	133.61	2656.57	143.6	2656.96
151.29	2655.05	151.93	2654.89	154.75	2655.39	158.46	2655.75	160.1	2655.88
160.98	2656.22	165	2656.45	182.34	2657.54	190.9	2659.62	192.22	2659.96
192.54	2659.96	196.17	2660.19	197.32	2660.05	198.71	2660.02		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	110.24	.035	120.56	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
104.21	116.72	95.2	95.61	96	.3	.5

Right Levee Station= 143.6 Elevation= 2656.96

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2657.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.040	0.037	0.039
W.S. Elev (ft)	2656.96	Reach Len. (ft)	95.20	95.61	96.00
Crit W.S. (ft)	2656.96	Flow Area (sq ft)	5.16	24.81	40.48
E.G. Slope (ft/ft)	0.005865	Area (sq ft)	5.16	24.81	40.48
Q Total (cfs)	225.00	Flow (cfs)	11.59	118.33	95.08
Top Width (ft)	76.12	Top Width (ft)	7.22	12.51	56.40
Vel Total (ft/s)	3.19	Avg. Vel. (ft/s)	2.25	4.77	2.35
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	0.72	1.98	0.72
Conv. Total (cfs)	2938.0	Conv. (cfs)	151.4	1545.2	1241.5
Length Wtd. (ft)	95.64	Wetted Per. (ft)	7.36	12.69	56.87
Min Ch El (ft)	2654.45	Shear (lb/sq ft)	0.26	0.72	0.26
Alpha	1.43	Stream Power (lb/ft s)	0.58	3.41	0.61
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	0.72	1.32	0.53
C & E Loss (ft)	0.10	Cum SA (acres)	0.81	0.78	0.66

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	83.37	104.21	11.59	5.16	7.36	5.15	0.72	2.25
2	Chan	104.21	106.71	16.47	4.20	2.55	7.32	1.68	3.92
3	Chan	106.71	109.21	25.38	5.44	2.55	11.28	2.18	4.66
4	Chan	109.21	111.72	32.07	5.96	2.53	14.25	2.38	5.38
5	Chan	111.72	114.22	25.91	5.07	2.53	11.52	2.03	5.11
6	Chan	114.22	116.72	18.50	4.14	2.53	8.22	1.66	4.47
7	ROB	116.72	130.16	25.50	10.81	13.50	11.33	0.80	2.36
8	ROB	130.16	143.60	3.49	3.49	13.45	1.55	0.26	1.00
9	ROB	143.60	161.97	61.39	22.29	18.75	27.28	1.21	2.75
10	ROB	161.97	180.34	4.70	3.88	11.17	2.09	0.35	1.21

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.3647

INPUT
Description: R.S. 0.3647, Imm. Upstream Driveway Culvert
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2661.34	4.15	2661.27	4.89	2661.24	22.29	2660.26	22.75	2660.2
31.36	2659.09	41.29	2658.33	51.28	2657.1	75.99	2654.82	79.6	2654.5
86.06	2654.34	93.01	2654.73	111.46	2654.61	113.54	2654.55	121.28	2654.32
125.28	2653.79	129.12	2653.42	136.08	2652.74	137.17	2652.64	142.21	2653.45
143.62	2653.68	151.93	2655.32	178.29	2654.71	181.88	2654.6	185.39	2654.61
198.71	2659.15	200.8	2659.76	201.61	2659.71	203.57	2659.57	204.14	2659.43
205.08	2659.46	207.74	2659.46	220.06	2659.51				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	125.28	.035	143.62	.04	205.08	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
129.12	142.21	127	126.99	126.9	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	113	2655.67	F
158	220.06	2655.67	F

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2656.50	Element			
Vel Head (ft)	0.02	Wt. n-Val.	0.039	0.035	0.040
W.S. Elev (ft)	2656.48	Reach Len. (ft)	127.00	126.99	126.90
Crit W.S. (ft)	2654.86	Flow Area (sq ft)	122.22	45.10	77.43
E.G. Slope (ft/ft)	0.000224	Area (sq ft)	122.22	45.10	77.43
Q Total (cfs)	225.00	Flow (cfs)	100.41	65.04	59.55
Top Width (ft)	132.87	Top Width (ft)	71.12	13.09	48.67
Vel Total (ft/s)	0.92	Avg. Vel. (ft/s)	0.82	1.44	0.77
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)	1.72	3.45	1.59
Conv. Total (cfs)	15034.4	Conv. (cfs)	6709.6	4345.9	3978.9
Length Wtd. (ft)	126.99	Wetted Per. (ft)	71.28	13.19	49.16
Min Ch El (ft)	2652.64	Shear (lb/sq ft)	0.02	0.05	0.02
Alpha	1.25	Stream Power (lb/ft s)	0.02	0.07	0.02
Frctn Loss (ft)		Cum Volume (acre-ft)	0.58	1.24	0.40
C & E Loss (ft)		Cum SA (acres)	0.72	0.75	0.54

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.50	84.75	19.51	32.02	26.84	8.67	1.20	0.61
2	LOB	84.75	113.00	43.11	52.60	28.26	19.16	1.86	0.82
3	LOB	113.00	129.12	37.79	37.60	16.18	16.80	2.33	1.01
4	Chan	129.12	131.74	11.43	8.35	2.63	5.08	3.19	1.37
5	Chan	131.74	134.36	12.99	9.02	2.63	5.77	3.44	1.44
6	Chan	134.36	136.97	14.64	9.68	2.63	6.51	3.70	1.51
7	Chan	136.97	139.59	14.31	9.58	2.65	6.36	3.66	1.49
8	Chan	139.59	142.21	11.68	8.48	2.65	5.19	3.24	1.38
9	ROB	142.21	158.00	23.41	28.03	15.97	10.40	1.77	0.84
10	ROB	158.00	173.52	16.29	22.96	15.52	7.24	1.48	0.71
11	ROB	173.52	189.03	19.70	25.86	15.72	8.76	1.67	0.76
12	ROB	189.03	204.55	0.14	0.58	1.95	0.06	0.31	0.24

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

LVERT

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.3527

INPUT
Description: Driveway Culvert off of Stardust Lane
Sediment blocking per field
survey, see TDN
Distance from Upstream XS = 28.2
Deck/Roadway Width = 71.7
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2657.25	2652	7.12	2657.19	2652	48.71	2656.78	2652
54.08	2656.77	2652	74.17	2656.21	2652	76.9	2656.14	2652
80.54	2656.13	2652	97.85	2655.84	2652	135.1	2655.66	2652
151.63	2655.8	2652	155.74	2655.96	2652	172.03	2656.57	2652
191.02	2658.19	2652	201	2659.39	2652			

Upstream Bridge Cross Section Data
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2661.34	4.15	2661.27	4.89	2661.24	22.29	2660.26	22.75	2660.2
31.36	2659.09	41.29	2658.33	51.28	2657.1	75.99	2654.82	79.6	2654.5
86.06	2654.34	93.01	2654.73	111.46	2654.61	113.54	2654.55	121.28	2654.32
125.28	2653.79	129.12	2653.42	136.08	2652.74	137.17	2652.64	142.21	2653.45
143.62	2653.68	151.93	2655.32	178.29	2654.71	181.88	2654.6	185.39	2654.61
198.71	2659.15	200.8	2659.76	201.61	2659.71	203.57	2659.57	204.14	2659.43
205.08	2659.46	207.74	2659.46	220.06	2659.51				

ning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	125.28	.035	143.62	.04	205.08	.025

Bank Sta: Left	Right	Coeff Contr.	Expan.
129.12	142.21	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	113	2655.67	F
158	220.06	2655.67	F

Downstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2657.25	2648	7.12	2657.19	2648	48.71	2656.78	2648
54.08	2656.77	2648	74.17	2656.21	2648	76.9	2656.14	2648
80.54	2656.13	2648	97.85	2655.84	2648	135.1	2655.66	2648
151.63	2655.8	2648	155.74	2655.96	2648	172.03	2656.57	2648
191.02	2658.19	2648	204.3	2659.39	2648			

Downstream Bridge Cross Section Data
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2656.6	.37	2656.59	36.12	2655.84	47.12	2655.45	53.47	2654.82
65.34	2653.71	76.51	2652.63	81.45	2652.31	95.65	2652.32	98.97	2652.56
105.46	2650.89	105.72	2649.31	105.75	2649.31	105.8	2649.31	110.42	2649.34
111.67	2649.34	120.01	2649.91	127.13	2650.45	129.84	2650.68	132.7	2651.27
143.67	2651.63	145.91	2651.7	157.7	2653.67	167.56	2654.24	169.14	2654.38
179.56	2655.5	187.05	2655.86	192.98	2656.4	201.11	2658.7	202.98	2659.37
203.69	2659.3								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	76.51	.04	105.46	.035	120.01	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
105.46	120.01	.3	.5

```
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0      84    2651       F
     142  203.69    2651       F

Upstream Embankment side slope              =       1 horiz. to 1.0 vertical
Downstream Embankment side slope            =       1 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =  2655.1
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular      3
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 1 - Headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
               24.7    81.2     .024      .03       .5                  .5                 1
Number of Barrels =  2
Upstream   Elevation =  2650.79
Centerline Stations
    Sta.    Sta.
   132.9   136.9
Downstream Elevation =  2649.5
Centerline Stations
    Sta.    Sta.
     108     112

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)        103.19    Culv Full Len (ft)         68.24
  # Barrels                      2    Culv Vel US (ft/s)          8.20
  Q Barrel (cfs)             51.60    Culv Vel DS (ft/s)          9.18
  E.G. US. (ft)            2656.50    Culv Inv El Up (ft)      2650.79
  W.S. US. (ft)            2656.48    Culv Inv El Dn (ft)      2649.50
  E.G. DS (ft)             2651.96    Culv Frctn Ls (ft)          2.62
  W.S. DS (ft)             2651.27    Culv Exit Loss (ft)         1.40
  Delta EG (ft)               4.54    Culv Entr Loss (ft)         0.52
  Delta WS (ft)               5.21    Q Weir (cfs)              121.81
  E.G. IC (ft)             2656.45    Weir Sta Lft (ft)          64.04
  E.G. OC (ft)             2656.50    Weir Sta Rgt (ft)         169.96
  Culvert Control           Outlet    Weir Submerg                0.00
  Culv WS Inlet (ft)       2653.79    Weir Max Depth (ft)         0.83
  Culv WS Outlet (ft)      2652.05    Weir Avg Depth (ft)         0.56
  Culv Nml Depth (ft)         3.00    Weir Flow Area (sq ft)     58.94
  Culv Crt Depth (ft)         2.55    Min El Weir Flow (ft)    2655.67


Note:    The normal depth exceeds the height of the culvert.  The program assumes that the normal depth
         is equal to the height of the culvert.

CROSS SECTION


RIVER: Unnamed Eastern
REACH: Trib to Stagecoa   RS: 0.3407

INPUT
Description: R.S. 0.3407, Imm. Downstream Driveway Culvert
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2656.6     .37 2656.59   36.12 2655.84   47.12 2655.45   53.47 2654.82
   65.34 2653.71   76.51 2652.63   81.45 2652.31   95.65 2652.32   98.97 2652.56
  105.46 2650.89  105.72 2649.31  105.75 2649.31   105.8 2649.31  110.42 2649.34
  111.67 2649.34  120.01 2649.91  127.13 2650.45  129.84 2650.68   132.7 2651.27
  143.67 2651.63  145.91  2651.7   157.7 2653.67  167.56 2654.24  169.14 2654.38
  179.56  2655.5  187.05 2655.86  192.98  2656.4  201.11  2658.7  202.98 2659.37
```

203.69 2659.3

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	76.51	.04	105.46	.035	120.01	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
105.46	120.01	154	161.24	168.3	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	84	2651	F
142	203.69	2651	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2651.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2651.27	Reach Len. (ft)	154.00	161.24	168.30
Crit W.S. (ft)	2651.27	Flow Area (sq ft)	0.28	25.55	10.49
E.G. Slope (ft/ft)	0.015065	Area (sq ft)	0.28	25.55	10.49
Q Total (cfs)	225.00	Flow (cfs)	0.41	182.61	41.98
Top Width (ft)	28.70	Top Width (ft)	1.47	14.55	12.68
Vel Total (ft/s)	6.19	Avg. Vel. (ft/s)	1.47	7.15	4.00
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)	0.19	1.76	0.83
Conv. Total (cfs)	1833.2	Conv. (cfs)	3.3	1487.8	342.0
Length Wtd. (ft)		Wetted Per. (ft)	1.52	15.91	12.77
Min Ch El (ft)	2649.31	Shear (lb/sq ft)	0.17	1.51	0.77
Alpha	1.16	Stream Power (lb/ft s)	0.25	10.79	3.09
Frctn Loss (ft)		Cum Volume (acre-ft)	0.40	1.14	0.27
C & E Loss (ft)		Cum SA (acres)	0.62	0.71	0.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	84.00	105.46	0.41	0.28	1.52	0.18	0.19	1.47
2	Chan	105.46	108.37	33.29	5.47	4.25	14.80	1.88	6.08
3	Chan	108.37	111.28	44.88	5.62	2.91	19.95	1.93	7.98
4	Chan	111.28	114.19	41.80	5.39	2.92	18.58	1.85	7.75
5	Chan	114.19	117.10	34.65	4.82	2.92	15.40	1.66	7.19
6	Chan	117.10	120.01	28.00	4.24	2.92	12.44	1.46	6.60
7	ROB	120.01	142.00	41.98	10.49	12.77	18.66	0.83	4.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.3101

INPUT
Description: R.S. 0.3101
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2654.66	3.21	2654.81	26.57	2652.16	36.26	2650.87	41.7	2650.26
70.59	2649.55	71.71	2649.52	72.51	2649.29	75.65	2648.15	80.98	2646.2
81.17	2646.22	81.18	2646.22	88.46	2647.18	96	2648.05	99.99	2648.25
121.88	2650.19	123.42	2650.3	128.18	2651.37	135.19	2652.44	150.52	2656.86
151.49	2657.02	159.22	2656.99	167.43	2656.84	197.62	2656.98	206.24	2657.05

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	80.98	.035	88.46	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
75.65	96	238	228.12	222	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2649.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.64	Wt. n-Val.	0.040	0.038	0.040
W.S. Elev (ft)	2648.77	Reach Len. (ft)	238.00	228.12	222.00
Crit W.S. (ft)	2648.77	Flow Area (sq ft)	0.52	32.70	3.95
E.G. Slope (ft/ft)	0.015514	Area (sq ft)	0.52	32.70	3.95
Q Total (cfs)	225.00	Flow (cfs)	1.06	213.98	9.97
Top Width (ft)	31.85	Top Width (ft)	1.70	20.35	9.81
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)	2.02	6.54	2.52
Max Chl Dpth (ft)	2.57	Hydr. Depth (ft)	0.31	1.61	0.40
Conv. Total (cfs)	1806.4	Conv. (cfs)	8.5	1718.0	80.0
Length Wtd. (ft)	227.47	Wetted Per. (ft)	1.80	20.81	9.83
Min Ch El (ft)	2646.20	Shear (lb/sq ft)	0.28	1.52	0.39
Alpha	1.12	Stream Power (lb/ft s)	0.57	9.96	0.98
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	0.40	1.03	0.24
C & E Loss (ft)	0.12	Cum SA (acres)	0.61	0.65	0.41

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	60.52	75.65	1.06	0.52	1.80	0.47	0.31	2.02
2	Chan	75.65	79.72	27.80	5.54	4.33	12.35	1.36	5.02
3	Chan	79.72	83.79	79.23	9.65	4.18	35.22	2.37	8.21
4	Chan	83.79	87.86	59.17	7.87	4.11	26.30	1.93	7.52
5	Chan	87.86	91.93	31.90	5.78	4.10	14.18	1.42	5.52
6	Chan	91.93	96.00	15.88	3.87	4.10	7.06	0.95	4.10
7	ROB	96.00	118.05	9.97	3.95	9.83	4.43	0.40	2.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.2669

INPUT
Description: R.S. 0.2669
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2648.55	10.28	2648.93	13.58	2648.87	23.53	2648.21	40.46	2645.83
43	2645.66	44.53	2645.54	56.68	2644.8	61.52	2644.5	62.16	2644.53

72.57	2643.93	74.55	2643.5	78.49	2643.86	84.83	2644.39	93.64	2645.74
100.42	2646.59	109.63	2646.83	127.16	2647.43	127.31	2647.43	127.5	2647.43
150.8	2646.34	154.65	2646.2	162.74	2645.5	172.35	2643.41	174.48	2642.95
175.03	2642.83	176.35	2642.61	181.03	2642.83	194.2	2643.45	196.99	2643.58
217.26	2644.07	238.59	2644.79	246.67	2645.08	247.16	2645.09	253.64	2645.49
265.21	2646.85	269.32	2647.6	273.87	2648.22	281.88	2648.84	295.49	2649.48
296.38	2649.51								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	150.8	.058	174.48	.035	181.03	.058	217.26	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
172.35	194.2	64.42	64.42	64.42	.1	.3

Left Levee Station= 127.31 Elevation= 2647.43

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2644.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.058	0.052	0.054
W.S. Elev (ft)	2644.43	Reach Len. (ft)	64.42	64.42	64.42
Crit W.S. (ft)	2644.43	Flow Area (sq ft)	2.38	30.71	16.66
E.G. Slope (ft/ft)	0.023757	Area (sq ft)	2.38	30.71	16.66
Q Total (cfs)	225.00	Flow (cfs)	5.90	170.30	48.80
Top Width (ft)	60.19	Top Width (ft)	4.68	21.85	33.66
Vel Total (ft/s)	4.52	Avg. Vel. (ft/s)	2.48	5.55	2.93
Max Chl Dpth (ft)	1.82	Hydr. Depth (ft)	0.51	1.41	0.49
Conv. Total (cfs)	1459.8	Conv. (cfs)	38.3	1104.9	316.6
Length Wtd. (ft)	64.42	Wetted Per. (ft)	4.79	21.95	33.67
Min Ch El (ft)	2642.61	Shear (lb/sq ft)	0.74	2.07	0.73
Alpha	1.24	Stream Power (lb/ft s)	1.83	11.51	2.15
Frctn Loss (ft)	1.14	Cum Volume (acre-ft)	0.39	0.87	0.19
C & E Loss (ft)	0.01	Cum SA (acres)	0.60	0.54	0.30

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	127.31	172.35	5.90	2.38	4.79	2.62	0.51	2.48
2	Chan	172.35	176.72	40.72	6.43	4.45	18.10	1.47	6.34
3	Chan	176.72	181.09	60.09	7.42	4.37	26.71	1.70	8.10
4	Chan	181.09	185.46	29.38	6.52	4.37	13.06	1.49	4.51
5	Chan	185.46	189.83	22.95	5.62	4.37	10.20	1.29	4.08
6	Chan	189.83	194.20	17.16	4.72	4.37	7.63	1.08	3.63
7	ROB	194.20	214.64	41.22	13.74	20.44	18.32	0.67	3.00
8	ROB	214.64	235.07	7.58	2.92	13.23	3.37	0.22	2.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water

surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.2547

INPUT
Description: R.S. 0.2547
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2648.2	17.51	2644.89	34.43	2641.97	37.07	2642.15	42.09	2642.94
49.87	2642.26	54.64	2641.66	68.98	2643	84.57	2644.92	88.65	2644.84
93.92	2644.74	114.66	2644.08	123.4	2643.86	137.68	2643.42	138.01	2643.41
138.1	2643.41	157.8	2643.07	175.07	2643.07	181.71	2643.01	187.39	2643.1
190.83	2642.38	192	2642.21	199.79	2641.11	202.93	2641.23	207.56	2641.47
217	2642.09	222.68	2642.47	227.27	2642.77	230.99	2643.03	240.3	2642.92
240.71	2642.92	241.09	2642.98	248.6	2644.49	255.31	2645.91	261.14	2646.57
271.89	2648.19	276.24	2648.73	292.69	2650.59	302.1	2650.73	310.99	2650.53

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	199.79	.035	217	.058	230.99	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
192	217	80	86.06	91	.1	.3

Left Levee Station= 84.57 Elevation= 2644.92

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2643.51	Element			
Vel Head (ft)	0.52	Wt. n-Val.	0.040	0.036	0.057
W.S. Elev (ft)	2642.99	Reach Len. (ft)	80.00	86.06	91.00
Crit W.S. (ft)	2642.99	Flow Area (sq ft)	1.70	35.06	6.30
E.G. Slope (ft/ft)	0.013691	Area (sq ft)	1.70	35.06	6.30
Q Total (cfs)	225.00	Flow (cfs)	4.06	210.06	10.88
Top Width (ft)	49.13	Top Width (ft)	4.08	25.00	20.05
Vel Total (ft/s)	5.23	Avg. Vel. (ft/s)	2.39	5.99	1.73
Max Chl Dpth (ft)	1.88	Hydr. Depth (ft)	0.42	1.40	0.31
Conv. Total (cfs)	1922.9	Conv. (cfs)	34.7	1795.2	92.9
Length Wtd. (ft)	84.84	Wetted Per. (ft)	4.15	25.11	20.09
Min Ch El (ft)	2641.11	Shear (lb/sq ft)	0.35	1.19	0.27
Alpha	1.24	Stream Power (lb/ft s)	0.84	7.15	0.46
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	0.39	0.82	0.17
C & E Loss (ft)	0.08	Cum SA (acres)	0.59	0.50	0.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	156.19	192.00	4.06	1.70	4.15	1.81	0.42	2.39
2	Chan	192.00	197.00	25.98	5.66	5.05	11.55	1.13	4.59
3	Chan	197.00	202.00	57.64	8.75	5.03	25.62	1.75	6.59
4	Chan	202.00	207.00	57.47	8.38	5.01	25.54	1.68	6.86
5	Chan	207.00	212.00	42.09	6.95	5.01	18.71	1.39	6.05
6	Chan	212.00	217.00	26.88	5.31	5.01	11.95	1.06	5.06
7	ROB	217.00	235.80	10.67	6.07	14.75	4.74	0.41	1.76
8	ROB	235.80	254.60	0.20	0.23	5.34	0.09	0.04	0.86

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.2384

INPUT
Description: R.S. 0.2384, Imm. Upstream Twilight Trail
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2647.81	2.92	2647.65	5.4	2647.21	15.9	2646.58	17.28	2646.4
23.53	2645.58	29.95	2644.61	33.68	2644.24	43.4	2642.95	45.97	2642.77
49	2642.61	59.63	2641.54	68.82	2641.16	82.85	2641.45	101.14	2640.93
132.21	2640.22	142.5	2640.43	154.7	2640.33	176.25	2640.18	186.43	2639.87
196.71	2639.97	204.8	2640.19	207.16	2640.14	209.6	2640.09	212.23	2640.12
213.42	2640.35	222.3	2642.07	223.23	2642.38	224.6	2642.97	233.25	2642.24
234.04	2642.15	235.37	2642.18	237.14	2642.14	253.24	2642.24	270.77	2643.47
270.99	2643.48	271.62	2643.54	283.93	2644.32	284.94	2644.41	305.89	2646.62
311.03	2647.04	328.01	2648.8	332.86	2649.31	332.96	2649.32		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	68.82	.025	132.21	.04	212.23	.025	233.25	.058
237.14	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
176.25	213.42	33.7	33.67	33.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2641.05	Element			
Vel Head (ft)	0.26	Wt. n-Val.	0.036	0.040	0.025
W.S. Elev (ft)	2640.79	Reach Len. (ft)	33.70	33.67	33.60
Crit W.S. (ft)	2640.79	Flow Area (sq ft)	28.24	27.96	0.49
E.G. Slope (ft/ft)	0.021220	Area (sq ft)	28.24	27.96	0.49
Q Total (cfs)	225.00	Flow (cfs)	96.79	126.68	1.53
Top Width (ft)	108.30	Top Width (ft)	68.87	37.17	2.26
Vel Total (ft/s)	3.97	Avg. Vel. (ft/s)	3.43	4.53	3.10
Max Chl Dpth (ft)	0.92	Hydr. Depth (ft)	0.41	0.75	0.22
Conv. Total (cfs)	1544.6	Conv. (cfs)	664.4	869.6	10.5
Length Wtd. (ft)	33.67	Wetted Per. (ft)	68.88	37.20	2.30
Min Ch El (ft)	2639.87	Shear (lb/sq ft)	0.54	1.00	0.28
Alpha	1.06	Stream Power (lb/ft s)	1.86	4.51	0.88
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	0.36	0.76	0.16
C & E Loss (ft)	0.05	Cum SA (acres)	0.52	0.44	0.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	105.75	141.00	40.21	11.24	33.63	17.87	0.33	3.58
2	LOB	141.00	176.25	56.58	17.00	35.25	25.15	0.48	3.33
3	Chan	176.25	183.68	23.12	5.36	7.44	10.28	0.72	4.32
4	Chan	183.68	191.12	32.72	6.60	7.44	14.54	0.89	4.96
5	Chan	191.12	198.55	29.37	6.18	7.43	13.05	0.83	4.75
6	Chan	198.55	205.99	20.53	4.99	7.44	9.12	0.67	4.12
7	Chan	205.99	213.42	20.94	4.84	7.46	9.31	0.65	4.33
8	ROB	213.42	237.33	1.53	0.49	2.30	0.68	0.22	3.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.2321

INPUT
Description: R.S. 0.2321, Centerline of Twilight Trail
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2645.94	4.56	2645.55	17.36	2644.35	19.15	2644.19	27.42	2643.52
49.39	2642.09	56.1	2641.64	61.8	2641.34	67.51	2641.11	92.05	2640
117.64	2639.37	132.59	2639.06	135.74	2638.99	160.14	2638.88	177.75	2638.79
193.43	2639.01	200.59	2639.11	203.8	2639.19	231.25	2640.56	277.3	2643.57
320.26	2646.84	341.33	2647.95						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
132.59	193.43	30.1	30.7	30.9	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2640.09	Element			
Vel Head (ft)	0.08	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2640.00	Reach Len. (ft)	30.10	30.70	30.90
Crit W.S. (ft)		Flow Area (sq ft)	19.96	67.08	16.14
E.G. Slope (ft/ft)	0.001570	Area (sq ft)	19.96	67.08	16.14
Q Total (cfs)	225.00	Flow (cfs)	29.26	168.56	27.18
Top Width (ft)	128.15	Top Width (ft)	40.63	60.84	26.68
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	1.47	2.51	1.68
Max Chl Dpth (ft)	1.21	Hydr. Depth (ft)	0.49	1.10	0.60
Conv. Total (cfs)	5679.1	Conv. (cfs)	738.6	4254.5	685.9
Length Wtd. (ft)	30.59	Wetted Per. (ft)	40.64	60.84	26.70
Min Ch El (ft)	2638.79	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	1.13	Stream Power (lb/ft s)	0.07	0.27	0.10
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	0.34	0.72	0.16
C & E Loss (ft)	0.02	Cum SA (acres)	0.48	0.40	0.23

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	79.55	106.07	1.62	2.48	14.12	0.72	0.18	0.65
2	LOB	106.07	132.59	27.64	17.48	26.52	12.29	0.66	1.58
3	Chan	132.59	144.76	29.58	12.41	12.17	13.15	1.02	2.38

4	Chan	144.76	156.93	32.64	13.17	12.17	14.51	1.08	2.48
5	Chan	156.93	169.09	35.55	13.86	12.17	15.80	1.14	2.56
6	Chan	169.09	181.26	38.30	14.50	12.17	17.02	1.19	2.64
7	Chan	181.26	193.43	32.50	13.13	12.17	14.44	1.08	2.47
8	ROB	193.43	223.01	27.18	16.14	26.70	12.08	0.60	1.68

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.2263

INPUT
Description: R.S. 0.2263, Imm. Downstream of Twilight Trail
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2644.73	.84	2644.7	1.41	2644.68	11.24	2644.12	12.28	2644.07
15.94	2643.75	32.47	2641.57	36.32	2641.25	40.49	2640.91	48.83	2640.55
64.67	2639.68	70.02	2639.58	72.58	2639.56	87.64	2639.25	101.52	2638.9
102.13	2638.87	102.45	2638.94	102.94	2638.95	114.68	2639.53	118.62	2639.73
122.02	2639.63	138.07	2639.51	141.75	2639.03	150.97	2637.83	155.37	2637.95
155.52	2637.96	155.54	2637.96	161.7	2638.45	164.2	2638.66	166.44	2639.06
173.14	2640.24	180.88	2640.14	188.1	2641.11	188.76	2641.12	194.29	2641.1
208.16	2641.02	210.7	2641.18	260.4	2644.24	277.77	2644.84	280.56	2645.06
285.77	2645.31	297.31	2646.58	297.67	2646.62	298.64	2646.72	305.17	2647.32
315.91	2648.23	324.38	2648.6						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	87.64	.025	118.62	.04	150.97	.035	173.14	.04
285.77	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
141.75	166.44	126.4	114.54	101.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2639.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.027	0.036	0.035
W.S. Elev (ft)	2639.66	Reach Len. (ft)	126.40	114.54	101.30
Crit W.S. (ft)	2639.66	Flow Area (sq ft)	21.73	33.04	1.04
E.G. Slope (ft/ft)	0.009873	Area (sq ft)	21.73	33.04	1.04
Q Total (cfs)	225.00	Flow (cfs)	60.94	162.11	1.95
Top Width (ft)	100.84	Top Width (ft)	72.72	24.69	3.43
Vel Total (ft/s)	4.03	Avg. Vel. (ft/s)	2.80	4.91	1.88
Max Chl Dpth (ft)	1.83	Hydr. Depth (ft)	0.30	1.34	0.30
Conv. Total (cfs)	2264.4	Conv. (cfs)	613.3	1631.5	19.6
Length Wtd. (ft)	120.81	Wetted Per. (ft)	72.78	24.83	3.48
Min Ch El (ft)	2637.83	Shear (lb/sq ft)	0.18	0.82	0.18
Alpha	1.20	Stream Power (lb/ft s)	0.52	4.02	0.34
Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	0.33	0.68	0.15
C & E Loss (ft)	0.02	Cum SA (acres)	0.44	0.37	0.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	56.70	85.05	3.58	3.33	19.55	1.59	0.17	1.07
2	LOB	85.05	113.40	54.05	15.02	28.38	24.02	0.53	3.60
3	LOB	113.40	141.75	3.31	3.38	24.86	1.47	0.14	0.98
4	Chan	141.75	146.69	16.30	4.72	4.98	7.24	0.96	3.45
5	Chan	146.69	151.63	39.15	7.86	4.97	17.40	1.59	4.98
6	Chan	151.63	156.56	50.94	8.60	4.94	22.64	1.74	5.92
7	Chan	156.56	161.50	36.45	7.04	4.95	16.20	1.43	5.17
8	Chan	161.50	166.44	19.27	4.82	4.98	8.57	0.98	4.00
9	ROB	166.44	198.03	1.95	1.04	3.48	0.87	0.30	1.88

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.2046

INPUT
Description: R.S. 0.2046
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2641.21	22.81	2640.79	25.95	2640.77	31.32	2640.37	49.45	2639.32
61.84	2635.97	70.04	2633.85	73.13	2632.75	77.62	2633.27	87.94	2634.63
100.32	2636.04	104.26	2636.32	110.62	2636.96	112.81	2635.54	114.6	2635.12
121.33	2633.55	122.65	2633.79	129.69	2635.09	134.37	2635.96	140	2636.92
143.3	2637.17	160.44	2637.62	175.04	2637.53	179.34	2637.51	182.34	2636.98
190.84	2635.15	196.02	2635.8	207.71	2638.31	212.27	2639.12	216.26	2639.94
222.28	2640.97	227.01	2641.46	244.79	2642.93	247.28	2642.86	290.41	2644.7

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	70.04	.035	77.62	.04	121.33	.035	134.37	.04
247.28	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
114.6	129.69	180.9	183.33	184.7	.1	.3

Right Levee Station= 160.44 Elevation= 2637.62

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2635.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.037	0.037	
W.S. Elev (ft)	2635.08	Reach Len. (ft)	180.90	183.33	184.70
Crit W.S. (ft)	2635.08	Flow Area (sq ft)	30.31	11.40	
E.G. Slope (ft/ft)	0.014909	Area (sq ft)	30.31	11.40	
Q Total (cfs)	225.00	Flow (cfs)	179.14	45.86	
Top Width (ft)	41.50	Top Width (ft)	26.63	14.88	
Vel Total (ft/s)	5.39	Avg. Vel. (ft/s)	5.91	4.02	
Max Chl Dpth (ft)	2.33	Hydr. Depth (ft)	1.14	0.77	
Conv. Total (cfs)	1842.7	Conv. (cfs)	1467.1	375.6	
Length Wtd. (ft)	182.37	Wetted Per. (ft)	27.12	15.19	
Min Ch El (ft)	2633.55	Shear (lb/sq ft)	1.04	0.70	
Alpha	1.07	Stream Power (lb/ft s)	6.15	2.81	
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	0.25	0.63	0.15
C & E Loss (ft)	0.02	Cum SA (acres)	0.30	0.32	0.21

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

rning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.84	68.76	4.05	1.57	3.60	1.80	0.45	2.59
2	LOB	68.76	91.68	175.09	28.74	23.30	77.82	1.25	6.09
3	LOB	91.68	114.60	0.00	0.00	0.22	0.00	0.01	0.24
4	Chan	114.60	117.62	1.74	0.95	2.93	0.77	0.33	1.83
5	Chan	117.62	120.64	11.85	3.07	3.10	5.27	1.02	3.86
6	Chan	120.64	123.65	21.11	4.07	3.08	9.38	1.35	5.18
7	Chan	123.65	126.67	9.66	2.50	3.07	4.29	0.83	3.87
8	Chan	126.67	129.69	1.51	0.81	3.02	0.67	0.27	1.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.1698

INPUT
Description: R.S. 0.1698
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2638.88	5.39	2638.86	8.31	2638.79	27.06	2636.28	27.75	2636.21
28.75	2636.1	39.72	2635.32	51.6	2635.07	56.36	2634.73	65.89	2634.23
70.84	2634.07	75.11	2633.8	82.06	2633.49	87.99	2632.9	89.91	2632.76
92.59	2631.11	95.04	2629.62	96.5	2629.36	98.56	2629.54	110.39	2630.81
112.86	2631.16	121.15	2632.34	127.09	2632.84	127.72	2632.98	138.9	2634.96
142.13	2635.61	162.37	2640.54	173.71	2642	175.54	2642.42	181.83	2642.63
191.01	2643	192.06	2642.99						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	89.91	.035	110.39	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
92.59	112.86	169	169.42	169.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2632.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.	0.035	0.035	0.040
W.S. Elev (ft)	2631.76	Reach Len. (ft)	169.00	169.42	169.60
Crit W.S. (ft)	2631.76	Flow Area (sq ft)	0.34	32.10	1.25
E.G. Slope (ft/ft)	0.014397	Area (sq ft)	0.34	32.10	1.25
Q Total (cfs)	225.00	Flow (cfs)	0.73	221.78	2.48
Top Width (ft)	25.52	Top Width (ft)	1.05	20.27	4.20
Vel Total (ft/s)	6.68	Avg. Vel. (ft/s)	2.16	6.91	1.98
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	0.32	1.58	0.30
Conv. Total (cfs)	1875.2	Conv. (cfs)	6.1	1848.4	20.7
Length Wtd. (ft)	169.42	Wetted Per. (ft)	1.24	20.81	4.24

Min Ch El (ft)	2629.36	Shear (lb/sq ft)	0.25	1.39	0.27
Alpha	1.06	Stream Power (lb/ft s)	0.53	9.58	0.53
Frctn Loss (ft)	1.68	Cum Volume (acre-ft)	0.19	0.53	0.15
C & E Loss (ft)	0.07	Cum SA (acres)	0.24	0.25	0.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.07	92.59	0.73	0.34	1.24	0.33	0.32	2.16
2	Chan	92.59	96.64	47.49	7.07	4.50	21.11	1.74	6.72
3	Chan	96.64	100.70	74.56	8.90	4.07	33.14	2.20	8.37
4	Chan	100.70	104.75	52.01	7.18	4.08	23.12	1.77	7.25
5	Chan	104.75	108.81	32.50	5.41	4.08	14.45	1.34	6.00
6	Chan	108.81	112.86	15.22	3.54	4.09	6.76	0.87	4.29
7	ROB	112.86	128.70	2.48	1.25	4.24	1.10	0.30	1.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.1377

INPUT
Description: R.S. 0.1377
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2634.25	5.89	2634.25	13.18	2633.95	34.18	2633.4	54.55	2631.65
83.9	2629.69	85.52	2629.55	85.86	2629.54	86.52	2629.25	92.72	2627.3
95	2626.58	99.43	2625.19	103.54	2625.46	104.25	2625.72	105.23	2626.07
109.28	2627.22	119.51	2629.39	129.21	2631.54	130.75	2632.04	145.8	2634.23
148.05	2634.46	150.36	2634.52	151.78	2634.6	172.88	2636.17	191.22	2637.89
198.46	2638.48	212.66	2639.85						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	95	.035	105.23	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
92.72	109.28	107.2	107.28	107.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2628.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.040	0.037	0.040
W.S. Elev (ft)	2628.33	Reach Len. (ft)	107.20	107.28	107.30
Crit W.S. (ft)		Flow Area (sq ft)	1.68	37.47	2.89
E.G. Slope (ft/ft)	0.007232	Area (sq ft)	1.68	37.47	2.89
Q Total (cfs)	225.00	Flow (cfs)	3.30	215.63	6.08
Top Width (ft)	25.05	Top Width (ft)	3.27	16.56	5.22
Vel Total (ft/s)	5.35	Avg. Vel. (ft/s)	1.96	5.75	2.10
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.51	2.26	0.55
Conv. Total (cfs)	2645.7	Conv. (cfs)	38.8	2535.5	71.4

Length Wtd. (ft)	107.28	Wetted Per. (ft)	3.43	17.16	5.34
Min Ch El (ft)	2625.19	Shear (lb/sq ft)	0.22	0.99	0.24
Alpha	1.11	Stream Power (lb/ft s)	0.43	5.67	0.51
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	0.18	0.40	0.14
C & E Loss (ft)	0.01	Cum SA (acres)	0.23	0.17	0.18

Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	74.18	92.72	3.30	1.68	3.43	1.47	0.51	1.96
2	Chan	92.72	96.03	21.08	5.13	3.47	9.37	1.55	4.11
3	Chan	96.03	99.34	52.70	8.58	3.47	23.42	2.59	6.14
4	Chan	99.34	102.66	70.58	10.05	3.32	31.37	3.03	7.02
5	Chan	102.66	105.97	50.97	8.48	3.45	22.65	2.56	6.01
6	Chan	105.97	109.28	20.29	5.23	3.44	9.02	1.58	3.88
7	ROB	109.28	129.96	6.08	2.89	5.34	2.70	0.55	2.10

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.1174

INPUT
Description: R.S. 0.1174
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2632.22	20	2632.78	20.85	2632.79	39.96	2628.27	40.61	2628.16
47.61	2625.73	49.41	2625.11	51.24	2624.6	52.03	2624.37	60.4	2625.77
63.72	2626.33	65.59	2626.67	85.69	2627.35	89.77	2627.47	91.67	2627.55
92.58	2627.51	103.41	2626.71	111.55	2627.76	113.18	2628.02	116.8	2628.47
155.13	2633.97	155.77	2633.97	165.78	2634.12				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	40.61	.035	52.03	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
47.61	60.4	162.2	162.25	162.3	.1	.3

Right Levee Station= 91.67 Elevation= 2627.55

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2627.86	Element			
Vel Head (ft)	0.62	Wt. n-Val.	0.035	0.038	0.040
W.S. Elev (ft)	2627.24	Reach Len. (ft)	162.20	162.25	162.30
Crit W.S. (ft)	2627.24	Flow Area (sq ft)	3.29	27.98	10.14
E.G. Slope (ft/ft)	0.011096	Area (sq ft)	3.29	27.98	10.14
Q Total (cfs)	225.00	Flow (cfs)	11.73	189.68	23.59
Top Width (ft)	39.18	Top Width (ft)	4.35	12.79	22.04
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	3.57	6.78	2.33
Max Chl Dpth (ft)	2.87	Hydr. Depth (ft)	0.76	2.19	0.46
Conv. Total (cfs)	2136.0	Conv. (cfs)	111.4	1800.7	223.9
Length Wtd. (ft)	162.25	Wetted Per. (ft)	4.61	13.11	22.13
Min Ch El (ft)	2624.37	Shear (lb/sq ft)	0.49	1.48	0.32
Alpha	1.35	Stream Power (lb/ft s)	1.76	10.02	0.74
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	0.18	0.32	0.12
C & E Loss (ft)	0.04	Cum SA (acres)	0.22	0.14	0.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	38.09	47.61	11.73	3.29	* 4.61	5.21	0.76	3.57
2	Chan	47.61	50.17	32.80	4.97	2.69	14.58	1.94	6.60
3	Chan	50.17	52.73	53.98	6.80	2.64	23.99	2.66	7.93
4	Chan	52.73	55.28	45.95	6.50	2.59	20.42	2.54	7.07
5	Chan	55.28	57.84	33.79	5.40	2.59	15.02	2.11	6.25
6	Chan	57.84	60.40	23.17	4.31	2.59	10.30	1.68	5.38
7	ROB	60.40	91.67	23.59	10.14	22.13	10.48	0.46	2.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.0867

INPUT
Description: R.S. 0.0867
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2627.18	10.6	2627.68	28.12	2624.99	40.12	2623.12	50.3	2623.1
61.87	2623	66.49	2621.74	69.52	2620.59	70.48	2620.84	74.13	2621.81
75.8	2622.25	92.26	2626.19	95.98	2626.6	105.68	2628.3	113.91	2629.84
129.35	2631.87	130.97	2632.14	137.25	2633.09	139.8	2633.75	141.33	2633.84
144.04	2633.94	151.64	2633.96	164.1	2633.81	174.56	2633.67		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	66.49	.035	75.8	.04	129.35	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
66.49	74.13	121.61	121.61	121.61	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2624.26	Element			
Vel Head (ft)	0.50	Wt. n-Val.	0.040	0.035	0.037
W.S. Elev (ft)	2623.77	Reach Len. (ft)	121.61	121.61	121.61
Crit W.S. (ft)	2623.77	Flow Area (sq ft)	22.75	19.72	7.70
E.G. Slope (ft/ft)	0.007862	Area (sq ft)	22.75	19.72	7.70
Q Total (cfs)	225.00	Flow (cfs)	61.33	135.35	28.32
Top Width (ft)	46.16	Top Width (ft)	30.52	7.64	8.00
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	2.70	6.86	3.68
Max Chl Dpth (ft)	3.18	Hydr. Depth (ft)	0.75	2.58	0.96
Conv. Total (cfs)	2537.6	Conv. (cfs)	691.6	1526.5	319.4
Length Wtd. (ft)	121.61	Wetted Per. (ft)	30.73	8.01	8.24
Min Ch El (ft)	2620.59	Shear (lb/sq ft)	0.36	1.21	0.46
Alpha	1.59	Stream Power (lb/ft s)	0.98	8.29	1.69
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	0.13	0.23	0.09
C & E Loss (ft)	0.01	Cum SA (acres)	0.16	0.10	0.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	26.60	39.89	1.69	1.20	3.97	0.75	0.31	1.41
2	LOB	39.89	53.19	20.91	8.78	13.30	9.30	0.66	2.38
3	LOB	53.19	66.49	38.72	12.77	13.47	17.21	0.96	3.03
4	Chan	66.49	68.02	22.11	3.54	1.63	9.83	2.32	6.25
5	Chan	68.02	69.55	32.10	4.42	1.63	14.27	2.90	7.25
6	Chan	69.55	71.07	34.23	4.54	1.58	15.21	2.97	7.54
7	Chan	71.07	72.60	26.80	3.92	1.58	11.91	2.57	6.84
8	Chan	72.60	74.13	20.11	3.30	1.58	8.94	2.16	6.10
9	ROB	74.13	94.22	28.32	7.70	8.24	12.59	0.96	3.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.0637

INPUT
Description: R.S. 0.0637
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2624.51	1.98	2624.62	13.72	2622.96	28.84	2620.86	39.81	2619.92
41.15	2619.71	43.21	2619.23	45.62	2618.67	47.82	2618.12	47.92	2618.14
48.22	2618.21	54.36	2619.16	57.5	2619.31	64.41	2619.64	74.83	2621.26
78.98	2621.78	82.17	2621.93	89.07	2622.64	94.56	2622.87	110.38	2623.85
114.22	2624.06	122.12	2626.86	130.57	2630.38	137.04	2630.47	152.96	2630.46
160.09	2630.4								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	48.22	.035	74.83	.04	137.04	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
43.21	54.36	128.06	128.06	128.06	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2621.13	Element			
Vel Head (ft)	0.56	Wt. n-Val.	0.040	0.037	0.035
W.S. Elev (ft)	2620.57	Reach Len. (ft)	128.06	128.06	128.06
Crit W.S. (ft)	2620.57	Flow Area (sq ft)	5.79	21.28	14.61
E.G. Slope (ft/ft)	0.012571	Area (sq ft)	5.79	21.28	14.61
Q Total (cfs)	225.00	Flow (cfs)	15.60	144.32	65.08
Top Width (ft)	38.25	Top Width (ft)	11.04	11.15	16.06
Vel Total (ft/s)	5.40	Avg. Vel. (ft/s)	2.69	6.78	4.45
Max Chl Dpth (ft)	2.45	Hydr. Depth (ft)	0.52	1.91	0.91
Conv. Total (cfs)	2006.8	Conv. (cfs)	139.2	1287.1	580.5
Length Wtd. (ft)	128.06	Wetted Per. (ft)	11.14	11.36	16.14
Min Ch El (ft)	2618.12	Shear (lb/sq ft)	0.41	1.47	0.71

Alpha	1.23	Stream Power (lb/ft s)	1.10	9.97	3.16
Frctn Loss (ft)	1.63	Cum Volume (acre-ft)	0.09	0.17	0.06
C & E Loss (ft)	0.02	Cum SA (acres)	0.10	0.07	0.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	25.93	34.57	0.20	0.25	2.40	0.09	0.10	0.82
2	LOB	34.57	43.21	15.40	5.55	8.73	6.85	0.64	2.78
3	Chan	43.21	45.44	19.72	3.58	2.29	8.76	1.60	5.51
4	Chan	45.44	47.67	31.77	4.77	2.30	14.12	2.14	6.66
5	Chan	47.67	49.90	39.43	5.08	2.26	17.53	2.28	7.76
6	Chan	49.90	52.13	31.03	4.31	2.26	13.79	1.93	7.20
7	Chan	52.13	54.36	22.36	3.54	2.26	9.94	1.59	6.32
8	ROB	54.36	75.51	65.08	14.61	16.14	28.93	0.91	4.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.0394

INPUT
Description: R.S. 0.0394
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2620.31	4.27	2620.51	28.06	2619.12	37.5	2618.54	46.41	2618.33
53.29	2618.06	55.84	2617.35	59.98	2615.94	61.95	2615.27	70.33	2617.28
76.31	2618.58	85.43	2620.38	87	2620.51	95.79	2621.96	109.36	2622.8
111.82	2622.86	118.64	2623.13	136.62	2623.92	148.35	2625.19	156.27	2625.57
167.91	2627.01								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	59.98	.035	70.33	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
55.84	70.33	108.4	109.67	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2619.11	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2618.33	Reach Len. (ft)	108.40	109.67	110.00
Crit W.S. (ft)	2618.33	Flow Area (sq ft)	2.52	29.56	2.53
E.G. Slope (ft/ft)	0.012843	Area (sq ft)	2.52	29.56	2.53
Q Total (cfs)	225.00	Flow (cfs)	4.37	213.79	6.84
Top Width (ft)	28.74	Top Width (ft)	9.42	14.49	4.83
Vel Total (ft/s)	6.50	Avg. Vel. (ft/s)	1.73	7.23	2.70
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)	0.27	2.04	0.52

Conv. Total (cfs)	1985.4	Conv. (cfs)	38.6	1886.5	60.3
Length Wtd. (ft)	109.46	Wetted Per. (ft)	9.53	15.07	4.94
Min Ch El (ft)	2615.27	Shear (lb/sq ft)	0.21	1.57	0.41
Alpha	1.18	Stream Power (lb/ft s)	0.37	11.37	1.11
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	0.08	0.10	0.03
C & E Loss (ft)	0.21	Cum SA (acres)	0.07	0.04	0.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	44.67	55.84	4.37	2.52	9.53	1.94	0.27	1.74
2	Chan	55.84	58.74	21.21	4.27	3.06	9.43	1.47	4.97
3	Chan	58.74	61.64	54.80	7.13	3.06	24.36	2.46	7.69
4	Chan	61.64	64.53	70.88	8.05	2.99	31.50	2.78	8.81
5	Chan	64.53	67.43	44.29	6.06	2.98	19.69	2.09	7.30
6	Chan	67.43	70.33	22.60	4.05	2.98	10.04	1.40	5.58
7	ROB	70.33	89.85	6.84	2.53	4.94	3.04	0.52	2.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Eastern
REACH: Trib to Stagecoa RS: 0.0186

INPUT
Description: R.S. 0.0186
Farthest downstream, near junction with Stagecoach
Pass Wash (North Scottsdale Delineation Study, FCDMC)
Water
Surface Elevation = 2617.1
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2618.41	3.38	2618.34	10.08	2618.15	11.31	2617.64	19.24	2614.08
24.28	2615.33	31.8	2616.97	37.58	2616.56	54.12	2615.17	57.88	2614.4
60.15	2613.94	63.07	2613.39	63.11	2613.39	67.34	2613.43	72.08	2614.35
77.77	2615.45	79.43	2615.69	79.92	2615.76	81.44	2615.94	96.14	2617.57
112.35	2621.34	116.04	2621.92	131.1	2624.01	144.02	2626.15	144.07	2626.16
144.36	2626.18	152.33	2626.32						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	54.12	.035	67.34	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
57.88	72.08	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2617.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.039	0.036	0.040
W.S. Elev (ft)	2617.10	Reach Len. (ft)			
Crit W.S. (ft)	2615.60	Flow Area (sq ft)	60.44	47.66	23.70
E.G. Slope (ft/ft)	0.000765	Area (sq ft)	60.44	47.66	23.70
Q Total (cfs)	225.00	Flow (cfs)	78.11	119.64	27.25
Top Width (ft)	79.39	Top Width (ft)	45.37	14.20	19.82
Vel Total (ft/s)	1.71	Avg. Vel. (ft/s)	1.29	2.51	1.15
Max Chl Dpth (ft)	3.71	Hydr. Depth (ft)	1.33	3.36	1.20
Conv. Total (cfs)	8134.6	Conv. (cfs)	2824.0	4325.4	985.2
Length Wtd. (ft)		Wetted Per. (ft)	46.49	14.39	20.02
Min Ch El (ft)	2613.39	Shear (lb/sq ft)	0.06	0.16	0.06
Alpha	1.40	Stream Power (lb/ft s)	0.08	0.40	0.06
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	11.58	23.15	28.47	20.08	11.40	12.65	1.89	1.42
2	LOB	23.15	34.73	8.69	9.98	11.79	3.86	0.86	0.87
3	LOB	34.73	46.30	7.61	9.16	11.61	3.38	0.79	0.83
4	LOB	46.30	57.88	33.34	21.22	11.68	14.82	1.83	1.57
5	Chan	57.88	60.72	20.31	8.48	2.90	9.03	2.99	2.39
6	Chan	60.72	63.56	26.87	10.02	2.88	11.94	3.53	2.68
7	Chan	63.56	66.40	29.29	10.49	2.84	13.02	3.69	2.79
8	Chan	66.40	69.24	25.00	10.08	2.88	11.11	3.55	2.48
9	Chan	69.24	72.08	18.17	8.59	2.89	8.07	3.03	2.11
10	ROB	72.08	88.13	26.99	22.91	16.23	12.00	1.43	1.18
11	ROB	88.13	104.18	0.26	0.79	3.80	0.12	0.21	0.33

SUMMARY OF MANNING'S N VALUES

River:Unnamed Eastern

Reach	River Sta.	n1	n2	n3	n4	n5	n6
Trib to Stagecoa	0.8707	.032	.035	.032			
Trib to Stagecoa	0.8440	.032	.035	.032			
Trib to Stagecoa	0.8171	.032	.035	.032	.04	.025	
Trib to Stagecoa	0.7934	.058	.04	.035	.04	.025	
Trib to Stagecoa	0.7626	.058	.04	.035	.04	.025	.04
Trib to Stagecoa	0.7537	Culvert					
Trib to Stagecoa	0.7448	.04	.045	.04	.025	.04	
Trib to Stagecoa	0.7265	.025	.04	.045	.025	.04	.025
Trib to Stagecoa	0.6776	.04	.045	.025	.04	.025	
Trib to Stagecoa	0.6449	.025	.04	.045	.025	.04	
Trib to Stagecoa	0.6242	.025	.04	.035	.025	.04	
Trib to Stagecoa	0.6025	.04	.058	.035	.04	.025	.04
Trib to Stagecoa	0.5830	.04	.058	.04	.025	.04	
Trib to Stagecoa	0.5727	Culvert					
Trib to Stagecoa	0.5624	.025	.04	.035	.04		
Trib to Stagecoa	0.5394	.025	.04	.025	.04	.035	.04
Trib to Stagecoa	0.5198	.025	.04	.025	.035	.04	
Trib to Stagecoa	0.5170	Culvert					
Trib to Stagecoa	0.5142	.025	.04	.025	.035	.04	.025
Trib to Stagecoa	0.5053	.025	.04	.025	.035	.04	.025
Trib to Stagecoa	0.4940	.025	.04	.025	.035	.04	.025
Trib to Stagecoa	0.4910	Culvert					
Trib to Stagecoa	0.4880	.025	.04	.025	.058	.035	.04

Trib to Stagecoa	0.4730	.04	.025	.058	.035	.04	
Trib to Stagecoa	0.4567	.04	.025	.04	.035	.04	
Trib to Stagecoa	0.4398	.025	.04	.035	.04		
Trib to Stagecoa	0.4246	.04	.035	.04			
Trib to Stagecoa	0.4017	.04	.035	.04			
Trib to Stagecoa	0.3933	.04	.035	.04			
Trib to Stagecoa	0.3828	.04	.035	.04			
Trib to Stagecoa	0.3647	.04	.035	.04	.025		
Trib to Stagecoa	0.3527	Culvert					
Trib to Stagecoa	0.3407	.025	.04	.035	.04		
Trib to Stagecoa	0.3101	.04	.035	.04			
Trib to Stagecoa	0.2669	.04	.058	.035	.058	.025	
Trib to Stagecoa	0.2547	.04	.035	.058	.025		
Trib to Stagecoa	0.2384	.04	.025	.04	.025	.058	.04
Trib to Stagecoa	0.2321	.025					
Trib to Stagecoa	0.2263	.04	.025	.04	.035	.04	.025
Trib to Stagecoa	0.2046	.04	.035	.04	.035	.04	.025
Trib to Stagecoa	0.1698	.04	.035	.04			
Trib to Stagecoa	0.1377	.04	.035	.04			
Trib to Stagecoa	0.1174	.04	.035	.04			
Trib to Stagecoa	0.0867	.04	.035	.04	.025		
Trib to Stagecoa	0.0637	.04	.035	.04	.025		
Trib to Stagecoa	0.0394	.04	.035	.04			
Trib to Stagecoa	0.0186	.04	.035	.04			

SUMMARY OF REACH LENGTHS

River: Unnamed Eastern

Reach	River Sta.	Left	Channel	Right
Trib to Stagecoa	0.8707	141.07	141.07	136.9
Trib to Stagecoa	0.8440	142.22	142.22	146.2
Trib to Stagecoa	0.8171	124.7	124.74	124.8
Trib to Stagecoa	0.7934	162.6	162.59	161.4
Trib to Stagecoa	0.7626	93.97	93.97	114.9
Trib to Stagecoa	0.7537	Culvert		
Trib to Stagecoa	0.7448	96.73	96.73	96.73
Trib to Stagecoa	0.7265	258.1	258.33	258.9
Trib to Stagecoa	0.6776	172.5	172.55	172.6
Trib to Stagecoa	0.6449	109.59	109.59	109.59
Trib to Stagecoa	0.6242	114.2	114.29	114.4
Trib to Stagecoa	0.6025	104.8	102.81	100.1
Trib to Stagecoa	0.5830	111.4	109.24	109
Trib to Stagecoa	0.5727	Culvert		
Trib to Stagecoa	0.5624	120.8	121.38	123.9
Trib to Stagecoa	0.5394	102.9	103.26	104.2
Trib to Stagecoa	0.5198	29.43	29.43	29.43
Trib to Stagecoa	0.5170	Culvert		
Trib to Stagecoa	0.5142	47.41	47.41	47.41
Trib to Stagecoa	0.5053	59.29	59.29	59.29
Trib to Stagecoa	0.4940	31.7	31.71	31.75
Trib to Stagecoa	0.4910	Culvert		
Trib to Stagecoa	0.4880	79.2	79.2	79.2
Trib to Stagecoa	0.4730	89.9	86.33	85.4
Trib to Stagecoa	0.4567	90.6	88.82	84.6
Trib to Stagecoa	0.4398	83.5	80.3	78.9
Trib to Stagecoa	0.4246	90.6	121.06	145.2
Trib to Stagecoa	0.4017	41	44.35	50
Trib to Stagecoa	0.3933	51	55.44	60
Trib to Stagecoa	0.3828	95.2	95.61	96
Trib to Stagecoa	0.3647	127	126.99	126.9
Trib to Stagecoa	0.3527	Culvert		
Trib to Stagecoa	0.3407	154	161.24	168.3
Trib to Stagecoa	0.3101	238	228.12	222
Trib to Stagecoa	0.2669	64.42	64.42	64.42
Trib to Stagecoa	0.2547	80	86.06	91
Trib to Stagecoa	0.2384	33.7	33.67	33.6

Trib to Stagecoa	0.2321	30.1	30.7	30.9
Trib to Stagecoa	0.2263	126.4	114.54	101.3
Trib to Stagecoa	0.2046	180.9	183.33	184.7
Trib to Stagecoa	0.1698	169	169.42	169.6
Trib to Stagecoa	0.1377	107.2	107.28	107.3
Trib to Stagecoa	0.1174	162.2	162.25	162.3
Trib to Stagecoa	0.0867	121.61	121.61	121.61
Trib to Stagecoa	0.0637	128.06	128.06	128.06
Trib to Stagecoa	0.0394	108.4	109.67	110
Trib to Stagecoa	0.0186	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Unnamed Eastern

Reach	River Sta.	Contr.	Expan.
Trib to Stagecoa	0.8707	.1	.3
Trib to Stagecoa	0.8440	.1	.3
Trib to Stagecoa	0.8171	.1	.3
Trib to Stagecoa	0.7934	.3	.5
Trib to Stagecoa	0.7626	.3	.5
Trib to Stagecoa	0.7537	Culvert	
Trib to Stagecoa	0.7448	.3	.5
Trib to Stagecoa	0.7265	.3	.5
Trib to Stagecoa	0.6776	.1	.3
Trib to Stagecoa	0.6449	.1	.3
Trib to Stagecoa	0.6242	.1	.3
Trib to Stagecoa	0.6025	.3	.5
Trib to Stagecoa	0.5830	.3	.5
Trib to Stagecoa	0.5727	Culvert	
Trib to Stagecoa	0.5624	.3	.5
Trib to Stagecoa	0.5394	.3	.5
Trib to Stagecoa	0.5198	.3	.5
Trib to Stagecoa	0.5170	Culvert	
Trib to Stagecoa	0.5142	.3	.5
Trib to Stagecoa	0.5053	.3	.5
Trib to Stagecoa	0.4940	.3	.5
Trib to Stagecoa	0.4910	Culvert	
Trib to Stagecoa	0.4880	.3	.5
Trib to Stagecoa	0.4730	.3	.5
Trib to Stagecoa	0.4567	.1	.3
Trib to Stagecoa	0.4398	.1	.3
Trib to Stagecoa	0.4246	.1	.3
Trib to Stagecoa	0.4017	.1	.3
Trib to Stagecoa	0.3933	.1	.3
Trib to Stagecoa	0.3828	.3	.5
Trib to Stagecoa	0.3647	.3	.5
Trib to Stagecoa	0.3527	Culvert	
Trib to Stagecoa	0.3407	.3	.5
Trib to Stagecoa	0.3101	.3	.5
Trib to Stagecoa	0.2669	.1	.3
Trib to Stagecoa	0.2547	.1	.3
Trib to Stagecoa	0.2384	.1	.3
Trib to Stagecoa	0.2321	.1	.3
Trib to Stagecoa	0.2263	.1	.3
Trib to Stagecoa	0.2046	.1	.3
Trib to Stagecoa	0.1698	.1	.3
Trib to Stagecoa	0.1377	.1	.3
Trib to Stagecoa	0.1174	.1	.3
Trib to Stagecoa	0.0867	.1	.3
Trib to Stagecoa	0.0637	.1	.3
Trib to Stagecoa	0.0394	.1	.3
Trib to Stagecoa	0.0186	.1	.3

RORS WARNINGS AND NOTES
rors Warnings and Notes for Plan : Plan 01

River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.8707 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.8440 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
er: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.8171 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.7934 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.7448 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used itical depth
for the water surface and continued on with the calculations.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.7265 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.6776 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.6449 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.6242 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.6025 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.5830 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.5624 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program us critical depth
for the water surface and continued on with the calculations.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.5394 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.5142 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.5053 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4940 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4910 Profile: PF 1 Culv: Culvert #1
Note: The normal depth exceeds the height of the culvert. The program assumes that the normal depth is equal to the height
of the culvert.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4880 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4730 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4567 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4398 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4246 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.4017 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.3933 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.3828 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.3647 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.3527 Profile: PF 1 Culv: Culvert #1
Note: The normal depth exceeds the height of the culvert. The program assumes that the normal depth is equal to the height
of the culvert.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.3407 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.3101 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.2669 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.2547 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.2384 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.2321 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.2263 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.2046 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.1698 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.1377 Profile: PF 1
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.1174 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.0867 Profile: PF 1

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.0637 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Eastern Reach: Trib to Stagecoa RS: 0.0394 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

HEC-RAS Model Summary Tables

Unnamed Tributary to Stagecoach Pass Wash

HEC-RAS Plan: Plan 01 River: Unnamed Eastern Reach: Trib to Stagecoa 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)	
Trib to Stagecoa	0.8707	PF 1	84.00	2710.48	2712.74	2712.74	2713.30	0.011720	6.59	15.13	13.60	0.86
Trib to Stagecoa	0.8440	PF 1	84.00	2707.83	2710.16	2710.16	2710.71	0.010632	6.56	15.56	13.89	0.84
Trib to Stagecoa	0.8171	PF 1	84.00	2705.26	2706.75	2706.75	2707.18	0.017367	5.58	16.24	20.46	0.96
Trib to Stagecoa	0.7934	PF 1	84.00	2702.95	2704.78	2704.78	2705.13	0.010868	5.65	19.91	32.28	0.79
Trib to Stagecoa	0.7626	PF 1	84.00	2700.69	2702.49	2701.95	2702.52	0.001136	1.82	65.42	83.10	0.27
Trib to Stagecoa	0.7537		Culvert									
Trib to Stagecoa	0.7448	PF 1	84.00	2695.34	2697.97	2697.97	2698.61	0.027993	6.45	13.03	9.92	0.99
Trib to Stagecoa	0.7265	PF 1	84.00	2691.74	2694.21	2694.15	2694.76	0.027293	5.95	14.12	11.45	0.94
Trib to Stagecoa	0.6776	PF 1	84.00	2685.98	2688.71	2688.51	2689.21	0.017135	5.75	15.29	11.14	0.77
Trib to Stagecoa	0.6449	PF 1	84.00	2682.53	2685.17	2685.17	2685.88	0.021755	7.24	13.62	10.19	0.89
Trib to Stagecoa	0.6242	PF 1	84.00	2679.90	2682.71	2682.71	2683.43	0.019332	6.85	12.30	8.62	0.99
Trib to Stagecoa	0.6025	PF 1	152.00	2676.92	2679.48		2679.89	0.012733	5.27	31.07	23.68	0.70
Trib to Stagecoa	0.5830	PF 1	152.00	2674.39	2679.15	2677.34	2679.26	0.002408	3.01	72.37	55.33	0.27
Trib to Stagecoa	0.5727		Culvert									
Trib to Stagecoa	0.5624	PF 1	152.00	2672.43	2674.56	2674.56	2675.10	0.013142	6.29	28.29	27.78	0.86
Trib to Stagecoa	0.5394	PF 1	152.00	2670.22	2672.02	2672.02	2672.33	0.010267	5.12	35.85	53.80	0.79
Trib to Stagecoa	0.5198	PF 1	152.00	2668.36	2671.10	2670.69	2671.23	0.002185	3.30	54.44	48.37	0.39
Trib to Stagecoa	0.5170		Culvert									
Trib to Stagecoa	0.5142	PF 1	152.00	2667.74	2670.47	2670.47	2670.84	0.008499	6.20	34.41	42.18	0.72
Trib to Stagecoa	0.5053	PF 1	152.00	2667.01	2669.86	2669.86	2670.28	0.005445	6.42	35.69	40.79	0.72
Trib to Stagecoa	0.4940	PF 1	152.00	2664.97	2669.64	2667.81	2669.70	0.000551	2.63	94.03	60.64	0.23
Trib to Stagecoa	0.4910		Culvert									
Trib to Stagecoa	0.4880	PF 1	152.00	2664.14	2666.04	2666.04	2666.64	0.018126	6.51	26.57	23.42	0.91
Trib to Stagecoa	0.4730	PF 1	152.00	2661.63	2664.42	2664.42	2665.02	0.016754	7.58	29.35	26.42	0.84
Trib to Stagecoa	0.4567	PF 1	152.00	2660.21	2662.62	2662.62	2663.27	0.012776	7.17	26.11	21.21	0.89
Trib to Stagecoa	0.4398	PF 1	152.00	2659.00	2661.51	2661.51	2661.84	0.007169	5.36	43.44	61.62	0.69
Trib to Stagecoa	0.4246	PF 1	152.00	2657.98	2659.92	2659.92	2660.43	0.014148	6.44	29.45	30.15	0.94
Trib to Stagecoa	0.4017	PF 1	152.00	2656.28	2657.81		2657.93	0.003726	2.86	56.12	52.04	0.45
Trib to Stagecoa	0.3933	PF 1	152.00	2655.86	2657.30	2657.14	2657.64	0.011437	4.72	33.46	32.56	0.76
Trib to Stagecoa	0.3828	PF 1	225.00	2654.45	2656.96	2656.96	2657.19	0.005865	4.77	70.45	76.12	0.60
Trib to Stagecoa	0.3647	PF 1	225.00	2652.64	2656.48	2654.86	2656.50	0.000224	1.44	244.76	132.87	0.14
Trib to Stagecoa	0.3527		Culvert									
Trib to Stagecoa	0.3407	PF 1	225.00	2649.31	2651.27	2651.27	2651.96	0.015065	7.15	36.33	28.70	0.95
Trib to Stagecoa	0.3101	PF 1	225.00	2646.20	2648.77	2648.77	2649.40	0.015514	6.54	37.17	31.85	0.91
Trib to Stagecoa	0.2669	PF 1	225.00	2642.61	2644.43	2644.43	2644.82	0.023757	5.55	49.75	60.19	0.82
Trib to Stagecoa	0.2547	PF 1	225.00	2641.11	2642.99	2642.99	2643.51	0.013691	5.99	43.06	49.13	0.89
Trib to Stagecoa	0.2384	PF 1	225.00	2639.87	2640.79	2640.79	2641.05	0.021220	4.53	56.70	108.30	0.92
Trib to Stagecoa	0.2321	PF 1	225.00	2638.79	2640.00		2640.09	0.001570	2.51	103.18	128.15	0.42
Trib to Stagecoa	0.2263	PF 1	225.00	2637.83	2639.66	2639.66	2639.97	0.009873	4.91	55.81	100.84	0.75
Trib to Stagecoa	0.2046	PF 1	225.00	2633.55	2635.08	2635.08	2635.56	0.014909	4.02	41.71	41.50	0.81
Trib to Stagecoa	0.1698	PF 1	225.00	2629.36	2631.76	2631.76	2632.49	0.014397	6.91	33.70	25.52	0.97
Trib to Stagecoa	0.1377	PF 1	225.00	2625.19	2628.33		2628.82	0.007232	5.75	42.04	25.05	0.67
Trib to Stagecoa	0.1174	PF 1	225.00	2624.37	2627.24	2627.24	2627.86	0.011096	6.78	41.41	39.18	0.81
Trib to Stagecoa	0.0867	PF 1	225.00	2620.59	2623.77	2623.77	2624.26	0.007862	6.86	50.17	46.16	0.75
Trib to Stagecoa	0.0637	PF 1	225.00	2618.12	2620.57	2620.57	2621.13	0.012571	6.78	41.68	38.25	0.87
Trib to Stagecoa	0.0394	PF 1	225.00	2615.27	2618.33	2618.33	2619.11	0.012843	7.23	34.62	28.74	0.89
Trib to Stagecoa	0.0186	PF 1	225.00	2613.39	2617.10	2615.60	2617.16	0.000765	2.51	131.80	79.39	0.24

HEC-RAS Plan: Plan 01 River: Unnamed Eastern Reach: Trib to Stagecoa Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Trib to Stagecoa	0.8707	PF 1	2713.30	2712.74	0.56	1.57	0.00	11.02	62.02	10.96	13.60
Trib to Stagecoa	0.8440	PF 1	2710.71	2710.16	0.55	1.92	0.04	9.71	63.13	11.15	13.89
Trib to Stagecoa	0.8171	PF 1	2707.18	2706.75	0.43	1.69	0.02	0.72	37.66	45.62	20.46
Trib to Stagecoa	0.7934	PF 1	2705.13	2704.78	0.34	0.42	0.15	10.61	45.68	27.71	32.28
Trib to Stagecoa	0.7626	PF 1	2702.52	2702.49	0.04			10.95	49.39	23.66	83.10
Trib to Stagecoa	0.7537		Culvert								
Trib to Stagecoa	0.7448	PF 1	2698.61	2697.97	0.65	2.67	0.05		84.00		9.92
Trib to Stagecoa	0.7265	PF 1	2694.76	2694.21	0.55	5.51	0.02		84.00	0.00	11.45
Trib to Stagecoa	0.6776	PF 1	2689.21	2688.71	0.50	3.32	0.02	0.45	81.79	1.76	11.14
Trib to Stagecoa	0.6449	PF 1	2685.88	2685.17	0.71	2.25	0.00	5.64	69.13	9.23	10.19
Trib to Stagecoa	0.6242	PF 1	2683.43	2682.71	0.73	1.67	0.09	0.03	83.96	0.00	8.62
Trib to Stagecoa	0.6025	PF 1	2679.89	2679.48	0.41	0.48	0.15	3.05	144.73	4.22	23.68
Trib to Stagecoa	0.5830	PF 1	2679.26	2679.15	0.11			26.17	104.43	21.40	55.33
Trib to Stagecoa	0.5727		Culvert								
Trib to Stagecoa	0.5624	PF 1	2675.10	2674.56	0.54	1.40	0.12	6.62	128.14	17.24	27.78
Trib to Stagecoa	0.5394	PF 1	2672.33	2672.02	0.31	0.42	0.09	74.33	74.03	3.64	53.80
Trib to Stagecoa	0.5198	PF 1	2671.23	2671.10	0.13			95.52	50.60	5.88	48.37
Trib to Stagecoa	0.5170		Culvert								
Trib to Stagecoa	0.5142	PF 1	2670.84	2670.47	0.37	0.32	0.01	75.90	64.82	11.28	42.18
Trib to Stagecoa	0.5053	PF 1	2670.28	2669.86	0.42	0.08	0.18	44.08	86.60	21.32	40.79
Trib to Stagecoa	0.4940	PF 1	2669.70	2669.64	0.06			17.99	66.89	67.12	60.64
Trib to Stagecoa	0.4910		Culvert								
Trib to Stagecoa	0.4880	PF 1	2666.64	2666.04	0.60	1.38	0.00	5.55	135.11	11.34	23.42
Trib to Stagecoa	0.4730	PF 1	2665.02	2664.42	0.60	1.26	0.01	30.42	63.23	58.35	26.42
Trib to Stagecoa	0.4567	PF 1	2663.27	2662.62	0.64	0.82	0.09	9.73	109.74	32.53	21.21
Trib to Stagecoa	0.4398	PF 1	2661.84	2661.51	0.33	0.78	0.02	3.34	105.53	43.14	61.62
Trib to Stagecoa	0.4246	PF 1	2660.43	2659.92	0.51	0.81	0.12	3.35	106.26	42.39	30.15
Trib to Stagecoa	0.4017	PF 1	2657.93	2657.81	0.12	0.27	0.02	2.20	143.41	6.39	52.04
Trib to Stagecoa	0.3933	PF 1	2657.64	2657.30	0.34	0.42	0.03	2.18	147.93	1.89	32.56
Trib to Stagecoa	0.3828	PF 1	2657.19	2656.96	0.23	0.06	0.10	11.59	118.33	95.08	76.12
Trib to Stagecoa	0.3647	PF 1	2656.50	2656.48	0.02			100.41	65.04	59.55	132.87
Trib to Stagecoa	0.3527		Culvert								
Trib to Stagecoa	0.3407	PF 1	2651.96	2651.27	0.69			0.41	182.61	41.98	28.70
Trib to Stagecoa	0.3101	PF 1	2649.40	2648.77	0.64	4.32	0.12	1.06	213.98	9.97	31.85
Trib to Stagecoa	0.2669	PF 1	2644.82	2644.43	0.39	1.14	0.01	5.90	170.30	48.80	60.19
Trib to Stagecoa	0.2547	PF 1	2643.51	2642.99	0.52	1.43	0.08	4.06	210.06	10.88	49.13
Trib to Stagecoa	0.2384	PF 1	2641.05	2640.79	0.26	0.13	0.05	96.79	126.68	1.53	108.30
Trib to Stagecoa	0.2321	PF 1	2640.09	2640.00	0.08	0.10	0.02	29.26	168.56	27.18	128.15
Trib to Stagecoa	0.2263	PF 1	2639.97	2639.66	0.30	1.45	0.02	60.94	162.11	1.95	100.84
Trib to Stagecoa	0.2046	PF 1	2635.56	2635.08	0.48	2.67	0.02	179.14	45.86		41.50
Trib to Stagecoa	0.1698	PF 1	2632.49	2631.76	0.73	1.68	0.07	0.73	221.78	2.48	25.52
Trib to Stagecoa	0.1377	PF 1	2628.82	2628.33	0.50	0.95	0.01	3.30	215.63	6.08	25.05
Trib to Stagecoa	0.1174	PF 1	2627.86	2627.24	0.62	1.50	0.04	11.73	189.68	23.59	39.18
Trib to Stagecoa	0.0867	PF 1	2624.26	2623.77	0.50	1.19	0.01	61.33	135.35	28.32	46.16
Trib to Stagecoa	0.0637	PF 1	2621.13	2620.57	0.56	1.63	0.02	15.60	144.32	65.08	38.25
Trib to Stagecoa	0.0394	PF 1	2619.11	2618.33	0.78	0.22	0.21	4.37	213.79	6.84	28.74
Trib to Stagecoa	0.0186	PF 1	2617.16	2617.10	0.06			78.11	119.64	27.25	79.39

Unnamed Central Tributary to Cave Creek

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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

PROJECT DATA
Project Title: Unnamed Central w Terravita Flow Split
Project File : UC_Final.prj
Run Date and Time: 04/22/2004 3:53:22 PM

Project in English units

Project Description:
Unnamed Central Tributary to Cave Creek
Prepared by CH2M HILL for the Flood
Control District of Maricopa County
Contract No. FCD 2000C037
Topographic
Mapping Source: M&B Aerial, Flight Date: August 2, 2001, 2'
Contour
Interval. Datum: NAD 83/NGVD29 from GDACS Control Network
(established and maintained by the Maricopa County Department of
Transportation).
Discharge information from the Carefree Drainage Master Plan
Data Collection Report, dated November 2002.
Discharge: Main 1796 cfs to 3043
cfs, North 2270 cfs, South 793 to 663 cfs
Study Limits: Town of Carefree
Upstream and Terravita Way Downstream
Flow Split Information: Flow Splits at
1.3235, 0.9593 and 0.8919 south
Final Model Run: September 2003

PLAN DATA

Plan Title: Plan 02
Plan File : c:\Carefree\HEC-RAS Files\Report 4-9-04\UC_Final_1.p02

Geometry Title: Unnamed Central Trib to Cave Creek
Geometry File : c:\Carefree\HEC-RAS Files\Report 4-9-04\UC_Final_1.g02

Flow Title : Flow Data
Flow File : c:\Carefree\HEC-RAS Files\Report 4-9-04\UC_Final_1.f02

Plan Summary Information:

Number of:	Cross Sections	= 40	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20

Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Flow Data
Flow File : c:\Carefree\HEC-RAS Files\Report 4-9-04\UC_Final_1.f02

Flow Data (cfs)

River	Reach	RS	PF 1
Unnamed Central	Main	2.2214	1652
Unnamed Central	Main	2.1828	2335
Unnamed Central	Main	2.1443	2363
Unnamed Central	Main	2.0456	2391
Unnamed Central	Main	1.9192	2447
Unnamed Central	Main	1.8096	2467
Unnamed Central	Main	1.5812	2622
Unnamed Central	Main	1.5234	2822
Unnamed Central	Main	1.4675	2779
Unnamed Central	Main	1.3235	2854
Unnamed Central	Main	1.2701	2274
Unnamed Central	Main	1.1824	2764
Unnamed Central	Main	0.9888	2849
Unnamed Central	North	0.9285	2092
Unnamed Central	South	0.9065	704
Unnamed Central	South	0.8919	562

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Unnamed Central	Main	PF 1	Known WS = 2266.55	
Unnamed Central	North	PF 1		Known WS = 2141.45
Unnamed Central	South	PF 1		Known WS = 2141.45

GEOMETRY DATA

Geometry Title: Unnamed Central Trib to Cave Creek
Geometry File : c:\Carefree\HEC-RAS Files\Report 4-9-04\UC_Final_1.g02

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Unnamed Central	Main		Terravita
Unnamed Central	North	Terravita	
Unnamed Central	South	Terravita	

JUNCTION INFORMATION

Name: Terravita
Description:
Energy computation Method

Length across Junction		Tributary			
River	Reach	River	Reach	Length	Angle

Unnamed Central Main to Unnamed Central North 162.62
Unnamed Central Main to Unnamed Central South 278.78

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.2214

INPUT
Description: R.S. 2.2214 - Farthest Upstream
Imm. downstream of Tom Darlington
Road
Overtopping Flow from Culvert under Tom Darlington
See
overtopping analysis in App. D of TDN

Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2269.54	4.43	2269.19	13.61	2268.87	26.89	2268.78	33.65	2267.15
35.02	2265.94	35.29	2265.98	42.88	2265.61	54.66	2263.24	56	2261.62
57	2260.41	57.1	2260.29	57.75	2259.51	62.29	2259.77	62.3	2259.77
65.86	2259.98	72.08	2260.19	72.3	2260.72	72.5	2261.21	75.35	2268.12
75.4	2268.36	81.32	2268.38	81.45	2268.39	86.32	2268.93	103.41	2267.61
105.83	2267.46	106.32	2267.49	125.58	2268.39	129.4	2268.53	129.99	2268.55

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.058	57.75	.032	75.4	.058

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
57	72.3	78.81	78.81	78.81	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2269.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.36	Wt. n-Val.	0.058	0.034	0.032
W.S. Elev (ft)	2267.00	Reach Len. (ft)	78.81	78.81	78.81
Crit W.S. (ft)	2267.00	Flow Area (sq ft)	52.52	108.59	8.12
E.G. Slope (ft/ft)	0.007198	Area (sq ft)	52.52	108.59	8.12
Q Total (cfs)	1652.00	Flow (cfs)	186.45	1429.50	36.05
Top Width (ft)	41.07	Top Width (ft)	23.18	15.30	2.59
Vel Total (ft/s)	9.76	Avg. Vel. (ft/s)	3.55	13.16	4.44
Max Chl Dpth (ft)	7.49	Hydr. Depth (ft)	2.27	7.10	3.14
Conv. Total (cfs)	19471.6	Conv. (cfs)	2197.6	16849.1	424.9
Length Wtd. (ft)	78.81	Wetted Per. (ft)	25.16	16.09	6.79
Min Ch El (ft)	2259.51	Shear (lb/sq ft)	0.94	3.03	0.54
Alpha	1.59	Stream Power (lb/ft s)	3.33	39.92	2.38
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	33.75	17.01	13.77
C & E Loss (ft)	0.22	Cum SA (acres)	27.53	5.28	10.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	22.80	34.20	0.03	0.06	0.51	0.00	0.17	0.50
2	LOB	34.20	45.60	33.04	14.53	11.74	2.00	1.27	2.27
3	LOB	45.60	57.00	153.38	37.93	12.91	9.28	3.33	4.04
4	Chan	57.00	60.06	272.18	22.43	3.49	16.48	7.33	12.13
5	Chan	60.06	63.12	310.34	22.25	3.07	18.79	7.27	13.95

6	Chan	63.12	66.18	297.78	21.70	3.06	18.03	7.09	13.72
7	Chan	66.18	69.24	288.65	21.29	3.06	17.47	6.96	13.56
8	Chan	69.24	72.30	260.55	20.92	3.42	15.77	6.84	12.46
9	ROB	72.30	83.84	36.05	8.12	6.79	2.18	3.14	4.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.2064

INPUT
Description: R.S. 2.2064
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2268.7	4.12	2269.24	9.99	2266.21	16.56	2264.17	26.52	2262.54
38.27	2260.62	50.17	2258.62	59.39	2257.03	63.24	2257.59	66.41	2257.84
71.66	2258.14	77.32	2258.47	78.73	2258.56	79.5	2258.9	83.7	2260.72
110.37	2271.81	111.72	2272.37	111.75	2272.38	111.77	2272.39	112.04	2272.42
123.92	2273.08	125.65	2273.19	128.69	2273.46	132.48	2273.44	145.31	2274.03
147.8	2274.17	150.2	2274.14						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.17	.032	71.66	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
50.17	79.5	123	125.07	128	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2263.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.63	Wt. n-Val.	0.040	0.033	0.040
W.S. Elev (ft)	2262.25	Reach Len. (ft)	123.00	125.07	128.00
Crit W.S. (ft)	2262.25	Flow Area (sq ft)	39.44	126.88	13.07
E.G. Slope (ft/ft)	0.008726	Area (sq ft)	39.44	126.88	13.07
Q Total (cfs)	1652.00	Flow (cfs)	200.86	1391.05	60.10
Top Width (ft)	59.09	Top Width (ft)	21.88	29.33	7.88
Vel Total (ft/s)	9.21	Avg. Vel. (ft/s)	5.09	10.96	4.60
Max Chl Dpth (ft)	5.22	Hydr. Depth (ft)	1.80	4.33	1.66
Conv. Total (cfs)	17684.8	Conv. (cfs)	2150.2	14891.2	643.4
Length Wtd. (ft)	124.72	Wetted Per. (ft)	22.18	29.61	8.56
Min Ch El (ft)	2257.03	Shear (lb/sq ft)	0.97	2.33	0.83
Alpha	1.24	Stream Power (lb/ft s)	4.93	25.59	3.82
Frctn Loss (ft)	1.03	Cum Volume (acre-ft)	33.67	16.80	13.75
C & E Loss (ft)	0.03	Cum SA (acres)	27.49	5.24	10.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	20.07	30.10	0.22	0.27	1.83	0.01	0.15	0.83
2	LOB	30.10	40.14	35.87	11.20	10.17	2.17	1.12	3.20
3	LOB	40.14	50.17	164.77	27.97	10.17	9.97	2.79	5.89
4	Chan	50.17	56.04	267.86	24.26	5.95	16.21	4.14	11.04
5	Chan	56.04	61.90	365.04	29.19	5.94	22.10	4.98	12.50
6	Chan	61.90	67.77	315.92	26.68	5.89	19.12	4.55	11.84
7	Chan	67.77	73.63	255.80	24.43	5.88	15.48	4.16	10.47
8	Chan	73.63	79.50	186.42	22.31	5.95	11.28	3.80	8.36
9	ROB	79.50	93.64	60.10	13.07	8.56	3.64	1.66	4.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.1828

INPUT
Description: R.S. 2.1828
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2263.3	1.47	2263.3	19.36	2263.21	27.84	2263.07	35.5	2261.45
40.31	2260.5	54.34	2256.25	57.87	2255.15	65.4	2254.87	66.15	2254.84
67.91	2254.74	69.2	2254.71	75.3	2253.05	77.45	2252.46	83.17	2251.66
84.42	2251.16	84.5	2251.13	86.99	2250.12	88.92	2250.33	90.5	2251.16
95	2253.54	102.95	2257.74	110.48	2260.92	110.49	2260.92	124.39	2264.04
150.77	2267.6	153.4	2267.77						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	69.2	.058	77.45	.032	102.95	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
84.5	90.5	75	76.03	77	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2260.23	Element			
Vel Head (ft)	1.98	Wt. n-Val.	0.039	0.032	0.032
W.S. Elev (ft)	2258.25	Reach Len. (ft)	75.00	76.03	77.00
Crit W.S. (ft)	2258.25	Flow Area (sq ft)	136.20	46.34	47.61
E.G. Slope (ft/ft)	0.007950	Area (sq ft)	136.20	46.34	47.61
Q Total (cfs)	2335.00	Flow (cfs)	1178.31	716.98	439.71
Top Width (ft)	56.42	Top Width (ft)	36.76	6.00	13.66
Vel Total (ft/s)	10.15	Avg. Vel. (ft/s)	8.65	15.47	9.23
Max Chl Dpth (ft)	8.13	Hydr. Depth (ft)	3.70	7.72	3.49
Conv. Total (cfs)	26187.8	Conv. (cfs)	13215.1	8041.2	4931.5
Length Wtd. (ft)	75.94	Wetted Per. (ft)	37.70	6.41	15.39
Min Ch El (ft)	2250.12	Shear (lb/sq ft)	1.79	3.59	1.54
Alpha	1.24	Stream Power (lb/ft s)	15.51	55.49	14.18
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	33.42	16.55	13.66
C & E Loss (ft)	0.10	Cum SA (acres)	27.41	5.19	10.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	33.80	50.70	2.46	1.33	3.10	0.11	0.45	1.85
2	LOB	50.70	67.60	289.86	46.23	17.24	12.41	2.74	6.27
3	LOB	67.60	84.50	885.99	88.64	17.36	37.94	5.24	10.00
4	Chan	84.50	85.70	131.27	8.84	1.29	5.62	7.36	14.85
5	Chan	85.70	86.90	146.04	9.42	1.29	6.25	7.85	15.50
6	Chan	86.90	88.10	159.76	9.69	1.21	6.84	8.07	16.49
7	Chan	88.10	89.30	151.38	9.50	1.25	6.48	7.92	15.93
8	Chan	89.30	90.50	128.53	8.89	1.36	5.50	7.41	14.46
9	ROB	90.50	103.08	439.42	47.37	14.22	18.82	3.77	9.28
10	ROB	103.08	115.66	0.29	0.25	1.17	0.01	0.23	1.17

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.1684

INPUT
Description: R.S. 2.1684
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2262.87	1.59	2262.92	11.29	2262.08	30.51	2259.91	34.48	2259.24
35.74	2259.32	51.72	2257.5	53.46	2257.72	62	2253.57	63.65	2252.77
65.8	2251.81	71.85	2249.11	75.96	2250.57	78.75	2251.47	79.07	2251.45
83.89	2251.23	85.4	2251.16	86.8	2251.87	89	2252.99	89.7	2253.35
91.32	2254.39	94.49	2254.5	103.15	2254.76	110.57	2257.9	115.08	2259.58
119.66	2259.67	131.91	2260.19	145.59	2263.16	146.73	2263.34	148.31	2263.52
153.75	2263.93	154.48	2263.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.058	75.96	.032	103.15	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
65.8	86.8	120	126.95	135	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2259.24	Element			
Vel Head (ft)	1.64	Wt. n-Val.	0.058	0.042	0.033
W.S. Elev (ft)	2257.60	Reach Len. (ft)	120.00	126.95	135.00
Crit W.S. (ft)		Flow Area (sq ft)	35.52	143.77	65.77
E.G. Slope (ft/ft)	0.008324	Area (sq ft)	35.52	143.77	65.77
Q Total (cfs)	2335.00	Flow (cfs)	158.34	1609.43	567.23
Top Width (ft)	57.82	Top Width (ft)	13.76	21.00	23.06
Vel Total (ft/s)	9.53	Avg. Vel. (ft/s)	4.46	11.19	8.62
Max Chl Dpth (ft)	8.49	Hydr. Depth (ft)	2.58	6.85	2.85
Conv. Total (cfs)	25592.8	Conv. (cfs)	1735.5	17640.2	6217.1
Length Wtd. (ft)	127.93	Wetted Per. (ft)	15.09	22.15	24.30
Min Ch El (ft)	2249.11	Shear (lb/sq ft)	1.22	3.37	1.41
Alpha	1.17	Stream Power (lb/ft s)	5.45	37.77	12.13
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	33.27	16.38	13.56
C & E Loss (ft)	0.22	Cum SA (acres)	27.36	5.16	10.17

Warning: Divided flow computed for this cross-section.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	39.48	52.64	0.03	0.08	1.68	0.00	0.05	0.32
2	LOB	52.64	65.80	158.32	35.43	13.41	6.78	2.93	4.47
3	Chan	65.80	70.00	221.09	28.25	4.60	9.47	6.73	7.83
4	Chan	70.00	74.20	303.22	33.91	4.52	12.99	8.07	8.94
5	Chan	74.20	78.40	343.41	29.12	4.43	14.71	6.93	11.79
6	Chan	78.40	82.60	372.30	26.12	4.22	15.94	6.22	14.25
7	Chan	82.60	86.80	369.41	26.37	4.37	15.82	6.28	14.01
8	ROB	86.80	100.34	459.23	48.13	14.20	19.67	3.56	9.54
9	ROB	100.34	113.87	108.00	17.64	10.10	4.63	1.85	6.12

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.1443

INPUT
Description: R.S. 2.1443
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2262.13	9.97	2261.37	11.88	2261.07	16.4	2260.27	33.14	2257.02
43.84	2255.14	46.04	2254.84	56.9	2250.76	59.3	2249.95	61.6	2249.18
64.09	2248.34	64.5	2248.05	66.04	2248.11	72.13	2248.3	79.33	2248.52
80.8	2249.28	82.75	2250.28	83	2250.38	102.76	2257.92	121.78	2257.28
123.77	2257.22	125.37	2257.37	143.51	2259.41	157.7	2261.35	166.27	2262.33
173.95	2262.54								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	33.14	.058	66.04	.032	82.75	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
61.6	80.8	127	125.66	125	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2258.43	Element			
Vel Head (ft)	0.92	Wt. n-Val.	0.058	0.039	0.038
W.S. Elev (ft)	2257.51	Reach Len. (ft)	127.00	125.66	125.00
Crit W.S. (ft)		Flow Area (sq ft)	108.14	175.02	85.31
E.G. Slope (ft/ft)	0.002950	Area (sq ft)	108.14	175.02	85.31
Q Total (cfs)	2363.00	Flow (cfs)	353.68	1559.85	449.48
Top Width (ft)	82.86	Top Width (ft)	31.00	19.20	32.67
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)	3.27	8.91	5.27
Max Chl Dpth (ft)	9.46	Hydr. Depth (ft)	3.49	9.12	2.61
Conv. Total (cfs)	43505.0	Conv. (cfs)	6511.5	28718.2	8275.3
Length Wtd. (ft)	125.75	Wetted Per. (ft)	32.23	19.62	34.26
Min Ch El (ft)	2248.05	Shear (lb/sq ft)	0.62	1.64	0.46
Alpha	1.44	Stream Power (lb/ft s)	2.02	14.64	2.42
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	33.07	15.92	13.33
C & E Loss (ft)	0.16	Cum SA (acres)	27.30	5.10	10.08

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	24.64	36.96	3.71	3.79	6.46	0.16	0.60	0.98
2	LOB	36.96	49.28	57.74	28.35	12.67	2.44	2.30	2.04
3	LOB	49.28	61.60	292.22	76.01	13.10	12.37	6.17	3.84
4	Chan	61.60	65.44	181.96	34.49	4.07	7.70	8.98	5.28
5	Chan	65.44	69.28	341.28	35.95	3.84	14.44	9.36	9.49
6	Chan	69.28	73.12	359.44	35.49	3.84	15.21	9.24	10.13
7	Chan	73.12	76.96	351.83	35.04	3.84	14.89	9.12	10.04
8	Chan	76.96	80.80	325.33	34.06	4.03	13.77	8.87	9.55
9	ROB	80.80	99.43	447.71	82.56	20.05	18.95	4.43	5.42
10	ROB	99.43	118.06	0.77	1.15	5.62	0.03	0.21	0.67
11	ROB	118.06	136.69	1.00	1.59	8.60	0.04	0.19	0.63

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.1205

INPUT
Description: R.S. 2.1205
High point in cross section forms an island, flow on both sides
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2270.21	8.92	2269.45	12.25	2269.21	28.5	2267.89	37.99	2266.81
44.75	2266.22	49.98	2264.22	50.99	2263.76	68.03	2260.67	72.97	2260.2
83.98	2259.38	93.77	2258.69	94.37	2258.64	101.29	2258.15	113.11	2256.98
115.36	2256.74	119.42	2256.49	131.84	2255.75	134.59	2255.61	139.24	2253.26
149	2247.75	149.7	2247.36	150.79	2246.74	156.52	2246.45	156.53	2246.45
160.2	2246.27	162.4	2246.2	163.77	2246.15	165.3	2247.31	167	2248.59
169.22	2250.27	175.78	2255.16	181.92	2255.28	197.81	2255.83	199.39	2255.88
200.35	2255.91	214.51	2255.55	215.93	2255.48	217.36	2256.04	219.19	2256.59
219.66	2256.57	221.51	2258.25	231.84	2262.21	235.54	2261.96	238.61	2261.85
242.52	2261.65	256.61	2260.91	262.55	2260.57	263.77	2260.5	270.76	2261.23
276.79	2262.6	278.81	2262.76	281.99	2261.75				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	119.42	.058	150.79	.032	163.77	.058	214.51	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
149.7	165.3	198	198.53	199	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2257.71	Element			
Vel Head (ft)	2.54	Wt. n-Val.	0.058	0.038	0.058
W.S. Elev (ft)	2255.17	Reach Len. (ft)	198.00	198.53	199.00
Crit W.S. (ft)	2254.64	Flow Area (sq ft)	54.49	135.32	41.14
E.G. Slope (ft/ft)	0.007511	Area (sq ft)	54.49	135.32	41.14
Q Total (cfs)	2363.00	Flow (cfs)	271.09	1901.61	190.31
Top Width (ft)	40.91	Top Width (ft)	14.24	15.60	11.07
Vel Total (ft/s)	10.23	Avg. Vel. (ft/s)	4.98	14.05	4.63
Max Chl Dpth (ft)	9.02	Hydr. Depth (ft)	3.83	8.67	3.72

Conv. Total (cfs)	27264.7	Conv. (cfs)	3127.9	21941.1	2195.8
Length Wtd. (ft)	198.52	Wetted Per. (ft)	16.25	16.17	13.68
Min Ch El (ft)	2246.15	Shear (lb/sq ft)	1.57	3.92	1.41
Alpha	1.56	Stream Power (lb/ft s)	7.82	55.15	6.52
Frctn Loss (ft)	1.89	Cum Volume (acre-ft)	32.84	15.47	13.14
C & E Loss (ft)	0.07	Cum SA (acres)	27.24	5.05	10.02

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	119.76	149.70	271.09	54.49	16.25	11.47	3.83	4.98
2	Chan	149.70	152.82	324.16	26.07	3.29	13.72	8.36	12.43
3	Chan	152.82	155.94	408.46	26.87	3.12	17.29	8.61	15.20
4	Chan	155.94	159.06	420.87	27.36	3.12	17.81	8.77	15.38
5	Chan	159.06	162.18	432.43	27.80	3.12	18.30	8.91	15.55
6	Chan	162.18	165.30	315.68	27.21	3.51	13.36	8.72	11.60
7	ROB	165.30	188.64	190.31	41.14	13.68	8.05	3.72	4.63

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

VER: Unnamed Central
ACH: Main RS: 2.0829

INPUT
Description: R.S. 2.0829
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2260.42	3.82	2259.93	18.41	2258.99	19.78	2258.91	21.09	2258.81
28.42	2258.27	41.46	2256.78	48.11	2256.22	59.88	2254.57	60.79	2254.48
68.85	2254.77	69.98	2254.77	81.91	2254.48	84.99	2254.47	87.56	2254.68
95.66	2254.29	121.92	2253.23	126.02	2253.03	127.48	2252.97	132.46	2252.68
137.88	2252.47	142.14	2249.55	148.25	2246.13	149.7	2245.32	150.58	2244.82
153.44	2244.8	154.57	2244.8	161.6	2244.75	163.5	2245.56	168.8	2247.8
177.14	2251.34	179.62	2252.53	181	2252.59	191.94	2252.61	194.52	2252.63
198	2252.44	213.93	2251.75	219.23	2252.48	231.22	2253.47	247.81	2254.55
263.17	2255.37	276.58	2255.8	289.02	2256.12	306.46	2255.66		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	95.66	.058	150.58	.032	161.6	.058	219.23	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
149.7	163.5	200	196.6	194	.1	.3

Right Levee Station= 194.52 Elevation= 2252.63

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2255.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.27	Wt. n-Val.	0.058	0.038	0.058
W.S. Elev (ft)	2252.47	Reach Len. (ft)	200.00	196.60	194.00
Crit W.S. (ft)	2252.47	Flow Area (sq ft)	44.30	105.10	56.22
E.G. Slope (ft/ft)	0.012508	Area (sq ft)	44.30	105.10	56.22
Q Total (cfs)	2363.00	Flow (cfs)	275.47	1735.84	351.69
Top Width (ft)	41.65	Top Width (ft)	11.85	13.80	16.00
Vel Total (ft/s)	11.49	Avg. Vel. (ft/s)	6.22	16.52	6.26

Max Chl Dpth (ft)	7.72	Hydr. Depth (ft)	3.74	7.62	3.51
Conv. Total (cfs)	21128.3	Conv. (cfs)	2463.0	15520.7	3144.6
Length Wtd. (ft)	196.52	Wetted Per. (ft)	13.86	14.10	17.43
Min Ch El (ft)	2244.75	Shear (lb/sq ft)	2.50	5.82	2.52
Alpha	1.60	Stream Power (lb/ft s)	15.52	96.15	15.76
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	32.61	14.92	12.92
C & E Loss (ft)	0.45	Cum SA (acres)	27.18	4.99	9.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	119.76	149.70	275.47	44.30	13.86	11.66	3.74	6.22
2	Chan	149.70	152.46	321.12	20.91	2.89	13.59	7.58	15.36
3	Chan	152.46	155.22	386.78	21.17	2.76	16.37	7.67	18.27
4	Chan	155.22	157.98	388.05	21.21	2.76	16.42	7.69	18.29
5	Chan	157.98	160.74	389.70	21.27	2.76	16.49	7.71	18.32
6	Chan	160.74	163.50	250.19	20.54	2.93	10.59	7.44	12.18
7	ROB	163.50	194.52	351.69	56.22	17.43	14.88	3.51	6.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.0456

INPUT
Description: R.S. 2.0456
Flow travels around island
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2262.92	.18	2262.93	.99	2262.94	6.47	2262.66	12.84	2262.4
18.69	2262.14	29.15	2261.36	31.62	2261.16	46.13	2260.39	50.1	2260.11
50.38	2260.1	62.15	2258.61	67.61	2258.18	69.22	2258.17	101.24	2256.05
108.44	2255.62	109.75	2255.41	112.1	2254.92	119.2	2253.56	122.93	2252.95
129.22	2251.55	131.73	2251.22	134.11	2251.07	137.75	2250.83	148.47	2245.78
152	2244.18	153.09	2243.68	156.65	2243.6	172.56	2243.16	185	2242.82
187	2243.97	196.12	2249.22	198.24	2251.17	213.49	2251.97	216.74	2251.94
220.13	2251.6	242.45	2249.67	248.42	2248.75	256.71	2246.71	260.41	2246.69

265.85	2246.68	266.83	2246.93	267.56	2246.97	272.8	2247.25	286.36	2248.69
292.04	2249.65	293.49	2250.01	295.95	2250.37	305.66	2251.22	316.56	2252.33
326.1	2253.44	328.9	2253.38	330.24	2253.43	349.46	2253.35		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	101.24	.058	156.65	.028	196.12	.058	242.45	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
152	187	215.71	215.71	215.71	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2250.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.77	Wt. n-Val.	0.058	0.030	0.034
W.S. Elev (ft)	2248.54	Reach Len. (ft)	215.71	215.71	215.71
Crit W.S. (ft)	2248.54	Flow Area (sq ft)	20.63	183.82	59.94
E.G. Slope (ft/ft)	0.005727	Area (sq ft)	20.63	183.82	59.94
Q Total (cfs)	2391.00	Flow (cfs)	63.37	2082.92	244.71
Top Width (ft)	87.96	Top Width (ft)	9.38	35.00	43.58
Vel Total (ft/s)	9.04	Avg. Vel. (ft/s)	3.07	11.33	4.08
Max Chl Dpth (ft)	5.72	Hydr. Depth (ft)	2.20	5.25	1.38
Conv. Total (cfs)	31594.6	Conv. (cfs)	837.4	27523.7	3233.6
Length Wtd. (ft)	215.71	Wetted Per. (ft)	10.35	35.43	45.13
Min Ch El (ft)	2242.82	Shear (lb/sq ft)	0.71	1.86	0.47
Alpha	1.39	Stream Power (lb/ft s)	2.19	21.02	1.94
Frctn Loss (ft)	1.36	Cum Volume (acre-ft)	32.46	14.27	12.66
C & E Loss (ft)	0.03	Cum SA (acres)	27.13	4.88	9.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	121.60	152.00	63.37	20.63	10.35	2.65	2.20	3.07
2	Chan	152.00	159.00	258.95	34.14	7.11	10.83	4.88	7.59
3	Chan	159.00	166.00	424.44	35.70	7.00	17.75	5.10	11.89
4	Chan	166.00	173.00	451.65	37.05	7.00	18.89	5.29	12.19
5	Chan	173.00	180.00	479.33	38.40	7.00	20.05	5.49	12.48
6	Chan	180.00	187.00	468.56	38.53	7.31	19.60	5.50	12.16
7	ROB	187.00	219.49	112.61	18.12	9.16	4.71	2.28	6.21
8	ROB	219.49	251.98	1.17	0.90	2.78	0.05	0.33	1.30
9	ROB	251.98	284.48	130.93	40.91	32.74	5.48	1.26	3.20
10	ROB	284.48	316.97	0.00	0.01	0.45	0.00	0.02	0.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 2.0048

PUT

Description: R.S. 2.0048
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2251.66	5.71	2251.74	11.87	2251.97	25.9	2251.47	37.84	2251
41.52	2250.69	46.55	2250.11	64.85	2247.31	74.29	2243.58	77.6	2241.61
78.75	2240.92	95.41	2240.94	104.19	2240.95	109.91	2240.92	111.2	2241.46
111.96	2241.78	115.05	2242.31	137.46	2247.24	138.74	2247.24	158.66	2247.29
168.27	2247.43	178.47	2247.43	182.32	2247.37	193.49	2247.16	207.74	2247.24
222.11	2247.39	239.51	2247.29	242.6	2247.24	246.57	2247.23	259.52	2247.15
290.99	2246.78	296.88	2246.69	302.86	2246.91	307.26	2246.92	313.3	2247.28
324.87	2247.44	337.47	2248.38	351.97	2249.59	356.68	2250.25	358.44	2250.32
363.59	2250.4								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	25.9	.058	78.75	.028	115.05	.058	158.66	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
77.6	111.2	222	218.88	216	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
194.2	291.4	2250

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2248.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.08	Wt. n-Val.	0.058	0.029	0.039
W.S. Elev (ft)	2245.97	Reach Len. (ft)	222.00	218.88	216.00
Crit W.S. (ft)	2245.97	Flow Area (sq ft)	18.43	168.60	45.96
E.G. Slope (ft/ft)	0.006957	Area (sq ft)	18.43	168.60	45.96
Q Total (cfs)	2391.00	Flow (cfs)	57.82	2067.62	265.55
Top Width (ft)	63.47	Top Width (ft)	9.37	33.60	20.50
Vel Total (ft/s)	10.26	Avg. Vel. (ft/s)	3.14	12.26	5.78
Max Chl Dpth (ft)	5.05	Hydr. Depth (ft)	1.97	5.02	2.24
Conv. Total (cfs)	28666.4	Conv. (cfs)	693.3	24789.3	3183.8
Length Wtd. (ft)	218.68	Wetted Per. (ft)	10.37	33.90	21.01
Min Ch El (ft)	2240.92	Shear (lb/sq ft)	0.77	2.16	0.95
Alpha	1.27	Stream Power (lb/ft s)	2.42	26.49	5.49
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	32.37	13.40	12.40
C & E Loss (ft)	0.03	Cum SA (acres)	27.08	4.71	9.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	62.08	77.60	57.82	18.43	10.37	2.42	1.97	3.14
2	Chan	77.60	84.32	381.65	33.55	6.91	15.96	4.99	11.38
3	Chan	84.32	91.04	425.29	33.89	6.72	17.79	5.04	12.55
4	Chan	91.04	97.76	424.15	33.84	6.72	17.74	5.04	12.54
5	Chan	97.76	104.48	423.06	33.78	6.72	17.69	5.03	12.52
6	Chan	104.48	111.20	413.46	33.54	6.83	17.29	4.99	12.33
7	ROB	111.20	161.68	265.55	45.96	21.01	11.11	2.24	5.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.9633

INPUT
Description: R.S. 1.9633
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2247.15	11.55	2247.53	12.52	2247.51	15.86	2247.61	23.13	2247.71
27.97	2248.02	34.34	2248.39	35.04	2248.43	35.28	2248.44	42.01	2247.91
52.85	2244.47	68.4	2239.19	70.02	2238.64	82	2238.5	85.44	2238.47
99.28	2238.15	104	2239.39	112.52	2241.63	119.92	2244.4	130.49	2242.34
131.79	2242.15	135.03	2242.34	149.84	2243.58	160.34	2243.7	161.6	2243.7
180.62	2243.64	182.73	2243.29	185.96	2243.45	190.25	2243.65	192.7	2243.76
201.15	2243.96	210.86	2244.04	230.53	2244.21	231.3	2244.22	258.27	2245.45
269.94	2245.42	272.56	2245.64	277.26	2245.65	288.81	2245.79	290.27	2245.98
360.07	2247								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	27.97	.058	70.02	.028	112.52	.058

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
68.4	104	128.83	128.83	128.83	.1	.3

Right Levee Station= 119.92 Elevation= 2244.4

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2245.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.98	Wt. n-Val.	0.058	0.030	0.029
W.S. Elev (ft)	2243.44	Reach Len. (ft)	128.83	128.83	128.83
Crit W.S. (ft)	2243.44	Flow Area (sq ft)	26.58	175.71	29.32
E.G. Slope (ft/ft)	0.006721	Area (sq ft)	26.58	175.71	29.32
Q Total (cfs)	2391.00	Flow (cfs)	88.95	2076.53	225.52
Top Width (ft)	61.46	Top Width (ft)	12.51	35.60	13.35
Vel Total (ft/s)	10.32	Avg. Vel. (ft/s)	3.35	11.82	7.69
Max Chl Dpth (ft)	5.29	Hydr. Depth (ft)	2.12	4.94	2.20
Conv. Total (cfs)	29165.7	Conv. (cfs)	1085.1	25329.7	2750.9
Length Wtd. (ft)	128.83	Wetted Per. (ft)	13.21	35.86	13.97
Min Ch El (ft)	2238.15	Shear (lb/sq ft)	0.84	2.06	0.88
Alpha	1.19	Stream Power (lb/ft s)	2.82	24.30	6.77
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	32.25	12.53	12.21
C & E Loss (ft)	0.09	Cum SA (acres)	27.03	4.53	9.58

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	54.72	68.40	88.95	26.58	13.21	3.72	2.12	3.35
2	Chan	68.40	75.52	355.93	33.90	7.21	14.89	4.76	10.50
3	Chan	75.52	82.64	420.81	34.92	7.12	17.60	4.90	12.05
4	Chan	82.64	89.76	433.68	35.56	7.12	18.14	4.99	12.20
5	Chan	89.76	96.88	456.58	36.67	7.12	19.10	5.15	12.45
6	Chan	96.88	104.00	409.54	34.66	7.28	17.13	4.87	11.82
7	ROB	104.00	119.92	225.52	29.32	13.97	9.43	2.20	7.69

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.9389

INPUT
Description: R.S. 1.9389
Upstream of Carefree Highway
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2243.11	2.37	2243.2	10.04	2243.07	33.1	2243.23	44.55	2243.32
62.7	2238.05	63.61	2237.79	64.33	2237.56	68.23	2237.5	89.27	2237.21
112.66	2236.89	115.4	2237.75	119.89	2239.15	125.66	2240.9	133.16	2241.85
144.85	2242.23	151.39	2242.23	158.81	2241.2	168.85	2241.69	188.52	2242.13
221.73	2243.03	225.26	2243.16	226.63	2243.23	227.19	2243.25	240.17	2243.85
252.83	2243.64	254.85	2243.63	259.74	2243.87	261.35	2244.09		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	44.55	.058	68.23	.028	125.66	.058

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
62.7	115.4	103	103.96	105	.1	.3

Right Levee Station= 144.85 Elevation= 2242.23

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2242.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.66	Wt. n-Val.	0.058	0.029	0.028
W.S. Elev (ft)	2241.20	Reach Len. (ft)	103.00	103.96	105.00
Crit W.S. (ft)	2241.20	Flow Area (sq ft)	17.10	208.49	19.50
E.G. Slope (ft/ft)	0.007074	Area (sq ft)	17.10	208.49	19.50
Q Total (cfs)	2391.00	Flow (cfs)	48.55	2216.64	125.82
Top Width (ft)	76.19	Top Width (ft)	10.85	52.70	12.64
Vel Total (ft/s)	9.76	Avg. Vel. (ft/s)	2.84	10.63	6.45
Max Chl Dpth (ft)	4.31	Hydr. Depth (ft)	1.58	3.96	1.54
Conv. Total (cfs)	28429.0	Conv. (cfs)	577.2	26355.8	1496.0
Length Wtd. (ft)	103.79	Wetted Per. (ft)	11.30	52.91	13.13
Min Ch El (ft)	2236.89	Shear (lb/sq ft)	0.67	1.74	0.66
Alpha	1.13	Stream Power (lb/ft s)	1.90	18.50	4.23
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	32.19	11.97	12.14
C & E Loss (ft)	0.15	Cum SA (acres)	26.99	4.40	9.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	50.16	62.70	48.55	17.10	11.30	2.03	1.58	2.84
2	Chan	62.70	73.24	300.21	38.56	10.61	12.56	3.66	7.79
3	Chan	73.24	83.78	443.17	40.50	10.54	18.53	3.84	10.94
4	Chan	83.78	94.32	471.42	42.03	10.54	19.72	3.99	11.22
5	Chan	94.32	104.86	500.21	43.55	10.54	20.92	4.13	11.49
6	Chan	104.86	115.40	501.62	43.84	10.67	20.98	4.16	11.44
7	ROB	115.40	144.85	125.82	19.50	13.13	5.26	1.54	6.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.9192

INPUT
Description: R.S. 1.9192
Carefree Highway - boundary of City of Scottsdale
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2242.35	2.82	2242.13	26.63	2240.5	28.54	2240.33	29.18	2240.32
30	2240.28	31.83	2240.28	45	2240.49	51.23	2240.12	71.93	2238.64
77.98	2238.31	91.91	2237.6	92.18	2237.59	92.79	2237.61	99.25	2237.65
109.24	2237.3	123.77	2236.88	127.9	2236.83	139.6	2236.21	150.43	2235.64
150.78	2235.62	150.86	2235.62	151.57	2235.64	151.59	2235.64	162.57	2235.92
176.44	2235.75	176.71	2235.74	177.67	2235.91	178.8	2236.11	196.46	2239.25
212.47	2239.97	213.62	2240.01	230.13	2240.64	237.35	2240.82	239.86	2240.82
259.28	2240.76	280.28	2240.77	288.32	2240.88	289.78	2241.17	297.63	2241.8
308.1	2242.08	317.17	2242.54	340.23	2243.16	346.9	2243.06	350.91	2243.02
353.31	2242.98								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	30	.025	127.9	.058	162.57	.028	177.67	.058
230.13	.025	280.28	.058						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
139.6	178.8	79.2	79.2	79.2	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2240.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.031	0.041	0.058
W.S. Elev (ft)	2239.28	Reach Len. (ft)	79.20	79.20	79.20
Crit W.S. (ft)	2239.28	Flow Area (sq ft)	130.66	134.84	28.31
E.G. Slope (ft/ft)	0.013057	Area (sq ft)	130.66	134.84	28.31
Q Total (cfs)	2447.00	Flow (cfs)	1066.18	1271.41	109.42
Top Width (ft)	134.23	Top Width (ft)	76.65	39.20	18.38
Vel Total (ft/s)	8.33	Avg. Vel. (ft/s)	8.16	9.43	3.87
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)	1.70	3.44	1.54
Conv. Total (cfs)	21415.1	Conv. (cfs)	9330.7	11126.8	957.6
Length Wtd. (ft)	79.20	Wetted Per. (ft)	76.73	39.25	18.65
Min Ch El (ft)	2235.62	Shear (lb/sq ft)	1.39	2.80	1.24
Alpha	1.09	Stream Power (lb/ft s)	11.33	26.40	4.78
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	32.01	11.56	12.08
C & E Loss (ft)	0.24	Cum SA (acres)	26.89	4.29	9.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	55.84	83.76	69.56	14.24	20.85	2.84	0.68	4.89
2	LOB	83.76	111.68	421.02	47.15	27.94	17.21	1.69	8.93
3	LOB	111.68	139.60	575.60	69.27	27.94	23.52	2.48	8.31
4	Chan	139.60	147.44	165.85	25.70	7.85	6.78	3.28	6.45
5	Chan	147.44	155.28	193.16	28.16	7.85	7.89	3.59	6.86
6	Chan	155.28	163.12	193.63	27.04	7.84	7.91	3.45	7.16
7	Chan	163.12	170.96	368.40	26.79	7.84	15.05	3.42	13.75
8	Chan	170.96	178.80	350.37	27.14	7.87	14.32	3.46	12.91
9	ROB	178.80	213.70	109.42	28.31	18.65	4.47	1.54	3.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.9042

INPUT
Description: R.S. 1.9042
Carefree Highway - Boundary City of Scottsdale
Levee
- flow does not overtop into roadside ditch

Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2241.04	2.08	2241.11	5.65	2241.22	9.97	2240.91	13.93	2240.57
20.75	2240.05	24.63	2239.47	28.41	2239.09	32.81	2238.18	36.29	2238.55
40.08	2238.88	43.6	2239.18	53.96	2240.31	62.61	2240.33	70.41	2240.32
73.45	2239.06	78.3	2233.76	78.78	2233.24	79.41	2233.36	84.85	2233.29
95.29	2233.31	100.68	2233.32	107.74	2233.12	107.78	2233.12	113.36	2232.91
117.14	2233.3	121.4	2233.74	123.6	2233.97	127.41	2233.94	128.65	2233.93
131.29	2234.23	137.66	2234.49	143.3	2234.55	166.61	2235.7	177.37	2236.28
184.48	2236.57	188.09	2236.76	194.99	2237.16	211.99	2238.86	216.55	2239.33
223.69	2239.82	230.23	2239.65	242.5	2239.4	242.67	2239.4	250.45	2239.11
255.36	2239.21	271.13	2238.25	273.36	2237.96	273.91	2237.89	280.47	2238.64
287.82	2239.63	291.45	2239.95	296.52	2240.4	321.72	2240.99	322.11	2241
322.94	2241.01	353.75	2241.39	361.03	2241.35	372.21	2242.04		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	78.78	.028	131.29	.025	211.99	.058	353.75	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
78.3	121.4	92	87.75	85	.1	.3

Left Levee Station= 62.61 Elevation= 2240.33
Right Levee Station= 223.69 Elevation= 2239.82

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2239.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.040	0.028	0.026
W.S. Elev (ft)	2238.80	Reach Len. (ft)	92.00	87.75	85.00
Crit W.S. (ft)	2237.02	Flow Area (sq ft)	11.61	238.62	266.72
E.G. Slope (ft/ft)	0.001142	Area (sq ft)	11.61	238.62	266.72
Q Total (cfs)	2447.00	Flow (cfs)	20.77	1323.06	1103.17
Top Width (ft)	137.68	Top Width (ft)	4.61	43.10	89.97
Vel Total (ft/s)	4.73	Avg. Vel. (ft/s)	1.79	5.54	4.14
Max Chl Dpth (ft)	5.89	Hydr. Depth (ft)	2.52	5.54	2.96
Conv. Total (cfs)	72412.4	Conv. (cfs)	614.7	39152.5	32645.3
Length Wtd. (ft)	86.76	Wetted Per. (ft)	6.83	43.39	90.15
Min Ch El (ft)	2232.91	Shear (lb/sq ft)	0.12	0.39	0.21
Alpha	1.09	Stream Power (lb/ft s)	0.22	2.17	0.87
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	31.88	11.22	11.82
C & E Loss (ft)	0.06	Cum SA (acres)	26.81	4.22	9.41

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	62.61	78.30	20.77	11.61	6.83	0.85	2.52	1.79
2	Chan	78.30	86.92	254.48	47.18	8.86	10.40	5.47	5.39
3	Chan	86.92	95.54	262.85	47.37	8.62	10.74	5.50	5.55
4	Chan	95.54	104.16	263.22	47.42	8.62	10.76	5.50	5.55
5	Chan	104.16	112.78	280.17	49.23	8.62	11.45	5.71	5.69
6	Chan	112.78	121.40	262.34	47.41	8.66	10.72	5.50	5.53
7	ROB	121.40	172.55	937.72	203.27	51.22	38.32	3.97	4.61
8	ROB	172.55	223.69	165.44	63.45	38.94	6.76	1.63	2.61

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.8875

INPUT
Description: R.S. 1.8875
Carefree Highway - boundary City of Scottsdale
Levee
on right side - flow does not overtop into roadside ditch
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2239.26	4.45	2239.23	9.75	2239.57	17.54	2237.18	19.82	2236.38
28.7	2236.43	37.37	2236.48	40.66	2236.48	52.38	2237.18	58.02	2237.66
63.12	2238.06	68.45	2238.53	73.54	2238.51	96.93	2237.82	113.04	2237.54
116.48	2237.6	118.76	2237.49	119.15	2237.46	119.46	2236.9	127	2232.5
127.5	2232.21	128	2231.92	128.1	2231.92	128.3	2231.92	140.38	2231.74
143.08	2231.7	146.05	2231.71	149.49	2232.05	151.3	2232.22	165.87	2233.59
168.71	2234.19	170.93	2234.53	180.3	2235.28	183.92	2235.49	195.74	2236.25
202.68	2236.37	225.27	2237.16	229.33	2237.2	236.01	2237.29	236.96	2237.13

243.47	2236.7	254.64	2237.12	257.94	2237.26	258.2	2237.31	260.1	2237.3
260.93	2237.32	263.3	2237.37	281.05	2237.66	281.84	2237.69	293.61	2238.21
297.85	2238.42	299.33	2238.48	317.64	2238.3	323.67	2238.18	343.66	2238.54
349.11	2238.65	354.63	2237.58	356.9	2237.18	357.21	2237.12	365.67	2239.22
368.32	2240.06	369.05	2240.06	400.74	2240.33	429.54	2241	436.54	2241.05
437.1	2241.01	440.33	2241.02	456.39	2241.06				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	140.38	.04	243.47	.028	281.05	.04	369.05	.025
440.33	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
127.5	151.3	122.24	122.24	122.24	.1	.3

Left Levee Station= 68.45 Elevation= 2238.53
Right Levee Station= 349.11 Elevation= 2238.65

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2238.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.	0.025	0.030	0.039
W.S. Elev (ft)	2237.97	Reach Len. (ft)	122.24	122.24	122.24
Crit W.S. (ft)	2237.97	Flow Area (sq ft)	35.17	145.84	237.25
E.G. Slope (ft/ft)	0.003639	Area (sq ft)	35.17	145.84	237.25
Q Total (cfs)	2447.00	Flow (cfs)	121.59	1444.87	880.53
Top Width (ft)	196.12	Top Width (ft)	35.53	23.80	136.80
Vel Total (ft/s)	5.85	Avg. Vel. (ft/s)	3.46	9.91	3.71
Max Chl Dpth (ft)	6.27	Hydr. Depth (ft)	0.99	6.13	1.73
Conv. Total (cfs)	40565.1	Conv. (cfs)	2015.7	23952.4	14597.1
Length Wtd. (ft)	122.24	Wetted Per. (ft)	37.13	23.90	137.08
Min Ch El (ft)	2231.70	Shear (lb/sq ft)	0.22	1.39	0.39
Alpha	1.86	Stream Power (lb/ft s)	0.74	13.73	1.46
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	31.83	10.83	11.32
C & E Loss (ft)	0.03	Cum SA (acres)	26.77	4.15	9.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	68.45	97.98	0.34	0.52	6.01	0.01	0.09	0.64
2	LOB	97.98	127.50	121.25	34.64	31.13	4.96	1.17	3.50
3	Chan	127.50	132.26	339.57	28.83	4.84	13.88	6.06	11.78
4	Chan	132.26	137.02	351.34	29.23	4.76	14.36	6.14	12.02
5	Chan	137.02	141.78	318.36	29.57	4.76	13.01	6.21	10.77
6	Chan	141.78	146.54	226.50	29.78	4.76	9.26	6.26	7.60
7	Chan	146.54	151.30	209.12	28.44	4.78	8.55	5.97	7.35
8	ROB	151.30	217.24	776.06	187.16	66.16	31.71	2.84	4.15
9	ROB	217.24	283.17	104.21	49.56	65.99	4.26	0.75	2.10
10	ROB	283.17	349.11	0.25	0.54	4.93	0.01	0.11	0.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.8644

INPUT
Description: R.S. 1.8644
Levee - flow does not overtop into roadside
ditch
along Carefree Highway (boundary to
City of Scottsdale)
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2236.78	5.84	2236.78	24.89	2236.97	27.59	2237.19	38.86	2234.8
40.33	2234.52	41.35	2234.5	45.57	2234.46	49.98	2234.54	56.38	2234.69
60.12	2234.34	62.46	2234.3	66.81	2234.35	78.26	2234.57	81.14	2234.64
83.8	2234.65	103.75	2234.62	110.54	2234.7	116.06	2233.43	118.24	2232.77
119.34	2232.5	124.42	2231.56	128.4	2230.84	129.71	2230.6	130.26	2230.49
130.51	2230.49	144.41	2230.52	152.23	2230.55	155.73	2230.56	167.48	2230.64
168.7	2230.82	169.11	2230.88	173.64	2231.5	174.09	2231.58	180.74	2233.01
182	2233.22	185.37	2233.27	191.65	2233.35	199.56	2234.15	211.12	2235.19
223.82	2236.33	231.79	2236.96	234.29	2237.04	239.71	2237.32	243.78	2236.19
249.84	2234.72	256.56	2234.56	262.14	2234.48	268.4	2233.87	272.67	2233.54
280.81	2234.14	289.81	2234.82	298.87	2234.87	306.39	2234.98	314.35	2235.59
317.78	2235.73	324.51	2236.1	346.46	2236.89				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	130.51	.04	199.56	.058	231.79	.028	272.67	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
128.4	168.7	116.16	116.16	116.16	.1	.3

Right Levee Station= 239.71 Elevation= 2237.32

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2236.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.025	0.039	0.040
W.S. Elev (ft)	2235.19	Reach Len. (ft)	116.16	116.16	116.16
Crit W.S. (ft)	2235.19	Flow Area (sq ft)	91.45	186.66	79.13
E.G. Slope (ft/ft)	0.006586	Area (sq ft)	91.45	186.66	79.13
Q Total (cfs)	2447.00	Flow (cfs)	439.72	1609.60	397.67
Top Width (ft)	174.08	Top Width (ft)	91.37	40.30	42.41
Vel Total (ft/s)	6.85	Avg. Vel. (ft/s)	4.81	8.62	5.03
Max Chl Dpth (ft)	4.70	Hydr. Depth (ft)	1.00	4.63	1.87
Conv. Total (cfs)	30151.8	Conv. (cfs)	5418.2	19833.4	4900.1
Length Wtd. (ft)	116.16	Wetted Per. (ft)	91.89	40.35	42.72
Min Ch El (ft)	2230.49	Shear (lb/sq ft)	0.41	1.90	0.76
Alpha	1.22	Stream Power (lb/ft s)	1.97	16.40	3.83
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	31.66	10.36	10.88
C & E Loss (ft)	0.03	Cum SA (acres)	26.59	4.06	8.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	25.68	51.36	25.61	8.73	14.40	1.05	0.61	2.93
2	LOB	51.36	77.04	61.89	18.69	25.70	2.53	0.73	3.31

3	LOB	77.04	102.72	39.94	14.37	25.68	1.63	0.56	2.78
4	LOB	102.72	128.40	312.30	49.67	26.11	12.76	1.93	6.29
5	Chan	128.40	136.46	361.39	37.50	8.09	14.77	4.65	9.64
6	Chan	136.46	144.52	317.86	37.70	8.06	12.99	4.68	8.43
7	Chan	144.52	152.58	315.11	37.50	8.06	12.88	4.65	8.40
8	Chan	152.58	160.64	311.44	37.24	8.06	12.73	4.62	8.36
9	Chan	160.64	168.70	303.80	36.71	8.07	12.42	4.56	8.27
10	ROB	168.70	204.21	395.64	76.98	35.79	16.17	2.17	5.14
11	ROB	204.21	239.71	2.03	2.14	6.93	0.08	0.31	0.95

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.8424

INPUT
Description: R.S. 1.8424
City of Scottsdale
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2235.14	1.67	2235.16	13.44	2235.18	26.3	2235.1	41.84	2235.07
53.64	2234.99	61.58	2234.98	68.47	2234.97	73.86	2234.74	75.09	2234.74
95.59	2233.23	102.55	2232.75	119.99	2232.69	121.75	2232.66	123.28	2232.52
130.59	2231.53	135.3	2230.65	135.96	2230.53	137.3	2230.22	137.5	2230.18
137.8	2230.11	139.41	2229.74	140.82	2229.78	146.01	2229.74	147.25	2229.73
163.03	2229.57	177.09	2229.48	182.75	2229.35	185.21	2229.27	185.22	2229.27
188.88	2229.15	204.05	2228.69	209.7	2230.06	211.75	2230.56	227.28	2234.32
229.16	2234.74	229.76	2234.77	232.2	2235.03	233.63	2234.88	240.75	2234.1
241.92	2233.6	249.8	2232.08	252.73	2232.83	264.85	2232.59	265.02	2232.59
265.05	2232.59	265.17	2232.58	288.28	2230.8	289.13	2230.85	300.34	2231.98
301.57	2231.84	306.14	2230.8	309.35	2230.86	310.63	2230.75	317.29	2232.62
318.07	2232.78	321.95	2232.94	327.62	2233.05	328.61	2232.96	334.04	2232.17
340.65	2232.51	343.55	2232.7	352.17	2233.16	352.19	2233.16	352.29	2233.17
352.47	2233.17	380.65	2234.19	395.36	2234.38	413.18	2234.73	416.39	2234.77
419.3	2234.82	430.5	2235.16	439.31	2235.28	460.6	2235.08		

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	73.86	.058	95.59	.04	102.55	.058	140.82	.028
204.05	.04	233.63	.058	288.28	.04				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
137.8	209.7	175	173.5	173.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2233.85	Element			
Vel Head (ft)	1.21	Wt. n-Val.	0.058	0.031	0.043
W.S. Elev (ft)	2232.64	Reach Len. (ft)	175.00	173.50	173.50
Crit W.S. (ft)	2232.64	Flow Area (sq ft)	17.49	231.81	76.69
E.G. Slope (ft/ft)	0.007782	Area (sq ft)	17.49	231.81	76.69
Q Total (cfs)	2447.00	Flow (cfs)	41.87	2164.49	240.64
Top Width (ft)	170.26	Top Width (ft)	15.82	71.90	82.54
Vel Total (ft/s)	7.51	Avg. Vel. (ft/s)	2.39	9.34	3.14
Max Chl Dpth (ft)	3.95	Hydr. Depth (ft)	1.11	3.22	0.93
Conv. Total (cfs)	27738.1	Conv. (cfs)	474.6	24535.7	2727.8
Length Wtd. (ft)	173.70	Wetted Per. (ft)	16.03	72.12	83.53
Min Ch El (ft)	2228.69	Shear (lb/sq ft)	0.53	1.56	0.45
Alpha	1.39	Stream Power (lb/ft s)	1.27	14.58	1.40

Frctn Loss (ft)	1.31	Cum Volume (acre-ft)	31.51	9.81	10.67
C & E Loss (ft)	0.19	Cum SA (acres)	26.45	3.91	8.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	110.24	137.80	41.87	17.49	16.03	1.71	1.11	2.39
2	Chan	137.80	152.18	334.43	41.44	14.42	13.67	2.88	8.07
3	Chan	152.18	166.56	405.79	43.58	14.38	16.58	3.03	9.31
4	Chan	166.56	180.94	431.98	45.24	14.38	17.65	3.15	9.55
5	Chan	180.94	195.32	506.57	49.79	14.39	20.70	3.46	10.17
6	Chan	195.32	209.70	485.72	51.76	14.55	19.85	3.60	9.38
7	ROB	209.70	259.88	53.23	15.12	16.15	2.18	0.96	3.52
8	ROB	259.88	310.06	159.96	51.29	47.94	6.54	1.08	3.12
9	ROB	310.06	360.24	27.45	10.28	19.44	1.12	0.54	2.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.8096

INPUT
Description: R.S. 1.8096
City of Scottsdale
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2232.55	8.85	2232.52	19	2232.73	25.82	2232.91	28.26	2232.91
41.34	2232.92	44.79	2232.71	53.19	2230.57	57.19	2229.52	65.88	2229.55
101.6	2229.41	104.54	2228.69	110.81	2227.44	118.09	2228.6	125.83	2230.13
130.14	2229.78	138.45	2229.09	147.99	2229.97	149.98	2230.16	159.37	2230.18
179.45	2230.37	184.48	2229.25	190.58	2227.59	199.05	2227.65	203.5	2227.64
206.14	2227.04	206.3	2227	208.52	2226.49	210.06	2226.48	216.26	2226.43
222.8	2226.42	225	2226.92	231.34	2228.37	235.27	2229.25	239.37	2230.23
245.55	2230.84	247.08	2230.98	247.57	2231	265.12	2230.41	265.61	2230.39
272.61	2229.83	277.02	2229.01	286.94	2229.67	290.68	2229.82	292.88	2229.85
298	2230.05	299.82	2229.73	307.02	2228.38	323.26	2227.42	328.95	2227.12
346.83	2229.03	351.43	2229.68	359.89	2229.7	387.75	2229.66	392.81	2229.72
396.14	2229.82	397.92	2229.83	405.89	2229.83	414.89	2229.82	416.88	2229.96
420.61	2230.02	430.91	2230.25	441.54	2230.52	463.59	2231.22	470.45	2231.41
479.35	2231.74	500.55	2231.84	504.85	2231.87				

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

0	.025	53.19	.058	110.81	.04	179.45	.04	206.14	.032
222.8	.058	277.02	.04	299.82	.025	420.61	.032		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
206.3	225	275	265.44	262	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2231.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.044	0.036	0.028
W.S. Elev (ft)	2230.46	Reach Len. (ft)	275.00	265.44	262.00
Crit W.S. (ft)	2230.46	Flow Area (sq ft)	177.29	73.84	223.54
E.G. Slope (ft/ft)	0.007287	Area (sq ft)	177.29	73.84	223.54
Q Total (cfs)	2467.00	Flow (cfs)	620.23	654.87	1191.91
Top Width (ft)	363.25	Top Width (ft)	152.67	18.70	191.88
Vel Total (ft/s)	5.20	Avg. Vel. (ft/s)	3.50	8.87	5.33
Max Chl Dpth (ft)	4.04	Hydr. Depth (ft)	1.16	3.95	1.17
Conv. Total (cfs)	28900.3	Conv. (cfs)	7265.8	7671.6	13962.9
Length Wtd. (ft)	267.23	Wetted Per. (ft)	153.76	18.81	192.74
Min Ch El (ft)	2226.42	Shear (lb/sq ft)	0.52	1.79	0.53
Alpha	1.40	Stream Power (lb/ft s)	1.84	15.83	2.81
Frctn Loss (ft)	2.53	Cum Volume (acre-ft)	31.12	9.20	10.07
C & E Loss (ft)	0.00	Cum SA (acres)	26.11	3.73	8.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	41.26	82.52	52.18	25.27	29.01	2.12	0.87	2.06
2	LOB	82.52	123.78	232.37	63.44	41.67	9.42	1.54	3.66
3	LOB	123.78	165.04	60.26	25.41	41.39	2.44	0.62	2.37
4	LOB	165.04	206.30	275.41	63.17	41.68	11.16	1.53	4.36
5	Chan	206.30	210.04	129.14	14.27	3.80	5.23	3.82	9.05
6	Chan	210.04	213.78	140.55	14.92	3.74	5.70	3.99	9.42
7	Chan	213.78	217.52	142.25	15.03	3.74	5.77	4.02	9.46
8	Chan	217.52	221.26	142.90	15.07	3.74	5.79	4.03	9.48
9	Chan	221.26	225.00	100.02	14.54	3.80	4.05	3.89	6.88
10	ROB	225.00	280.97	89.47	39.70	34.35	3.63	1.17	2.25
11	ROB	280.97	336.94	790.93	106.46	56.23	32.06	1.90	7.43
12	ROB	336.94	392.91	252.33	56.41	56.07	10.23	1.01	4.47
13	ROB	392.91	448.88	59.19	20.98	46.10	2.40	0.46	2.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.7593

INPUT

Description: R.S. 1.7593
City of Scottsdale
ation Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2226.98	12.08	2226.96	21.33	2227.09	25.71	2227.07	39.54	2227.15
42.9	2227.22	50.01	2225.65	59.76	2223.56	65.55	2223.9	81.24	2224.44
87.27	2224.5	92.79	2224.42	100.32	2224.39	102.54	2224.36	116.15	2224.47
117.62	2224.48	118.72	2224.44	126.86	2223.96	131.96	2224.41	137.52	2224.74
142.37	2224.77	152.98	2224.81	161.08	2224.94	164.84	2225	167.46	2224.43
172.51	2223.46	172.88	2223.55	180.82	2224.01	192.58	2223.93	200.39	2223.92
204.3	2223.51	206.65	2223.26	206.89	2223.23	207.14	2223.23	212.56	2223.15
212.58	2223.15	213.01	2223.14	218.94	2223.03	219.6	2223.08	227	2223.5
228.13	2223.56	230.47	2223.68	232.95	2223.29	236.8	2222.9	244.34	2223.64
251.35	2224.62	258.04	2224.86	261.51	2225.01	265.14	2225.15	268.13	2225.22
273.46	2225.41	280.4	2225.51	289.2	2225.56	292.18	2225.25	308.25	2224.55
313.24	2224.35	320.39	2224.95	328.15	2225.23	329.86	2225.32	330.69	2225.32
343.64	2225.38	353.79	2225.4	362.89	2225.45	368.82	2225.39	377.36	2225.33
386.94	2225.31	397.03	2225.26	402.16	2225.45	418.06	2225.54	443.89	2226.28
446.46	2226.33	448.32	2226.39	459.56	2226.62	472.36	2226.76	474.23	2226.74
476.02	2226.75	499.34	2226.86	503.51	2226.94	512.37	2227.02		

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	42.9	.058	81.24	.04	116.15	.058	200.39	.035
244.34	.058	289.2	.04	308.25	.025				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
204.3	227	312	309.44	308	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2226.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.	0.052	0.035	0.034
W.S. Elev (ft)	2225.87	Reach Len. (ft)	312.00	309.44	308.00
Crit W.S. (ft)	2225.87	Flow Area (sq ft)	240.03	60.44	166.31
E.G. Slope (ft/ft)	0.012815	Area (sq ft)	240.03	60.44	166.31
Total (cfs)	2467.00	Flow (cfs)	1042.14	557.56	867.31
Top Width (ft)	380.73	Top Width (ft)	155.31	22.70	202.73
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	4.34	9.22	5.21
Max Chl Dpth (ft)	2.97	Hydr. Depth (ft)	1.55	2.66	0.82
Conv. Total (cfs)	21792.9	Conv. (cfs)	9206.0	4925.3	7661.6
Length Wtd. (ft)	309.24	Wetted Per. (ft)	155.82	22.73	202.98
Min Ch El (ft)	2223.03	Shear (lb/sq ft)	1.23	2.13	0.66
Alpha	1.32	Stream Power (lb/ft s)	5.35	19.62	3.42
Frctn Loss (ft)	4.48	Cum Volume (acre-ft)	29.80	8.79	8.90
C & E Loss (ft)	0.01	Cum SA (acres)	25.14	3.60	7.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	40.86	81.72	205.51	52.33	32.99	8.33	1.60	3.93
2	LOB	81.72	122.58	301.41	59.43	40.87	12.22	1.45	5.07
3	LOB	122.58	163.44	167.86	50.68	40.90	6.80	1.24	3.31
4	LOB	163.44	204.30	367.35	77.59	41.06	14.89	1.90	4.73
5	Chan	204.30	208.84	104.73	11.66	4.56	4.25	2.57	8.98
6	Chan	208.84	213.38	114.35	12.27	4.54	4.64	2.70	9.32
7	Chan	213.38	217.92	120.04	12.64	4.54	4.87	2.78	9.50
8	Chan	217.92	222.46	117.96	12.51	4.55	4.78	2.76	9.43
9	Chan	222.46	227.00	100.48	11.36	4.55	4.07	2.50	8.84
10	ROB	227.00	284.07	474.16	79.36	57.25	19.22	1.39	5.97
11	ROB	284.07	341.15	240.47	47.71	57.14	9.75	0.84	5.04

12	ROB	341.15	398.22	122.61	29.30	57.08	4.97	0.51	4.19
13	ROB	398.22	455.30	30.06	9.94	31.51	1.22	0.32	3.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.7007

INPUT
Description: R.S. 1.7007
City of Scottsdale
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2222.16	.39	2222.16	6.88	2222.12	21.48	2222.18	33.05	2222.72
50.38	2222.57	50.99	2222.52	59.26	2221.24	66.63	2220.18	73.94	2219.2
78.1	2218.72	84.52	2217.97	91.76	2218.09	94.01	2218.15	94.02	2218.15
99.23	2218.3	111	2218.68	112.18	2218.72	117.57	2218.86	120	2218.96
120.9	2219	121.54	2219.03	138.16	2219.33	144.3	2218.99	154.86	2218.41
168.15	2219.81	169.55	2219.94	187.9	2219.94	210.72	2219.92	229.4	2219.53
279.2	2218.54	283.39	2218.7	286.03	2218.43	298.26	2218.85	336.3	2219.48
343.92	2219.5	356.49	2222.63	357.85	2223.02	363.81	2223.02	376.55	2222.98
413.55	2223.05	428.91	2223.04	445.92	2223.32	447.52	2223.34		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	50.99	.058	84.52	.035	112.18	.058	168.15	.04
343.92	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
78.1	111	302	298.32	296	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2221.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.058	0.038	0.044
W.S. Elev (ft)	2220.63	Reach Len. (ft)	302.00	298.32	296.00
Crit W.S. (ft)	2220.63	Flow Area (sq ft)	14.51	76.86	323.62
E.G. Slope (ft/ft)	0.016478	Area (sq ft)	14.51	76.86	323.62
Q Total (cfs)	2467.00	Flow (cfs)	47.27	681.96	1737.76
Top Width (ft)	284.95	Top Width (ft)	14.59	32.90	237.45
Vel Total (ft/s)	5.94	Avg. Vel. (ft/s)	3.26	8.87	5.37
Max Chl Dpth (ft)	2.66	Hydr. Depth (ft)	0.99	2.34	1.36
Conv. Total (cfs)	19218.6	Conv. (cfs)	368.3	5312.7	13537.6
Length Wtd. (ft)	297.01	Wetted Per. (ft)	14.72	32.95	237.75
Min Ch El (ft)	2217.97	Shear (lb/sq ft)	1.01	2.40	1.40
Alpha	1.20	Stream Power (lb/ft s)	3.30	21.29	7.52
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	28.89	8.30	7.17
C & E Loss (ft)	0.00	Cum SA (acres)	24.53	3.41	5.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	62.48	78.10	47.27	14.51	14.72	1.92	0.99	3.26
2	Chan	78.10	84.68	87.38	15.09	6.62	3.54	2.29	5.79
3	Chan	84.68	91.26	175.82	17.12	6.58	7.13	2.60	10.27
4	Chan	91.26	97.84	160.36	16.20	6.58	6.50	2.46	9.90
5	Chan	97.84	104.42	139.74	14.92	6.58	5.66	2.27	9.37
6	Chan	104.42	111.00	118.66	13.52	6.58	4.81	2.06	8.77
7	ROB	111.00	178.30	434.12	99.64	67.42	17.60	1.48	4.36
8	ROB	178.30	245.61	252.82	59.89	67.31	10.25	0.89	4.22
9	ROB	245.61	312.91	821.23	121.45	67.34	33.29	1.80	6.76
10	ROB	312.91	380.22	229.60	42.65	35.68	9.31	1.20	5.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.6442

INPUT
Description: R.S. 1.6442
City of Scottsdale
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2217.03	1.35	2217.37	3.09	2216.71	7.99	2215.03	14.53	2214.64
14.57	2214.64	14.61	2214.63	34.75	2213.73	35.08	2213.73	45.16	2214.09
46.52	2214.24	56.59	2214.88	61.6	2214.26	62.35	2214.17	67.34	2213.44
80.75	2213.69	97.03	2214	101.14	2214.09	103.5	2214.13	104.4	2214.15
118.47	2214	124.89	2213.82	136.31	2214.7	136.82	2214.84	143.54	2214.81
152.13	2214.76	161.77	2214.67	167.96	2214.59	169.64	2214.56	187.11	2214.59
189.91	2214.64	206.59	2214.85	220.35	2215	226.22	2214.75	234.98	2214.39
243.28	2214.9	247.35	2215.26	253.47	2215.06	264.31	2214.78	266.84	2214.72
278.14	2212.84	284	2211.74	296.58	2212.92	297.95	2213.03	298.34	2213.03
302.23	2213.35	319.06	2214.78	326.63	2216.82	334.61	2219.14	338.45	2219.3

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	7.99	.058	45.16	.035	80.75	.032	104.4	.058
169.64	.04	284	.032						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
61.6	103.5	173.71	173.71	173.71	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2216.18	Element			
Vel Head (ft)	0.66	Wt. n-Val.	0.051	0.033	0.039
W.S. Elev (ft)	2215.52	Reach Len. (ft)	173.71	173.71	173.71
Crit W.S. (ft)	2215.52	Flow Area (sq ft)	65.13	72.53	262.83
E.G. Slope (ft/ft)	0.017096	Area (sq ft)	65.13	72.53	262.83
Q Total (cfs)	2467.00	Flow (cfs)	284.26	607.76	1574.98
Top Width (ft)	315.26	Top Width (ft)	55.05	41.90	218.32
Vel Total (ft/s)	6.16	Avg. Vel. (ft/s)	4.36	8.38	5.99
Max Chl Dpth (ft)	3.78	Hydr. Depth (ft)	1.18	1.73	1.20
Conv. Total (cfs)	18868.0	Conv. (cfs)	2174.1	4648.2	12045.7
Length Wtd. (ft)	173.71	Wetted Per. (ft)	55.24	41.97	218.92
Min Ch El (ft)	2213.44	Shear (lb/sq ft)	1.26	1.84	1.28
Alpha	1.12	Stream Power (lb/ft s)	5.49	15.46	7.68
Frctn Loss (ft)	2.43	Cum Volume (acre-ft)	28.61	7.79	5.18
C & E Loss (ft)	0.07	Cum SA (acres)	24.29	3.15	3.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	12.32	7.15	3.05	5.86	0.29	0.53	2.35
2	LOB	12.32	24.64	44.17	13.08	12.34	1.79	1.06	3.38
3	LOB	24.64	36.96	87.74	19.74	12.33	3.56	1.60	4.44
4	LOB	36.96	49.28	89.05	18.09	12.34	3.61	1.47	4.92
5	LOB	49.28	61.60	56.16	11.17	12.37	2.28	0.91	5.03
6	Chan	61.60	69.98	121.73	14.99	8.44	4.93	1.79	8.12
7	Chan	69.98	78.36	141.92	16.39	8.38	5.75	1.96	8.66
8	Chan	78.36	86.74	131.57	15.07	8.38	5.33	1.80	8.73
9	Chan	86.74	95.12	115.65	13.73	8.38	4.69	1.64	8.42
10	Chan	95.12	103.50	96.89	12.35	8.38	3.93	1.47	7.85
11	ROB	103.50	150.49	210.23	56.55	47.05	8.52	1.20	3.72
12	ROB	150.49	197.48	158.29	41.57	46.99	6.42	0.88	3.81
13	ROB	197.48	244.47	134.29	34.99	47.02	5.44	0.74	3.84
14	ROB	244.47	291.46	615.91	76.08	47.30	24.97	1.62	8.10
15	ROB	291.46	338.45	456.25	53.65	30.55	18.49	1.77	8.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.6113

INPUT
Description: R.S. 1.6113
City of Scottsdale
Levee - Terravita Berm (retention pond)

Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2210.89	5.45	2211.05	11.54	2211.01	11.62	2210.95	12.17	2210.99
14.71	2211.05	44.31	2211.65	48.63	2212.43	57.7	2213.85	60.09	2213.06
68.79	2211.03	70.2	2211.04	96.18	2211.6	97.79	2211.6	102.37	2211.67
103.72	2211.67	118.01	2211.39	118.6	2211.38	126.8	2211.22	127.82	2211.2
130.54	2211.21	148.54	2211.3	152.3	2211.26	192.61	2211.36	199.18	2211.38
202.43	2211.38	202.5	2211.36	202.56	2211.35	206.61	2210.49	213.87	2210.8
217.35	2210.91	230.96	2211.18	239.07	2211.37	241.49	2211.01	245.23	2210.73
245.97	2210.68	246.12	2210.69	254.91	2211.19	271.66	2211.59	273.31	2211.56
276.27	2211.68	278.11	2211.52	285.71	2210.79	301.09	2209.41	309.97	2212.08
321.53	2216.28	327.71	2216.4	338.24	2216.75	344.32	2216.75		

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	70.2	.058	152.3	.032	206.61	.058	301.09	.04
321.53	.032	327.71	.025						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
118.6	202.5	155	158.56	163	.1	.3

Left Levee Station= 57.7 Elevation= 2213.85

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2213.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.	0.053	0.039	0.054
W.S. Elev (ft)	2213.12	Reach Len. (ft)	155.00	158.56	163.00
Crit W.S. (ft)	2212.65	Flow Area (sq ft)	94.05	152.85	235.26
E.G. Slope (ft/ft)	0.011633	Area (sq ft)	94.05	152.85	235.26
Q Total (cfs)	2467.00	Flow (cfs)	388.63	929.77	1148.60
Top Width (ft)	252.93	Top Width (ft)	58.69	83.90	110.33
Vel Total (ft/s)	5.12	Avg. Vel. (ft/s)	4.13	6.08	4.88
Max Chl Dpth (ft)	3.71	Hydr. Depth (ft)	1.60	1.82	2.13
Conv. Total (cfs)	22872.6	Conv. (cfs)	3603.2	8620.3	10649.2
Length Wtd. (ft)	158.27	Wetted Per. (ft)	58.95	83.91	111.18
Min Ch El (ft)	2211.20	Shear (lb/sq ft)	1.16	1.32	1.54
Alpha	1.06	Stream Power (lb/ft s)	4.79	8.05	7.50
Frctn Loss (ft)	2.22	Cum Volume (acre-ft)	28.30	7.34	4.18
C & E Loss (ft)	0.06	Cum SA (acres)	24.06	2.90	3.28

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	57.70	78.00	136.07	27.88	18.34	5.52	1.54	4.88
2	LOB	78.00	98.30	134.79	34.43	20.30	5.46	1.70	3.92
3	LOB	98.30	118.60	117.75	31.74	20.30	4.77	1.56	3.71
4	Chan	118.60	135.38	130.88	31.28	16.78	5.31	1.86	4.18
5	Chan	135.38	152.16	129.31	31.05	16.78	5.24	1.85	4.16
6	Chan	152.16	168.94	231.30	30.88	16.78	9.38	1.84	7.49
7	Chan	168.94	185.72	223.49	30.18	16.78	9.06	1.80	7.41
8	Chan	185.72	202.50	214.80	29.47	16.78	8.71	1.76	7.29
9	ROB	202.50	230.86	323.40	62.94	28.47	13.11	2.22	5.14
10	ROB	230.86	259.23	251.21	57.68	28.42	10.18	2.03	4.36
11	ROB	259.23	287.59	198.96	50.15	28.42	8.06	1.77	3.97
12	ROB	287.59	315.96	375.03	64.50	25.87	15.20	2.56	5.81

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.5812

INPUT
Description: R.S. 1.5812
City of Scottsdale
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2210.11	34.74	2210.43	41.23	2210.34	68.88	2210.32	74.13	2210.5
82.15	2210.81	82.74	2210.84	83.52	2210.87	93.82	2211.01	96.63	2210.86
96.89	2210.45	97.55	2209.67	106.99	2208.79	107.83	2208.75	108.78	2208.5
114.06	2207.04	117.52	2207.58	120.08	2207.72	129.86	2207.72	133.23	2207.21
135.59	2207.59	142.77	2208.38	157.99	2208.49	167.44	2208.46	181.04	2208.07
186.2	2207.93	200.03	2207.96	215.8	2208.05	215.9	2208.05	217.61	2207.99
217.63	2207.99	228.62	2207.63	231.69	2207.59	243.9	2208.03	244	2208.03

263.04 2208.88 269.15 2210.51 271.86 2211.58 280.57 2212.04 288.1 2212.56
294.92 2212.86 298.85 2212.82 306.91 2212.74

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	97.55	.058	186.2	.032	243.9	.058	263.04	.04
280.57	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
215.8	244	135	139.14	143	.1	.3

Left Levee Station= 93.82 Elevation= 2211.01
Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	34.6	2213

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2211.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.047	0.032	0.057
W.S. Elev (ft)	2210.25	Reach Len. (ft)	135.00	139.14	143.00
Crit W.S. (ft)	2210.25	Flow Area (sq ft)	249.25	68.86	37.57
E.G. Slope (ft/ft)	0.017082	Area (sq ft)	249.25	68.86	37.57
Q Total (cfs)	2622.00	Flow (cfs)	1684.53	756.56	180.91
Top Width (ft)	171.09	Top Width (ft)	118.74	28.20	24.16
Vel Total (ft/s)	7.37	Avg. Vel. (ft/s)	6.76	10.99	4.82
Max Chl Dpth (ft)	3.20	Hydr. Depth (ft)	2.10	2.44	1.56
Conv. Total (cfs)	20061.5	Conv. (cfs)	12888.7	5788.6	1384.2
Length Wtd. (ft)	136.42	Wetted Per. (ft)	119.44	28.22	24.35
Min Ch El (ft)	2207.59	Shear (lb/sq ft)	2.23	2.60	1.65
Alpha	1.21	Stream Power (lb/ft s)	15.04	28.60	7.92
Frctn Loss (ft)	2.27	Cum Volume (acre-ft)	27.69	6.94	3.67
C & E Loss (ft)	0.05	Cum SA (acres)	23.75	2.70	3.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	93.82	134.48	444.86	80.08	38.06	16.97	2.14	5.55
2	LOB	134.48	175.14	403.52	78.13	40.72	15.39	1.92	5.16
3	LOB	175.14	215.80	836.14	91.04	40.66	31.89	2.24	9.18
4	Chan	215.80	221.44	135.60	12.90	5.64	5.17	2.29	10.51
5	Chan	221.44	227.08	154.39	13.94	5.64	5.89	2.47	11.07
6	Chan	227.08	232.72	170.43	14.79	5.64	6.50	2.62	11.52
7	Chan	232.72	238.36	158.99	14.19	5.64	6.06	2.52	11.20
8	Chan	238.36	244.00	137.15	13.04	5.64	5.23	2.31	10.52
9	ROB	244.00	256.58	125.55	24.33	12.59	4.79	1.93	5.16
10	ROB	256.58	269.16	55.37	13.24	11.76	2.11	1.14	4.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.5549

INPUT
Description: R.S. 1.5549
City of Scottsdale
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2208.16	21.48	2208.42	42.93	2208.66	59.72	2208.85	60.92	2209.01
61.55	2208.24	62.25	2207.62	68.58	2206.97	74.86	2206.37	76.57	2206.39
84.44	2205.25	86.19	2205.03	91.32	2205.65	100.67	2206.79	134.63	2206.62
138.93	2206.58	140.4	2206.51	155.82	2205.58	174.03	2205.48	181.26	2205.4
205.28	2206.24	209.3	2206.43	224.23	2205.97	235.93	2205.61	240.52	2205.43
248.48	2205.82	249.15	2205.87	250.6	2206.01	253.94	2206.34	264.32	2207.42
268.33	2207.59	277.01	2209.38	277.72	2209.52	278.3	2209.54	282.54	2209.62
288.54	2210.16	299.33	2210.05						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	68.58	.058	155.82	.032	235.93	.035	240.52	.04
282.54	.025								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
224.23	250.6	162	166.32	172	.1	.3

Left Levee Station= 60.92 Elevation= 2209.01

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2208.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2207.91	Reach Len. (ft)	162.00	166.32	172.00
Crit W.S. (ft)	2207.91	Flow Area (sq ft)	284.60	58.10	18.29
E.G. Slope (ft/ft)	0.016234	Area (sq ft)	284.60	58.10	18.29
Q Total (cfs)	2622.00	Flow (cfs)	2011.38	527.33	83.29
Top Width (ft)	207.94	Top Width (ft)	162.30	26.37	19.26
Vel Total (ft/s)	7.26	Avg. Vel. (ft/s)	7.07	9.08	4.55
Max Chl Dpth (ft)	2.88	Hydr. Depth (ft)	1.75	2.20	0.95
Conv. Total (cfs)	20578.7	Conv. (cfs)	15786.3	4138.8	653.7
Length Wtd. (ft)	162.73	Wetted Per. (ft)	162.73	26.40	19.37
Min Ch El (ft)	2205.43	Shear (lb/sq ft)	1.77	2.23	0.96
Alpha	1.05	Stream Power (lb/ft s)	12.53	20.25	4.36
Frctn Loss (ft)	2.76	Cum Volume (acre-ft)	26.86	6.73	3.58
C & E Loss (ft)	0.07	Cum SA (acres)	23.31	2.61	2.95

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	60.92	101.75	320.23	65.69	40.19	12.21	1.65	4.88
2	LOB	101.75	142.58	186.80	50.38	40.83	7.12	1.23	3.71
3	LOB	142.58	183.40	823.74	91.91	40.85	31.42	2.25	8.96
4	LOB	183.40	224.23	680.62	76.61	40.85	25.96	1.88	8.88
5	Chan	224.23	229.50	100.35	10.64	5.28	3.83	2.02	9.43
6	Chan	229.50	234.78	114.16	11.50	5.28	4.35	2.18	9.93
7	Chan	234.78	240.05	121.09	12.42	5.28	4.62	2.36	9.75
8	Chan	240.05	245.33	106.26	12.49	5.28	4.05	2.37	8.51

9	Chan	245.33	250.60	85.47	11.06	5.29	3.26	2.10	7.73
10	ROB	250.60	260.35	71.46	13.68	9.80	2.73	1.40	5.22
11	ROB	260.35	270.09	11.82	4.61	9.57	0.45	0.48	2.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.5234

INPUT
Description: R.S. 1.5234
City of Scottsdale
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2206.95	22.56	2207.44	23.97	2207.46	24.04	2207.47	24.07	2207.43
24.91	2205.69	31.67	2204.91	39.2	2204.38	42.58	2203.71	53.1	2202.14
59.6	2203.01	67.55	2204.15	82.9	2204.19	94.09	2204.08	107.61	2203.98
120.8	2203	124.14	2202.64	125.02	2202.67	126.1	2202.61	131.95	2202.29
143.41	2202.66	146.56	2202.69	152.3	2202.98	153.07	2203.09	166.33	2203.07
168.95	2202.96	172.92	2202.71	181.72	2202.22	186.73	2202.59	206.45	2203.52
210.01	2203.88	222.89	2203.93	225.43	2203.96	228.96	2204.01	231.63	2204.1
234.78	2203.75	244.26	2202.75	250.89	2202.74	255.16	2202.74	260.96	2202.68
264.49	2202.71	266.74	2202.64	273.07	2202.6	286.11	2202.39	294.52	2202.31
303.92	2202.42	309.01	2202.64	311.45	2202.56	312	2202.52	318.61	2202
320	2202.49	321	2202.85	323.34	2203.68	328.13	2206.19	330.09	2206.48
335.46	2207.14	346.54	2207.15						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	24.07	.058	120.8	.032	153.07	.04	244.26	.035
264.49	.058	318.61	.04	330.09	.025				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
312	320	310	295.15	295	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2205.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.043	0.055	0.040
W.S. Elev (ft)	2204.66	Reach Len. (ft)	310.00	295.15	295.00
Crit W.S. (ft)	2204.55	Flow Area (sq ft)	418.65	19.22	6.17
E.G. Slope (ft/ft)	0.017740	Area (sq ft)	418.65	19.22	6.17
Q Total (cfs)	2822.00	Flow (cfs)	2666.52	123.12	32.36
Top Width (ft)	289.99	Top Width (ft)	276.78	8.00	5.21
Vel Total (ft/s)	6.36	Avg. Vel. (ft/s)	6.37	6.41	5.24
Max Chl Dpth (ft)	2.66	Hydr. Depth (ft)	1.51	2.40	1.18
Conv. Total (cfs)	21187.4	Conv. (cfs)	20020.0	924.4	242.9
Length Wtd. (ft)	307.15	Wetted Per. (ft)	277.37	8.10	5.66
Min Ch El (ft)	2202.00	Shear (lb/sq ft)	1.67	2.63	1.21
Alpha	1.00	Stream Power (lb/ft s)	10.65	16.83	6.33
Frctn Loss (ft)	5.37	Cum Volume (acre-ft)	25.55	6.58	3.53
C & E Loss (ft)	0.01	Cum SA (acres)	22.50	2.54	2.91

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	62.40	161.87	38.50	27.46	5.74	1.42	4.20
2	LOB	62.40	124.80	181.22	49.36	62.51	6.42	0.79	3.67
3	LOB	124.80	187.20	1052.92	122.66	62.47	37.31	1.97	8.58
4	LOB	187.20	249.60	435.08	75.55	62.51	15.42	1.21	5.76
5	LOB	249.60	312.00	835.43	132.58	62.41	29.60	2.12	6.30
6	Chan	312.00	313.60	19.89	3.53	1.60	0.70	2.20	5.64
7	Chan	313.60	315.20	21.82	3.73	1.60	0.77	2.33	5.86
8	Chan	315.20	316.80	23.82	3.93	1.60	0.84	2.45	6.06
9	Chan	316.80	318.40	25.89	4.13	1.60	0.92	2.58	6.27
10	Chan	318.40	320.00	31.70	3.91	1.68	1.12	2.45	8.10
11	ROB	320.00	325.31	32.36	6.17	5.66	1.15	1.18	5.24

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.4675

INPUT
Description: R.S. 1.4675
City of Scottsdale
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2200.74	22.23	2200.68	31.37	2200.62	36.14	2200.11	44.74	2199.31
46.16	2199.17	47.59	2198.92	60.69	2196.62	70.53	2198.04	73.07	2198.4
83.31	2198.49	86.51	2198.5	89.4	2198.13	99.87	2196.67	103.16	2196.74
130.56	2197.5	130.75	2197.52	142.82	2199.09	146.49	2199.4	152.76	2199.27
174.88	2198.62	180	2198.48	181.04	2198.46	188.51	2198.77	203.29	2198.83
211.79	2198.88	220.13	2198.91	235.13	2199.06	256.13	2199.19	278.69	2199.11
297.67	2198.78	309.12	2198.69	319.1	2197.51	321.96	2197.17	323.87	2197.2
331.06	2197.12	333.68	2197.09	339.29	2197.26	342.65	2197.29	349.25	2197.23
351.69	2197.2	355.3	2196.91	356.17	2196.84	361.36	2196.42	369.77	2196.35
383.32	2196.38	387.63	2196.35	391.25	2196.37	396.3	2196.87	412.47	2198.46
412.9	2198.5	414.11	2198.71	431.66	2201.43	438.62	2202.49	446.44	2203.13
446.99	2203.16	447.87	2203.19	448.42	2203.21				

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	31.37	.058	89.4	.032	130.56	.04	331.06	.032
342.65	.058	414.11	.04	438.62	.025				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
355.3	396.3	233.32	233.32	233.32	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2199.91	Element			
Vel Head (ft)	0.61	Wt. n-Val.	0.039	0.058	0.058
W.S. Elev (ft)	2199.30	Reach Len. (ft)	233.32	233.32	233.32
Crit W.S. (ft)	2199.30	Flow Area (sq ft)	303.03	117.09	28.76
E.G. Slope (ft/ft)	0.017213	Area (sq ft)	303.03	117.09	28.76
Q Total (cfs)	2779.00	Flow (cfs)	1860.91	791.63	126.46
Top Width (ft)	367.09	Top Width (ft)	304.47	41.00	21.62
Vel Total (ft/s)	6.19	Avg. Vel. (ft/s)	6.14	6.76	4.40
Max Chl Dpth (ft)	2.95	Hydr. Depth (ft)	1.00	2.86	1.33
Conv. Total (cfs)	21181.4	Conv. (cfs)	14183.8	6033.8	963.9
Length Wtd. (ft)	233.32	Wetted Per. (ft)	305.21	41.04	21.76
Min Ch El (ft)	2196.35	Shear (lb/sq ft)	1.07	3.07	1.42
Alpha	1.02	Stream Power (lb/ft s)	6.55	20.73	6.24
Frctn Loss (ft)	3.38	Cum Volume (acre-ft)	22.98	6.12	3.42
C & E Loss (ft)	0.02	Cum SA (acres)	20.43	2.38	2.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	71.06	173.57	40.53	26.56	6.25	1.55	4.28
2	LOB	71.06	142.12	963.56	116.63	71.31	34.67	1.64	8.26
3	LOB	142.12	213.18	83.38	29.90	65.10	3.00	0.46	2.79
4	LOB	213.18	284.24	27.52	15.92	71.06	0.99	0.22	1.73
5	LOB	284.24	355.30	612.87	100.04	71.17	22.05	1.41	6.13
6	Chan	355.30	363.50	144.09	22.15	8.22	5.19	2.70	6.50
7	Chan	363.50	371.70	165.22	24.02	8.20	5.95	2.93	6.88
8	Chan	371.70	379.90	165.90	24.08	8.20	5.97	2.94	6.89
9	Chan	379.90	388.10	165.38	24.04	8.20	5.95	2.93	6.88
10	Chan	388.10	396.30	151.04	22.79	8.22	5.44	2.78	6.63
11	ROB	396.30	406.72	98.88	19.99	10.47	3.56	1.92	4.95
12	ROB	406.72	417.15	27.54	8.72	10.51	0.99	0.84	3.16
13	ROB	417.15	427.57	0.03	0.05	0.78	0.00	0.06	0.71

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.4233

INPUT
Description: R.S. 1.4233
City of Scottsdale
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2195.45	3.18	2195.43	20.19	2196.15	34.05	2196.31	35.02	2196.26
36.01	2195.73	36.67	2195.25	40.34	2194.93	43.38	2193.76	47.39	2192.41
56.77	2192.42	60.93	2192.37	72.75	2193.79	78.18	2194.24	87.48	2194.09
88.77	2194.05	90.65	2194	97.24	2193.76	98.74	2193.75	108.27	2193.26
120.41	2192.61	122.88	2192.53	123.56	2192.48	125.28	2192.5	137.64	2192.71
150.05	2194.78	151.03	2194.93	151.4	2194.92	160.54	2194.59	162.86	2194.65
172.21	2194.71	193.9	2194.77	196.08	2194.86	196.33	2194.84	204.37	2194.25
205.46	2194.13	215.17	2194.24	222.92	2194.34	229.21	2193.83	235.39	2193.25
236.72	2193.14	237.85	2193.01	239.91	2193.14	248.07	2192.52	249.11	2192.47
250.45	2192.49	257.71	2192.56	262.61	2192.09	267.99	2193.1	275.55	2194.38
316.93	2193.99	330.67	2193.87	335.13	2193.78	336.82	2193.86	344.35	2194.71
345.06	2194.78	345.58	2194.74	352	2194.13	353.13	2193.78	355.64	2193.85
380.49	2194.19	384.91	2193.54	392.96	2192.68	394.17	2192.57	411.16	2193.73
412.39	2194.1	414	2194.62	422.94	2193.2	425	2192.89	426.3	2192.7
430.73	2192.03	437.65	2192.18	439.7	2192.24	439.72	2192.24	458.81	2192.8
459.9	2192.89	466.37	2193.43	469.41	2193.71	473.32	2193.31	475.01	2193.24
500.54	2192.86	501.6	2192.86	504.6	2193.74	525.58	2199.02	535.97	2198.69
548.35	2199.44								

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	34.05	.04	47.39	.032	60.93	.04	125.28	.032
150.05	.04	430.73	.032	466.37	.058	525.58	.04		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
425	459.9	275	268.89	265	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2195.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.038	0.033	0.052
W.S. Elev (ft)	2194.70	Reach Len. (ft)	275.00	268.89	265.00
Crit W.S. (ft)	2194.70	Flow Area (sq ft)	370.48	79.48	70.44
E.G. Slope (ft/ft)	0.012370	Area (sq ft)	370.48	79.48	70.44
Q Total (cfs)	2779.00	Flow (cfs)	1804.84	687.12	287.04
Top Width (ft)	429.66	Top Width (ft)	346.26	34.90	48.50
Vel Total (ft/s)	5.34	Avg. Vel. (ft/s)	4.87	8.64	4.07
Max Chl Dpth (ft)	2.67	Hydr. Depth (ft)	1.07	2.28	1.45
Conv. Total (cfs)	24986.2	Conv. (cfs)	16227.5	6177.9	2580.8
Length Wtd. (ft)	272.43	Wetted Per. (ft)	347.85	34.98	48.81
Min Ch El (ft)	2192.03	Shear (lb/sq ft)	0.82	1.75	1.11
Alpha	1.25	Stream Power (lb/ft s)	4.01	15.17	4.54
Frctn Loss (ft)	4.00	Cum Volume (acre-ft)	21.18	5.60	3.15
C & E Loss (ft)	0.01	Cum SA (acres)	18.68	2.17	2.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	85.00	426.22	64.92	44.56	15.34	1.47	6.57
2	LOB	85.00	170.00	527.59	91.86	77.20	18.98	1.19	5.74
3	LOB	170.00	255.00	246.53	58.68	57.11	8.87	1.03	4.20
4	LOB	255.00	340.00	285.56	75.22	85.25	10.28	0.88	3.80
5	LOB	340.00	425.00	318.94	79.81	83.73	11.48	0.96	4.00
6	Chan	425.00	431.98	122.00	16.12	7.04	4.39	2.31	7.57
7	Chan	431.98	438.96	172.23	17.90	6.98	6.20	2.56	9.62
8	Chan	438.96	445.94	151.85	16.59	6.98	5.46	2.38	9.15
9	Chan	445.94	452.92	130.69	15.17	6.98	4.70	2.17	8.62
10	Chan	452.92	459.90	110.35	13.70	6.99	3.97	1.96	8.05
11	ROB	459.90	477.59	115.33	24.23	17.75	4.15	1.37	4.76
12	ROB	477.59	495.28	112.83	28.79	17.69	4.06	1.63	3.92
13	ROB	495.28	512.97	58.87	17.42	13.37	2.12	1.33	3.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.3724

INPUT
Description: R.S. 1.3724
City of Scottsdale
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	2190.87	34.09	2190.96	47.64	2191.01	60.66	2191.04	68.89	2191.15
69.56	2191.15	70.05	2191.03	71.4	2190.23	75.79	2189.63	89.73	2189.13
99.38	2187.68	101.29	2187.43	101.94	2187.42	114.74	2187.34	116.34	2187.27
123.24	2188.16	125.45	2188.63	127.69	2188.78	131.49	2187.93	136.46	2187.2
144.28	2188.33	151.31	2189.52	168.19	2189.8	192.15	2189.5	206.93	2188.37
209.34	2188.26	215.03	2188.85	219.75	2189.4	220.91	2189.43	227.68	2189.07
235.34	2188.58	236.84	2188.54	245.19	2188.07	253.97	2188.61	258.79	2188.83
279.55	2188.53	280.57	2188.5	281.09	2188.51	292.52	2188.12	294.89	2188.24
303.34	2188.51	312.48	2188.58	315.32	2188.68	320.34	2188.01	322.14	2187.78
324.23	2187.76	335.65	2187.83	357.07	2189.14	364.95	2189.68	375.72	2189.9
379.85	2189.83	406.43	2189.39	413.89	2189.23	417.19	2189.02	427.75	2188.46
444.75	2188.57	453.66	2188.66	467.67	2186.78	469.43	2186.49	472.76	2186.88
478.58	2187.48	494.04	2187	495.59	2187.24	510.38	2189.38	514.65	2189.38
524.53	2189.26	537.67	2189.14	542.82	2189.01	552.3	2188.71	561.56	2188.6
571.7	2187.46	573.95	2187.13	590.94	2188.85	603.67	2189.45	607.29	2189.55
615.08	2189.58	630.47	2189.58	638.03	2188.42	639.5	2188.2	641.36	2187.93
650.1	2187.29	654.98	2186.9	661.88	2187.46	666.62	2187.66	666.65	2187.66
671.04	2187.84	682.98	2187.86	683.58	2187.84	718.4	2188.02	718.5	2188.02
719.98	2188.02	723.48	2188.07	731.05	2188.06	739.68	2187.73	743.74	2187.45
751.68	2187.14	778.41	2193.57	781.88	2194.41	783.72	2194.66	785.38	2195.08
787.23	2194.76	790.12	2194.29						

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	70.05	.04	101.29	.032	116.34	.04	322.14	.032
357.07	.04	467.67	.032	495.59	.058	573.95	.04		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
639.5	718.4	258.19	258.19	258.19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2189.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.037	0.040	0.040
W.S. Elev (ft)	2189.13	Reach Len. (ft)	258.19	258.19	258.19
Crit W.S. (ft)	2189.13	Flow Area (sq ft)	324.82	109.63	53.12
E.G. Slope (ft/ft)	0.017742	Area (sq ft)	324.82	109.63	53.12
Q Total (cfs)	2779.00	Flow (cfs)	1795.59	675.00	308.41
Top Width (ft)	487.82	Top Width (ft)	367.38	78.90	41.53
Vel Total (ft/s)	5.70	Avg. Vel. (ft/s)	5.53	6.16	5.81
Max Chl Dpth (ft)	2.64	Hydr. Depth (ft)	0.88	1.39	1.28
Conv. Total (cfs)	20863.4	Conv. (cfs)	13480.4	5067.6	2315.4
Length Wtd. (ft)	258.19	Wetted Per. (ft)	368.81	78.99	41.79
Min Ch El (ft)	2186.90	Shear (lb/sq ft)	0.98	1.54	1.41
Alpha	1.01	Stream Power (lb/ft s)	5.39	9.47	8.17
Frctn Loss (ft)	4.39	Cum Volume (acre-ft)	18.98	5.01	2.77
C & E Loss (ft)	0.03	Cum SA (acres)	16.43	1.82	2.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	127.90	347.79	48.66	38.38	12.52	1.28	7.15
2	LOB	127.90	255.80	198.52	50.13	70.98	7.14	0.71	3.96
3	LOB	255.80	383.70	340.66	73.67	101.15	12.26	0.73	4.62
4	LOB	383.70	511.60	754.78	107.11	93.46	27.16	1.15	7.05
5	LOB	511.60	639.50	153.84	45.25	64.84	5.54	0.70	3.40
6	Chan	639.50	655.28	174.24	25.78	15.84	6.27	1.63	6.76
7	Chan	655.28	671.06	180.11	26.28	15.81	6.48	1.67	6.85
8	Chan	671.06	686.84	115.56	20.12	15.78	4.16	1.28	5.74

9	Chan	686.84	702.62	108.41	19.37	15.78	3.90	1.23	5.60
10	Chan	702.62	718.40	96.68	18.08	15.78	3.48	1.15	5.35
11	ROB	718.40	732.74	79.29	15.41	14.35	2.85	1.07	5.15
12	ROB	732.74	747.09	130.81	20.81	14.36	4.71	1.45	6.28
13	ROB	747.09	761.43	98.31	16.89	13.08	3.54	1.32	5.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.3235

INPUT
Description: R.S. 1.3235
City of Scottsdale - Directly upstream of flow split
Diversion of 632 cfs - goes into Terravita development
Station Elevation Data num= 106

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2185.46	10.1	2185.32	18.89	2184.83	19.72	2184.46	20.89	2184
28.42	2183.06	30.1	2182.76	53.82	2182.38	60.41	2182.25	62.22	2182.26
72.31	2182.46	87.71	2182.69	109.15	2183.41	117.32	2183.76	124.18	2181.8
124.48	2181.74	144.24	2181.87	153.27	2181.86	156.31	2181.91	162.57	2183.02
163.74	2183.31	164.25	2183.27	169.04	2182.57	171.16	2182.89	180.42	2184.13
193.54	2184.08	202.77	2183.9	210.96	2182.91	219	2181.89	230.62	2182.78
235.45	2183.2	244.18	2182.94	253.37	2182.71	258.14	2182.63	278.44	2183.15
281.95	2183.27	288.56	2182.56	292.3	2182.33	302.05	2183.15	304.4	2183.37
317.27	2183.53	328.93	2183.62	342.15	2182.99	361.55	2182.65	370.81	2182.57
378.69	2183.02	382.83	2183.32	386.54	2183.63	392.14	2183.98	406.51	2183.45
413.77	2183.24	418.04	2183.09	431.64	2183.4	445.22	2183.76	454.51	2183.87
492.84	2183.53	504.74	2183.5	510.43	2183.49	511.37	2183.43	520.78	2182.64
524.26	2182.69	532.63	2182.71	536.77	2182.87	553.77	2182.7	562.25	2182.46
565.14	2182.45	569.98	2182.33	576.54	2182.13	580.58	2182.35	589.46	2182.6
594.86	2182.71	602.91	2182.71	603.79	2182.63	610.36	2181.24	618.73	2182.65
621.19	2183.04	626.09	2182.57	628.14	2182.32	632.78	2182.69	637.3	2183.03
645.93	2181.69	674.69	2183.84	701.49	2183.64	715.3	2183.61	726.08	2183.65
756.27	2184.48	773.78	2184.33	826.81	2183.93	837	2182.68	838.8	2182.46
840.58	2182.24	859.57	2182.27	859.58	2182.27	865.02	2182.28	867.27	2182.26
870	2182.71	871	2182.87	871.4	2182.93	871.7	2182.98	881.33	2184.54
885.19	2184.83	896.29	2185.82	906.12	2187.5	906.47	2187.48	910.05	2187.54
922	2188.32								

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	20.89	.04	124.48	.032	162.57	.04	328.93	.035
386.54	.04	840.58	.035	867.27	.025				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
837	870	282.18	282.18	282.18	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2184.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.038	0.034	0.025
W.S. Elev (ft)	2183.71	Reach Len. (ft)	282.18	282.18	282.18
Crit W.S. (ft)	2183.68	Flow Area (sq ft)	517.87	46.42	3.10
E.G. Slope (ft/ft)	0.016335	Area (sq ft)	517.87	46.42	3.10
Q Total (cfs)	2854.00	Flow (cfs)	2518.07	321.21	14.71
Top Width (ft)	663.04	Top Width (ft)	623.85	33.00	6.19
Vel Total (ft/s)	5.03	Avg. Vel. (ft/s)	4.86	6.92	4.75

Max Chl Dpth (ft)	2.47	Hydr. Depth (ft)	0.83	1.41	0.50
Conv. Total (cfs)	22330.1	Conv. (cfs)	19701.7	2513.2	115.1
Length Wtd. (ft)	282.18	Wetted Per. (ft)	625.49	33.06	6.27
Min Ch El (ft)	2182.24	Shear (lb/sq ft)	0.84	1.43	0.50
Alpha	1.04	Stream Power (lb/ft s)	4.11	9.91	2.39
Frctn Loss (ft)	4.34	Cum Volume (acre-ft)	16.49	4.55	2.61
C & E Loss (ft)	0.01	Cum SA (acres)	13.49	1.49	2.21

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	167.40	1000.85	165.39	143.29	35.07	1.16	6.05
2	LOB	167.40	334.80	386.96	102.37	140.68	13.56	0.73	3.78
3	LOB	334.80	502.20	220.43	59.13	126.08	7.72	0.47	3.73
4	LOB	502.20	669.60	900.73	183.93	167.99	31.56	1.10	4.90
5	LOB	669.60	837.00	9.11	7.05	47.46	0.32	0.15	1.29
6	Chan	837.00	843.60	55.38	8.89	6.63	1.94	1.35	6.23
7	Chan	843.60	850.20	67.08	9.62	6.60	2.35	1.46	6.97
8	Chan	850.20	856.80	66.29	9.55	6.60	2.32	1.45	6.94
9	Chan	856.80	863.40	65.47	9.48	6.60	2.29	1.44	6.91
10	Chan	863.40	870.00	67.00	8.89	6.64	2.35	1.35	7.54
11	ROB	870.00	880.40	14.71	3.10	6.27	0.52	0.50	4.75

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.2701

INPUT
Description: R.S. 1.2701
City of Scottsdale
Flow around island
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
305.87	2181.19	317.68	2180.87	325.78	2180.49	336.42	2180.46	341.24	2180.36
350.49	2180.11	358.45	2180	362.39	2179.83	367.93	2178.89	372.4	2178.75
379.02	2179.05	392.44	2178.12	401.27	2178.23	403.13	2178.32	411.13	2179.29
436.41	2178.84	445.22	2178.21	457.48	2179.27	479.3	2178.7	494.05	2176.7
502.53	2177.32	507.82	2177.91	526.04	2177.06	533.82	2178.38	541.63	2178.59
549.86	2178.71	565.6	2177.61	571.65	2177.16	575.64	2176.77	577.67	2176.97
583.11	2177.07	585.88	2177.31	590.88	2176.85	594.42	2177.01	599.69	2177.37
602.34	2177.39	609.2	2178.13	617.27	2177.58	628.43	2176.65	630.33	2176.58
630.95	2176.47	636.99	2176.45	650.65	2178.4	653.19	2178.68	697.23	2180.16
737.95	2180.16	753.37	2180.08	764.59	2180.25	787.7	2180.6	804.97	2180.97
829.64	2180.47	841.62	2180.24	878.39	2179.74	886.5	2177.95	889.15	2177.37
895.63	2177.39	895.66	2177.39	905.51	2177.4	909	2177.98	910	2178.14
911	2178.3	920.53	2179.85	932.57	2180.34	938.64	2180.79	941.78	2180.82
949.33	2181.34	956.3	2181.95	968.49	2182.47	970.87	2182.47		

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
305.87	.025	362.39	.04	379.02	.035	457.48	.04	841.62	.058
889.15	.035	920.53	.04	941.78	.025				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
886.5	909	274	277.62	285	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2179.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.040	0.038	0.035
W.S. Elev (ft)	2179.28	Reach Len. (ft)	274.00	277.62	285.00
Crit W.S. (ft)	2179.17	Flow Area (sq ft)	365.75	40.79	5.23
E.G. Slope (ft/ft)	0.014319	Area (sq ft)	365.75	40.79	5.23
Q Total (cfs)	2274.00	Flow (cfs)	1972.17	282.01	19.82
Top Width (ft)	341.35	Top Width (ft)	310.82	22.50	8.03
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)	5.39	6.91	3.79
Max Chl Dpth (ft)	2.83	Hydr. Depth (ft)	1.18	1.81	0.65
Conv. Total (cfs)	19003.8	Conv. (cfs)	16481.4	2356.8	165.7
Length Wtd. (ft)	274.77	Wetted Per. (ft)	311.91	22.61	8.13
Min Ch El (ft)	2177.37	Shear (lb/sq ft)	1.05	1.61	0.58
Alpha	1.03	Stream Power (lb/ft s)	5.65	11.15	2.18
Frctn Loss (ft)	4.44	Cum Volume (acre-ft)	13.63	4.27	2.58
C & E Loss (ft)	0.01	Cum SA (acres)	10.47	1.31	2.17

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	305.87	422.00	101.36	30.73	55.87	4.46	0.55	3.30
2	LOB	422.00	538.12	601.19	124.06	116.53	26.44	1.07	4.85
3	LOB	538.12	654.25	1251.96	202.21	116.52	55.06	1.74	6.19
4	LOB	654.25	770.37	8.75	4.75	16.82	0.38	0.28	1.84
5	LOB	770.37	886.50	8.89	4.01	6.17	0.39	0.67	2.22
6	Chan	886.50	891.00	43.28	7.82	4.56	1.90	1.74	5.53
7	Chan	891.00	895.50	63.32	8.54	4.50	2.78	1.90	7.41
8	Chan	895.50	900.00	62.80	8.50	4.50	2.76	1.89	7.39
9	Chan	900.00	904.50	62.54	8.48	4.50	2.75	1.88	7.38
10	Chan	904.50	909.00	50.08	7.45	4.55	2.20	1.66	6.72
11	ROB	909.00	921.37	19.82	5.23	8.13	0.87	0.65	3.79

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.2175

INPUT
Description: R.S. 1.2175
City of Scottsdale
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2178.53	11.23	2178.57	18.57	2177.68	23.9	2178.59	27.33	2178.52
48.47	2175.41	51.73	2175.43	55.95	2174.78	56.91	2174.77	59.16	2174.75
66.76	2174.69	67.82	2174.67	70.54	2174.59	74.21	2174.65	78.52	2174.68
84.73	2174.87	88.9	2174.84	93.77	2174.86	94.23	2174.82	101.72	2174.3
105.42	2174.25	111.86	2174.34	120.72	2174.34	131.21	2175.19	132.48	2175.27
135.21	2175.16	140.33	2174.96	152.7	2174.53	172.28	2173.87	181.96	2172.87
187.53	2172.2	202.12	2173.29	202.24	2173.3	202.64	2173.29	221.16	2173.06
224.54	2173.07	238.6	2171.92	241.82	2171.65	242.53	2171.78	245.71	2172.25
254.95	2173.66	268.53	2173.81	270.15	2173.83	273.94	2173.69	287.48	2173.25
294.84	2173.36	316.72	2173.58	322.89	2173.8	339.87	2174.72	342.2	2174.72
348.77	2174.65	356.19	2174.64	403.53	2175.28	408.89	2175.34	410.86	2175.34
411.96	2175.35	415.73	2175.39	421.11	2175.26	421.71	2175.24	450.97	2174.56
459.04	2174.81	461.58	2174.81	493.91	2174.75	527.07	2174.29	527.44	2174.28
533.69	2174.19	541.09	2174.11	557.44	2174.06	566.51	2173.92	576.9	2173.9
580.4	2173.86	581.78	2173.87	587.54	2173.63	590.6	2173.3	593.22	2173.01
593.61	2172.95	593.92	2172.91	597.31	2172.95	597.33	2172.95	602.57	2173.02

604.16	2173.08	605.45	2173.16	609.03	2173.26	611.3	2173.34	612.68	2173.21
616.13	2172.93	619.14	2172.72	626.3	2172.53	628.87	2172.39	630	2172.88
631	2173.31	632	2173.74	635.9	2175.42	640.15	2177.13	642.51	2176.57
643.84	2176.46	644.4	2176.11	655.54	2176.77	656.5	2176.83	657.3	2176.82
659.04	2176.91	663.63	2177.09						

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	48.47	.04	70.54	.035	120.72	.04	533.69	.058
587.54	.035	635.9	.04	644.4	.025				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
590.6	631	192	185.11	181	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2175.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.61	Wt. n-Val.	0.041	0.035	0.035
W.S. Elev (ft)	2174.69	Reach Len. (ft)	192.00	185.11	181.00
Crit W.S. (ft)	2174.69	Flow Area (sq ft)	311.34	71.00	2.22
E.G. Slope (ft/ft)	0.018363	Area (sq ft)	311.34	71.00	2.22
Q Total (cfs)	2274.00	Flow (cfs)	1672.12	592.42	9.46
Top Width (ft)	395.01	Top Width (ft)	351.40	40.40	3.21
Vel Total (ft/s)	5.91	Avg. Vel. (ft/s)	5.37	8.34	4.25
Max Chl Dpth (ft)	3.04	Hydr. Depth (ft)	0.89	1.76	0.69
Conv. Total (cfs)	16780.9	Conv. (cfs)	12339.3	4371.7	69.8
Length Wtd. (ft)	189.76	Wetted Per. (ft)	351.86	40.65	3.50
Min Ch El (ft)	2172.39	Shear (lb/sq ft)	1.01	2.00	0.73
Alpha	1.13	Stream Power (lb/ft s)	5.45	16.71	3.10
Frctn Loss (ft)	2.41	Cum Volume (acre-ft)	11.50	3.91	2.56
C & E Loss (ft)	0.04	Cum SA (acres)	8.38	1.11	2.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	118.12	19.03	8.04	34.80	0.84	0.23	2.37
2	LOB	118.12	236.24	776.99	123.98	95.42	34.17	1.30	6.27
3	LOB	236.24	354.36	723.49	127.85	113.07	31.82	1.13	5.66
4	LOB	354.36	472.48	0.66	0.88	15.90	0.03	0.06	0.76
5	LOB	472.48	590.60	151.95	50.59	92.67	6.68	0.55	3.00
6	Chan	590.60	598.68	109.71	13.60	8.10	4.82	1.68	8.07
7	Chan	598.68	606.76	105.06	13.24	8.08	4.62	1.64	7.93
8	Chan	606.76	614.84	87.15	11.84	8.10	3.83	1.47	7.36
9	Chan	614.84	622.92	136.26	15.48	8.09	5.99	1.92	8.80
10	Chan	622.92	631.00	154.24	16.83	8.28	6.78	2.08	9.17
11	ROB	631.00	637.53	9.46	2.22	3.50	0.42	0.69	4.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.1824

INPUT
Description: R.S. 1.1824
City of Scottsdale
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2175.23	20.43	2175.13	26.61	2174.37	29.35	2174.4	32.15	2174.41
40.98	2173.72	43.34	2172.83	43.69	2172.67	45.62	2172.52	48.37	2172.25
52.42	2171.52	56.64	2170.78	65.64	2170.64	80.5	2170.47	84.32	2170.69
98.27	2171.66	101.69	2171.44	108.51	2170.79	111.93	2170.43	113.86	2170.36
124.54	2170.33	128.62	2170.58	137.69	2171	157.37	2171.22	168.13	2171.38
179.33	2171.41	182.3	2171.4	187.94	2171.67	204.22	2169.24	204.54	2169.18
204.76	2169.16	220.54	2170.35	222.39	2170.15	225.97	2169.96	230.37	2169.95
238.65	2169.98	250	2170.08	256.28	2170.08	260.03	2170.06	262.72	2170.12
271.81	2170.41	286.33	2170.96	300.83	2171.93	318.58	2171.23	331.78	2170.75
343.06	2170.43	345.45	2170.36	348.56	2170.52	365.88	2171.6	378.23	2171.33
399.99	2170.58	407.78	2170.5	413.51	2170.53	420.18	2170.54	434.47	2171.18
445.66	2171.6	452.05	2171.58	464.16	2171.61	474.35	2171.6	477.42	2171.61
483.73	2171.47	485.75	2171.3	496.11	2170.38	501.13	2170.58	507.62	2171.01
516.27	2170.9	530.9	2170.8	541.31	2169.85	552.6	2168.98	553.52	2168.91
554.24	2168.56	554.32	2168.55	554.64	2168.53	555.82	2168.42	561.82	2167.81
562.9	2167.94	563.63	2167.99	563.65	2167.99	571.12	2168.57	577.98	2168.57
582.84	2168.5	583.7	2168.77	587.56	2169.98	596.65	2172.06	600.38	2171.9
602.94	2171.88	624.37	2172.83	630.56	2172.91	635.83	2172.71	638.82	2172.58
641.84	2172.56	648.18	2172.72	653.49	2172.86	656.94	2172.98	665.35	2173.19
671.69	2173.79	677.3	2174.35	685.47	2173.18	688.28	2172.65	688.94	2172.57
689.32	2172.61	699.67	2173.18						

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	40.98	.04	65.64	.035	137.69	.04	464.16	.058
561.82	.035	587.56	.058	671.69	.04	689.32	.025		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
552.6	583.7	255	261.36	270	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2172.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.042	0.040	0.040
W.S. Elev (ft)	2171.81	Reach Len. (ft)	255.00	261.36	270.00
Crit W.S. (ft)	2171.81	Flow Area (sq ft)	495.53	106.72	16.75
E.G. Slope (ft/ft)	0.009811	Area (sq ft)	495.53	106.72	16.75
Q Total (cfs)	2764.00	Flow (cfs)	1783.52	893.74	86.74
Top Width (ft)	540.05	Top Width (ft)	497.08	31.10	11.87
Vel Total (ft/s)	4.47	Avg. Vel. (ft/s)	3.60	8.37	5.18
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)	1.00	3.43	1.41
Conv. Total (cfs)	27905.1	Conv. (cfs)	18006.2	9023.1	875.7
Length Wtd. (ft)	258.43	Wetted Per. (ft)	497.84	31.29	12.26
Min Ch El (ft)	2167.81	Shear (lb/sq ft)	0.61	2.09	0.84
Alpha	1.60	Stream Power (lb/ft s)	2.19	17.49	4.33
Frctn Loss (ft)	2.88	Cum Volume (acre-ft)	9.72	3.53	2.52
C & E Loss (ft)	0.00	Cum SA (acres)	6.51	0.96	2.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	110.52	199.10	53.18	59.91	7.20	0.89	3.74
2	LOB	110.52	221.04	478.86	118.61	110.79	17.32	1.07	4.04
3	LOB	221.04	331.56	510.52	125.01	105.87	18.47	1.18	4.08
4	LOB	331.56	442.08	346.91	100.89	110.60	12.55	0.91	3.44
5	LOB	442.08	552.60	248.13	97.83	110.67	8.98	0.89	2.54
6	Chan	552.60	558.82	115.87	20.74	6.33	4.19	3.33	5.59
7	Chan	558.82	565.04	198.66	23.93	6.25	7.19	3.85	8.30
8	Chan	565.04	571.26	207.50	21.60	6.24	7.51	3.47	9.60
9	Chan	571.26	577.48	185.40	20.17	6.22	6.71	3.24	9.19
10	Chan	577.48	583.70	186.32	20.28	6.26	6.74	3.26	9.19
11	ROB	583.70	606.89	86.74	16.75	12.26	3.14	1.41	5.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.1329

INPUT
Description: R.S. 1.1329
City of Scottsdale
Station Elevation Data num= 80

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2169.29	2.65	2169.07	4.49	2168.99	6.32	2168.8	15.05	2168.78
15.65	2168.76	25.96	2168.72	31.87	2168.74	35.06	2168.77	43.33	2165.99
45.35	2165.23	47.49	2165.2	57.84	2165.19	59.02	2165.21	71.63	2164.88
78.65	2164.71	79.95	2164.9	82.31	2165.13	93.21	2165.39	99.69	2165.33
130.57	2165.44	136.41	2165.47	138.46	2165.52	141.28	2165.28	152.03	2164.64
156.07	2164.87	164.92	2165.26	174.19	2165.72	185.73	2166.03	191.12	2165.48
199.27	2164.75	208.53	2163.59	210.89	2163.28	212.54	2163.52	223.46	2164.1
225.96	2163.9	237.87	2165.01	242.63	2165.39	254.53	2165.56	260.13	2165.66
271.73	2165.69	279.24	2165.72	294.56	2165.61	306.55	2163.93	308.9	2163.55
310.72	2163.25	312.06	2163.27	312.08	2163.27	321.56	2163.37	328.32	2163.44
339.18	2163.33	340.37	2163.3	341.51	2163.3	342.13	2163.41	343.4	2163.58
358.33	2165.62	361.72	2165.62	362.79	2165.68	363.53	2165.66	391.8	2166.12
408.88	2166.25	416.68	2165.69	428.84	2164.97	432.46	2164.52	436.29	2164.07
439.68	2164.66	460.93	2165.91	482.67	2166.39	485.87	2166.49	492.68	2166.71
502.68	2167.08	508.93	2167.29	519.39	2167.69	524.75	2167.92	531.4	2167.89
531.91	2167.79	543.58	2167.6	551.36	2167.6	573.15	2168.37	580.9	2168.59

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	31.87	.04	45.35	.032	82.31	.04	254.53	.058
328.32	.032	358.33	.058	408.88	.04				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
308.9	343.4	400	370.66	358	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2166.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.040	0.043	0.038
W.S. Elev (ft)	2166.32	Reach Len. (ft)	400.00	370.66	358.00
Crit W.S. (ft)	2166.32	Flow Area (sq ft)	316.33	102.03	104.74
E.G. Slope (ft/ft)	0.012744	Area (sq ft)	316.33	102.03	104.74
Q Total (cfs)	2764.00	Flow (cfs)	1493.24	821.26	449.50

Top Width (ft)	437.29	Top Width (ft)	266.56	34.50	136.23
Vel Total (ft/s)	5.28	Avg. Vel. (ft/s)	4.72	8.05	4.29
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)	1.19	2.96	0.77
Conv. Total (cfs)	24484.5	Conv. (cfs)	13227.7	7275.0	3981.9
Length Wtd. (ft)	380.30	Wetted Per. (ft)	267.26	34.55	136.56
Min Ch El (ft)	2163.25	Shear (lb/sq ft)	0.94	2.35	0.61
Alpha	1.23	Stream Power (lb/ft s)	4.45	18.91	2.62
Frctn Loss (ft)	4.39	Cum Volume (acre-ft)	7.34	2.91	2.14
C & E Loss (ft)	0.03	Cum SA (acres)	4.28	0.76	1.64

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	61.78	105.63	20.14	19.63	3.82	1.04	5.24
2	LOB	61.78	123.56	343.21	69.23	61.81	12.42	1.12	4.96
3	LOB	123.56	185.34	241.23	60.53	61.84	8.73	0.98	3.99
4	LOB	185.34	247.12	646.24	109.47	62.04	23.38	1.77	5.90
5	LOB	247.12	308.90	156.93	56.95	61.93	5.68	0.92	2.76
6	Chan	308.90	315.80	124.90	20.77	6.92	4.52	3.01	6.01
7	Chan	315.80	322.70	122.93	20.54	6.90	4.45	2.98	5.98
8	Chan	322.70	329.60	135.83	20.06	6.90	4.91	2.91	6.77
9	Chan	329.60	336.50	217.06	20.22	6.90	7.85	2.93	10.73
10	Chan	336.50	343.40	220.54	20.44	6.92	7.98	2.96	10.79
11	ROB	343.40	390.90	215.21	41.35	47.64	7.79	0.87	5.20
12	ROB	390.90	438.40	144.75	35.21	47.63	5.24	0.74	4.11
13	ROB	438.40	485.90	89.54	28.18	41.29	3.24	0.68	3.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.0627

INPUT
Description: R.S. 1.0627
City of Scottsdale
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2160.35	.4	2160.35	3.62	2160.41	7.44	2160.4	48.6	2160.3
50.79	2160.3	56.19	2160.41	59.84	2160.51	67.49	2160.61	75.34	2160.5
82.61	2160.55	86.2	2160.77	90.3	2159.57	91.94	2159.53	96.67	2158.51
107.69	2157.76	112.12	2157.48	117.01	2156.94	122.68	2156.28	129.66	2156.98
137.74	2157.62	145.92	2157.48	150.83	2157.39	151.16	2157.39	156.82	2157.51
170.88	2157.9	175.58	2158.03	190.35	2157.94	200.3	2156.12	201.54	2155.89
204.57	2155.35	212.68	2155.41	225.47	2155.45	227.83	2155.48	235.12	2155.56
244.77	2155.6	247.73	2155.98	248.7	2156.08	255.43	2156.8	259.25	2156.85
261.84	2156.87	290.83	2157.28	297.24	2157.41	304.38	2157.58	306.52	2157.66
310.04	2157.79	311.87	2157.82	315.1	2157.75	328.86	2158.54	343.01	2158.83
347.56	2159.04	369.49	2160.13	372.23	2160.22	402.79	2160.51	406.2	2160.51
410.36	2160.61	418.5	2160.86	430.94	2161.17	441.41	2160.38	448.09	2159.89
452.68	2159.51	469.11	2161.1	471.24	2161.29	489.53	2161.99	493.65	2162.2
496.1	2162.39	497.83	2162.46	498.81	2162.48	499.63	2162.5	524.45	2163.15

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	107.69	.04	170.88	.058	212.68	.035	247.73	.058
310.04	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
200.3	248.7	255	247.63	245	.1	.3

Right Levee Station= 430.94 Elevation= 2161.17

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2159.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.042	0.039	0.056
W.S. Elev (ft)	2159.00	Reach Len. (ft)	255.00	247.63	245.00
Crit W.S. (ft)	2159.00	Flow Area (sq ft)	155.35	168.09	138.37
E.G. Slope (ft/ft)	0.010509	Area (sq ft)	155.35	168.09	138.37
Q Total (cfs)	2764.00	Flow (cfs)	743.73	1493.99	526.28
Top Width (ft)	252.31	Top Width (ft)	105.90	48.40	98.00
Vel Total (ft/s)	5.99	Avg. Vel. (ft/s)	4.79	8.89	3.80
Max Chl Dpth (ft)	3.65	Hydr. Depth (ft)	1.47	3.47	1.41
Conv. Total (cfs)	26962.3	Conv. (cfs)	7254.9	14573.6	5133.8
Length Wtd. (ft)	250.23	Wetted Per. (ft)	106.30	48.50	98.08
Min Ch El (ft)	2155.35	Shear (lb/sq ft)	0.96	2.27	0.93
Alpha	1.44	Stream Power (lb/ft s)	4.59	20.21	3.52
Frctn Loss (ft)	2.81	Cum Volume (acre-ft)	5.18	1.76	1.14
C & E Loss (ft)	0.03	Cum SA (acres)	2.57	0.41	0.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	80.12	120.18	171.73	32.08	25.92	6.21	1.24	5.35
2	LOB	120.18	160.24	388.79	70.52	40.14	14.07	1.76	5.51
3	LOB	160.24	200.30	183.22	52.75	40.23	6.63	1.32	3.47
4	Chan	200.30	209.98	201.26	33.60	9.75	7.28	3.47	5.99
5	Chan	209.98	219.66	314.33	34.71	9.68	11.37	3.59	9.06
6	Chan	219.66	229.34	347.31	34.33	9.68	12.57	3.55	10.12
7	Chan	229.34	239.02	332.71	33.46	9.68	12.04	3.46	9.94
8	Chan	239.02	248.70	298.38	32.01	9.71	10.80	3.31	9.32
9	ROB	248.70	309.45	461.56	114.98	60.80	16.70	1.89	4.01
10	ROB	309.45	370.19	64.72	23.39	37.29	2.34	0.63	2.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 1.0158

INPUT
Description: R.S. 1.0158
City of Scottsdale
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2155.72	6.03	2155.72	13.2	2155.4	25.49	2154.96	29.24	2154.75
32.09	2153.86	36.01	2152.58	44.55	2152.55	59.24	2152.51	65.01	2152.56
71.18	2151.36	73.32	2150.81	83.71	2151.41	85.38	2151.51	93.95	2151.55
147.53	2151.82	152.64	2151.81	154.61	2151.82	157.3	2151.85	159.99	2151.81
166.9	2151.8	182.82	2151.72	193.65	2151.8	198.55	2151.25	204.32	2150.65
208.85	2151.36	211.75	2151.85	216.28	2152.16	218.01	2152.22	221.63	2151.41
226.05	2150.4	229.01	2150.76	236	2150.88	236.33	2150.89	241.58	2150.49
242.45	2150.47	254.66	2150.25	254.67	2150.25	259.3	2150.17	264.52	2150.08
267.3	2150.77	270.14	2151.47	271.94	2152.08	277.99	2152.31	286.95	2152.8
289.66	2151.78	292.52	2150.29	297.24	2151.48	301.85	2152.6	305.37	2152.37
305.69	2152.25	309.73	2150.42	313.7	2151.1	318.84	2152.22	324.01	2153.44
330.62	2154	331.38	2154.08	332.41	2154.08	336.16	2154.25	337.76	2154.27
348.53	2154.42	359.24	2154.69	361.31	2154.78	372.91	2155.66	372.92	2155.66
372.99	2155.67	387.34	2156.83	397.8	2157.15	406.18	2157.51	407.33	2157.51
411.31	2157.79	419.84	2158.22	426.61	2158.54	431.33	2158.83	438.46	2159.12
442.88	2159.28	452.65	2159.54	454.86	2159.54	467.18	2159.89	468.95	2159.91
482.43	2160.7	483.22	2160.73	489.98	2161.03	494.75	2161.2	498.96	2161.29

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	25.49	.04	216.28	.058	241.58	.032	301.85	.058
318.84	.04								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
236	267.3	140	142.56	145	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2153.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.042	0.034	0.039
W.S. Elev (ft)	2153.21	Reach Len. (ft)	140.00	142.56	145.00
Crit W.S. (ft)	2153.21	Flow Area (sq ft)	301.57	88.91	75.74
E.G. Slope (ft/ft)	0.012007	Area (sq ft)	301.57	88.91	75.74
Q Total (cfs)	2764.00	Flow (cfs)	1529.64	847.99	386.37
Top Width (ft)	288.95	Top Width (ft)	201.92	31.30	55.73
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)	5.07	9.54	5.10
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)	1.49	2.84	1.36
Conv. Total (cfs)	25224.7	Conv. (cfs)	13959.7	7738.9	3526.0
Length Wtd. (ft)	141.03	Wetted Per. (ft)	202.62	31.40	57.48
Min Ch El (ft)	2150.08	Shear (lb/sq ft)	1.12	2.12	0.99
Alpha	1.30	Stream Power (lb/ft s)	5.66	20.24	5.04
Frctn Loss (ft)	1.91	Cum Volume (acre-ft)	3.84	1.03	0.54
C & E Loss (ft)	0.00	Cum SA (acres)	1.67	0.18	0.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	47.20	22.24	7.86	13.22	0.80	0.60	2.83
2	LOB	47.20	94.40	314.49	64.22	47.41	11.38	1.36	4.90
3	LOB	94.40	141.60	386.74	72.58	47.20	13.99	1.54	5.33
4	LOB	141.60	188.80	339.64	67.14	47.20	12.29	1.42	5.06
5	LOB	188.80	236.00	466.53	89.77	47.60	16.88	1.90	5.20
6	Chan	236.00	242.26	90.74	15.85	6.28	3.28	2.53	5.73
7	Chan	242.26	248.52	176.23	17.48	6.26	6.38	2.79	10.08
8	Chan	248.52	254.78	188.26	18.18	6.26	6.81	2.90	10.35
9	Chan	254.78	261.04	200.32	18.87	6.26	7.25	3.02	10.61

10	Chan	261.04	267.30	192.45	18.52	6.34	6.96	2.96	10.39
11	ROB	267.30	313.63	351.10	65.56	47.85	12.70	1.41	5.36
12	ROB	313.63	359.96	35.27	10.18	9.64	1.28	1.08	3.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 0.9888

INPUT
Description: R.S. 0.9888
City of Scottsdale
Station Elevation Data num= 82

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2152.99	21.79	2153.49	47.62	2154.1	55.95	2151.94	64.85	2151.09
70.31	2151.13	73.42	2150.23	81.43	2150.34	89.83	2150.75	92.72	2150.36
101.37	2148.92	103.44	2149.08	116.13	2149.74	118.02	2149.76	118.7	2149.75
157.23	2149.99	157.65	2149.99	162.5	2149.95	166.64	2149.77	171.06	2149.72
178.06	2149.48	181.37	2149.44	184.56	2149.44	192.47	2149.41	208.24	2149.58
220.06	2149.75	227.38	2149.84	228.74	2149.87	234.68	2149.97	235.62	2150.15
236.02	2150.05	252.78	2149.56	255.6	2149.27	260.98	2149	264.62	2148.56
269.42	2148.1	272.05	2148.22	275.66	2148.81	281.53	2149.53	282.61	2149.38
283.89	2149.25	287.78	2148.84	295.32	2148.24	297.27	2148	298.31	2147.99
311.12	2147.6	313.49	2147.51	322.03	2148.35	329.94	2149.12	334.31	2149.52
336.56	2149.79	342.46	2149.42	347.62	2149.12	349.3	2148.75	352.66	2148.01
353.77	2147.77	355.97	2147.81	356.88	2147.83	366.35	2147.96	369	2148.87
370.47	2149.38	376.06	2151.33	383.14	2151.9	395.6	2152.76	403.06	2152.95
407.26	2153.08	416.03	2153.52	418.04	2153.58	426.7	2153.85	431.21	2153.96
443.3	2154.39	455.14	2154.86	462.16	2155.23	469.26	2155.48	475.52	2155.75
481.89	2155.87	487.21	2155.94	536.06	2157.47	541.14	2157.56	551.9	2158.1
554.68	2158.21	561.83	2158.66						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	64.85	.04	255.6	.058	347.62	.035	370.47	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
349.3	369	152	155.76	160	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2151.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.049	0.035	0.037
W.S. Elev (ft)	2150.92	Reach Len. (ft)	152.00	155.76	160.00
Crit W.S. (ft)	2150.92	Flow Area (sq ft)	422.21	56.79	6.01
E.G. Slope (ft/ft)	0.015295	Area (sq ft)	422.21	56.79	6.01
Q Total (cfs)	2849.00	Flow (cfs)	2218.23	598.65	32.12
Top Width (ft)	303.82	Top Width (ft)	278.25	19.70	5.87
Vel Total (ft/s)	5.87	Avg. Vel. (ft/s)	5.25	10.54	5.35
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)	1.52	2.88	1.02
Conv. Total (cfs)	23036.8	Conv. (cfs)	17936.4	4840.7	259.7
Length Wtd. (ft)	153.33	Wetted Per. (ft)	279.00	19.96	6.22
Min Ch El (ft)	2147.77	Shear (lb/sq ft)	1.44	2.72	0.92
Alpha	1.31	Stream Power (lb/ft s)	7.59	28.64	4.93
Frctn Loss (ft)	1.75	Cum Volume (acre-ft)	2.68	0.79	0.40
C & E Loss (ft)	0.01	Cum SA (acres)	0.90	0.10	0.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	69.86	139.72	325.67	70.18	68.94	11.43	1.02	4.64
2	LOB	139.72	209.58	455.82	86.33	69.87	16.00	1.24	5.28
3	LOB	209.58	279.44	544.73	105.24	70.05	19.12	1.51	5.18
4	LOB	279.44	349.30	892.01	160.45	70.13	31.31	2.30	5.56
5	Chan	349.30	353.24	99.59	10.24	4.03	3.50	2.60	9.73
6	Chan	353.24	357.18	136.16	12.25	3.95	4.78	3.11	11.11
7	Chan	357.18	361.12	132.38	12.03	3.94	4.65	3.05	11.00
8	Chan	361.12	365.06	128.49	11.82	3.94	4.51	3.00	10.87
9	Chan	365.06	369.00	102.03	10.45	4.09	3.58	2.65	9.77
10	ROB	369.00	407.57	32.12	6.01	6.22	1.13	1.02	5.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: Main RS: 0.9593

INPUT
Description: R.S. 0.9593 At Terravita Flow Split
2270 cfs to the north, 793
cfs to the south
Station Elevation Data num= 80

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2148.92	29.41	2149.27	32.03	2149.27	34.81	2149.28	36.54	2149.31
43.45	2148.82	46.57	2148.13	47.28	2148.18	55.93	2149.39	56.28	2149.41
57.8	2149.11	64.18	2147.93	67.25	2147.96	71.5	2148.11	76.82	2146.88
77.2	2146.76	78.44	2146.62	88.21	2145.06	96.8	2145.53	99.12	2145.67
101.41	2145.74	111.66	2146.15	130.66	2146.47	137.69	2146.56	145.69	2145.69
148.65	2145.32	153.96	2146.26	159.22	2146.91	161.16	2146.99	165.77	2147.11
166.67	2147	176.67	2147.01	180.18	2146.98	191.57	2146.84	201.25	2146.54
202.31	2146.51	204.15	2146.5	223.91	2146.69	228.68	2146.86	236.04	2145.62
241.54	2144.69	248.8	2145.9	259.67	2147.33	262.25	2147.27	275.13	2147.05
284.59	2146.52	293.19	2146.08	301.58	2145.71	304.67	2145.28	305.9	2145.11
307.9	2144.83	308.93	2144.68	330.14	2144.46	330.17	2144.46	334.03	2144.42
340.28	2144.34	342	2145.02	342.32	2145.15	342.4	2145.17	348.8	2146.97
371.02	2147.41	385.48	2147.53	403.43	2147.76	415.43	2148	430.84	2148.14
437.44	2147.51	445.02	2146.82	452.31	2146.11	461.4	2145.33	466.4	2145.34
476.37	2145.35	480.27	2145.32	482.88	2145.34	492.79	2144.88	496.85	2144.69
498.56	2145.3	500.67	2145.59	513	2147.61	521.42	2149.26	527.93	2150.52

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	36.54	.04	248.8	.058	308.93	.032	334.03	.04
513	.032	521.42	.058						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
305.9	342	0	0	0	.1	.3

Right Levee Station= 430.84 Elevation= 2148.14

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2148.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.	0.043	0.035	0.040

W.S. Elev (ft)	2147.95	Reach Len. (ft)	162.62	162.62	162.62
Crit W.S. (ft)	2147.95	Flow Area (sq ft)	367.34	122.42	43.15
E.G. Slope (ft/ft)	0.008870	Area (sq ft)	367.34	122.42	43.15
Q Total (cfs)	2849.00	Flow (cfs)	1628.81	1111.93	108.26
Top Width (ft)	342.38	Top Width (ft)	235.51	36.10	70.77
Vel Total (ft/s)	5.35	Avg. Vel. (ft/s)	4.43	9.08	2.51
Max Chl Dpth (ft)	3.61	Hydr. Depth (ft)	1.56	3.39	0.61
Conv. Total (cfs)	30250.8	Conv. (cfs)	17294.8	11806.5	1149.5
Length Wtd. (ft)	162.62	Wetted Per. (ft)	236.48	36.26	71.05
Min Ch El (ft)	2144.34	Shear (lb/sq ft)	0.86	1.87	0.34
Alpha	1.53	Stream Power (lb/ft s)	3.81	16.98	0.84
Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	1.30	0.47	0.31
C & E Loss (ft)	0.06	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	61.18	122.36	512.69	97.18	52.27	18.00	1.87	5.28
2	LOB	122.36	183.54	377.63	86.27	61.38	13.25	1.41	4.38
3	LOB	183.54	244.72	439.80	94.55	61.42	15.44	1.55	4.65
4	LOB	244.72	305.90	298.69	89.34	61.41	10.48	1.46	3.34
5	Chan	305.90	313.12	179.80	23.02	7.25	6.31	3.19	7.81
6	Chan	313.12	320.34	236.50	24.17	7.22	8.30	3.35	9.78
7	Chan	320.34	327.56	245.38	24.71	7.22	8.61	3.42	9.93
8	Chan	327.56	334.78	249.00	25.25	7.22	8.74	3.50	9.86
9	Chan	334.78	342.00	201.25	25.26	7.35	7.06	3.50	7.97
10	ROB	342.00	386.42	101.56	37.25	44.70	3.56	0.84	2.73
11	ROB	386.42	430.84	6.70	5.90	26.35	0.24	0.22	1.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: North RS: 0.9285

INPUT
Description: R.S. 0.9285
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2144.38	4.81	2144.38	10.41	2144.35	15.7	2144.24	28.48	2143.9

41.21	2144.19	59.67	2144.43	66.19	2144.39	80.91	2144.41	89.27	2144.75
94.5	2144.72	115.48	2144.22	122.28	2144.27	128.79	2144.13	142.23	2144.02
151.26	2141.94	155.43	2141.2	157.49	2141.39	158.33	2141.52	168.61	2142.55
172.17	2144.67	175.78	2144.69	188.03	2144.79	213.56	2144.74	227.33	2144.64
229.06	2144.6	229.44	2144.6	237.94	2143.18	245.7	2141.86	248.07	2141.46
252.75	2141.48	254.93	2141.55	255.19	2141.48	256.54	2141.48	257.16	2141.47
257.18	2141.47	260.85	2141.4	270.78	2141.17	272.4	2141.45	272.7	2141.5
272.81	2141.52	274	2141.84	274.6	2142	280.81	2143.69	285.77	2143.59
312.35	2143.49	318.87	2143.38	326.91	2143.5	336.25	2143.47	352.36	2143.71
375.55	2143.89	378.67	2143.8	383.3	2144.2	389.6	2144.63	391.83	2144.76
393.43	2144.81	408.29	2145.71	417.25	2146.1	430.56	2145.3	439.27	2144.7
447.05	2144.31	452.26	2143.87	455.9	2143.91	481.46	2146.15	481.7	2146.17
493.3	2146.07	493.65	2146.05	503.29	2145.1	503.74	2145.07		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	59.67	.058	89.27	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
245.7	274	98	101.15	105	.3	.5

Left Levee Station= 0 Elevation= 2144.38
Right Levee Station= 417.25 Elevation= 2146.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2145.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.039	0.040	0.040
W.S. Elev (ft)	2144.98	Reach Len. (ft)	98.00	101.15	105.00
Crit W.S. (ft)	2144.98	Flow Area (sq ft)	217.19	100.83	159.46
E.G. Slope (ft/ft)	0.007896	Area (sq ft)	217.19	100.83	159.46
Q Total (cfs)	2092.00	Flow (cfs)	690.51	774.24	627.25
Top Width (ft)	396.30	Top Width (ft)	245.70	28.30	122.30
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)	3.18	7.68	3.93
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	0.88	3.56	1.30
Conv. Total (cfs)	23542.6	Conv. (cfs)	7770.8	8713.0	7058.8
Length Wtd. (ft)	101.24	Wetted Per. (ft)	247.52	28.42	122.59
Min Ch El (ft)	2141.17	Shear (lb/sq ft)	0.43	1.75	0.64
Alpha	1.55	Stream Power (lb/ft s)	1.38	13.43	2.52
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	0.27	0.37	0.25
C & E Loss (ft)	0.18	Cum SA (acres)	0.30	0.10	0.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	49.14	131.76	39.52	49.75	6.30	0.80	3.33
2	LOB	49.14	98.28	43.87	24.73	49.15	2.10	0.50	1.77
3	LOB	98.28	147.42	108.44	40.05	49.28	5.18	0.82	2.71
4	LOB	147.42	196.56	311.14	75.79	49.96	14.87	1.54	4.11
5	LOB	196.56	245.70	95.30	37.09	49.37	4.56	0.75	2.57
6	Chan	245.70	251.36	145.53	19.45	5.69	6.96	3.44	7.48
7	Chan	251.36	257.02	149.76	19.75	5.67	7.16	3.49	7.58
8	Chan	257.02	262.68	155.42	20.18	5.66	7.43	3.57	7.70
9	Chan	262.68	268.34	164.67	20.90	5.66	7.87	3.69	7.88
10	Chan	268.34	274.00	158.87	20.55	5.73	7.59	3.63	7.73
11	ROB	274.00	321.75	321.23	74.81	48.00	15.36	1.57	4.29
12	ROB	321.75	369.50	254.98	64.99	47.75	12.19	1.36	3.92

13	ROB	369.50	417.25	51.03	19.66	26.84	2.44	0.73	2.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Unnamed Central
REACH: North RS: 0.9094

INPUT
Description: R.S. 0.9094 - Imm. upstream Terravita Way culverts
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2143.15	9.17	2143.47	10.78	2143.36	11.61	2143.25	21.94	2143.41
21.99	2143.41	32.85	2142.02	33.93	2142.09	43.54	2141.2	46.5	2140.79
49.25	2140.35	56.42	2138.65	57.6	2138.4	59.6	2137.98	60.33	2137.82
64.61	2137.73	68.98	2137.63	74.32	2137.76	75.61	2137.52	82.91	2137.38
87.87	2137.52	88.84	2137.56	98	2137.89	98.25	2137.9	109.93	2138.04
111.07	2138.04	114.41	2137.95	115.68	2137.92	117	2138.18	122.39	2139.24
128.98	2139.92	129.46	2139.96	134.91	2140.3	136.69	2140.51	141.79	2140.69
150.88	2141.52	153.2	2141.54	154.69	2141.43	161.69	2142.24	162.49	2142.31
169.27	2143.2	172.18	2143.58	172.78	2143.62	174.54	2143.99	181.12	2144.86
184.88	2144.89	192.19	2144.36	195.74	2144.24	197.68	2144.08	200.26	2143.89
200.34	2143.89	207.61	2143.94	219.56	2145.23	225.19	2145.89	236.96	2146.79

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.032	115.68	.058	150.88	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
57.6	117	129.89	129.89	129.89	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	48	2140.38	F
127	236.96	2140.38	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2142.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.06	Wt. n-Val.	0.032	0.032	0.058
W.S. Elev (ft)	2141.45	Reach Len. (ft)			
Crit W.S. (ft)	2141.11	Flow Area (sq ft)	21.54	219.15	44.37
E.G. Slope (ft/ft)	0.006185	Area (sq ft)	21.54	219.15	44.37
Q Total (cfs)	2092.00	Flow (cfs)	91.87	1891.92	108.21
Top Width (ft)	109.72	Top Width (ft)	16.76	59.40	33.56
Vel Total (ft/s)	7.34	Avg. Vel. (ft/s)	4.27	8.63	2.44
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)	1.29	3.69	1.32
Conv. Total (cfs)	26601.4	Conv. (cfs)	1168.2	24057.3	1376.0
Length Wtd. (ft)		Wetted Per. (ft)	17.06	59.52	33.76
Min Ch El (ft)	2137.38	Shear (lb/sq ft)	0.49	1.42	0.51
Alpha	1.27	Stream Power (lb/ft s)	2.08	12.27	1.24
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Divided flow computed for this cross-section.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	36.00	48.00	4.68	2.85	7.22	0.22	0.40	1.64
2	LOB	48.00	57.60	87.19	18.68	9.84	4.17	1.95	4.67
3	Chan	57.60	69.48	371.56	43.22	11.94	17.76	3.64	8.60
4	Chan	69.48	81.36	412.71	45.97	11.90	19.73	3.87	8.98
5	Chan	81.36	93.24	423.85	46.69	11.89	20.26	3.93	9.08
6	Chan	93.24	105.12	360.32	42.35	11.88	17.22	3.56	8.51
7	Chan	105.12	117.00	323.48	40.92	11.91	15.46	3.44	7.91
8	ROB	117.00	127.00	74.09	23.86	10.13	3.54	2.39	3.11
9	ROB	127.00	148.99	34.10	20.45	22.06	1.63	0.93	1.67
10	ROB	148.99	170.98	0.01	0.06	1.57	0.00	0.04	0.23

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: Unnamed Central
REACH: South RS: 0.9065

INPUT
Description: R.S. 0.9065
Imm. upstream of Terravita Way
City of Scottsdale
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2143.9	9.3	2144.01	22.04	2143.93	25.39	2143.99	31.73	2143.96
34.44	2143.96	37.33	2144	46.77	2144.63	54.03	2144.48	59.09	2143.4
60.16	2142.99	64.53	2141.49	75.06	2141.44	80.62	2141.34	92.56	2140.64
95.93	2140.55	97.88	2140.69	111.68	2141.61	113.03	2141.63	118.17	2141.76
121.35	2141.85	126.81	2141.87	129.95	2141.79	133.78	2141.76	137.54	2141.71
142.13	2141.6	144.77	2141.53	148.56	2141.49	151.68	2141.09	153.71	2141.1
157.18	2141.11	161.11	2141.26	169.14	2141.83	170.12	2141.87	173.18	2141.7
174.91	2141.7	185.54	2141.23	188.74	2141.13	196.44	2141.07	207.68	2140.71
211.34	2140.37	218.14	2141.25	224.25	2141.73	227.23	2142.08	227.52	2142.09
233.8	2141.66	234.77	2141.59	238.85	2140.64	244	2139.43	244.5	2139.31
246.33	2138.88	250.89	2138.7	253.62	2138.8	255.64	2139	258.03	2139.24
258.2	2139.26	263.95	2139.93	263.99	2140.12	265.34	2140.26	269.88	2140.45
273.59	2140.96	280.48	2141.21	281.61	2141.27	286.71	2141.81	297.35	2143.13
299.62	2143.07	300.2	2143.03	307	2142.91				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	250.89	.035	269.88	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
244.5	258.2	77.06	77.06	77.06	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2142.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.040	0.037	0.036
W.S. Elev (ft)	2141.86	Reach Len. (ft)	77.06	77.06	77.06
Crit W.S. (ft)	2141.86	Flow Area (sq ft)	102.65	40.54	34.19
E.G. Slope (ft/ft)	0.007880	Area (sq ft)	102.65	40.54	34.19
Q Total (cfs)	704.00	Flow (cfs)	250.97	295.19	157.84
Top Width (ft)	215.07	Top Width (ft)	172.45	13.70	28.92
Vel Total (ft/s)	3.97	Avg. Vel. (ft/s)	2.44	7.28	4.62
Max Chl Dpth (ft)	3.16	Hydr. Depth (ft)	0.60	2.96	1.18
Conv. Total (cfs)	7930.9	Conv. (cfs)	2827.3	3325.4	1778.2
Length Wtd. (ft)	77.06	Wetted Per. (ft)	173.02	13.78	29.20
Min Ch El (ft)	2138.70	Shear (lb/sq ft)	0.29	1.45	0.58
Alpha	1.85	Stream Power (lb/ft s)	0.71	10.54	2.66
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	0.34	0.12	0.06
C & E Loss (ft)	0.13	Cum SA (acres)	0.42	0.05	0.06

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	48.90	97.80	60.34	23.99	34.44	8.57	0.70	2.51
2	LOB	97.80	146.70	21.63	14.58	46.20	3.07	0.32	1.48
3	LOB	146.70	195.60	47.83	23.95	48.59	6.79	0.49	2.00
4	LOB	195.60	244.50	121.17	40.13	43.79	17.21	0.92	3.02
5	Chan	244.50	247.24	50.87	7.79	2.79	7.23	2.84	6.53
6	Chan	247.24	249.98	58.51	8.42	2.74	8.31	3.07	6.95
7	Chan	249.98	252.72	66.24	8.58	2.74	9.41	3.13	7.72
8	Chan	252.72	255.46	64.38	8.24	2.75	9.15	3.01	7.82
9	Chan	255.46	258.20	55.18	7.51	2.75	7.84	2.74	7.35
10	ROB	258.20	267.96	111.92	19.41	9.96	15.90	1.99	5.77
11	ROB	267.96	277.72	37.73	10.49	9.80	5.36	1.07	3.60
12	ROB	277.72	287.48	8.19	4.29	9.44	1.16	0.46	1.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Unnamed Central
REACH: South RS: 0.8919

INPUT
Description: R.S. 0.8919 Centerline of Terravita Way Dip Section
Diversion of
130 cfs to south through Terravita development
City of Scottsdale
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2140.96	3.77	2140.92	5.06	2140.92	6.2	2140.9	36.59	2140.86
38.83	2140.87	40.81	2140.77	63.34	2140.57	92.99	2140.48	128.28	2140.56
135.08	2140.53	135.17	2140.53	135.26	2140.54	143.88	2141.49	144.38	2141.51
149.21	2141.32	154.12	2141.22	165.83	2140.97	170.42	2140.79	172.82	2140.83
173	2140.82	173.19	2140.8	179.77	2140.05	198.78	2139.88	205.86	2139.81
207.78	2139.93	210.96	2140.12	212.24	2140.17	213.03	2140.19	213.65	2140.2
215.75	2140.33	218.18	2140.33	226.17	2140.3	230.34	2140.27	238.03	2140.33
240.27	2140.25	248.78	2140.2	250.88	2140.07	258.32	2140.24	261.52	2140.29
271.12	2140.49	274.12	2140.56	280.72	2140.66	284.32	2140.75	286.57	2140.78
295.86	2139.93	297.73	2139.91	302.5	2139.59	307.73	2139.23	309.72	2139.16
312.45	2139.09	320.49	2138.89	321.17	2138.9	326.81	2138.98	327.87	2139.01
338.82	2139.43	339.23	2139.42	342	2139.68	349.74	2140.41	350.03	2140.43
357.23	2140.55	358.58	2140.54	364.76	2140.75	367.24	2140.78	378.88	2141.07
380.58	2141.17	389.09	2141.58	402.3	2142.43	402.85	2142.43		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.025	198.78	.035	226.17	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
302.5	342	101	106.73	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2141.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.030	0.040	0.040
W.S. Elev (ft)	2141.45	Reach Len. (ft)			
Crit W.S. (ft)	2140.74	Flow Area (sq ft)	279.03	90.29	33.46
E.G. Slope (ft/ft)	0.000778	Area (sq ft)	279.03	90.29	33.46
Q Total (cfs)	562.00	Flow (cfs)	371.12	162.19	28.69
Top Width (ft)	384.00	Top Width (ft)	300.11	39.50	44.39
Vel Total (ft/s)	1.40	Avg. Vel. (ft/s)	1.33	1.80	0.86
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	0.93	2.29	0.75
Conv. Total (cfs)	20153.6	Conv. (cfs)	13308.4	5816.3	1028.9
Length Wtd. (ft)		Wetted Per. (ft)	300.79	39.54	44.44
Min Ch El (ft)	2138.89	Shear (lb/sq ft)	0.05	0.11	0.04
Alpha	1.10	Stream Power (lb/ft s)	0.06	0.20	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Divided flow computed for this cross-section.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	60.50	44.87	38.21	60.99	7.98	0.63	1.17
2	LOB	60.50	121.00	85.73	56.17	60.50	15.25	0.93	1.53
3	LOB	121.00	181.50	40.82	35.43	58.21	7.26	0.61	1.15
4	LOB	181.50	242.00	125.37	80.83	60.52	22.31	1.34	1.55
5	LOB	242.00	302.50	74.34	68.39	60.56	13.23	1.13	1.09
6	Chan	302.50	310.40	28.41	16.72	7.91	5.06	2.12	1.70
7	Chan	310.40	318.30	35.24	19.02	7.90	6.27	2.41	1.85
8	Chan	318.30	326.20	38.12	19.93	7.90	6.78	2.52	1.91
9	Chan	326.20	334.10	33.86	18.57	7.91	6.03	2.35	1.82
10	Chan	334.10	342.00	26.55	16.05	7.92	4.72	2.03	1.65
11	ROB	342.00	354.17	16.12	15.25	12.21	2.87	1.25	1.06
12	ROB	354.17	366.34	8.15	10.12	12.17	1.45	0.83	0.80
13	ROB	366.34	378.51	3.97	6.58	12.17	0.71	0.54	0.60
14	ROB	378.51	390.68	0.46	1.52	7.89	0.08	0.19	0.30

Warning: Divided flow computed for this cross-section.

SUMMARY OF MANNING'S N VALUES

River:Unnamed Central

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n9
Main	2.2214	.058	.032	.058						
Main	2.2064	.04	.032	.04						
Main	2.1828	.04	.058	.032	.04					
Main	2.1684	.058	.032	.04						
Main	2.1443	.04	.058	.032	.04					
Main	2.1205	.04	.058	.032	.058	.04				
Main	2.0829	.04	.058	.032	.058	.04				
Main	2.0456	.04	.058	.028	.058	.04				
Main	2.0048	.04	.058	.028	.058	.025				
Main	1.9633	.04	.058	.028	.058					
Main	1.9389	.04	.058	.028	.058					
Main	1.9192	.04	.025	.058	.028	.058	.025	.058		
Main	1.9042	.04	.028	.025	.058	.025				
Main	1.8875	.025	.04	.028	.04	.025	.04			
Main	1.8644	.025	.04	.058	.028	.04				
Main	1.8424	.025	.058	.04	.058	.028	.04	.058	.04	
Main	1.8096	.025	.058	.04	.04	.032	.058	.04	.025	.032
Main	1.7593	.025	.058	.04	.058	.035	.058	.04	.025	
Main	1.7007	.025	.058	.035	.058	.04	.025			

Main	1.6442	.032	.058	.035	.032	.058	.04	.032	
Main	1.6113	.032	.058	.032	.058	.04	.032	.025	
Main	1.5812	.025	.058	.032	.058	.04	.025		
Main	1.5549	.025	.058	.032	.035	.04	.025		
Main	1.5234	.025	.058	.032	.04	.035	.058	.04	.025
Main	1.4675	.025	.058	.032	.04	.032	.058	.04	.025
Main	1.4233	.032	.04	.032	.04	.032	.04	.032	.058
.04									
Main	1.3724	.025	.04	.032	.04	.032	.04	.032	.058
.04									
Main	1.3235	.025	.04	.032	.04	.035	.04	.035	.025
Main	1.2701	.025	.04	.035	.04	.058	.035	.04	.025
Main	1.2175	.025	.04	.035	.04	.058	.035	.04	.025
Main	1.1824	.025	.04	.035	.04	.058	.035	.058	.04
.025									
Main	1.1329	.025	.04	.032	.04	.058	.032	.058	.04
Main	1.0627	.025	.04	.058	.035	.058	.04		
Main	1.0158	.025	.04	.058	.032	.058	.04		
Main	0.9888	.025	.04	.058	.035	.04			
Main	0.9593	.025	.04	.058	.032	.04	.032	.058	
North	0.9285	.032	.058	.04					
North	0.9094	.032	.058	.04					
South	0.9065	.04	.035	.04					
South	0.8919	.025	.035	.04					

SUMMARY OF REACH LENGTHS

River: Unnamed Central

Reach	River Sta.	Left	Channel	Right
Main	2.2214	78.81	78.81	78.81
Main	2.2064	123	125.07	128
Main	2.1828	75	76.03	77
Main	2.1684	120	126.95	135
Main	2.1443	127	125.66	125
Main	2.1205	198	198.53	199
Main	2.0829	200	196.6	194
Main	2.0456	215.71	215.71	215.71
Main	2.0048	222	218.88	216
Main	1.9633	128.83	128.83	128.83
Main	1.9389	103	103.96	105
Main	1.9192	79.2	79.2	79.2
Main	1.9042	92	87.75	85
Main	1.8875	122.24	122.24	122.24
Main	1.8644	116.16	116.16	116.16
Main	1.8424	175	173.5	173.5
Main	1.8096	275	265.44	262
Main	1.7593	312	309.44	308
Main	1.7007	302	298.32	296
Main	1.6442	173.71	173.71	173.71
Main	1.6113	155	158.56	163
Main	1.5812	135	139.14	143
Main	1.5549	162	166.32	172
Main	1.5234	310	295.15	295
Main	1.4675	233.32	233.32	233.32
Main	1.4233	275	268.89	265
Main	1.3724	258.19	258.19	258.19
Main	1.3235	282.18	282.18	282.18
Main	1.2701	274	277.62	285
Main	1.2175	192	185.11	181
Main	1.1824	255	261.36	270
Main	1.1329	400	370.66	358
Main	1.0627	255	247.63	245
Main	1.0158	140	142.56	145
Main	0.9888	152	155.76	160
Main	0.9593	0	0	0
North	0.9285	98	101.15	105

North	0.9094	129.89	129.89	129.89
South	0.9065	77.06	77.06	77.06
South	0.8919	101	106.73	110

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Unnamed Central

Reach	River Sta.	Contr.	Expan.
Main	2.2214	.1	.3
Main	2.2064	.1	.3
Main	2.1828	.1	.3
Main	2.1684	.1	.3
Main	2.1443	.1	.3
Main	2.1205	.1	.3
Main	2.0829	.1	.3
Main	2.0456	.1	.3
Main	2.0048	.1	.3
Main	1.9633	.1	.3
Main	1.9389	.1	.3
Main	1.9192	.1	.3
Main	1.9042	.1	.3
Main	1.8875	.1	.3
Main	1.8644	.1	.3
Main	1.8424	.1	.3
Main	1.8096	.1	.3
Main	1.7593	.1	.3
Main	1.7007	.1	.3
Main	1.6442	.1	.3
Main	1.6113	.1	.3
Main	1.5812	.1	.3
Main	1.5549	.1	.3
Main	1.5234	.1	.3
Main	1.4675	.1	.3
Main	1.4233	.1	.3
Main	1.3724	.1	.3
Main	1.3235	.1	.3
Main	1.2701	.1	.3
Main	1.2175	.1	.3
Main	1.1824	.1	.3
Main	1.1329	.1	.3
Main	1.0627	.1	.3
Main	1.0158	.1	.3
Main	0.9888	.1	.3
Main	0.9593	.1	.3
North	0.9285	.3	.5
North	0.9094	.3	.5
South	0.9065	.1	.3
South	0.8919	.1	.3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 02

River: Unnamed Central Reach: Main RS: 2.2214 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 2.2064 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 2.1828 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 2.1684 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Unnamed Central Reach: Main RS: 2.1443 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 2.1205 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 2.0829 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.

River: Unnamed Central Reach: Main RS: 2.0456 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 2.0048 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 1.9633 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.9389 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.9192 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.9042 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.8875 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.8644 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.8424 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 1.8096 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
ver: Unnamed Central Reach: Main RS: 1.7593 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.7007 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.6442 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical
swer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.6113 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.5812 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.5549 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth,
e calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.5234 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 1.4675 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.4233 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.3724 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.3235 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Unnamed Central Reach: Main RS: 1.2701 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Unnamed Central Reach: Main RS: 1.2175 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. Th may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.1824 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.1329 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 1.0627 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: Main RS: 1.0158 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 0.9888 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: Main RS: 0.9593 Profile: PF 1

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:A flow split was encountered. The program first calculated the momentum of both channels below the junction. An
energy balance was performed across the junction from the stream with the highest momentum downstream to the section
upstream.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: South RS: 0.9065 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Unnamed Central Reach: South RS: 0.8919 Profile: PF 1
Warning:Divided flow computed for this cross-section.
River: Unnamed Central Reach: North RS: 0.9285 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Unnamed Central Reach: North RS: 0.9094 Profile: PF 1
Warning:Divided flow computed for this cross-section.

HEC-RAS Model Summary Tables

Unnamed Central Tributary to Cave Creek

HEC-RAS Plan: Plan 02 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)	
Main	2.2214	PF 1	1652.00	2259.51	2267.00	2267.00	2269.36	0.007198	13.16	169.24	41.07	0.87
Main	2.2064	PF 1	1652.00	2257.03	2262.25	2262.25	2263.88	0.008726	10.96	179.38	59.09	0.93
Main	2.1828	PF 1	2335.00	2250.12	2258.25	2258.25	2260.23	0.007950	15.47	230.15	56.42	0.98
Main	2.1684	PF 1	2335.00	2249.11	2257.60		2259.24	0.008324	11.19	245.06	57.82	0.75
Main	2.1443	PF 1	2363.00	2248.05	2257.51		2258.43	0.002950	8.91	368.47	82.86	0.52
Main	2.1205	PF 1	2363.00	2246.15	2255.17	2254.64	2257.71	0.007511	14.05	230.95	40.91	0.84
Main	2.0829	PF 1	2363.00	2244.75	2252.47	2252.47	2255.74	0.012508	16.52	205.62	41.65	1.05
Main	2.0456	PF 1	2391.00	2242.82	2248.54	2248.54	2250.31	0.005727	11.33	264.39	87.96	0.87
Main	2.0048	PF 1	2391.00	2240.92	2245.97	2245.97	2248.06	0.006957	12.26	232.99	63.47	0.96
Main	1.9633	PF 1	2391.00	2238.15	2243.44	2243.44	2245.42	0.006721	11.82	231.61	61.46	0.94
Main	1.9389	PF 1	2391.00	2236.89	2241.20	2241.20	2242.87	0.007074	10.63	245.08	76.19	0.94
Main	1.9192	PF 1	2447.00	2235.62	2239.28	2239.28	2240.46	0.013057	9.43	293.80	134.23	0.90
Main	1.9042	PF 1	2447.00	2232.91	2238.80	2237.02	2239.18	0.001142	5.54	516.95	137.68	0.42
Main	1.8875	PF 1	2447.00	2231.70	2237.97	2237.97	2238.95	0.003639	9.91	418.27	196.12	0.71
Main	1.8644	PF 1	2447.00	2230.49	2235.19	2235.19	2236.08	0.006586	8.62	357.24	174.08	0.71
Main	1.8424	PF 1	2447.00	2228.69	2232.64	2232.64	2233.85	0.007782	9.34	325.99	170.26	0.92
Main	1.8096	PF 1	2467.00	2226.42	2230.46	2230.46	2231.04	0.007287	8.87	474.67	363.25	0.79
Main	1.7593	PF 1	2467.00	2223.03	2225.87	2225.87	2226.45	0.012815	9.22	466.78	380.73	1.00
Main	1.7007	PF 1	2467.00	2217.97	2220.63	2220.63	2221.29	0.016478	8.87	414.98	284.95	1.02
Main	1.6442	PF 1	2467.00	2213.44	2215.52	2215.52	2216.18	0.017096	8.38	400.48	315.26	1.12
Main	1.6113	PF 1	2467.00	2211.20	2213.12	2212.65	2213.55	0.011633	6.08	482.16	252.93	0.79
Main	1.5812	PF 1	2622.00	2207.59	2210.25	2210.25	2211.27	0.017082	10.99	355.68	171.09	1.24
Main	1.5549	PF 1	2622.00	2205.43	2207.91	2207.91	2208.77	0.016234	9.08	360.99	207.94	1.08
Main	1.5234	PF 1	2822.00	2202.00	2204.66	2204.55	2205.29	0.017740	6.41	444.05	289.99	0.73
Main	1.4675	PF 1	2779.00	2196.35	2199.30	2199.30	2199.91	0.017213	6.76	448.88	367.09	0.71
Main	1.4233	PF 1	2779.00	2192.03	2194.70	2194.70	2195.25	0.012370	8.64	520.41	429.66	1.01
Main	1.3724	PF 1	2779.00	2186.90	2189.13	2189.13	2189.63	0.017742	6.16	487.57	487.82	0.92
Main	1.3235	PF 1	2854.00	2182.24	2183.71	2183.68	2184.12	0.016335	6.92	567.38	663.04	1.03
Main	1.2701	PF 1	2274.00	2177.37	2179.28	2179.17	2179.77	0.014319	6.91	411.77	341.35	0.91
Main	1.2175	PF 1	2274.00	2172.39	2174.69	2174.69	2175.31	0.018363	8.34	384.57	395.01	1.11
Main	1.1824	PF 1	2764.00	2167.81	2171.81	2171.81	2172.31	0.009811	8.37	619.00	540.05	0.80
Main	1.1329	PF 1	2764.00	2163.25	2166.32	2166.32	2166.86	0.012744	8.05	523.11	437.29	0.82
Main	1.0627	PF 1	2764.00	2155.35	2159.00	2159.00	2159.80	0.010509	8.89	461.82	252.31	0.84
Main	1.0158	PF 1	2764.00	2150.08	2153.21	2153.21	2153.92	0.012007	9.54	466.22	288.95	1.00
Main	0.9888	PF 1	2849.00	2147.77	2150.92	2150.92	2151.62	0.015295	10.54	485.00	303.82	1.09
Main	0.9593	PF 1	2849.00	2144.34	2147.95	2147.95	2148.63	0.008870	9.08	532.91	342.38	0.87
South	0.9065	PF 1	704.00	2138.70	2141.86	2141.86	2142.31	0.007880	7.28	177.38	215.07	0.75
South	0.8919	PF 1	562.00	2138.89	2141.45	2140.74	2141.48	0.000778	1.80	402.78	384.00	0.21
North	0.9285	PF 1	2092.00	2141.17	2144.98	2144.98	2145.45	0.007896	7.68	477.48	396.30	0.72
North	0.9094	PF 1	2092.00	2137.38	2141.45	2141.11	2142.51	0.006185	8.63	285.06	109.72	0.79

HEC-RAS Plan: Plan 02 Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Main	2.2214	PF 1	2269.36	2267.00	2.36	0.62	0.22	186.45	1429.50	36.05	41.07
Main	2.2064	PF 1	2263.88	2262.25	1.63	1.03	0.03	200.86	1391.05	60.10	59.09
Main	2.1828	PF 1	2260.23	2258.25	1.98	0.62	0.10	1178.31	716.98	439.71	56.42
Main	2.1684	PF 1	2259.24	2257.60	1.64	0.59	0.22	158.34	1609.43	567.23	57.82
Main	2.1443	PF 1	2258.43	2257.51	0.92	0.56	0.16	353.68	1559.85	449.48	82.86
Main	2.1205	PF 1	2257.71	2255.17	2.54	1.89	0.07	271.09	1901.61	190.31	40.91
Main	2.0829	PF 1	2255.74	2252.47	3.27	1.60	0.45	275.47	1735.84	351.69	41.65
Main	2.0456	PF 1	2250.31	2248.54	1.77	1.36	0.03	63.37	2082.92	244.71	87.96
Main	2.0048	PF 1	2248.06	2245.97	2.08	1.50	0.03	57.82	2067.62	265.55	63.47
Main	1.9633	PF 1	2245.42	2243.44	1.98	0.89	0.09	88.95	2076.53	225.52	61.46
Main	1.9389	PF 1	2242.87	2241.20	1.66	0.98	0.15	48.55	2216.64	125.82	76.19
Main	1.9192	PF 1	2240.46	2239.28	1.18	0.22	0.24	1066.18	1271.41	109.42	134.23
Main	1.9042	PF 1	2239.18	2238.80	0.38	0.16	0.06	20.77	1323.06	1103.17	137.68
Main	1.8875	PF 1	2238.95	2237.97	0.99	0.59	0.03	121.59	1444.87	880.53	196.12
Main	1.8644	PF 1	2236.08	2235.19	0.89	0.83	0.03	439.72	1609.60	397.67	174.08
Main	1.8424	PF 1	2233.85	2232.64	1.21	1.31	0.19	41.87	2164.49	240.64	170.26
Main	1.8096	PF 1	2231.04	2230.46	0.59	2.53	0.00	620.23	654.87	1191.91	363.25
Main	1.7593	PF 1	2226.45	2225.87	0.57	4.48	0.01	1042.14	557.56	867.31	380.73
Main	1.7007	PF 1	2221.29	2220.63	0.66	4.98	0.00	47.27	681.96	1737.76	284.95
Main	1.6442	PF 1	2216.18	2215.52	0.66	2.43	0.07	284.26	607.76	1574.98	315.26
Main	1.6113	PF 1	2213.55	2213.12	0.43	2.22	0.06	388.63	929.77	1148.60	252.93
Main	1.5812	PF 1	2211.27	2210.25	1.02	2.27	0.05	1684.53	756.56	180.91	171.09
Main	1.5549	PF 1	2208.77	2207.91	0.86	2.76	0.07	2011.38	527.33	83.29	207.94
Main	1.5234	PF 1	2205.29	2204.66	0.63	5.37	0.01	2666.52	123.12	32.36	289.99
Main	1.4675	PF 1	2199.91	2199.30	0.61	3.38	0.02	1860.91	791.63	126.46	367.09
Main	1.4233	PF 1	2195.25	2194.70	0.55	4.00	0.01	1804.84	687.12	287.04	429.66
Main	1.3724	PF 1	2189.63	2189.13	0.51	4.39	0.03	1795.59	675.00	308.41	487.82
Main	1.3235	PF 1	2184.12	2183.71	0.41	4.34	0.01	2518.07	321.21	14.71	663.04
Main	1.2701	PF 1	2179.77	2179.28	0.49	4.44	0.01	1972.17	282.01	19.82	341.35
Main	1.2175	PF 1	2175.31	2174.69	0.61	2.41	0.04	1672.12	592.42	9.46	395.01
Main	1.1824	PF 1	2172.31	2171.81	0.49	2.88	0.00	1783.52	893.74	86.74	540.05
Main	1.1329	PF 1	2166.86	2166.32	0.53	4.39	0.03	1493.24	821.26	449.50	437.29
Main	1.0627	PF 1	2159.80	2159.00	0.80	2.81	0.03	743.73	1493.99	526.28	252.31
Main	1.0158	PF 1	2153.92	2153.21	0.71	1.91	0.00	1529.64	847.99	386.37	288.95
Main	0.9888	PF 1	2151.62	2150.92	0.70	1.75	0.01	2218.23	598.65	32.12	303.82
Main	0.9593	PF 1	2148.63	2147.95	0.68	1.37	0.06	1628.81	1111.93	108.26	342.38
South	0.9065	PF 1	2142.31	2141.86	0.45	0.16	0.13	250.97	295.19	157.84	215.07
South	0.8919	PF 1	2141.48	2141.45	0.03			371.12	162.19	28.69	384.00
North	0.9285	PF 1	2145.45	2144.98	0.46	0.70	0.18	690.51	774.24	627.25	396.30
North	0.9094	PF 1	2142.51	2141.45	1.06			91.87	1891.92	108.21	109.72

Windmill Wash

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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

PROJECT DATA
Project Title: Windmill Wash
Project File : WM_Final.prj
Run Date and Time: 05/24/2004 10:51:35 AM

Project in English units

Project Description:
Windmill Wash, Carefree, AZ
Prepared by CH2M HILL for the Flood Control
District of Maricopa County
Contract No. FCD 2000C037
Topographic Mapping
Source: Flown and Mapped by M&B Aerial, Flight Date: 8/2/01
2' Contour
Interval, DatumL NAD 83/NGVD29 from GDACS Control Network, established and
maintained by MCDOT
Discharge Information from the Carefree Drainage Master
Plan Final Data Collection Report, dated November 2002.
Downstream study limit
is the Town of Carefree boundary
Discharge: from 66 cfs at R.S. 1.6576 to 357
cfs at R.S. 0.0243
Dip Roadway Crossings at R.S. 1.5241 and 0.3142
Final
Model Run: April 2003

PLAN DATA

Plan Title: Plan 08
Plan File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\WM_Final.p08

Geometry Title: Windmill Wash
Geometry File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\WM_Final.g01

Flow Title : Flow Data
Flow File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\WM_Final.f01

Plan Summary Information:

Number of:	Cross Sections =	85	Mulitple Openings =	0
	Culverts =	6	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3

Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Flow Data
Flow File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\WM_Final.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Windmill Wash	South Branch	0.4414	54
Windmill Wash	South Branch	0.1002	131
Windmill Wash	North Branch	1.6576	64
Windmill Wash	North Branch	1.3110	77
Windmill Wash	North Branch	1.2930	131
Windmill Wash	Combined Branch	1.1975	162
Windmill Wash	Combined Branch	0.9196	198
Windmill Wash	Combined Branch	0.6472	250
Windmill Wash	Combined Branch	0.3444	295
Windmill Wash	Combined Branch	0.0243	338

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Windmill Wash	South Branch	PF 1	Critical	
Windmill Wash	North Branch	PF 1	Critical	
Windmill Wash	Combined Branch	PF 1		Known WS = 2487.42

GEOMETRY DATA

Geometry Title: Windmill Wash
Geometry File : p:\162944\00 CD for Floodplain Report - FEMA\HEC-RAS Files\WM_Final.g01

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Windmill Wash	South Branch		Twilight
Windmill Wash	North Branch		Twilight
Windmill Wash	Combined Branch	Twilight	

JUNCTION INFORMATION

Name: Twilight
Description:
Energy computation Method

Length across Junction		Tributary			
River	Reach	River	Reach	Length	Angle
Windmill Wash	North Branch	to Windmill Wash	Combined Branch	219.4	
Windmill Wash	South Branch	to Windmill Wash	Combined Branch	304.9	

CROSS SECTION

RIVER: Windmill Wash

REACH: South Branch RS: 0.4414

PUT
scription: R.S. 0.4414 Farthest Upstream Southern Tributary Boundary
Conditions Only

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2660.78	.98	2660.98	2.47	2660.85	14.99	2657.84	24.45	2654.74
45.3	2648.5	47.32	2647.89	48.17	2648.02	50.9	2648.43	52.52	2648.67
56.83	2649.35	65.81	2648.95	66.54	2648.92	69.43	2649.21	85.62	2650.68
92.36	2651.32	104.47	2651.75	123.98	2653.93	136.46	2653.8	136.84	2653.8

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	2.47	.04	48.17	.045	56.83	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
45.3	50.9	88.64	88.64	88.64	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2649.69	Element			
Vel Head (ft)	0.24	Wt. n-Val.	0.040	0.042	0.043
W.S. Elev (ft)	2649.44	Reach Len. (ft)	88.64	88.64	88.64
Crit W.S. (ft)	2649.44	Flow Area (sq ft)	1.48	7.11	7.69
E.G. Slope (ft/ft)	0.013418	Area (sq ft)	1.48	7.11	7.69
Q Total (cfs)	54.00	Flow (cfs)	3.75	33.51	16.73
Top Width (ft)	29.84	Top Width (ft)	3.15	5.60	21.09
Vel Total (ft/s)	3.32	Avg. Vel. (ft/s)	2.53	4.72	2.18
Max Chl Dpth (ft)	1.55	Hydr. Depth (ft)	0.47	1.27	0.36
Conv. Total (cfs)	466.2	Conv. (cfs)	32.4	289.3	144.5
Length Wtd. (ft)	88.64	Wetted Per. (ft)	3.29	5.73	21.19
Min Ch El (ft)	2647.89	Shear (lb/sq ft)	0.38	1.04	0.30
Alpha	1.43	Stream Power (lb/ft s)	0.96	4.90	0.66
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)	0.28	0.53	0.60
C & E Loss (ft)	0.01	Cum SA (acres)	0.35	0.36	0.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	36.24	45.30	3.75	1.48	3.29	6.95	0.47	2.53
2	Chan	45.30	46.42	5.54	1.24	1.17	10.26	1.11	4.45
3	Chan	46.42	47.54	8.56	1.61	1.16	15.86	1.44	5.31
4	Chan	47.54	48.66	8.25	1.61	1.13	15.28	1.43	5.14
5	Chan	48.66	49.78	6.24	1.42	1.13	11.55	1.26	4.41
6	Chan	49.78	50.90	4.92	1.23	1.13	9.11	1.10	4.01
7	ROB	50.90	68.09	15.79	6.99	17.28	29.25	0.41	2.26
8	ROB	68.09	85.28	0.94	0.70	3.92	1.74	0.18	1.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.4246

INPUT
Description: R.S. 0.4246, Boundary Conditions Only
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2656.33	1.18	2656.31	9.83	2656.14	19.77	2652.44	32.62	2647.07
33.99	2646.5	34	2646.5	35.4	2645.85	35.63	2645.89	39.2	2646.48
40.75	2646.74	45.86	2647.61	47.14	2647.62	84.96	2648.13	85.95	2648.07
102.32	2647.41	112.2	2648.51	119.82	2648.16	126.64	2649.3	136.05	2651.09

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	19.77	.04	32.62	.045	40.75	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
34	39.2	100	96.35	92	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2647.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.044	0.045	0.043
W.S. Elev (ft)	2647.52	Reach Len. (ft)	100.00	96.35	92.00
Crit W.S. (ft)	2647.52	Flow Area (sq ft)	1.26	7.04	3.42
E.G. Slope (ft/ft)	0.019524	Area (sq ft)	1.26	7.04	3.42
Q Total (cfs)	54.00	Flow (cfs)	4.09	38.75	11.16
Top Width (ft)	17.57	Top Width (ft)	2.46	5.20	9.91
Vel Total (ft/s)	4.61	Avg. Vel. (ft/s)	3.24	5.51	3.27
Max Chl Dpth (ft)	1.67	Hydr. Depth (ft)	0.51	1.35	0.34
Conv. Total (cfs)	386.5	Conv. (cfs)	29.3	277.3	79.9
Length Wtd. (ft)	94.96	Wetted Per. (ft)	2.66	5.40	10.00
Min Ch El (ft)	2645.85	Shear (lb/sq ft)	0.58	1.59	0.42
Alpha	1.17	Stream Power (lb/ft s)	1.87	8.75	1.36
Frctn Loss (ft)	1.68	Cum Volume (acre-ft)	0.28	0.52	0.59
C & E Loss (ft)	0.07	Cum SA (acres)	0.35	0.35	0.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	27.20	34.00	4.09	1.26	2.66	7.57	0.51	3.24
2	Chan	34.00	35.04	6.57	1.31	1.15	12.18	1.26	5.01
3	Chan	35.04	36.08	10.16	1.67	1.09	18.81	1.60	6.09
4	Chan	36.08	37.12	8.97	1.53	1.05	16.61	1.47	5.86
5	Chan	37.12	38.16	7.29	1.35	1.05	13.50	1.30	5.40
6	Chan	38.16	39.20	5.76	1.17	1.05	10.66	1.13	4.91
7	ROB	39.20	58.57	11.00	3.21	6.23	20.37	0.52	3.43
8	ROB	58.57	77.94						
9	ROB	77.94	97.31						
10	ROB	97.31	116.68	0.16	0.21	3.78	0.29	0.06	0.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.4064

INPUT
Description: R.S. 0.4064, Boundary Conditions Only
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2651.98	5.7	2651.91	5.89	2651.91	6.02	2651.91	14.78	2651.72
17.4	2651.59	25.89	2648.33	33.2	2645.14	35.11	2644.31	35.71	2644.38
37.73	2644.62	42	2645.11	47.22	2645.7	57.04	2645.59	58.36	2645.55
62.27	2645.58	74.76	2645.72	80.88	2645.17	88.59	2644.67	95.99	2645.39
110.5	2646.54	131.98	2648.6	142.69	2649.85	150.77	2650.44		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	14.78	.04	35.11	.045	47.22	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
33.2	42	92	96.64	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2645.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.040	0.044	0.040
W.S. Elev (ft)	2645.54	Reach Len. (ft)	92.00	96.64	100.00
Crit W.S. (ft)	2645.43	Flow Area (sq ft)	0.18	7.23	10.21
E.G. Slope (ft/ft)	0.016033	Area (sq ft)	0.18	7.23	10.21
Q Total (cfs)	54.00	Flow (cfs)	0.27	26.76	26.96
Top Width (ft)	34.54	Top Width (ft)	0.91	8.80	24.83
Vel Total (ft/s)	3.07	Avg. Vel. (ft/s)	1.51	3.70	2.64
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)	0.20	0.82	0.41
Conv. Total (cfs)	426.5	Conv. (cfs)	2.2	211.4	212.9
Length Wtd. (ft)	97.87	Wetted Per. (ft)	0.99	9.02	24.93
Min Ch El (ft)	2644.31	Shear (lb/sq ft)	0.18	0.80	0.41
Alpha	1.09	Stream Power (lb/ft s)	0.28	2.97	1.08
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	0.28	0.50	0.58
C & E Loss (ft)	0.01	Cum SA (acres)	0.34	0.34	0.76

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	26.56	33.20	0.27	0.18	0.99	0.51	0.20	1.51
2	Chan	33.20	34.96	4.99	1.37	1.92	9.24	0.78	3.64
3	Chan	34.96	36.72	8.84	2.00	1.78	16.36	1.14	4.41
4	Chan	36.72	38.48	6.31	1.64	1.77	11.68	0.93	3.84
5	Chan	38.48	40.24	4.19	1.28	1.77	7.76	0.73	3.26
6	Chan	40.24	42.00	2.44	0.93	1.77	4.52	0.53	2.63
7	ROB	42.00	63.75	1.18	0.81	3.80	2.19	0.21	1.47
8	ROB	63.75	85.51	7.38	3.14	8.74	13.66	0.36	2.35
9	ROB	85.51	107.26	18.40	6.25	12.39	34.08	0.51	2.94

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.3881

INPUT
Description: R.S. 0.3881 Begin Floodplain Mapping
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2652.02	2.59	2652	6.93	2651.89	11.13	2651.79	14.02	2651.29
21.87	2648.13	32.81	2644.52	33.15	2644.41	36.1	2643.15	36.45	2643
37.86	2642.96	40.17	2642.91	50	2643.15	57	2643.32	73.22	2643.72
84.25	2643.86	95.83	2644.22	101.68	2644.3	103.43	2644.55	104.67	2644.55
139.23	2646.09	149.64	2646.16	153.41	2646.33	160.86	2646.68		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	21.87	.04	32.81	.045	37.86	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
36.1	50	134.63	134.63	134.63	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2643.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.045	0.041	0.040
W.S. Elev (ft)	2643.70	Reach Len. (ft)	134.63	134.63	134.63
Crit W.S. (ft)	2643.69	Flow Area (sq ft)	0.35	9.56	6.13
E.G. Slope (ft/ft)	0.020955	Area (sq ft)	0.35	9.56	6.13
Q Total (cfs)	54.00	Flow (cfs)	0.67	39.40	13.93
Top Width (ft)	37.50	Top Width (ft)	1.28	13.90	22.32
Vel Total (ft/s)	3.37	Avg. Vel. (ft/s)	1.91	4.12	2.27
Max Chl Dpth (ft)	0.79	Hydr. Depth (ft)	0.27	0.69	0.27
Conv. Total (cfs)	373.0	Conv. (cfs)	4.6	272.2	96.3
Length Wtd. (ft)	134.63	Wetted Per. (ft)	1.39	13.93	22.33
Min Ch El (ft)	2642.91	Shear (lb/sq ft)	0.33	0.90	0.36
Alpha	1.22	Stream Power (lb/ft s)	0.63	3.70	0.82
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	0.28	0.48	0.56
C & E Loss (ft)	0.01	Cum SA (acres)	0.34	0.31	0.70

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	28.88	36.10	0.67	0.35	1.39	1.24	0.27	1.91
2	Chan	36.10	38.88	7.92	1.99	2.81	14.67	0.72	3.97
3	Chan	38.88	41.66	9.65	2.15	2.78	17.87	0.77	4.50
4	Chan	41.66	44.44	8.55	1.99	2.78	15.83	0.72	4.29
5	Chan	44.44	47.22	7.25	1.81	2.78	13.42	0.65	4.01
6	Chan	47.22	50.00	6.03	1.62	2.78	11.16	0.58	3.73
7	ROB	50.00	72.17	13.93	6.13	22.18	25.80	0.28	2.27

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.3626

INPUT
Description: R.S. 0.3626
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2646.39	5.97	2646.24	21.62	2645.99	31.01	2643.07	39.1	2639.94

39.12	2639.93	40.36	2639.73	41.02	2639.62	43.7	2639.74	47.3	2639.94
56.26	2640.45	71.05	2641.52	90.92	2642.1	93.7	2642.2	97.94	2642.54
102.23	2642.41	111.91	2642.76	112.74	2643.05	123.69	2642.99	136.45	2642.62
138.84	2642.85	141.24	2643.28	151.33	2644.65	159.41	2645.6		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	21.62	.04	31.01	.045	43.7	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
39.1	47.3	78.45	78.45	78.45	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2641.00	Element			
Vel Head (ft)	0.30	Wt. n-Val.	0.045	0.043	0.040
W.S. Elev (ft)	2640.70	Reach Len. (ft)	78.45	78.45	78.45
Crit W.S. (ft)	2640.70	Flow Area (sq ft)	0.75	7.60	4.96
E.G. Slope (ft/ft)	0.022232	Area (sq ft)	0.75	7.60	4.96
Q Total (cfs)	54.00	Flow (cfs)	1.84	37.28	14.88
Top Width (ft)	22.58	Top Width (ft)	1.96	8.20	12.42
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)	2.47	4.90	3.00
Max Chl Dpth (ft)	1.08	Hydr. Depth (ft)	0.38	0.93	0.40
Conv. Total (cfs)	362.2	Conv. (cfs)	12.4	250.0	99.8
Length Wtd. (ft)	78.45	Wetted Per. (ft)	2.11	8.24	12.44
Min Ch El (ft)	2639.62	Shear (lb/sq ft)	0.49	1.28	0.55
Alpha	1.17	Stream Power (lb/ft s)	1.21	6.28	1.66
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	0.28	0.46	0.54
C & E Loss (ft)	0.01	Cum SA (acres)	0.34	0.28	0.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	31.28	39.10	1.84	0.75	2.11	3.41	0.38	2.47
2	Chan	39.10	40.74	6.69	1.48	1.66	12.38	0.90	4.53
3	Chan	40.74	42.38	8.73	1.72	1.65	16.17	1.05	5.07
4	Chan	42.38	44.02	7.99	1.61	1.64	14.80	0.98	4.96
5	Chan	44.02	45.66	7.55	1.47	1.64	13.98	0.90	5.13
6	Chan	45.66	47.30	6.32	1.32	1.64	11.70	0.81	4.78
7	ROB	47.30	69.72	14.88	4.96	12.44	27.56	0.40	3.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.3477

INPUT
Description: R.S. 0.3477
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2644.56	25.66	2643.26	38.36	2641.65	45.13	2639.87	53.52	2638.22

56.8	2637.05	57.26	2636.89	57.35	2636.86	58.8	2636.58	60.5	2637.04
61.4	2637.28	64.31	2638.07	64.83	2638.16	86.76	2639.39	90.54	2639.6
90.71	2639.61	107.84	2640.74	108.41	2640.68	116.55	2639.27	123.15	2642.62
127.42	2644.2	128.72	2644.2	137.55	2644.19	146.67	2644.34	154.01	2644.42

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	53.52	.045	64.83	.04	116.55	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
56.8	60.5	138	143.2	150	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2638.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.045	0.045	0.045
W.S. Elev (ft)	2638.37	Reach Len. (ft)	138.00	143.20	150.00
Crit W.S. (ft)	2638.37	Flow Area (sq ft)	2.48	5.84	3.66
E.G. Slope (ft/ft)	0.017416	Area (sq ft)	2.48	5.84	3.66
Q Total (cfs)	54.00	Flow (cfs)	8.33	33.73	11.94
Top Width (ft)	15.89	Top Width (ft)	4.06	3.70	8.13
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	3.36	5.78	3.26
Max Chl Dpth (ft)	1.79	Hydr. Depth (ft)	0.61	1.58	0.45
Conv. Total (cfs)	409.2	Conv. (cfs)	63.2	255.6	90.5
Length Wtd. (ft)	144.44	Wetted Per. (ft)	4.28	3.82	8.28
Min Ch El (ft)	2636.58	Shear (lb/sq ft)	0.63	1.66	0.48
Alpha	1.23	Stream Power (lb/ft s)	2.12	9.60	1.57
Frctn Loss (ft)	2.34	Cum Volume (acre-ft)	0.27	0.44	0.53
C & E Loss (ft)	0.06	Cum SA (acres)	0.33	0.27	0.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	45.44	56.80	8.33	2.48	4.28	15.43	0.61	3.36
2	Chan	56.80	57.54	5.77	1.07	0.78	10.68	1.45	5.39
3	Chan	57.54	58.28	7.10	1.20	0.75	13.15	1.62	5.92
4	Chan	58.28	59.02	8.03	1.29	0.76	14.87	1.75	6.20
5	Chan	59.02	59.76	7.11	1.21	0.77	13.16	1.63	5.88
6	Chan	59.76	60.50	5.72	1.06	0.77	10.59	1.43	5.39
7	ROB	60.50	79.20	11.94	3.66	8.28	22.11	0.45	3.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.3206

INPUT
Description: R.S. 0.3206
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2640.39	2.04	2640.29	19.26	2639.36	23.27	2638.87	39.4	2637.83

52.14	2636.76	66.88	2636.09	81.81	2635.7	89.36	2635.76	96.53	2635.67
111.41	2635.3	115.61	2635.31	116.42	2635.3	116.94	2635.22	121.1	2634.51
124.74	2633.88	126.88	2634.13	127.05	2634.15	130.7	2634.48	139.01	2635.22
140.23	2635.18	154.55	2634.97	156.83	2635.06	158.6	2635.08	167.49	2634.64
168.74	2634.65	185.35	2635.42	188.64	2635.54	197.33	2635.85	205.75	2636.5
209.25	2636.8	215.94	2638.04	218.11	2638.27	225.04	2638.59	237.48	2639.19
238.73	2640.35	247.18	2642.19						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	115.61	.045	127.05	.04	215.94	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
121.1	130.7	33.77	33.77	33.77	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2635.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.045	0.043	0.040
W.S. Elev (ft)	2635.14	Reach Len. (ft)	33.77	33.77	33.77
Crit W.S. (ft)	2635.14	Flow Area (sq ft)	1.14	9.00	9.30
E.G. Slope (ft/ft)	0.015067	Area (sq ft)	1.14	9.00	9.30
Q Total (cfs)	54.00	Flow (cfs)	2.11	36.22	15.66
Top Width (ft)	56.48	Top Width (ft)	3.66	9.60	43.22
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)	1.85	4.03	1.68
Max Chl Dpth (ft)	1.25	Hydr. Depth (ft)	0.31	0.94	0.22
Conv. Total (cfs)	439.9	Conv. (cfs)	17.2	295.1	127.6
Length Wtd. (ft)	33.77	Wetted Per. (ft)	3.71	9.68	43.27
Min Ch El (ft)	2633.88	Shear (lb/sq ft)	0.29	0.87	0.20
Alpha	1.53	Stream Power (lb/ft s)	0.54	3.52	0.34
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.27	0.42	0.51
C & E Loss (ft)	0.00	Cum SA (acres)	0.32	0.24	0.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	96.88	121.10	2.11	1.14	3.71	3.91	0.31	1.85
2	Chan	121.10	123.02	5.15	1.52	1.95	9.55	0.79	3.40
3	Chan	123.02	124.94	9.21	2.15	1.95	17.06	1.12	4.29
4	Chan	124.94	126.86	9.25	2.15	1.93	17.12	1.12	4.30
5	Chan	126.86	128.78	7.36	1.76	1.93	13.63	0.92	4.19
6	Chan	128.78	130.70	5.25	1.42	1.93	9.71	0.74	3.69
7	ROB	130.70	154.00	4.68	3.24	18.05	8.66	0.18	1.44
8	ROB	154.00	177.29	10.94	5.98	23.32	20.26	0.26	1.83
9	ROB	177.29	200.59	0.05	0.08	1.90	0.09	0.04	0.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.3142

PUT
scription: R.S. 0.3142 Centerline of Twilight Trail

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2639.33	36.97	2637.31	65.56	2635.82	83.76	2635.08	102.85	2634.42
123.53	2634.05	128.38	2634.02	128.5	2634.02	141.47	2633.66	141.82	2633.68
147.8	2634	150.06	2634.12	180.66	2635.52	219.49	2637.41	247.9	2637.9

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
128.5	147.8	28.81	28.81	28.81	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2634.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2634.40	Reach Len. (ft)	28.81	28.81	28.81
Crit W.S. (ft)	2634.40	Flow Area (sq ft)	5.34	10.95	1.66
E.G. Slope (ft/ft)	0.008295	Area (sq ft)	5.34	10.95	1.66
Q Total (cfs)	54.00	Flow (cfs)	10.39	40.58	3.03
Top Width (ft)	52.53	Top Width (ft)	24.76	19.30	8.47
Vel Total (ft/s)	3.01	Avg. Vel. (ft/s)	1.95	3.71	1.82
Max Chl Dpth (ft)	0.74	Hydr. Depth (ft)	0.22	0.57	0.20
Conv. Total (cfs)	592.9	Conv. (cfs)	114.1	445.6	33.2
Length Wtd. (ft)	28.81	Wetted Per. (ft)	24.77	19.31	8.48
Min Ch El (ft)	2633.66	Shear (lb/sq ft)	0.11	0.29	0.10
Alpha	1.24	Stream Power (lb/ft s)	0.22	1.09	0.18
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	0.26	0.41	0.51
C & E Loss (ft)	0.05	Cum SA (acres)	0.31	0.23	0.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	102.80	128.50	10.39	5.34	24.77	19.24	0.22	1.95
2	Chan	128.50	132.36	5.19	1.69	3.86	9.61	0.44	3.07
3	Chan	132.36	136.22	7.48	2.10	3.86	13.85	0.54	3.56
4	Chan	136.22	140.08	10.09	2.52	3.86	18.68	0.65	4.01
5	Chan	140.08	143.94	11.19	2.68	3.86	20.73	0.69	4.18
6	Chan	143.94	147.80	6.64	1.96	3.87	12.29	0.51	3.39
7	ROB	147.80	167.82	3.03	1.66	8.48	5.60	0.20	1.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.3087

INPUT
Description: R.S. 0.3087 Immediately Downstream of Twilight
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2638.02	.34	2638	17.6	2637.08	21.02	2637	35.7	2636.35
35.85	2636.34	36.13	2636.32	43.36	2635.84	46.62	2635.46	53.7	2635.06
61	2635.16	79.79	2635.66	86.13	2635.55	94.66	2635.55	99.36	2635.24
111.38	2633.99	115.97	2633.88	126.57	2633.69	139.66	2633.41	140.44	2633.37
142.09	2633.06	147.37	2632.33	147.4	2632.32	148.98	2631.99	157.76	2631.86
159.76	2631.83	162.3	2632.36	165.01	2632.92	185.75	2633.77	189.24	2634.02
195.42	2634.81	199.74	2636	206.77	2637.94	209.56	2638.46	218.84	2639.54
222.15	2639.73	227.94	2639.68						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	142.09	.045	157.76	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
147.4	162.3	72	76.07	80	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2633.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.045	0.043	0.040
W.S. Elev (ft)	2632.72	Reach Len. (ft)	72.00	76.07	80.00
Crit W.S. (ft)	2632.72	Flow Area (sq ft)	0.56	11.19	0.31
E.G. Slope (ft/ft)	0.027595	Area (sq ft)	0.56	11.19	0.31
Q Total (cfs)	54.00	Flow (cfs)	1.03	52.37	0.60
Top Width (ft)	19.48	Top Width (ft)	2.84	14.90	1.74
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	1.84	4.68	1.94
Max Chl Dpth (ft)	0.89	Hydr. Depth (ft)	0.20	0.75	0.18
Conv. Total (cfs)	325.1	Conv. (cfs)	6.2	315.3	3.6
Length Wtd. (ft)	76.07	Wetted Per. (ft)	2.87	14.99	1.77
Min Ch El (ft)	2631.83	Shear (lb/sq ft)	0.34	1.29	0.30
Alpha	1.06	Stream Power (lb/ft s)	0.62	6.02	0.59
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	0.26	0.40	0.51
C & E Loss (ft)	0.04	Cum SA (acres)	0.30	0.22	0.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	117.92	147.40	1.03	0.56	2.87	1.90	0.20	1.84
2	Chan	147.40	150.38	7.77	1.93	3.01	14.40	0.65	4.04
3	Chan	150.38	153.36	10.53	2.30	2.98	19.49	0.77	4.58
4	Chan	153.36	156.34	11.55	2.43	2.98	21.38	0.82	4.75
5	Chan	156.34	159.32	13.45	2.56	2.98	24.91	0.86	5.25
6	Chan	159.32	162.30	9.07	1.97	3.03	16.80	0.66	4.60
7	ROB	162.30	175.43	0.60	0.31	1.77	1.12	0.18	1.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.2943

INPUT
Description: R.S. 0.2943
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2634.92	9.22	2634.77	17.27	2634.5	34.67	2633.84	36.89	2633.78
52.36	2632.73	68.94	2631.72	69.55	2631.72	72.36	2631.68	86.11	2631.48
91.8	2629.59	92.76	2629.27	93.97	2628.93	94.55	2629.1	96.3	2629.61
96.9	2629.79	98.69	2630.32	103.08	2631.27	145.45	2634.66	156.35	2635.48
156.8	2635.51	156.96	2635.44	163.3	2635.41				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	86.11	.04	92.76	.045	98.69	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
91.8	96.3	182.12	182.12	182.12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2631.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.040	0.044	0.045
W.S. Elev (ft)	2630.73	Reach Len. (ft)	182.12	182.12	182.12
Crit W.S. (ft)	2630.73	Flow Area (sq ft)	1.96	6.63	2.22
E.G. Slope (ft/ft)	0.019726	Area (sq ft)	1.96	6.63	2.22
Q Total (cfs)	54.00	Flow (cfs)	6.80	39.60	7.60
Top Width (ft)	12.23	Top Width (ft)	3.44	4.50	4.29
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)	3.47	5.97	3.42
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)	0.57	1.47	0.52
Conv. Total (cfs)	384.5	Conv. (cfs)	48.4	281.9	54.1
Length Wtd. (ft)	182.12	Wetted Per. (ft)	3.62	4.70	4.44
Min Ch El (ft)	2628.93	Shear (lb/sq ft)	0.67	1.74	0.62
Alpha	1.18	Stream Power (lb/ft s)	2.31	10.38	2.11
Frctn Loss (ft)	3.71	Cum Volume (acre-ft)	0.26	0.39	0.50
C & E Loss (ft)	0.01	Cum SA (acres)	0.29	0.20	0.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.44	91.80	6.80	1.96	3.62	12.59	0.57	3.47
2	Chan	91.80	92.70	6.90	1.16	0.95	12.78	1.29	5.94
3	Chan	92.70	93.60	8.65	1.41	0.94	16.01	1.57	6.11
4	Chan	93.60	94.50	10.11	1.56	0.94	18.73	1.73	6.48
5	Chan	94.50	95.40	8.07	1.36	0.94	14.94	1.51	5.92
6	Chan	95.40	96.30	5.88	1.13	0.94	10.88	1.25	5.21
7	ROB	96.30	109.70	7.60	2.22	4.44	14.08	0.52	3.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is

not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.2598

INPUT
Description: R.S. 0.2598
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2629.62	27.22	2630.15	36.9	2630.21	40.07	2630.03	47.64	2629.53
60.53	2628.35	64.37	2628.07	75.71	2628.45	81.42	2628.59	83.93	2628.11
86.34	2627.62	88.13	2627.65	97.89	2627.72	103.22	2627.62	109.33	2627.46
117.39	2627.19	119.85	2627.04	126.54	2625.72	127.54	2625.52	128.27	2625.28
128.81	2625.38	130.06	2625.77	130.1	2625.78	138.45	2628.15	142.46	2629.58
148.29	2630.38	153.41	2631.25	158.52	2632	165.37	2633.11	179.16	2634.3
191.24	2634.36								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	83.93	.04	126.54	.045	138.45	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
126.54	130.1	119	114.85	111	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2627.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.040	0.045	0.045
W.S. Elev (ft)	2626.96	Reach Len. (ft)	119.00	114.85	111.00
Crit W.S. (ft)	2626.96	Flow Area (sq ft)	3.91	5.14	2.46
E.G. Slope (ft/ft)	0.021051	Area (sq ft)	3.91	5.14	2.46
Q Total (cfs)	54.00	Flow (cfs)	15.14	30.77	8.09
Top Width (ft)	14.02	Top Width (ft)	6.29	3.56	4.16
Vel Total (ft/s)	4.69	Avg. Vel. (ft/s)	3.87	5.98	3.29
Max Chl Dpth (ft)	1.68	Hydr. Depth (ft)	0.62	1.45	0.59
Conv. Total (cfs)	372.2	Conv. (cfs)	104.3	212.1	55.8
Length Wtd. (ft)	115.12	Wetted Per. (ft)	6.42	3.69	4.33
Min Ch El (ft)	2625.28	Shear (lb/sq ft)	0.80	1.83	0.75
Alpha	1.19	Stream Power (lb/ft s)	3.10	10.96	2.46
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	0.25	0.36	0.49
C & E Loss (ft)	0.00	Cum SA (acres)	0.27	0.19	0.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	101.23	126.54	15.14	3.91	6.42	28.04	0.62	3.87
2	Chan	126.54	127.25	5.28	0.93	0.73	9.77	1.31	5.65
3	Chan	127.25	127.96	6.30	1.05	0.74	11.67	1.47	6.01
4	Chan	127.96	128.68	7.57	1.17	0.74	14.03	1.64	6.49
5	Chan	128.68	129.39	6.58	1.08	0.74	12.18	1.51	6.11
6	Chan	129.39	130.10	5.04	0.92	0.75	9.33	1.29	5.48
7	ROB	130.10	142.33	8.09	2.46	4.33	14.98	0.59	3.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and

assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.2381

INPUT
Description: R.S. 0.2381
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2627.47	4.91	2627.48	5.64	2627.26	30	2626.31	45.3	2625.71
46.18	2625.68	77.22	2625.13	77.82	2625.12	77.97	2625.12	82.84	2625.35
85.11	2625.47	85.22	2625.46	86.82	2625.42	102.85	2625.02	105.23	2624.66
110.5	2623.61	113.2	2623.07	113.21	2623.07	116.5	2623.63	117.6	2623.81
118.03	2623.88	123.29	2624.97	138.32	2626.37	138.91	2626.43	139.43	2626.51
153.74	2627.85	170.27	2630.26	178.89	2631.81	189.91	2634.11	192.64	2634.12

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	30	.04	105.23	.045	113.21	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
110.5	116.5	146.05	146.05	146.05	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2624.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.045	0.042	0.040
W.S. Elev (ft)	2624.54	Reach Len. (ft)	146.05	146.05	146.05
Crit W.S. (ft)	2624.54	Flow Area (sq ft)	2.18	7.19	2.27
E.G. Slope (ft/ft)	0.020586	Area (sq ft)	2.18	7.19	2.27
Q Total (cfs)	54.00	Flow (cfs)	6.14	40.56	7.30
Top Width (ft)	15.41	Top Width (ft)	4.68	6.00	4.73
Vel Total (ft/s)	4.64	Avg. Vel. (ft/s)	2.81	5.64	3.22
Max Chl Dpth (ft)	1.47	Hydr. Depth (ft)	0.47	1.20	0.48
Conv. Total (cfs)	376.4	Conv. (cfs)	42.8	282.7	50.9
Length Wtd. (ft)	146.05	Wetted Per. (ft)	4.77	6.10	4.82
Min Ch El (ft)	2623.07	Shear (lb/sq ft)	0.59	1.51	0.60
Alpha	1.22	Stream Power (lb/ft s)	1.65	8.54	1.95
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)	0.24	0.35	0.49
C & E Loss (ft)	0.00	Cum SA (acres)	0.26	0.18	0.49

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	88.40	110.50	6.14	2.18	4.77	11.37	0.47	2.81
2	Chan	110.50	111.70	6.06	1.26	1.22	11.22	1.05	4.80
3	Chan	111.70	112.90	8.53	1.55	1.22	15.80	1.29	5.50
4	Chan	112.90	114.10	10.79	1.69	1.22	19.97	1.41	6.38
5	Chan	114.10	115.30	8.74	1.46	1.22	16.19	1.22	5.97
6	Chan	115.30	116.50	6.44	1.22	1.22	11.92	1.01	5.29
7	ROB	116.50	131.73	7.30	2.27	4.82	13.52	0.48	3.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.2104

INPUT
Description: R.S. 0.2104
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2627.57	12.16	2627.29	13.73	2627.24	16.43	2626.84	22.28	2626.19
45.83	2622.65	59.41	2621.77	64.42	2621.54	69.3	2620.25	69.46	2620.21
72.12	2619.5	72.23	2619.47	73.91	2619.81	76	2620.27	82.97	2621.81
92.53	2622.73	104.99	2623.33	109.79	2623.23	120.14	2622.69	141.91	2621.26
147.31	2620.95	155.19	2621.05	163.72	2621.14	177.94	2621.88	186.7	2622.24
193.98	2624.6	197.79	2625.84	205.47	2626.05				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	64.42	.045	73.91	.04	197.79	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
69.3	76	89	83.14	78	.1	.3

Right Levee Station= 104.99 Elevation= 2623.33

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2621.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.045	0.043	0.040
W.S. Elev (ft)	2621.10	Reach Len. (ft)	89.00	83.14	78.00
Crit W.S. (ft)	2621.10	Flow Area (sq ft)	1.37	8.31	1.56
E.G. Slope (ft/ft)	0.020336	Area (sq ft)	1.37	8.31	1.56
Q Total (cfs)	54.00	Flow (cfs)	3.57	45.88	4.54
Top Width (ft)	13.68	Top Width (ft)	3.22	6.70	3.76
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)	2.61	5.52	2.90
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.43	1.24	0.42
Conv. Total (cfs)	378.7	Conv. (cfs)	25.1	321.7	31.9
Length Wtd. (ft)	82.96	Wetted Per. (ft)	3.33	6.89	3.85
Min Ch El (ft)	2619.47	Shear (lb/sq ft)	0.52	1.53	0.52
Alpha	1.17	Stream Power (lb/ft s)	1.36	8.46	1.50
Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	0.23	0.32	0.48
C & E Loss (ft)	0.00	Cum SA (acres)	0.24	0.15	0.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	55.44	69.30	3.57	1.37	3.33	6.62	0.43	2.61
2	Chan	69.30	70.64	6.38	1.38	1.39	11.82	1.03	4.63
3	Chan	70.64	71.98	10.50	1.86	1.39	19.44	1.39	5.65

4	Chan	71.98	73.32	12.55	2.06	1.37	23.25	1.54	6.10
5	Chan	73.32	74.66	9.78	1.70	1.37	18.11	1.27	5.74
6	Chan	74.66	76.00	6.67	1.31	1.37	12.35	0.98	5.08
7	ROB	76.00	104.99	4.54	1.56	3.85	8.42	0.42	2.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.1947

INPUT
Description: R.S. 0.1947
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2624.8	2.76	2625.26	14.14	2625	23.61	2624.95	28.64	2624.54
40.85	2623.76	48.95	2622.61	69.57	2619.19	69.68	2619.12	72.51	2618.11
73	2617.92	73.9	2617.57	73.99	2617.54	74.56	2617.35	75.24	2617.51
76.5	2617.87	77.3	2618.1	84.3	2620.11	90.87	2619.98	96.58	2620.23
125.77	2619.7	134.03	2619.27	147.04	2619.39	161.14	2619.55	163.45	2620.11
177.97	2623.64	179.88	2623.69	181.96	2623.86	184.66	2624.06		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	69.57	.045	75.24	.04	177.97	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
73	76.5	120	130.01	145	.1	.3

Right Levee Station= 96.58 Elevation= 2620.23

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2619.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.045	0.043	0.040
W.S. Elev (ft)	2619.21	Reach Len. (ft)	120.00	130.01	145.00
Crit W.S. (ft)	2619.21	Flow Area (sq ft)	2.27	5.59	3.12
E.G. Slope (ft/ft)	0.018646	Area (sq ft)	2.27	5.59	3.12
Q Total (cfs)	54.00	Flow (cfs)	7.45	34.76	11.79
Top Width (ft)	11.70	Top Width (ft)	3.54	3.50	4.66
Vel Total (ft/s)	4.92	Avg. Vel. (ft/s)	3.28	6.21	3.78
Max Chl Dpth (ft)	1.86	Hydr. Depth (ft)	0.64	1.60	0.67
Conv. Total (cfs)	395.5	Conv. (cfs)	54.5	254.6	86.3
Length Wtd. (ft)	132.16	Wetted Per. (ft)	3.78	3.67	4.85
Min Ch El (ft)	2617.35	Shear (lb/sq ft)	0.70	1.77	0.75
Alpha	1.22	Stream Power (lb/ft s)	2.30	11.03	2.83
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	0.23	0.31	0.48
C & E Loss (ft)	0.04	Cum SA (acres)	0.24	0.14	0.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	58.40	73.00	7.45	2.27	3.78	13.79	0.64	3.28
2	Chan	73.00	73.70	5.40	1.00	0.75	10.00	1.42	5.41
3	Chan	73.70	74.40	7.22	1.18	0.74	13.36	1.69	6.11
4	Chan	74.40	75.10	8.20	1.26	0.72	15.18	1.80	6.49
5	Chan	75.10	75.80	7.65	1.15	0.73	14.17	1.64	6.67
6	Chan	75.80	76.50	6.30	1.01	0.73	11.67	1.44	6.26
7	ROB	76.50	96.58	11.79	3.12	4.85	21.83	0.67	3.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.1700

INPUT
Description: R.S. 0.1700
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2622.35	6.48	2622.03	14.81	2621.51	22.67	2620.95	29.62	2620.54
35.7	2620	43.91	2619.77	47.46	2619.66	50.44	2619.45	60.53	2618.58
65.36	2618.51	78.86	2617.75	88.49	2617.04	95.95	2616.57	99.3	2615.61
99.73	2615.49	101.65	2615.18	105.13	2615.49	105.94	2615.56	106.8	2615.64
118.78	2616.7	124.77	2616.65	148.67	2616.9	158.22	2618.26	159.96	2618.25

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	95.95	.045	105.13	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
99.3	106.8	77.25	77.25	77.25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2616.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.045	0.044	0.040
W.S. Elev (ft)	2616.44	Reach Len. (ft)	77.25	77.25	77.25
Crit W.S. (ft)	2616.44	Flow Area (sq ft)	1.20	7.82	3.62
E.G. Slope (ft/ft)	0.021887	Area (sq ft)	1.20	7.82	3.62
Q Total (cfs)	54.00	Flow (cfs)	3.19	40.02	10.79
Top Width (ft)	19.45	Top Width (ft)	2.90	7.50	9.05
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	2.65	5.12	2.98
Max Chl Dpth (ft)	1.26	Hydr. Depth (ft)	0.42	1.04	0.40
Conv. Total (cfs)	365.0	Conv. (cfs)	21.5	270.5	72.9
Length Wtd. (ft)	77.25	Wetted Per. (ft)	3.02	7.56	9.09
Min Ch El (ft)	2615.18	Shear (lb/sq ft)	0.55	1.41	0.54
Alpha	1.18	Stream Power (lb/ft s)	1.44	7.23	1.62
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	0.23	0.29	0.47
C & E Loss (ft)	0.01	Cum SA (acres)	0.23	0.13	0.44

Warning: The energy equation could not be balanced within the specified number of iterations. The

program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	79.44	99.30	3.19	1.20	3.02	5.90	0.42	2.65
2	Chan	99.30	100.80	7.15	1.49	1.53	13.24	1.00	4.79
3	Chan	100.80	102.30	9.97	1.81	1.51	18.45	1.21	5.49
4	Chan	102.30	103.80	9.01	1.70	1.51	16.68	1.14	5.29
5	Chan	103.80	105.30	7.41	1.50	1.51	13.72	1.00	4.93
6	Chan	105.30	106.80	6.49	1.30	1.51	12.02	0.87	4.98
7	ROB	106.80	117.43	10.79	3.62	9.09	19.98	0.40	2.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.1554

INPUT
Description: R.S. 0.1554
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2620.46	7.23	2619.74	15.96	2619.27	27.35	2619.31	28.71	2619.29
33.87	2619.28	47.33	2618.48	53.15	2617.9	60.52	2616.5	73.51	2614.36
77.2	2613.5	77.48	2613.43	80.48	2612.86	80.75	2612.81	84.1	2613.44
84.27	2613.47	90.08	2614.87	97.53	2614.64	107.82	2614.76	114.15	2614.75
120.24	2614.88	129.25	2612.67	129.66	2612.54	130.3	2612.65	148.55	2615.71
155.55	2615.94	174.07	2616.62						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	15.96	.04	77.48	.045	84.27	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
77.2	84.1	120	116.59	112	.1	.3

Right Levee Station= 120.24 Elevation= 2614.88

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2614.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.040	0.045	0.041
W.S. Elev (ft)	2614.32	Reach Len. (ft)	120.00	116.59	112.00
Crit W.S. (ft)	2614.32	Flow Area (sq ft)	1.44	8.16	1.64
E.G. Slope (ft/ft)	0.022109	Area (sq ft)	1.44	8.16	1.64
Q Total (cfs)	54.00	Flow (cfs)	4.30	44.47	5.22
Top Width (ft)	14.11	Top Width (ft)	3.51	6.90	3.69
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)	2.99	5.45	3.18
Max Chl Dpth (ft)	1.78	Hydr. Depth (ft)	0.41	1.18	0.44
Conv. Total (cfs)	363.2	Conv. (cfs)	28.9	299.1	35.1
Length Wtd. (ft)	114.51	Wetted Per. (ft)	3.61	7.03	3.80
Min Ch El (ft)	2612.81	Shear (lb/sq ft)	0.55	1.60	0.60
Alpha	1.13	Stream Power (lb/ft s)	1.65	8.74	1.90
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	0.22	0.27	0.46

C & E Loss (ft) 0.12 Cum SA (acres) 0.22 0.12 0.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	61.76	77.20	4.30	1.44	3.61	7.97	0.41	2.99
2	Chan	77.20	78.58	6.37	1.33	1.41	11.80	0.97	4.78
3	Chan	78.58	79.96	9.34	1.70	1.40	17.29	1.23	5.51
4	Chan	79.96	81.34	12.20	1.99	1.40	22.59	1.44	6.13
5	Chan	81.34	82.72	9.84	1.75	1.40	18.23	1.27	5.62
6	Chan	82.72	84.10	6.72	1.39	1.40	12.44	1.01	4.83
7	ROB	84.10	102.17	5.22	1.64	3.80	9.67	0.44	3.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.1333

INPUT
Description: R.S. 0.1333
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2620.82	23.66	2618.42	34.15	2617.24	36.95	2616.97	54.5	2614.49
59.06	2614.27	63.32	2613.94	65.47	2614.15	80.24	2613.68	84.39	2613.49
89.34	2613.21	96.38	2612.72	100.1	2611.2	100.18	2611.17	101.05	2610.84
102.42	2610.92	105	2611.26	105.4	2611.31	105.8	2611.36	107.67	2611.61
107.68	2611.61	108.7	2611.74	115.65	2612.08	116.78	2612.1	148.68	2611.88
149.09	2611.87	150.09	2611.72	163.59	2609.49	168.55	2610.06	193.71	2613.97
197.35	2614.17	210.58	2614.13	224.26	2613.97	236.42	2615.12		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	36.95	.04	96.38	.045	102.42	.04	193.71	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
100.1	105	89.76	89.76	89.76	.3	.5

Right Levee Station= 116.78 Elevation= 2612.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 2612.11 Element Left OB Channel Right OB

Vel Head (ft)	0.01	Wt. n-Val.	0.045	0.042	0.040
W.S. Elev (ft)	2612.10	Reach Len. (ft)	89.76	89.76	89.76
Crit W.S. (ft)	2612.10	Flow Area (sq ft)	0.99	5.30	52.59
E.G. Slope (ft/ft)	0.000979	Area (sq ft)	0.99	5.30	52.59
Q Total (cfs)	54.00	Flow (cfs)	0.57	6.06	47.37
Top Width (ft)	83.78	Top Width (ft)	2.20	4.90	76.68
Vel Total (ft/s)	0.92	Avg. Vel. (ft/s)	0.58	1.14	0.90
Max Chl Dpth (ft)	2.61	Hydr. Depth (ft)	0.45	1.08	0.69
Conv. Total (cfs)	1725.5	Conv. (cfs)	18.3	193.6	1513.7
Length Wtd. (ft)	89.76	Wetted Per. (ft)	2.38	4.99	77.10
Min Ch El (ft)	2610.84	Shear (lb/sq ft)	0.03	0.06	0.04
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.07	0.04
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	0.22	0.26	0.39
C & E Loss (ft)	0.00	Cum SA (acres)	0.22	0.10	0.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	80.08	100.10	0.57	0.99	2.38	1.06	0.45	0.58
2	Chan	100.10	101.08	1.11	1.06	1.05	2.05	1.09	1.04
3	Chan	101.08	102.06	1.42	1.21	0.98	2.63	1.23	1.18
4	Chan	102.06	103.04	1.38	1.14	0.99	2.56	1.16	1.22
5	Chan	103.04	104.02	1.19	1.01	0.99	2.21	1.03	1.18
6	Chan	104.02	105.00	0.95	0.89	0.99	1.77	0.90	1.08
7	ROB	105.00	116.78	1.41	3.56	11.82	2.61	0.30	0.40
8	ROB	116.78	140.71	0.33	1.98	23.93	0.62	0.08	0.17
9	ROB	140.71	164.64	22.30	24.79	24.13	41.29	1.04	0.90
10	ROB	164.64	188.56	23.33	22.26	17.23	43.20	1.31	1.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.1163

INPUT
Description: R.S. 0.1163 Immediately Upstream of Milky Way
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2616.48	19.65	2616.25	31.8	2615.48	46.87	2614.85	51.77	2614.4
66.46	2613.3	70.36	2612.93	74.91	2612.52	93.25	2612.45	111.02	2612.01
119.94	2611.56	132.41	2611.34	150.95	2610.94	161.51	2610.9	173.52	2610.63
179.97	2610.59	179.98	2610.59	185.79	2610.55	197.3	2609.93	202.09	2609.67
206.44	2609.59	210.04	2609.51	219	2609.89	228.05	2610.28	231.34	2610.44
233.35	2610.63	236.2	2610.89	242.73	2611.31	247.55	2611.49	252.55	2612.17
272.48	2614.39	286.91	2615.19						

Manning's n Values num= 2

Sta	n Val	Sta	n Val
0	.025	51.77	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

197.3 219 85.01 85.01 85.01 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	192.7	2611.34	F
210.7	286.91	2611.34	F

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2611.65	Element			
Vel Head (ft)	0.00	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2611.65	Reach Len. (ft)	85.01	85.01	85.01
Crit W.S. (ft)	2610.44	Flow Area (sq ft)	59.43	42.64	28.02
E.G. Slope (ft/ft)	0.000104	Area (sq ft)	59.43	42.64	28.02
Q Total (cfs)	54.00	Flow (cfs)	18.56	25.27	10.17
Top Width (ft)	130.51	Top Width (ft)	79.10	21.70	29.71
Vel Total (ft/s)	0.42	Avg. Vel. (ft/s)	0.31	0.59	0.36
Max Chl Dpth (ft)	2.14	Hydr. Depth (ft)	0.75	1.96	0.94
Conv. Total (cfs)	5306.8	Conv. (cfs)	1824.0	2483.4	999.4
Length Wtd. (ft)	85.01	Wetted Per. (ft)	79.13	21.72	29.77
Min Ch El (ft)	2609.51	Shear (lb/sq ft)	0.00	0.01	0.01
Alpha	1.29	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	0.16	0.21	0.31
C & E Loss (ft)		Cum SA (acres)	0.13	0.07	0.22

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	115.62	154.16	2.59	14.25	35.97	4.80	0.40	0.18
2	LOB	154.16	192.70	12.60	37.84	38.55	23.33	0.98	0.33
3	LOB	192.70	197.30	3.37	7.33	4.61	6.24	1.59	0.46
4	Chan	197.30	201.77	4.65	8.22	4.47	8.61	1.84	0.57
5	Chan	201.77	206.23	5.41	8.99	4.47	10.01	2.01	0.60
6	Chan	206.23	210.70	5.80	9.38	4.47	10.75	2.10	0.62
7	Chan	210.70	214.85	5.06	8.39	4.15	9.37	2.02	0.60
8	Chan	214.85	219.00	4.35	7.66	4.15	8.05	1.85	0.57
9	ROB	219.00	232.58	8.35	19.81	13.60	15.47	1.46	0.42
10	ROB	232.58	246.16	1.79	7.86	13.61	3.31	0.58	0.23
11	ROB	246.16	259.75	0.03	0.35	2.56	0.06	0.14	0.09

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Windmill Wash
REACH: South Branch RS: 0.1083

INPUT
Description: Culvert No. 164 at Milky Way
Distance from Upstream XS = 20.5
Deck/Roadway Width = 50.7
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2614.66	2602	70.16	2613.22	2602	154.17	2611.99	2602
259.96	2611.34	2602	277.28	2611.39	2602	310.11	2611.81	2602

Upstream Bridge Cross Section Data
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2616.48	19.65	2616.25	31.8	2615.48	46.87	2614.85	51.77	2614.4
66.46	2613.3	70.36	2612.93	74.91	2612.52	93.25	2612.45	111.02	2612.01
119.94	2611.56	132.41	2611.34	150.95	2610.94	161.51	2610.9	173.52	2610.63

```
  179.97 2610.59  179.98 2610.59  185.79 2610.55   197.3 2609.93  202.09 2609.67
  206.44 2609.59  210.04 2609.51     219 2609.89  228.05 2610.28  231.34 2610.44
  233.35 2610.63   236.2 2610.89  242.73 2611.31  247.55 2611.49  252.55 2612.17
  272.48 2614.39  286.91 2615.19

Manning's n Values        num=       2
     Sta   n Val     Sta   n Val
       0    .025   51.77     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
         197.3     219             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0   192.7 2611.34       F
   210.7  286.91 2611.34       F

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 2613.58    2602   100.8 2611.56    2602  110.12 2611.48    2602
  180.44 2611.12    2602   262.1 2611.05    2602  291.87 2611.42    2602

Downstream Bridge Cross Section Data
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2614.35    9.44  2613.1   17.07 2612.08   29.93 2610.99   30.42 2610.96
   40.45 2610.27   55.19 2609.36   55.81 2609.33   61.21 2608.95   77.47 2608.29
   80.34 2608.16   97.89 2607.78  106.84 2607.55  118.03 2607.67  128.47  2607.6
  141.37 2607.53     146 2607.62  163.35 2607.86  167.31 2607.91  171.84 2607.87
  177.21 2604.68   177.3 2604.64  178.58 2604.02  178.84  2603.9   180.3  2604.7
  180.86    2605  186.46 2607.68  191.38 2607.67  202.98 2607.38  210.84 2607.48
  229.28 2607.45  231.74  2607.5   237.8 2608.11  246.77 2609.12  263.59 2610.95
  270.44 2611.45  279.11 2611.83  283.58 2611.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  171.84    .045  180.86     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
         177.3   180.3             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     168    2607       F
     189  283.58    2607       F

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =      .5 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =    2610
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       3
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                7.6    66.6     .024     .024        0                  .9                 1
Upstream   Elevation =  2607.28
           Centerline Station =  201.6
Downstream Elevation =  2606.4
           Centerline Station =  176.8

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)          49.52    Culv Full Len (ft)
  # Barrels                       1    Culv Vel US (ft/s)          7.09
```

Q Barrel (cfs)	49.52	Culv Vel DS (ft/s)	8.55
E.G. US. (ft)	2611.65	Culv Inv El Up (ft)	2607.28
W.S. US. (ft)	2611.65	Culv Inv El Dn (ft)	2606.40
E.G. DS (ft)	2607.94	Culv Frctn Ls (ft)	1.12
W.S. DS (ft)	2607.13	Culv Exit Loss (ft)	1.89
Delta EG (ft)	3.71	Culv Entr Loss (ft)	0.70
Delta WS (ft)	4.52	Q Weir (cfs)	4.48
E.G. IC (ft)	2611.65	Weir Sta Lft (ft)	207.65
E.G. OC (ft)	2611.65	Weir Sta Rgt (ft)	248.81
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2610.17	Weir Max Depth (ft)	0.23
Culv WS Outlet (ft)	2608.69	Weir Avg Depth (ft)	0.12
Culv Nml Depth (ft)	3.00	Weir Flow Area (sq ft)	4.93
Culv Crt Depth (ft)	2.29	Min El Weir Flow (ft)	2611.44

Note: The normal depth exceeds the height of the culvert. The program assumes that the normal depth is equal to the height of the culvert.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.1002

INPUT
Description: R.S. 0.1002 Immediately Downstream of Milky Way
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2614.35	9.44	2613.1	17.07	2612.08	29.93	2610.99	30.42	2610.96
40.45	2610.27	55.19	2609.36	55.81	2609.33	61.21	2608.95	77.47	2608.29
80.34	2608.16	97.89	2607.78	106.84	2607.55	118.03	2607.67	128.47	2607.6
141.37	2607.53	146	2607.62	163.35	2607.86	167.31	2607.91	171.84	2607.87
177.21	2604.68	177.3	2604.64	178.58	2604.02	178.84	2603.9	180.3	2604.7
180.86	2605	186.46	2607.68	191.38	2607.67	202.98	2607.38	210.84	2607.48
229.28	2607.45	231.74	2607.5	237.8	2608.11	246.77	2609.12	263.59	2610.95
270.44	2611.45	279.11	2611.83	283.58	2611.87				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	171.84	.045	180.86	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
177.3	180.3	135	132.27	132	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	168	2607	F
189	283.58	2607	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2607.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.045	0.045	0.041
W.S. Elev (ft)	2607.13	Reach Len. (ft)	135.00	132.27	132.00
Crit W.S. (ft)	2607.13	Flow Area (sq ft)	5.28	8.55	6.03
E.G. Slope (ft/ft)	0.019134	Area (sq ft)	5.28	8.55	6.03
Q Total (cfs)	131.00	Flow (cfs)	25.38	72.55	33.08
Top Width (ft)	12.23	Top Width (ft)	4.22	3.00	5.02
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	4.80	8.49	5.49
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)	1.25	2.85	1.20
Conv. Total (cfs)	947.0	Conv. (cfs)	183.5	524.5	239.1
Length Wtd. (ft)	132.72	Wetted Per. (ft)	4.90	3.37	5.57
Min Ch El (ft)	2603.90	Shear (lb/sq ft)	1.29	3.03	1.29
Alpha	1.19	Stream Power (lb/ft s)	6.19	25.69	7.09
Frctn Loss (ft)	2.27	Cum Volume (acre-ft)	0.09	0.16	0.28
C & E Loss (ft)	0.20	Cum SA (acres)	0.05	0.05	0.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	168.00	177.30	25.38	5.28	4.90	19.37	1.25	4.80
2	Chan	177.30	177.90	12.82	1.58	0.67	9.79	2.64	8.10
3	Chan	177.90	178.50	15.26	1.76	0.67	11.65	2.93	8.69
4	Chan	178.50	179.10	17.21	1.89	0.67	13.14	3.16	9.09
5	Chan	179.10	179.70	14.98	1.76	0.68	11.43	2.93	8.53
6	Chan	179.70	180.30	12.28	1.56	0.68	9.37	2.60	7.88
7	ROB	180.30	189.00	33.08	6.03	5.57	25.25	1.20	5.49

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.0751

INPUT
Description: R.S. 0.0751
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2612.53	11.97	2612.19	17	2611.55	25.27	2610.52	33.04	2610.23
46.67	2609.26	59.49	2606.14	74.38	2603.95	75.69	2603.7	78.24	2603.53
80.77	2603.08	82.83	2602.73	86.09	2602.16	87.88	2602.55	89	2602.73
94.81	2603.64	102.31	2603.63	116.07	2604.86	128.68	2605.64	129.42	2605.67
134.05	2606.03	148.14	2606.89	155.38	2607.4	157.19	2607.44	160.13	2607.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	86.09	.045	94.81	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
82.83	89	95	89.4	85	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2604.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.040	0.042	0.043
W.S. Elev (ft)	2604.19	Reach Len. (ft)	95.00	89.40	85.00
Crit W.S. (ft)	2604.19	Flow Area (sq ft)	7.00	10.69	11.70
E.G. Slope (ft/ft)	0.015436	Area (sq ft)	7.00	10.69	11.70
Q Total (cfs)	131.00	Flow (cfs)	25.15	66.74	39.11
Top Width (ft)	35.77	Top Width (ft)	10.06	6.17	19.54
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)	3.59	6.24	3.34
Max Chl Dpth (ft)	2.03	Hydr. Depth (ft)	0.70	1.73	0.60
Conv. Total (cfs)	1054.4	Conv. (cfs)	202.4	537.2	314.8
Length Wtd. (ft)	88.53	Wetted Per. (ft)	10.18	6.28	19.64
Min Ch El (ft)	2602.16	Shear (lb/sq ft)	0.66	1.64	0.57
Alpha	1.29	Stream Power (lb/ft s)	2.38	10.25	1.92
Frctn Loss (ft)	1.31	Cum Volume (acre-ft)	0.08	0.13	0.25
C & E Loss (ft)	0.03	Cum SA (acres)	0.03	0.03	0.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	66.26	82.83	25.15	7.00	10.18	19.20	0.70	3.59
2	Chan	82.83	84.06	11.84	1.93	1.25	9.04	1.56	6.13
3	Chan	84.06	85.30	14.69	2.20	1.25	11.21	1.78	6.68
4	Chan	85.30	86.53	16.59	2.43	1.26	12.66	1.97	6.84
5	Chan	86.53	87.77	13.18	2.22	1.26	10.06	1.80	5.94
6	Chan	87.77	89.00	10.44	1.92	1.25	7.97	1.56	5.44
7	ROB	89.00	103.23	36.94	10.44	14.30	28.20	0.73	3.54
8	ROB	103.23	117.45	2.17	1.26	5.34	1.66	0.24	1.72

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.0582

PUT
scription: R.S. 0.0582
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2611.54	2.79	2611.37	17.58	2611.01	31.35	2610.48	37.44	2610.13
48.7	2609.42	62.35	2607.9	81.46	2604.97	86.31	2604.18	87.58	2604.09
88.56	2603.94	91.7	2602.54	94.5	2601.68	98.01	2600.6	103	2601.52
103.57	2601.62	109.42	2602.16	113.75	2602.13	122.03	2602.17	131.7	2602.34
148.61	2603.89	166.33	2604.56	172.38	2604.62				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	98.01	.045	103.57	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
94.5	103	93	98.57	104	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2603.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.040	0.043	0.040
W.S. Elev (ft)	2602.70	Reach Len. (ft)	93.00	98.57	104.00
Crit W.S. (ft)	2602.70	Flow Area (sq ft)	1.68	13.66	17.34
E.G. Slope (ft/ft)	0.014190	Area (sq ft)	1.68	13.66	17.34
Q Total (cfs)	131.00	Flow (cfs)	4.72	75.77	50.51
Top Width (ft)	44.28	Top Width (ft)	3.16	8.50	32.62
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)	2.81	5.55	2.91
Max Chl Dpth (ft)	2.10	Hydr. Depth (ft)	0.53	1.61	0.53
Conv. Total (cfs)	1099.7	Conv. (cfs)	39.6	636.1	424.0
Length Wtd. (ft)	100.25	Wetted Per. (ft)	3.32	8.75	32.68
Min Ch El (ft)	2600.60	Shear (lb/sq ft)	0.45	1.38	0.47
Alpha	1.33	Stream Power (lb/ft s)	1.26	7.67	1.37
Frctn Loss (ft)	1.18	Cum Volume (acre-ft)	0.07	0.10	0.22
C & E Loss (ft)	0.02	Cum SA (acres)	0.01	0.02	0.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	75.60	94.50	4.72	1.68	3.32	3.60	0.53	2.81
2	Chan	94.50	96.20	10.86	2.18	1.78	8.29	1.28	4.99
3	Chan	96.20	97.90	19.21	3.07	1.78	14.66	1.80	6.26
4	Chan	97.90	99.60	20.15	3.33	1.73	15.39	1.96	6.04
5	Chan	99.60	101.30	14.99	2.80	1.73	11.44	1.65	5.35
6	Chan	101.30	103.00	10.55	2.27	1.73	8.06	1.34	4.65
7	ROB	103.00	116.88	31.29	9.54	13.91	23.89	0.69	3.28
8	ROB	116.88	130.75	17.62	6.75	13.88	13.45	0.49	2.61
9	ROB	130.75	144.63	1.60	1.05	4.89	1.22	0.22	1.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: South Branch RS: 0.0395

INPUT
Description: R.S. 0.0395 Immediately Upstream of Junction
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2612.98	.87	2613.04	2.72	2612.96	7.11	2612.65	17.67	2611.61
36.3	2609.76	40.93	2608.91	45.22	2607.95	64.36	2603.53	69.62	2602.71
86.09	2601.38	87.06	2601.13	88.52	2601.03	90.83	2600.95	94.24	2600.43
95.7	2600.2	95.9	2600.17	99.31	2599.57	101.32	2599.84	102	2599.92
104	2600.15	106.1	2600.4	111.37	2601.01	130.12	2600.91	146.03	2600.95
150.4	2600.96								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	94.24	.035	101.32	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
95.7	104	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2601.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.038	0.036	0.040
W.S. Elev (ft)	2601.37	Reach Len. (ft)	304.90	304.90	304.90
Crit W.S. (ft)	2601.37	Flow Area (sq ft)	5.29	12.40	22.38
E.G. Slope (ft/ft)	0.009888	Area (sq ft)	5.29	12.40	22.38
Q Total (cfs)	131.00	Flow (cfs)	14.91	65.58	50.51
Top Width (ft)	64.28	Top Width (ft)	9.58	8.30	46.40
Vel Total (ft/s)	3.27	Avg. Vel. (ft/s)	2.82	5.29	2.26
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)	0.55	1.49	0.48
Conv. Total (cfs)	1317.4	Conv. (cfs)	149.9	659.5	508.0

Length Wtd. (ft)	304.90	Wetted Per. (ft)	9.67	8.39	46.86
Min Ch El (ft)	2599.57	Shear (lb/sq ft)	0.34	0.91	0.29
Alpha	1.58	Stream Power (lb/ft s)	0.95	4.82	0.67
Frctn Loss (ft)	2.59	Cum Volume (acre-ft)	0.06	0.07	0.17
C & E Loss (ft)	0.01	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	76.56	95.70	14.91	5.29	9.67	11.38	0.55	2.82
2	Chan	95.70	97.36	10.87	2.18	1.68	8.29	1.31	4.99
3	Chan	97.36	99.02	15.18	2.66	1.69	11.59	1.60	5.70
4	Chan	99.02	100.68	17.12	2.86	1.68	13.07	1.72	5.99
5	Chan	100.68	102.34	12.80	2.51	1.67	9.77	1.51	5.10
6	Chan	102.34	104.00	9.61	2.19	1.67	7.34	1.32	4.40
7	ROB	104.00	113.28	18.40	6.52	9.33	14.05	0.70	2.82
8	ROB	113.28	122.56	7.13	3.68	9.28	5.44	0.40	1.94
9	ROB	122.56	131.84	8.63	4.13	9.28	6.59	0.44	2.09
10	ROB	131.84	141.12	8.66	4.14	9.28	6.61	0.45	2.09
11	ROB	141.12	150.40	7.70	3.92	9.69	5.88	0.42	1.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.6576

INPUT
Description: R.S. 1.6576 Boundary Conditions Only
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2656.64	6.51	2655.56	18.35	2653.32	33.52	2650.83	43.93	2648.23
50.44	2647.38	53.52	2646.86	63.42	2646.23	68.2	2645.09	68.94	2644.91
69.28	2644.79	70.9	2644.22	73.32	2644.85	73.8	2645.08	78.16	2647.19
79.41	2647.68	85.95	2647.79	88.48	2648.01	93.45	2648.48	96.36	2648.71
100.24	2648.77	105.97	2648.73	108.62	2648.44	112.63	2649.48	122.39	2651.1
131.49	2650.99	137.33	2650.92						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	68.94	.035	78.16	.04	108.62	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
68.2	73.8	275	267.67	261	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2646.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.040	0.036	0.035
W.S. Elev (ft)	2646.16	Reach Len. (ft)	275.00	267.67	261.00

Crit W.S. (ft)	2646.16	Flow Area (sq ft)	2.40	8.49	1.20
E.G. Slope (ft/ft)	0.013985	Area (sq ft)	2.40	8.49	1.20
Q Total (cfs)	64.00	Flow (cfs)	6.81	53.45	3.73
Top Width (ft)	12.31	Top Width (ft)	4.48	5.60	2.23
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	2.84	6.30	3.10
Max Chl Dpth (ft)	1.94	Hydr. Depth (ft)	0.53	1.52	0.54
Conv. Total (cfs)	541.2	Conv. (cfs)	57.6	452.0	31.6
Length Wtd. (ft)	266.64	Wetted Per. (ft)	4.61	5.87	2.48
Min Ch El (ft)	2644.22	Shear (lb/sq ft)	0.45	1.26	0.42
Alpha	1.23	Stream Power (lb/ft s)	1.29	7.95	1.32
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)	0.46	0.66	1.03
C & E Loss (ft)	0.11	Cum SA (acres)	0.40	0.38	1.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	54.56	68.20	6.81	2.40	4.61	10.64	0.53	2.84
2	Chan	68.20	69.32	6.83	1.36	1.16	10.67	1.21	5.03
3	Chan	69.32	70.44	11.35	1.77	1.19	17.73	1.58	6.41
4	Chan	70.44	71.56	14.98	2.08	1.17	23.40	1.86	7.21
5	Chan	71.56	72.68	12.05	1.82	1.16	18.83	1.62	6.63
6	Chan	72.68	73.80	8.25	1.46	1.19	12.88	1.31	5.63
7	ROB	73.80	86.51	3.73	1.20	2.48	5.84	0.54	3.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.6069

INPUT
Description: R.S. 1.6069 Boundary Conditions Only
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2652.16	1.02	2652.22	10.52	2651.86	18.19	2650.38	25.92	2649.27
46.22	2645.47	47.14	2645.28	47.44	2645.23	47.86	2645.16	49.25	2644.73
60.18	2642.77	67.11	2640.34	79.64	2642.67	86.51	2643.62	90.35	2643.65
103.18	2643.86	107.45	2641.98	110.8	2640.83	112.74	2640.17	113.12	2640.23
114.9	2640.52	117.56	2640.91	117.6	2640.92	119.87	2641.26	137.63	2641.51
144.84	2641.6	156.42	2641.18	180.6	2642.29	184.36	2642.41	190.68	2643.49
197.7	2645.23	207.24	2647.32	210.35	2647.72	214.36	2647.74	225.57	2647.63

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	107.45	.035	114.9	.04	180.6	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
110.8	117.6	273	276.68	282	.1	.3

Left Levee Station= 103.18 Elevation= 2643.86

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2641.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.035	0.036	0.040
W.S. Elev (ft)	2641.73	Reach Len. (ft)	273.00	276.68	282.00
Crit W.S. (ft)	2641.73	Flow Area (sq ft)	1.19	8.14	16.27
E.G. Slope (ft/ft)	0.008794	Area (sq ft)	1.19	8.14	16.27
Q Total (cfs)	64.00	Flow (cfs)	2.69	34.82	26.49
Top Width (ft)	60.32	Top Width (ft)	2.63	6.80	50.89
Vel Total (ft/s)	2.50	Avg. Vel. (ft/s)	2.26	4.28	1.63
Max Chl Dpth (ft)	1.56	Hydr. Depth (ft)	0.45	1.20	0.32
Conv. Total (cfs)	682.5	Conv. (cfs)	28.7	371.3	282.5
Length Wtd. (ft)	277.93	Wetted Per. (ft)	2.78	6.97	50.93
Min Ch El (ft)	2640.17	Shear (lb/sq ft)	0.23	0.64	0.18
Alpha	1.80	Stream Power (lb/ft s)	0.53	2.74	0.29
Frctn Loss (ft)	3.04	Cum Volume (acre-ft)	0.44	0.61	0.98
C & E Loss (ft)	0.01	Cum SA (acres)	0.38	0.35	0.86

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	103.18	110.80	2.69	1.19	2.78	4.20	0.45	2.26
2	Chan	110.80	112.16	6.40	1.54	1.44	10.00	1.14	4.15
3	Chan	112.16	113.52	10.19	2.02	1.40	15.93	1.49	5.04
4	Chan	113.52	114.88	8.55	1.81	1.38	13.36	1.33	4.73
5	Chan	114.88	116.24	5.63	1.52	1.37	8.80	1.12	3.71
6	Chan	116.24	117.60	4.05	1.25	1.38	6.32	0.92	3.24
7	ROB	117.60	139.19	14.01	7.99	21.62	21.89	0.37	1.75
8	ROB	139.19	160.79	11.02	6.92	21.61	17.22	0.32	1.59
9	ROB	160.79	182.38	1.46	1.36	7.71	2.28	0.18	1.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.5545

INPUT
Description: R.S. 1.5545 Boundary Conditions Only
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2648.75	8.26	2648.32	17.96	2647.15	33.48	2647.43	34.79	2647.34
42.49	2646.32	53.29	2644.8	71.37	2639.18	72.32	2638.92	73.42	2638.69
75.86	2638.22	79.44	2637.58	86.57	2636.55	91.6	2635.34	93.04	2634.99
94.05	2634.75	94.18	2634.72	94.32	2634.73	99.67	2635.21	103.7	2635.46
109.49	2635.81	113.69	2635.98	123.72	2636.27	124.63	2636.35	129.31	2636.88
146.8	2638.97	156.63	2639.98	167.86	2640.25	173.28	2640.36	178.66	2640.7
185.98	2640.96	208.29	2640.7	217	2640.68	223.04	2641.14	227.82	2641.39

234.1 2641.8 237.54 2642.11

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	86.57	.035	109.49	.04	208.29	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
91.6	103.7	106	111.61	117	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2636.36	Element			
Vel Head (ft)	0.32	Wt. n-Val.	0.035	0.035	0.035
W.S. Elev (ft)	2636.04	Reach Len. (ft)	106.00	111.61	117.00
Crit W.S. (ft)	2636.04	Flow Area (sq ft)	1.02	11.36	3.02
E.G. Slope (ft/ft)	0.013992	Area (sq ft)	1.02	11.36	3.02
Q Total (cfs)	64.00	Flow (cfs)	2.49	54.40	7.10
Top Width (ft)	27.08	Top Width (ft)	2.91	12.10	12.07
Vel Total (ft/s)	4.16	Avg. Vel. (ft/s)	2.45	4.79	2.35
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)	0.35	0.94	0.25
Conv. Total (cfs)	541.1	Conv. (cfs)	21.1	459.9	60.1
Length Wtd. (ft)	111.75	Wetted Per. (ft)	2.99	12.20	12.08
Min Ch El (ft)	2634.72	Shear (lb/sq ft)	0.30	0.81	0.22
Alpha	1.18	Stream Power (lb/ft s)	0.73	3.89	0.51
Frctn Loss (ft)	1.81	Cum Volume (acre-ft)	0.44	0.54	0.92
C & E Loss (ft)	0.02	Cum SA (acres)	0.36	0.29	0.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.28	91.60	2.49	1.02	2.99	3.89	0.35	2.45
2	Chan	91.60	94.02	11.52	2.40	2.49	18.00	0.99	4.79
3	Chan	94.02	96.44	16.63	2.97	2.43	25.98	1.23	5.60
4	Chan	96.44	98.86	12.07	2.45	2.43	18.86	1.01	4.93
5	Chan	98.86	101.28	8.33	1.96	2.43	13.01	0.81	4.25
6	Chan	101.28	103.70	5.86	1.59	2.42	9.16	0.66	3.70
7	ROB	103.70	130.47	7.10	3.02	12.08	11.10	0.25	2.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.5334

INPUT
Description: R.S. 1.5334 Begin Floodplain Mapping
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2643.19	11.21	2643.12	21.44	2641.49	30.62	2639.33	44.04	2636.66
49.59	2635.79	59.94	2634.79	63.79	2634.62	72.16	2634.2	81.45	2633.7

82.7	2633.62	86.98	2633.33	87	2633.33	88.91	2633.2	93.08	2633.35
97.7	2633.61	105.63	2634.05	106.72	2634.07	108.11	2634.12	110.84	2634.17
125.39	2634.42	128.78	2634.5	142.79	2634.38	160.9	2634.27	170.62	2634.58
178.43	2635.19	184.9	2635.35	192.79	2635.65	207.74	2635.95	214.24	2635.91
217.86	2636.57	219.83	2636.7	229.86	2638.11	233.87	2638.09		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	72.16	.035	81.45	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
82.7	97.7	48.84	48.84	48.84	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2634.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.037	0.040	0.040
W.S. Elev (ft)	2634.18	Reach Len. (ft)	48.84	48.84	48.84
Crit W.S. (ft)	2634.18	Flow Area (sq ft)	2.77	11.75	3.09
E.G. Slope (ft/ft)	0.019056	Area (sq ft)	2.77	11.75	3.09
Q Total (cfs)	64.00	Flow (cfs)	6.92	51.18	5.90
Top Width (ft)	38.72	Top Width (ft)	10.13	15.00	13.59
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	2.50	4.35	1.91
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)	0.27	0.78	0.23
Conv. Total (cfs)	463.6	Conv. (cfs)	50.1	370.8	42.7
Length Wtd. (ft)	48.84	Wetted Per. (ft)	10.14	15.02	13.61
Min Ch El (ft)	2633.20	Shear (lb/sq ft)	0.32	0.93	0.27
Alpha	1.22	Stream Power (lb/ft s)	0.81	4.05	0.52
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	0.43	0.51	0.91
C & E Loss (ft)	0.01	Cum SA (acres)	0.35	0.25	0.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	66.16	82.70	6.92	2.77	10.14	10.81	0.27	2.50
2	Chan	82.70	85.70	7.59	1.98	3.01	11.85	0.66	3.84
3	Chan	85.70	88.70	11.86	2.59	3.01	18.53	0.86	4.59
4	Chan	88.70	91.70	13.49	2.79	3.00	21.07	0.93	4.83
5	Chan	91.70	94.70	10.80	2.44	3.00	16.87	0.81	4.42
6	Chan	94.70	97.70	7.45	1.96	3.00	11.64	0.65	3.81
7	ROB	97.70	124.93	5.90	3.09	13.61	9.22	0.23	1.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.5241

INPUT
Description: R.S. 1.5241 Centerline of Twilight Trail
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	2637.98	21.41	2637.24	52.75	2636.39	75.31	2635.16	120.7	2632.55
124.89	2632.31	132.55	2632.24	132.73	2632.24	145.65	2632.38	149.1	2632.59
184.72	2634.8	232.28	2638.7						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
120.7	149.1	32.45	32.45	32.45	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2633.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2632.89	Reach Len. (ft)	32.45	32.45	32.45
Crit W.S. (ft)	2632.89	Flow Area (sq ft)	0.98	15.51	0.70
E.G. Slope (ft/ft)	0.009842	Area (sq ft)	0.98	15.51	0.70
Q Total (cfs)	64.00	Flow (cfs)	1.75	61.10	1.15
Top Width (ft)	38.99	Top Width (ft)	5.83	28.40	4.76
Vel Total (ft/s)	3.72	Avg. Vel. (ft/s)	1.79	3.94	1.64
Max Chl Dpth (ft)	0.65	Hydr. Depth (ft)	0.17	0.55	0.15
Conv. Total (cfs)	645.1	Conv. (cfs)	17.6	615.8	11.6
Length Wtd. (ft)	32.45	Wetted Per. (ft)	5.84	28.41	4.77
Min Ch El (ft)	2632.24	Shear (lb/sq ft)	0.10	0.34	0.09
Alpha	1.08	Stream Power (lb/ft s)	0.18	1.32	0.15
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	0.43	0.50	0.91
C & E Loss (ft)	0.01	Cum SA (acres)	0.34	0.23	0.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	96.56	120.70	1.75	0.98	5.84	2.73	0.17	1.79
2	Chan	120.70	126.38	10.05	2.77	5.69	15.70	0.49	3.62
3	Chan	126.38	132.06	14.76	3.49	5.68	23.06	0.61	4.23
4	Chan	132.06	137.74	15.01	3.53	5.68	23.45	0.62	4.25
5	Chan	137.74	143.42	12.64	3.18	5.68	19.75	0.56	3.97
6	Chan	143.42	149.10	8.64	2.53	5.69	13.51	0.45	3.41
7	ROB	149.10	165.74	1.15	0.70	4.77	1.80	0.15	1.64

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.5180

INPUT
Description: R.S. 1.5180 Immediately Downstream of Twilight Trail
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2636.93	13.08	2636.53	19.51	2635.45	27.13	2635.51	36.37	2636
39.88	2636.12	40.34	2636.18	41.48	2636.27	46	2636.45	54.82	2636.8

70.69	2636.16	78.59	2635.52	78.81	2635.5	79.94	2635.43	104.46	2633
110.01	2632.73	115.65	2632.1	115.86	2632.11	116.58	2632.13	118.64	2632.08
128	2631.13	130.25	2630.9	130.26	2630.9	131.83	2630.74	134.86	2630.78
141.4	2631.13	142	2631.16	143.8	2631.26	146.49	2631.4	161.89	2632.6
207.05	2636.61	210.9	2636.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	130.25	.035	146.49	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
128	141.4	150	155.99	165	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2632.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.040	0.036	0.036
W.S. Elev (ft)	2631.73	Reach Len. (ft)	150.00	155.99	165.00
Crit W.S. (ft)	2631.73	Flow Area (sq ft)	1.80	11.10	3.10
E.G. Slope (ft/ft)	0.015869	Area (sq ft)	1.80	11.10	3.10
Q Total (cfs)	64.00	Flow (cfs)	3.77	51.55	8.68
Top Width (ft)	28.72	Top Width (ft)	5.95	13.40	9.37
Vel Total (ft/s)	4.00	Avg. Vel. (ft/s)	2.10	4.64	2.80
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)	0.30	0.83	0.33
Conv. Total (cfs)	508.0	Conv. (cfs)	29.9	409.2	68.9
Length Wtd. (ft)	156.66	Wetted Per. (ft)	5.98	13.43	9.39
Min Ch El (ft)	2630.74	Shear (lb/sq ft)	0.30	0.82	0.33
Alpha	1.17	Stream Power (lb/ft s)	0.62	3.80	0.92
Frctn Loss (ft)	2.22	Cum Volume (acre-ft)	0.43	0.49	0.91
C & E Loss (ft)	0.01	Cum SA (acres)	0.34	0.21	0.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	102.40	128.00	3.77	1.80	5.98	5.89	0.30	2.10
2	Chan	128.00	130.68	7.75	1.98	2.69	12.11	0.74	3.90
3	Chan	130.68	133.36	13.32	2.58	2.69	20.81	0.96	5.16
4	Chan	133.36	136.04	12.93	2.53	2.68	20.20	0.95	5.10
5	Chan	136.04	138.72	10.17	2.19	2.68	15.89	0.82	4.64
6	Chan	138.72	141.40	7.38	1.81	2.68	11.53	0.68	4.08
7	ROB	141.40	155.30	8.68	3.10	9.39	13.57	0.33	2.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.4884

INPUT
Description: R.S. 1.4884
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	2635.24	.56	2635.18	6.8	2634.11	21.78	2632.17	28.02	2631.48
35.93	2630.5	42.27	2629.51	45.17	2629.15	47.58	2628.95	58.6	2627.34
58.86	2627.3	60.96	2626.68	61	2626.67	63.9	2627.28	68.28	2628.2
71.13	2628.91	72.2	2628.82	74.59	2628.83	81.19	2628.87	89.07	2629.03
94.32	2629.35	99	2630.32	115.39	2632.04	127.64	2633.88	131.85	2634.68
144.86	2635.34	146.31	2635.34	152.89	2635.43	154.8	2635.44	155.03	2635.4
157.55	2635.17								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	58.86	.035	68.28	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
58.6	63.9	122	115.71	110	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2628.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.040	0.035	0.035
W.S. Elev (ft)	2628.39	Reach Len. (ft)	122.00	115.71	110.00
Crit W.S. (ft)	2628.39	Flow Area (sq ft)	3.80	7.41	2.94
E.G. Slope (ft/ft)	0.012727	Area (sq ft)	3.80	7.41	2.94
Q Total (cfs)	64.00	Flow (cfs)	10.32	43.42	10.26
Top Width (ft)	17.67	Top Width (ft)	7.21	5.30	5.16
Vel Total (ft/s)	4.52	Avg. Vel. (ft/s)	2.72	5.86	3.49
Max Chl Dpth (ft)	1.72	Hydr. Depth (ft)	0.53	1.40	0.57
Conv. Total (cfs)	567.3	Conv. (cfs)	91.5	384.9	90.9
Length Wtd. (ft)	115.68	Wetted Per. (ft)	7.29	5.46	5.28
Min Ch El (ft)	2626.67	Shear (lb/sq ft)	0.41	1.08	0.44
Alpha	1.29	Stream Power (lb/ft s)	1.12	6.32	1.54
Frctn Loss (ft)	1.48	Cum Volume (acre-ft)	0.42	0.46	0.90
C & E Loss (ft)	0.01	Cum SA (acres)	0.31	0.18	0.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	46.88	58.60	10.32	3.80	7.29	16.13	0.53	2.71
2	Chan	58.60	59.66	6.31	1.25	1.10	9.85	1.18	5.05
3	Chan	59.66	60.72	9.49	1.58	1.11	14.83	1.49	6.02
4	Chan	60.72	61.78	11.44	1.75	1.09	17.88	1.65	6.53
5	Chan	61.78	62.84	9.21	1.54	1.08	14.39	1.45	6.00
6	Chan	62.84	63.90	6.97	1.30	1.08	10.89	1.23	5.37
7	ROB	63.90	82.63	10.26	2.94	5.28	16.03	0.57	3.49

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.4665

INPUT
Description: R.S. 1.4665

Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2636.76	.17	2636.76	6.47	2636.7	10.07	2636.35	15.47	2635.81
39.2	2631.28	46.59	2629.76	52.07	2626.51	55.7	2624.48	56.83	2623.85
57.36	2623.55	61.6	2624.66	62.52	2624.9	69.1	2626.34	79.22	2627.42
99.12	2629.08	103.17	2629.5	105.76	2629.89	113.88	2630.77	130.04	2632.3
136.26	2632.59	141.08	2633.01						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	52.07	.035	62.52	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
55.7	61.6	90.48	90.48	90.48	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2626.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	Wt. n-Val.	0.035	0.035	0.037
W.S. Elev (ft)	2625.60	Reach Len. (ft)	90.48	90.48	90.48
Crit W.S. (ft)	2625.59	Flow Area (sq ft)	1.13	8.99	1.89
E.G. Slope (ft/ft)	0.012918	Area (sq ft)	1.13	8.99	1.89
Q Total (cfs)	64.00	Flow (cfs)	3.39	55.11	5.50
Top Width (ft)	12.05	Top Width (ft)	2.01	5.90	4.14
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)	3.00	6.13	2.91
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)	0.56	1.52	0.46
Conv. Total (cfs)	563.1	Conv. (cfs)	29.9	484.8	48.4
Length Wtd. (ft)	90.48	Wetted Per. (ft)	2.30	6.29	4.25
Min Ch El (ft)	2623.55	Shear (lb/sq ft)	0.40	1.15	0.36
Alpha	1.18	Stream Power (lb/ft s)	1.19	7.07	1.04
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	0.41	0.43	0.89
C & E Loss (ft)	0.03	Cum SA (acres)	0.30	0.16	0.56

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	44.56	55.70	3.39	1.13	2.30	5.30	0.56	3.00
2	Chan	55.70	56.88	9.52	1.72	1.35	14.87	1.45	5.55
3	Chan	56.88	58.06	16.08	2.29	1.28	25.12	1.94	7.01
4	Chan	58.06	59.24	13.45	2.03	1.22	21.02	1.72	6.64
5	Chan	59.24	60.42	9.66	1.66	1.22	15.10	1.41	5.82
6	Chan	60.42	61.60	6.40	1.30	1.22	9.99	1.10	4.93
7	ROB	61.60	77.50	5.50	1.89	4.25	8.59	0.46	2.91

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.4494

INPUT
Description: R.S. 1.4494
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2633.29	12.96	2632.29	21.65	2631.51	22.76	2631.4	41.35	2629.78
43.12	2629.61	50.69	2628.92	57.03	2628.31	58.31	2628.18	73.7	2626.45
76.69	2626.13	85.11	2624.69	92.1	2623.32	92.36	2623.27	93.65	2622.89
94.07	2622.74	96.6	2623.24	97.8	2623.48	111.32	2626.21	128.37	2629.19
132.36	2629.86	136.92	2630.18	141.88	2630.52				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

0	.04	92.36	.035	97.8	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
92.1	96.6	87	90.78	95	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2624.91	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.040	0.035	0.037
W.S. Elev (ft)	2624.48	Reach Len. (ft)	87.00	90.78	95.00
Crit W.S. (ft)	2624.48	Flow Area (sq ft)	3.41	6.56	3.79
E.G. Slope (ft/ft)	0.013358	Area (sq ft)	3.41	6.56	3.79
Q Total (cfs)	64.00	Flow (cfs)	10.02	40.46	13.51
Top Width (ft)	16.53	Top Width (ft)	5.90	4.50	6.13
Vel Total (ft/s)	4.65	Avg. Vel. (ft/s)	2.94	6.16	3.56
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)	0.58	1.46	0.62
Conv. Total (cfs)	553.7	Conv. (cfs)	86.7	350.1	116.9
Length Wtd. (ft)	90.54	Wetted Per. (ft)	6.01	4.63	6.26
Min Ch El (ft)	2622.74	Shear (lb/sq ft)	0.47	1.18	0.51
Alpha	1.30	Stream Power (lb/ft s)	1.39	7.28	1.80
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)	0.41	0.42	0.88
C & E Loss (ft)	0.05	Cum SA (acres)	0.29	0.15	0.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	73.68	92.10	10.02	3.41	6.01	15.66	0.58	2.94
2	Chan	92.10	93.00	6.16	1.14	0.93	9.62	1.27	5.41
3	Chan	93.00	93.90	8.65	1.38	0.94	13.51	1.53	6.28
4	Chan	93.90	94.80	10.17	1.50	0.92	15.88	1.67	6.76
5	Chan	94.80	95.70	8.56	1.35	0.92	13.37	1.50	6.33
6	Chan	95.70	96.60	6.94	1.19	0.92	10.84	1.32	5.82
7	ROB	96.60	105.66	13.51	3.79	6.26	21.11	0.62	3.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.4322

INPUT
Description: R.S. 1.4322
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2631.09	3.92	2630.64	8.03	2630.45	17.29	2628.62	28.79	2627.1
44.92	2626.28	45.94	2626.19	47.91	2626.09	68.94	2624.11	69.79	2624.03
70.26	2624.01	70.75	2623.88	80.54	2621.37	84.27	2621.63	85.5	2621.41
87.49	2621.05	88.42	2620.89	91.2	2621.42	91.6	2621.5	91.8	2621.54
93.54	2621.87	97.97	2622.33	102.84	2622.84	113.31	2623.44	124.05	2624.07
124.75	2624.1	124.94	2624.13	129.92	2624.3	144.82	2624.84	145.59	2624.89
156.26	2626.05	171.71	2627.72	172.82	2627.82	186.74	2629.19		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	80.54	.035	93.54	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
85.5	91.2	58.04	58.04	58.04	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2622.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.036	0.035	0.036
W.S. Elev (ft)	2622.37	Reach Len. (ft)	58.04	58.04	58.04
Crit W.S. (ft)	2622.29	Flow Area (sq ft)	6.24	6.95	2.90
E.G. Slope (ft/ft)	0.010741	Area (sq ft)	6.24	6.95	2.90
Q Total (cfs)	64.00	Flow (cfs)	21.72	34.52	7.76
Top Width (ft)	21.72	Top Width (ft)	8.86	5.70	7.15
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	3.48	4.97	2.68
Max Chl Dpth (ft)	1.48	Hydr. Depth (ft)	0.70	1.22	0.40
Conv. Total (cfs)	617.5	Conv. (cfs)	209.6	333.1	74.9
Length Wtd. (ft)	58.04	Wetted Per. (ft)	9.02	5.80	7.22
Min Ch El (ft)	2620.89	Shear (lb/sq ft)	0.46	0.80	0.27
Alpha	1.16	Stream Power (lb/ft s)	1.62	3.99	0.72
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	0.40	0.40	0.88
C & E Loss (ft)	0.01	Cum SA (acres)	0.28	0.14	0.54

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	68.40	85.50	21.72	6.24	9.02	33.94	0.70	3.48
2	Chan	85.50	86.64	5.46	1.21	1.16	8.53	1.06	4.50
3	Chan	86.64	87.78	7.33	1.45	1.16	11.46	1.27	5.07
4	Chan	87.78	88.92	8.93	1.63	1.16	13.95	1.43	5.48
5	Chan	88.92	90.06	7.39	1.46	1.16	11.55	1.28	5.08
6	Chan	90.06	91.20	5.41	1.21	1.16	8.46	1.06	4.48
7	ROB	91.20	110.31	7.76	2.90	7.22	12.13	0.40	2.68

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.4212

INPUT
Description: R.S. 1.4212
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2628.87	.11	2628.87	3.16	2628.7	4.23	2628.75	7.07	2627.95
8.83	2627.25	10.8	2627.22	64.62	2626.88	82.18	2627.13	86.11	2627.14
95.48	2622.74	99.8	2620.84	101.36	2620.15	102.2	2620.2	108.45	2620.6
110.1	2620.82	111.5	2621.01	112.11	2621.09	116.18	2621.45	124	2622.15
126.23	2622.37	130.36	2622.6	132.28	2622.69	136.27	2622.91	146.39	2623.42
152.05	2623.81	153.5	2623.89	154.1	2624	155.86	2624.08	176.78	2625.99
184.23	2626.27	201.92	2627.64	202.41	2627.67	202.62	2627.69	202.77	2627.7
213.3	2628.85								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	10.8	.025	82.18	.04	101.36	.035	112.11	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
99.8	110.1	119	120.94	122	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2621.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.040	0.036	0.036
W.S. Elev (ft)	2621.50	Reach Len. (ft)	119.00	120.94	122.00
Crit W.S. (ft)	2621.50	Flow Area (sq ft)	0.50	10.90	2.07

E.G. Slope (ft/ft)	0.015362	Area (sq ft)	0.50	10.90	2.07
Q Total (cfs)	64.00	Flow (cfs)	1.04	57.54	5.42
Top Width (ft)	18.50	Top Width (ft)	1.51	10.30	6.69
Vel Total (ft/s)	4.75	Avg. Vel. (ft/s)	2.08	5.28	2.62
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.33	1.06	0.31
Conv. Total (cfs)	516.4	Conv. (cfs)	8.4	464.2	43.7
Length Wtd. (ft)	120.82	Wetted Per. (ft)	1.65	10.47	6.72
Min Ch El (ft)	2620.15	Shear (lb/sq ft)	0.29	1.00	0.30
Alpha	1.14	Stream Power (lb/ft s)	0.61	5.27	0.77
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	0.39	0.39	0.87
C & E Loss (ft)	0.16	Cum SA (acres)	0.27	0.13	0.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	79.84	99.80	1.04	0.50	1.65	1.63	0.33	2.08
2	Chan	99.80	101.86	10.91	2.24	2.21	17.05	1.09	4.86
3	Chan	101.86	103.92	15.57	2.60	2.06	24.33	1.26	6.00
4	Chan	103.92	105.98	12.96	2.32	2.06	20.24	1.13	5.57
5	Chan	105.98	108.04	10.53	2.05	2.06	16.46	1.00	5.13
6	Chan	108.04	110.10	7.56	1.69	2.08	11.82	0.82	4.49
7	ROB	110.10	130.74	5.42	2.07	6.72	8.47	0.31	2.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3983

INPUT
Description: R.S. 1.3983 Immediately Upstream of Driveway Culvert
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2626.85	11.16	2626.82	12.44	2626.78	14.8	2626.64	16.52	2625.81
17.87	2624.13	22.78	2623.89	29.63	2623.67	34.97	2624.48	44.31	2623.8
45.66	2623.57	47.2	2623.17	53.68	2622.48	62.18	2621.23	73.97	2621.43
76.04	2621.88	82.02	2622.28	85.17	2622.27	88.89	2621.92	99.76	2621.16
109.82	2620.52	117	2619.84	117.88	2619.75	119.15	2619.58	125.4	2618.14
128.68	2617.39	128.93	2617.33	129.04	2617.3	129.1	2617.33	131.8	2618.29
132.1	2618.4	139.93	2621.18	142.35	2621.84	144.76	2621.89	160.73	2622.26
161.28	2622.27	161.7	2622.33	172.74	2623.83	181.26	2624.71	186.14	2625.38
191.53	2626.34	202.35	2628.2	204.5	2628.61	207.36	2629.14	214.23	2629.92
216.37	2630.11								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

```
      0    .025   44.31     .04  128.68    .035  142.35     .04

nk Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        125.4   131.8              220  214.37     214            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     117 2622.52       F
     141  216.37 2622.52       F
```

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2620.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.040	0.038	0.035
W.S. Elev (ft)	2620.22	Reach Len. (ft)	220.00	214.37	214.00
Crit W.S. (ft)	2619.18	Flow Area (sq ft)	9.59	15.77	5.23
E.G. Slope (ft/ft)	0.001418	Area (sq ft)	10.35	15.77	5.23
Q Total (cfs)	64.00	Flow (cfs)	14.44	41.71	7.85
Top Width (ft)	24.25	Top Width (ft)	12.42	6.40	5.43
Vel Total (ft/s)	2.09	Avg. Vel. (ft/s)	1.51	2.64	1.50
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)	1.14	2.46	0.96
Conv. Total (cfs)	1699.6	Conv. (cfs)	383.5	1107.8	208.3
Length Wtd. (ft)	214.37	Wetted Per. (ft)	8.58	6.67	5.76
Min Ch El (ft)	2617.30	Shear (lb/sq ft)	0.10	0.21	0.08
Alpha	1.22	Stream Power (lb/ft s)	0.15	0.55	0.12
Frctn Loss (ft)		Cum Volume (acre-ft)	0.38	0.35	0.86
C & E Loss (ft)		Cum SA (acres)	0.25	0.11	0.51

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	93.60	117.00	0.00	0.77	4.04	0.00	0.19	0.00
2	LOB	117.00	125.40	14.44	9.59	8.58	22.56	1.14	1.51
3	Chan	125.40	126.68	6.62	2.85	1.31	10.35	2.23	2.32
4	Chan	126.68	127.96	8.13	3.23	1.31	12.71	2.52	2.52
5	Chan	127.96	129.24	10.28	3.59	1.33	16.07	2.80	2.87
6	Chan	129.24	130.52	9.66	3.35	1.36	15.09	2.61	2.89
7	Chan	130.52	131.80	7.02	2.76	1.36	10.97	2.16	2.54
8	ROB	131.80	141.00	7.85	5.23	5.76	12.26	0.96	1.50

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Windmill Wash
REACH: North Branch RS: 1.3786

INPUT
Description: R.S. 1.3786 - Driveway Culvert
Distance from Upstream XS = 19
Deck/Roadway Width = 159
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2623.62	2610	19.25	2623.66	2610	30.16	2623.37	2610
32.79	2622.99	2610	39.62	2622.95	2610	57.97	2623.32	2610
85.77	2623.2	2610	97.12	2622.54	2610	100.99	2622.52	2610
117.27	2623.54	2610	132.51	2623.89	2610	208.86	2628.08	2610
223.46	2631.51	2610	230.18	2631.52	2610			

Upstream Bridge Cross Section Data
ation Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
       0 2626.85   11.16 2626.82   12.44 2626.78    14.8 2626.64   16.52 2625.81
   17.87 2624.13   22.78 2623.89   29.63 2623.67   34.97 2624.48   44.31  2623.8
   45.66 2623.57    47.2 2623.17   53.68 2622.48   62.18 2621.23   73.97 2621.43
   76.04 2621.88   82.02 2622.28   85.17 2622.27   88.89 2621.92   99.76 2621.16
  109.82 2620.52     117 2619.84  117.88 2619.75  119.15 2619.58   125.4 2618.14
  128.68 2617.39  128.93 2617.33  129.04  2617.3   129.1 2617.33   131.8 2618.29
   132.1  2618.4  139.93 2621.18  142.35 2621.84  144.76 2621.89  160.73 2622.26
  161.28 2622.27   161.7 2622.33  172.74 2623.83  181.26 2624.71  186.14 2625.38
  191.53 2626.34  202.35  2628.2   204.5 2628.61  207.36 2629.14  214.23 2629.92
  216.37 2630.11

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025   44.31     .04  128.68    .035  142.35     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
         125.4   131.8             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     117 2622.52       F
     141  216.37 2622.52       F

Downstream  Deck/Roadway Coordinates
    num=      10
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 2619.99    2610    2.17 2619.93    2610   18.58 2619.97    2610
   20.63 2620.06    2610   34.18 2620.22    2610   53.83 2620.82    2610
   71.13 2621.95    2610   91.48  2622.7    2610  127.95 2625.11    2610
  133.26  2624.9    2610

Downstream Bridge Cross Section Data
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2621.39     .17 2621.39    7.59  2620.8   16.32 2620.08   18.09 2619.63
   20.13 2619.05   33.91 2615.14   39.32 2612.71    40.1  2612.6   42.72 2612.22
   43.97 2612.33   44.54 2612.39    47.1 2612.67   47.13 2612.67   55.31 2613.51
   57.79 2614.24   68.05 2615.21   76.32 2616.86   84.86 2618.84   90.72 2620.24
   98.38 2621.79  112.85 2622.32  133.26 2623.98

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   20.13    .058   44.54    .035   57.79     .04   76.32    .032

Bank Sta: Left   Right    Coeff Contr.   Expan.
          40.1    47.1             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0      21 2619.29       F
      67  133.26 2619.29       F

Upstream Embankment side slope              =       2 horiz. to 1.0 vertical
Downstream Embankment side slope            =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =    2618
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       4
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
              10.5     187     .024     .024        0                  .9                 1
Upstream   Elevation =  2615.97
           Centerline Station =  129.1
Downstream Elevation =  2612.05
           Centerline Station =  42.9
```

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	64.00	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	8.08
Q Barrel (cfs)	64.00	Culv Vel DS (ft/s)	5.41
E.G. US. (ft)	2620.31	Culv Inv El Up (ft)	2615.97
W.S. US. (ft)	2620.22	Culv Inv El Dn (ft)	2612.05
E.G. DS (ft)	2615.63	Culv Frctn Ls (ft)	3.33
W.S. DS (ft)	2615.61	Culv Exit Loss (ft)	0.44
Delta EG (ft)	4.68	Culv Entr Loss (ft)	0.91
Delta WS (ft)	4.61	Q Weir (cfs)	
E.G. IC (ft)	2619.91	Weir Sta Lft (ft)	
E.G. OC (ft)	2620.31	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	2618.38	Weir Max Depth (ft)	
Culv WS Outlet (ft)	2615.61	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	2.16	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	2.41	Min El Weir Flow (ft)	2622.53

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3577

INPUT
Description: R.S. 1.3577 Immediately Downstream of Driveway Culvert
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2621.39	.17	2621.39	7.59	2620.8	16.32	2620.08	18.09	2619.63
20.13	2619.05	33.91	2615.14	39.32	2612.71	40.1	2612.6	42.72	2612.22
43.97	2612.33	44.54	2612.39	47.1	2612.67	47.13	2612.67	55.31	2613.51
57.79	2614.24	68.05	2615.21	76.32	2616.86	84.86	2618.84	90.72	2620.24
98.38	2621.79	112.85	2622.32	133.26	2623.98				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	20.13	.058	44.54	.035	57.79	.04	76.32	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
40.1	47.1	40	41.55	43	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	21	2619.29	F
67	133.26	2619.29	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2615.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.058	0.047	0.036
W.S. Elev (ft)	2615.61	Reach Len. (ft)	40.00	41.55	43.00
Crit W.S. (ft)	2613.59	Flow Area (sq ft)	11.83	22.31	33.67
E.G. Slope (ft/ft)	0.000249	Area (sq ft)	11.83	22.31	34.56
Q Total (cfs)	64.00	Flow (cfs)	5.99	23.87	34.14
Top Width (ft)	37.83	Top Width (ft)	7.86	7.00	22.97
Vel Total (ft/s)	0.94	Avg. Vel. (ft/s)	0.51	1.07	1.01
Max Chl Dpth (ft)	3.39	Hydr. Depth (ft)	1.51	3.19	1.69
Conv. Total (cfs)	4056.3	Conv. (cfs)	379.5	1512.8	2164.0
Length Wtd. (ft)	42.01	Wetted Per. (ft)	8.45	7.05	20.09
Min Ch El (ft)	2612.22	Shear (lb/sq ft)	0.02	0.05	0.03
Alpha	1.12	Stream Power (lb/ft s)	0.01	0.05	0.03
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.32	0.26	0.76
C & E Loss (ft)	0.00	Cum SA (acres)	0.20	0.07	0.44

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	30.55	40.10	5.99	11.83	8.45	9.36	1.51	0.51
2	Chan	40.10	41.50	3.73	4.36	1.41	5.83	3.11	0.86
3	Chan	41.50	42.90	4.14	4.64	1.41	6.47	3.31	0.89
4	Chan	42.90	44.30	4.16	4.64	1.41	6.50	3.31	0.90
5	Chan	44.30	45.70	5.95	4.44	1.41	9.29	3.17	1.34
6	Chan	45.70	47.10	5.89	4.23	1.41	9.20	3.02	1.39
7	ROB	47.10	67.00	34.14	33.67	20.09	53.35	1.69	1.01
8	ROB	67.00	83.57	0.00	0.88	3.11	0.00	0.29	0.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3498

INPUT
Description: R.S. 1.3498
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2620.65	11.72	2619.82	19.51	2619.34	32.49	2617.26	44.42	2614.94
49.66	2614.03	51.57	2613.78	58.47	2612.51	59.21	2612.38	60.42	2612.27
60.5	2612.24	60.78	2612.13	61.74	2611.74	62.68	2611.86	65.2	2612.29
72.6	2613.54	72.97	2613.61	77.11	2613.87	118.11	2616.45	118.61	2616.47
118.77	2616.47	136.24	2621.08	147.8	2624.4				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	19.51	.058	58.47	.032	72.6	.04	136.24	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
60.5	65.2	34	35.28	37	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2615.62	Element			
Vel Head (ft)	0.01	Wt. n-Val.	0.047	0.032	0.035
W.S. Elev (ft)	2615.61	Reach Len. (ft)	34.00	35.28	37.00
Crit W.S. (ft)		Flow Area (sq ft)	33.91	16.98	52.51
E.G. Slope (ft/ft)	0.000100	Area (sq ft)	33.91	16.98	52.51
Q Total (cfs)	64.00	Flow (cfs)	15.95	18.16	29.89
Top Width (ft)	63.79	Top Width (ft)	19.53	4.70	39.57
Vel Total (ft/s)	0.62	Avg. Vel. (ft/s)	0.47	1.07	0.57
Max Chl Dpth (ft)	3.87	Hydr. Depth (ft)	1.74	3.61	1.33
Conv. Total (cfs)	6412.3	Conv. (cfs)	1597.8	1819.8	2994.6
Length Wtd. (ft)	35.83	Wetted Per. (ft)	19.82	4.84	39.74
Min Ch El (ft)	2611.74	Shear (lb/sq ft)	0.01	0.02	0.01
Alpha	1.39	Stream Power (lb/ft s)	0.01	0.02	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	0.30	0.24	0.72
C & E Loss (ft)	0.00	Cum SA (acres)	0.19	0.07	0.41

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	36.30	48.40	0.96	5.20	7.55	1.51	0.70	0.19
2	LOB	48.40	60.50	14.98	28.71	12.27	23.41	2.37	0.52

3	Chan	60.50	61.44	3.43	3.34	1.01	5.36	3.56	1.03
4	Chan	61.44	62.38	3.99	3.59	0.97	6.23	3.82	1.11
5	Chan	62.38	63.32	3.85	3.50	0.95	6.02	3.72	1.10
6	Chan	63.32	64.26	3.58	3.35	0.95	5.59	3.56	1.07
7	Chan	64.26	65.20	3.31	3.20	0.95	5.18	3.40	1.04
8	ROB	65.20	81.72	24.63	35.80	16.65	38.49	2.17	0.69
9	ROB	81.72	98.24	5.10	15.37	16.55	7.96	0.93	0.33
10	ROB	98.24	114.76	0.16	1.34	6.54	0.25	0.21	0.12

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3431

INPUT
Description: R.S. 1.3431 Immediately Upstream of Driveway Culvert
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2620.3	.05	2620.3	3.84	2620.02	21.19	2618.67	30.84	2617.19
37.55	2616.01	44.27	2615.14	54.82	2614.01	63.73	2612.99	68.15	2612.97
72.7	2612.06	75.58	2611.48	75.95	2611.48	76.21	2611.48	80.5	2612.03
80.76	2612.06	82.12	2612.16	86.91	2612.84	88.18	2612.89	98.51	2613.01
103.56	2613.04	105.91	2613.07	108.08	2613.04	111.74	2613.24	118.26	2614.59
121.99	2615.2	125.39	2615.96	153.24	2624.45	154.29	2624.78		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	37.55	.058	68.15	.035	80.76	.04	125.39	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
72.7	80.5	35.69	35.69	35.69	.3	.5

Effective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	73	2615.1	F
81	154.29	2615.1	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2615.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.047	0.035	0.040
W.S. Elev (ft)	2615.61	Reach Len. (ft)	35.69	35.69	35.69
Crit W.S. (ft)	2613.01	Flow Area (sq ft)	56.33	30.21	99.35
E.G. Slope (ft/ft)	0.000027	Area (sq ft)	56.33	30.21	99.35
Q Total (cfs)	64.00	Flow (cfs)	14.07	16.42	33.51
Top Width (ft)	83.20	Top Width (ft)	32.07	7.80	43.33
Vel Total (ft/s)	0.34	Avg. Vel. (ft/s)	0.25	0.54	0.34
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)	1.76	3.87	2.29
Conv. Total (cfs)	12233.8	Conv. (cfs)	2689.0	3138.5	6406.4
Length Wtd. (ft)	35.69	Wetted Per. (ft)	32.31	7.89	43.63
Min Ch El (ft)	2611.48	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	1.26	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	0.27	0.22	0.66
C & E Loss (ft)		Cum SA (acres)	0.17	0.06	0.37

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	29.08	43.62	0.02	0.58	3.02	0.04	0.19	0.04
2	LOB	43.62	58.16	2.39	17.20	14.63	3.74	1.18	0.14
3	LOB	58.16	72.70	11.65	38.55	14.67	18.20	2.65	0.30
4	Chan	72.70	73.00	0.55	1.07	0.31	0.86	3.58	0.51

5	Chan	73.00	74.50	2.99	5.64	1.53	4.67	3.76	0.53
6	Chan	74.50	76.00	3.40	6.08	1.52	5.31	4.05	0.56
7	Chan	76.00	77.50	3.42	6.09	1.51	5.35	4.06	0.56
8	Chan	77.50	79.00	3.16	5.81	1.51	4.93	3.87	0.54
9	Chan	79.00	80.50	2.90	5.52	1.51	4.53	3.68	0.53
10	ROB	80.50	81.00	0.82	1.78	0.50	1.28	3.56	0.46
11	ROB	81.00	95.66	15.82	42.33	14.71	24.71	2.89	0.37
12	ROB	95.66	110.32	13.07	37.70	14.66	20.42	2.57	0.35
13	ROB	110.32	124.97	3.81	17.55	13.75	5.96	1.30	0.22

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Windmill Wash
REACH: North Branch RS: 1.3385

INPUT
Description: R.S. 1.3385 Driveway Culvert
Distance from Upstream XS = 9
Deck/Roadway Width = 11
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 8

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2617.54	2610	36.83	2615.79	2610	46.67	2615.11	2610
65.67	2615.1	2610	88.38	2615.28	2610	108.16	2616.18	2610
145.89	2623.97	2610	163.89	2624.41	2610			

Upstream Bridge Cross Section Data
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2620.3	.05	2620.3	3.84	2620.02	21.19	2618.67	30.84	2617.19
37.55	2616.01	44.27	2615.14	54.82	2614.01	63.73	2612.99	68.15	2612.97
72.7	2612.06	75.58	2611.48	75.95	2611.48	76.21	2611.48	80.5	2612.03
80.76	2612.06	82.12	2612.16	86.91	2612.84	88.18	2612.89	98.51	2613.01
103.56	2613.04	105.91	2613.07	108.08	2613.04	111.74	2613.24	118.26	2614.59
121.99	2615.2	125.39	2615.96	153.24	2624.45	154.29	2624.78		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	37.55	.058	68.15	.035	80.76	.04	125.39	.032

Bank Sta: Left	Right	Coeff Contr.	Expan.
72.7	80.5	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	73	2615.1	F
81	154.29	2615.1	F

Downstream Deck/Roadway Coordinates
num= 9

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2616.84	2610	38.62	2615.01	2610	46.97	2615.06	2610
54	2614.16	2610	60.04	2614.01	2610	79.88	2614.9	2610
82.46	2615.56	2610	100.78	2616.83	2610	138.79	2624.02	2610

Downstream Bridge Cross Section Data
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2616.88	21.45	2615.92	23.15	2615.85	24.12	2615.81	25.81	2615.71
40.08	2613.44	51.79	2612.81	61.24	2611.5	62.94	2611.22	64.6	2610.95
64.69	2610.93	67.92	2610.44	67.93	2610.44	70.4	2610.94	75.44	2611.95
75.99	2612.05	78.26	2612.25	86.67	2613.83	94.59	2614.75	103	2617.11
122.86	2621.59	124.58	2621.95	125.71	2622.17	127.14	2622.32	136.57	2623.49
137.32	2623.58								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	40.08	.058	67.93	.04	127.14	.025

Bank Sta: Left Right Coeff Contr. Expan.
64.6 70.4 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	53	2612	F
82	137.32	2612	F

Upstream Embankment side slope = 1.2 horiz. to 1.0 vertical
Downstream Embankment side slope = 1.2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 2614
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
Culvert #1 Circular 2
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
	4	20.5	.024	.024	0	.9	1

Upstream Elevation = 2609.92
Centerline Station = 77.1
Downstream Elevation = 2609.53
Centerline Station = 64.9

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	24.59	Culv Full Len (ft)	20.50
# Barrels	1	Culv Vel US (ft/s)	7.83
Q Barrel (cfs)	24.59	Culv Vel DS (ft/s)	7.83
E.G. US. (ft)	2615.61	Culv Inv El Up (ft)	2609.92
W.S. US. (ft)	2615.61	Culv Inv El Dn (ft)	2609.53
E.G. DS (ft)	2613.04	Culv Frctn Ls (ft)	0.83
W.S. DS (ft)	2612.98	Culv Exit Loss (ft)	0.90
Delta EG (ft)	2.58	Culv Entr Loss (ft)	0.86
Delta WS (ft)	2.63	Q Weir (cfs)	39.41
E.G. IC (ft)	2615.59	Weir Sta Lft (ft)	40.54
E.G. OC (ft)	2615.61	Weir Sta Rgt (ft)	95.93
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2611.92	Weir Max Depth (ft)	0.52
Culv WS Outlet (ft)	2611.53	Weir Avg Depth (ft)	0.41
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	22.77
Culv Crt Depth (ft)	1.75	Min El Weir Flow (ft)	2615.11

Warning: During the culvert inlet computations, the program could not balance the culvert/weir flow. The reported inlet energy grade answer may not be valid.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3364

INPUT
Description: R.S. 1.3364 Immediately Downstream of Driveway Culvert
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2616.88	21.45	2615.92	23.15	2615.85	24.12	2615.81	25.81	2615.71
40.08	2613.44	51.79	2612.81	61.24	2611.5	62.94	2611.22	64.6	2610.95
64.69	2610.93	67.92	2610.44	67.93	2610.44	70.4	2610.94	75.44	2611.95
75.99	2612.05	78.26	2612.25	86.67	2613.83	94.59	2614.75	103	2617.11
122.86	2621.59	124.58	2621.95	125.71	2622.17	127.14	2622.32	136.57	2623.49
137.32	2623.58								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	40.08	.058	67.93	.04	127.14	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
64.6	70.4	78.46	78.46	78.46	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	53	2612	F
82	137.32	2612	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2613.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.058	0.051	0.040
W.S. Elev (ft)	2612.98	Reach Len. (ft)	78.46	78.46	78.46
Crit W.S. (ft)	2612.01	Flow Area (sq ft)	13.97	13.28	11.58
E.G. Slope (ft/ft)	0.002042	Area (sq ft)	13.97	13.28	11.58
Q Total (cfs)	64.00	Flow (cfs)	14.70	30.24	19.05
Top Width (ft)	33.52	Top Width (ft)	15.97	5.80	11.75
Vel Total (ft/s)	1.65	Avg. Vel. (ft/s)	1.05	2.28	1.65
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)	0.87	2.29	0.99
Conv. Total (cfs)	1416.4	Conv. (cfs)	325.3	669.3	421.7
Length Wtd. (ft)	78.46	Wetted Per. (ft)	16.11	5.89	11.93
Min Ch El (ft)	2610.44	Shear (lb/sq ft)	0.11	0.29	0.12
Alpha	1.29	Stream Power (lb/ft s)	0.12	0.65	0.20
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.24	0.21	0.61
C & E Loss (ft)	0.03	Cum SA (acres)	0.15	0.06	0.35

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	39.75	53.00	0.15	0.58	4.39	0.23	0.13	0.26
2	LOB	53.00	64.60	14.55	13.39	11.72	22.74	1.15	1.09
3	Chan	64.60	65.76	4.48	2.46	1.17	7.00	2.12	1.82
4	Chan	65.76	66.92	5.12	2.67	1.17	8.00	2.30	1.92
5	Chan	66.92	68.08	6.12	2.87	1.17	9.56	2.47	2.13
6	Chan	68.08	69.24	7.88	2.78	1.18	12.32	2.39	2.84
7	Chan	69.24	70.40	6.64	2.50	1.18	10.37	2.16	2.65
8	ROB	70.40	82.00	19.05	11.58	11.78	29.77	1.00	1.65
9	ROB	82.00	95.83	0.00	0.00	0.15	0.00	0.01	0.09

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3215

INPUT
Description: R.S. 1.3215
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2616.55	13.47	2616.42	26.44	2613.01	37.72	2610.66	40.8	2609.52
40.96	2609.46	43.51	2608.76	44.27	2608.92	46.21	2609.33	47	2609.47
50.32	2610.05	54.04	2610.28	55.41	2610.31	77.48	2611.33	82.62	2611.74
96.18	2612.53	108.16	2612.89	116.78	2613.64	132.99	2614.75	135.58	2615.01
136.11	2615.02	138.11	2615.48						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	13.47	.058	44.27	.032	55.41	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
40.8	47	58	55.44	53	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2613.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.058	0.048	0.037
W.S. Elev (ft)	2612.99	Reach Len. (ft)	58.00	55.44	53.00
Crit W.S. (ft)		Flow Area (sq ft)	21.98	23.95	95.39
E.G. Slope (ft/ft)	0.000063	Area (sq ft)	21.98	23.95	95.39
Q Total (cfs)	64.00	Flow (cfs)	5.85	14.38	43.77
Top Width (ft)	82.80	Top Width (ft)	14.27	6.20	62.33
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.27	0.60	0.46
Max Chl Dpth (ft)	4.23	Hydr. Depth (ft)	1.54	3.86	1.53
Conv. Total (cfs)	8048.9	Conv. (cfs)	736.0	1808.6	5504.4
Length Wtd. (ft)	53.96	Wetted Per. (ft)	14.72	6.38	62.46
Min Ch El (ft)	2608.76	Shear (lb/sq ft)	0.01	0.01	0.01
Alpha	1.13	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	0.21	0.17	0.52
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	0.05	0.29

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	24.48	32.64	0.51	3.89	6.24	0.79	0.64	0.13
2	LOB	32.64	40.80	5.35	18.09	8.47	8.35	2.22	0.30
3	Chan	40.80	42.04	1.93	4.53	1.29	3.01	3.66	0.43
4	Chan	42.04	43.28	2.24	4.96	1.29	3.51	4.00	0.45
5	Chan	43.28	44.52	2.78	5.13	1.27	4.34	4.14	0.54
6	Chan	44.52	45.76	3.92	4.82	1.27	6.12	3.89	0.81
7	Chan	45.76	47.00	3.51	4.51	1.26	5.49	3.63	0.78
8	ROB	47.00	65.22	28.51	49.02	18.29	44.55	2.69	0.58
9	ROB	65.22	83.44	12.52	32.34	18.25	19.56	1.77	0.39
10	ROB	83.44	101.67	2.63	12.68	18.25	4.11	0.70	0.21
11	ROB	101.67	119.89	0.11	1.35	7.67	0.18	0.18	0.08

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.3110

INPUT
Description: R.S. 1.3110 Immediately Upstream of Milky Way
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2615.49	9.64	2614.26	18.28	2613.03	27.11	2612.27	29.97	2611.92
45.15	2612.01	50.96	2611.22	52.93	2610.14	60.3	2608.01	61.67	2607.61
62.3	2607.43	64	2608.02	65	2608.36	66.96	2609.03	68.59	2609.23
69.53	2609.29	82.73	2609.52	95.84	2610.57	101.3	2610.82	108.12	2610.86
115.06	2611.16	123.23	2612.02	133.47	2612.67	146.18	2613	157.02	2613.05
165.78	2615.9	168.92	2616.85						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	18.28	.058	66.96	.035	82.73	.04

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          60.3      64             95.03   95.03   95.03            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0      53 2611.65       F
      71  168.92 2611.65       F
```

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2612.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.058	0.058	0.039
W.S. Elev (ft)	2612.99	Reach Len. (ft)	95.03	95.03	95.03
Crit W.S. (ft)	2609.58	Flow Area (sq ft)	62.54	19.49	169.93
E.G. Slope (ft/ft)	0.000026	Area (sq ft)	62.54	19.49	169.93
Q Total (cfs)	77.00	Flow (cfs)	10.57	7.44	58.99
Top Width (ft)	127.07	Top Width (ft)	41.56	3.70	81.81
Vel Total (ft/s)	0.31	Avg. Vel. (ft/s)	0.17	0.38	0.35
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	1.50	5.27	2.08
Conv. Total (cfs)	15157.4	Conv. (cfs)	2081.5	1464.7	11611.3
Length Wtd. (ft)	95.03	Wetted Per. (ft)	42.24	3.88	82.12
Min Ch El (ft)	2607.43	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	1.18	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	0.15	0.14	0.35
C & E Loss (ft)		Cum SA (acres)	0.08	0.04	0.20

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	13.25	26.50	0.12	2.59	7.79	0.16	0.33	0.05
2	LOB	26.50	39.75	1.31	13.17	13.27	1.70	0.99	0.10
3	LOB	39.75	53.00	2.20	18.12	13.58	2.85	1.37	0.12
4	LOB	53.00	60.30	6.94	28.66	7.60	9.02	3.93	0.24
5	Chan	60.30	61.04	1.41	3.77	0.77	1.83	5.09	0.37
6	Chan	61.04	61.78	1.51	3.93	0.77	1.96	5.30	0.39
7	Chan	61.78	62.52	1.60	4.07	0.77	2.08	5.50	0.39
8	Chan	62.52	63.26	1.52	3.96	0.78	1.97	5.36	0.38
9	Chan	63.26	64.00	1.40	3.77	0.78	1.82	5.10	0.37
10	ROB	64.00	71.00	11.34	28.44	7.18	14.72	4.06	0.40
11	ROB	71.00	90.58	28.43	66.69	19.61	36.92	3.41	0.43
12	ROB	90.58	110.17	13.63	45.30	19.61	17.70	2.31	0.30
13	ROB	110.17	129.75	5.36	25.89	19.65	6.96	1.32	0.21
14	ROB	129.75	149.34	0.23	3.61	16.07	0.30	0.22	0.06

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Windmill Wash
REACH: North Branch RS: 1.2940

INPUT
Description: No. 163 Milky Way Culvert
Distance from Upstream XS = 24
Deck/Roadway Width = 53
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 5

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2611.65	2604	70.01	2612.73	2604	74.91	2612.9	2604
161.96	2618.8	2604	174.14	2619.32	2604			

Upstream Bridge Cross Section Data
Station Elevation Data num= 27

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2615.49    9.64 2614.26   18.28 2613.03   27.11 2612.27   29.97 2611.92
   45.15 2612.01   50.96 2611.22   52.93 2610.14    60.3 2608.01   61.67 2607.61
    62.3 2607.43      64 2608.02      65 2608.36   66.96 2609.03   68.59 2609.23
   69.53 2609.29   82.73 2609.52   95.84 2610.57   101.3 2610.82  108.12 2610.86
  115.06 2611.16  123.23 2612.02  133.47 2612.67  146.18    2613  157.02 2613.05
  165.78  2615.9  168.92 2616.85

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   18.28    .058   66.96    .035   82.73     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
          60.3      64             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0      53 2611.65       F
      71  168.92 2611.65       F

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 2611.47    2604    5.37  2611.5    2604   34.36 2611.91    2604
   94.07 2613.97    2604  152.21 2617.86    2604  175.07  2618.6    2604

Downstream Bridge Cross Section Data
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 2610.93     .87 2610.87   21.39 2610.93   25.93 2610.88   28.25 2610.86
   34.32 2610.34   45.84 2607.88   48.84 2606.16    51.2 2605.49   54.68 2604.49
      56 2605.39    56.4 2605.66   57.97 2606.72   62.61 2606.79   74.31 2606.95
   83.09 2607.63   83.32 2607.69   83.53  2607.7   97.02 2608.77    97.8 2608.78
  102.71 2609.14  114.84 2610.44  123.54 2611.13  141.74 2612.19  156.98 2614.02
  159.57 2614.44  171.75 2618.17

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   48.84    .035   57.97     .04    97.8    .032

Bank Sta: Left   Right    Coeff Contr.   Expan.
          51.2      56             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0      47    2607       F
      61  171.75    2607       F

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =    2609
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       2
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                8.5   81.35     .024     .024        0                    .9                1
Upstream   Elevation =  2606.51
           Centerline Station =  64.4
Downstream Elevation =  2604.78
           Centerline Station =  51.9

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

Q Culv Group (cfs)          25.79    Culv Full Len (ft)          81.35
```

# Barrels	1	Culv Vel US (ft/s)	8.21
Q Barrel (cfs)	25.79	Culv Vel DS (ft/s)	8.21
E.G. US. (ft)	2612.99	Culv Inv El Up (ft)	2606.51
W.S. US. (ft)	2612.99	Culv Inv El Dn (ft)	2604.78
E.G. DS (ft)	2607.87	Culv Frctn Ls (ft)	3.60
W.S. DS (ft)	2607.40	Culv Exit Loss (ft)	0.58
Delta EG (ft)	5.13	Culv Entr Loss (ft)	0.94
Delta WS (ft)	5.59	Q Weir (cfs)	51.21
E.G. IC (ft)	2612.92	Weir Sta Lft (ft)	19.15
E.G. OC (ft)	2612.99	Weir Sta Rgt (ft)	75.73
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2608.51	Weir Max Depth (ft)	0.86
Culv WS Outlet (ft)	2606.78	Weir Avg Depth (ft)	0.48
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	27.16
Culv Crt Depth (ft)	1.78	Min El Weir Flow (ft)	2612.10

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.2930

INPUT
Description: R.S. 1.2930 Immediately Downstream of Milky Way
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2610.93	.87	2610.87	21.39	2610.93	25.93	2610.88	28.25	2610.86
34.32	2610.34	45.84	2607.88	48.84	2606.16	51.2	2605.49	54.68	2604.49
56	2605.39	56.4	2605.66	57.97	2606.72	62.61	2606.79	74.31	2606.95
83.09	2607.63	83.32	2607.69	83.53	2607.7	97.02	2608.77	97.8	2608.78
102.71	2609.14	114.84	2610.44	123.54	2611.13	141.74	2612.19	156.98	2614.02
159.57	2614.44	171.75	2618.17						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	48.84	.035	57.97	.04	97.8	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
51.2	56	156	158.4	162	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	47	2607	F
61	171.75	2607	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2607.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.036	0.035	0.038
W.S. Elev (ft)	2607.40	Reach Len. (ft)	156.00	158.40	162.00
Crit W.S. (ft)	2607.40	Flow Area (sq ft)	5.06	11.64	13.18
E.G. Slope (ft/ft)	0.008225	Area (sq ft)	5.06	11.64	13.18
Q Total (cfs)	131.00	Flow (cfs)	21.90	76.52	32.58
Top Width (ft)	33.46	Top Width (ft)	4.53	4.80	24.14
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)	4.33	6.57	2.47
Max Chl Dpth (ft)	2.91	Hydr. Depth (ft)	1.12	2.43	0.55
Conv. Total (cfs)	1444.5	Conv. (cfs)	241.5	843.7	359.2
Length Wtd. (ft)	158.80	Wetted Per. (ft)	4.95	5.22	24.57
Min Ch El (ft)	2604.49	Shear (lb/sq ft)	0.53	1.15	0.28
Alpha	1.56	Stream Power (lb/ft s)	2.27	7.53	0.68
Frctn Loss (ft)	1.51	Cum Volume (acre-ft)	0.08	0.11	0.15
C & E Loss (ft)	0.04	Cum SA (acres)	0.03	0.03	0.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	37.60	47.00	0.02	0.03	0.38	0.01	0.09	0.62
2	LOB	47.00	51.20	21.89	5.03	4.57	16.71	1.20	4.35
3	Chan	51.20	52.16	11.81	1.97	1.00	9.02	2.05	6.00
4	Chan	52.16	53.12	14.58	2.23	1.00	11.13	2.33	6.53
5	Chan	53.12	54.08	17.58	2.50	1.00	13.42	2.60	7.04
6	Chan	54.08	55.04	19.23	2.70	1.06	14.68	2.81	7.13
7	Chan	55.04	56.00	13.31	2.25	1.16	10.16	2.34	5.93
8	ROB	56.00	61.00	15.94	4.65	5.41	12.17	0.93	3.43
9	ROB	61.00	83.15	16.64	8.54	19.16	12.70	0.45	1.95

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.2630

INPUT
Description: R.S. 1.2630
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2607.36	16.42	2606.54	17.93	2606.43	25.77	2606.65	43.89	2606.44
47.81	2605.92	55.59	2605.1	62.2	2604.17	67	2602.02	71	2601
72.68	2600.59	73.83	2600.31	77	2601.05	83.84	2602.63	86.45	2603.4
93.84	2603.31	108.04	2603.56	123.7	2604.45	139.07	2605.21	144.84	2605.4
152.26	2605.98	159.93	2606.41	178.76	2607.59	183.36	2607.94	186.46	2608.15

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	71	.035	83.84	.04	159.93	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
71	77	127.78	127.78	127.78	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2603.31	Element			
Vel Head (ft)	0.60	Wt. n-Val.	0.040	0.035	0.035
W.S. Elev (ft)	2602.71	Reach Len. (ft)	127.78	127.78	127.78
Crit W.S. (ft)	2602.71	Flow Area (sq ft)	5.36	12.28	5.99
E.G. Slope (ft/ft)	0.011142	Area (sq ft)	5.36	12.28	5.99
Q Total (cfs)	131.00	Flow (cfs)	19.85	87.06	24.09
Top Width (ft)	18.68	Top Width (ft)	5.55	6.00	7.13
Vel Total (ft/s)	5.54	Avg. Vel. (ft/s)	3.71	7.09	4.02
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	0.96	2.05	0.84
Conv. Total (cfs)	1241.1	Conv. (cfs)	188.1	824.7	228.2
Length Wtd. (ft)	127.78	Wetted Per. (ft)	5.83	6.17	7.32
Min Ch El (ft)	2600.31	Shear (lb/sq ft)	0.64	1.38	0.57
Alpha	1.25	Stream Power (lb/ft s)	2.37	9.82	2.29
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	0.06	0.07	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.01	0.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.80	71.00	19.85	5.36	5.83	15.15	0.96	3.71
2	Chan	71.00	72.20	14.78	2.23	1.24	11.28	1.86	6.62
3	Chan	72.20	73.40	18.85	2.58	1.24	14.39	2.15	7.29
4	Chan	73.40	74.60	21.49	2.79	1.23	16.40	2.33	7.69
5	Chan	74.60	75.80	17.88	2.50	1.23	13.65	2.08	7.15
6	Chan	75.80	77.00	14.06	2.17	1.23	10.73	1.80	6.49
7	ROB	77.00	98.89	24.09	5.99	7.32	18.39	0.84	4.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: North Branch RS: 1.2388

INPUT
Description: R.S. 1.2388 Northern Trib. Upstream Junction
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2601.03	5.08	2601.06	12.46	2601.11	18.75	2600.9	47.53	2599.81
50.64	2598	52.4	2596.93	52.59	2596.81	53.37	2596.35	54.8	2596.92
57.12	2597.85	64.24	2599.47	109.16	2601.24	110.73	2601.3	110.9	2601.3
112.51	2601.28	130.05	2601.25	137.93	2601.07	140.02	2602.68	141.45	2603.47
152.45	2603.68								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.64	.035	64.24	.04	109.16	.032	141.45	.025

Bank Sta: Left	Right	Coeff Contr.	Expan.
52.4	54.8	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2600.10	Element			
Vel Head (ft)	0.64	Wt. n-Val.	0.036	0.035	0.035
W.S. Elev (ft)	2599.46	Reach Len. (ft)	219.40	219.40	219.40
Crit W.S. (ft)	2599.46	Flow Area (sq ft)	5.34	6.78	10.50
E.G. Slope (ft/ft)	0.010706	Area (sq ft)	5.34	6.78	10.50
Q Total (cfs)	131.00	Flow (cfs)	27.16	55.38	48.46
Top Width (ft)	16.06	Top Width (ft)	4.27	2.40	9.39
Vel Total (ft/s)	5.79	Avg. Vel. (ft/s)	5.09	8.17	4.61
Max Chl Dpth (ft)	3.11	Hydr. Depth (ft)	1.25	2.82	1.12
Conv. Total (cfs)	1266.1	Conv. (cfs)	262.5	535.3	468.3
Length Wtd. (ft)	219.40	Wetted Per. (ft)	4.96	2.67	9.75
Min Ch El (ft)	2596.35	Shear (lb/sq ft)	0.72	1.70	0.72
Alpha	1.24	Stream Power (lb/ft s)	3.66	13.87	3.32
Frctn Loss (ft)	1.93	Cum Volume (acre-ft)	0.04	0.04	0.09
C & E Loss (ft)	0.10	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	41.92	52.40	27.16	5.34	4.96	20.73	1.25	5.09
2	Chan	52.40	52.88	9.78	1.28	0.56	7.47	2.68	7.61
3	Chan	52.88	53.36	11.63	1.42	0.56	8.88	2.96	8.18
4	Chan	53.36	53.84	12.60	1.45	0.52	9.62	3.02	8.70
5	Chan	53.84	54.32	11.31	1.36	0.52	8.63	2.83	8.34
6	Chan	54.32	54.80	10.06	1.26	0.52	7.68	2.63	7.96
7	ROB	54.80	74.33	48.46	10.50	9.75	36.99	1.12	4.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.1975

INPUT
Description: R.S. 1.1975
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2605.35	4.12	2605.54	5.8	2605.62	6.09	2605.58	19.66	2604.03
23.87	2603.59	33.36	2602.53	68.53	2597.09	74.23	2596.17	80.24	2595.16
88.67	2595.36	97.29	2595.47	102.25	2593.49	102.7	2593.31	103.65	2592.92
104.15	2592.72	106	2593.3	106.5	2593.46	110.28	2594.64	111.87	2595.12
112.78	2595.1	122.81	2594.97	133.66	2594.9	138.79	2595.1	156.54	2595.85
168.33	2596.21	196.84	2597.72	199.82	2597.9	200.19	2597.91	223.85	2598.73
233.42	2599.38	240.1	2599.73	245.73	2600.33	260.96	2600.65	264.04	2600.92
280.91	2601.47	284.68	2601.85						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	33.36	.058	97.29	.035	110.28	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
102.7	106	212	205.69	200	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2595.91	Element			
Vel Head (ft)	0.32	Wt. n-Val.	0.038	0.035	0.038
W.S. Elev (ft)	2595.59	Reach Len. (ft)	212.00	205.69	200.00
Crit W.S. (ft)	2595.59	Flow Area (sq ft)	11.32	8.51	27.01
E.G. Slope (ft/ft)	0.007586	Area (sq ft)	11.32	8.51	27.01
Q Total (cfs)	162.00	Flow (cfs)	30.02	56.83	75.15
Top Width (ft)	72.69	Top Width (ft)	25.02	3.30	44.37
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)	2.65	6.68	2.78
Max Chl Dpth (ft)	2.87	Hydr. Depth (ft)	0.45	2.58	0.61
Conv. Total (cfs)	1860.0	Conv. (cfs)	344.6	652.5	862.9
Length Wtd. (ft)	202.74	Wetted Per. (ft)	25.47	3.50	44.67
Min Ch El (ft)	2592.72	Shear (lb/sq ft)	0.21	1.15	0.29
Alpha	1.72	Stream Power (lb/ft s)	0.56	7.68	0.80
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	1.63	3.59	3.29
C & E Loss (ft)	0.04	Cum SA (acres)	2.54	1.99	5.08

arning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	61.62	82.16	1.31	1.33	4.51	0.81	0.30	0.99
2	LOB	82.16	102.70	28.70	9.99	20.96	17.72	0.49	2.87
3	Chan	102.70	103.36	10.05	1.59	0.71	6.20	2.42	6.31
4	Chan	103.36	104.02	12.01	1.77	0.71	7.41	2.68	6.78
5	Chan	104.02	104.68	13.06	1.85	0.70	8.06	2.80	7.07
6	Chan	104.68	105.34	11.60	1.72	0.69	7.16	2.60	6.76
7	Chan	105.34	106.00	10.10	1.58	0.69	6.24	2.39	6.40
8	ROB	106.00	141.74	73.57	25.44	36.02	45.41	0.71	2.89
9	ROB	141.74	177.47	1.58	1.58	8.65	0.98	0.18	1.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.1585

INPUT
Description: R.S. 1.1585
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2595.01	20.85	2594.88	26.75	2594.9	32.23	2594.85	47.05	2595
52.98	2594.03	56.58	2593.38	58.42	2592.7	60.84	2591.82	65.33	2591.66
68.63	2591.57	69.88	2590.88	70.7	2590.58	71.92	2590.14	71.93	2590.13
72.64	2589.87	76.2	2590.64	76.62	2590.73	78.35	2591.15	96.72	2591.08
102.77	2591.09	104.77	2591.1	111.39	2591.19	129.83	2591.51	135.42	2591.58
149.5	2591.96	154.14	2590.13	155.6	2589.53	157.15	2589.96	162.79	2591.37
172.7	2592.3	178.52	2592.57	181.26	2592.68	201.73	2595.01	204.43	2595.23
205.2	2595.26	229.28	2596.36	234.32	2596.78	240.51	2597.06	245.72	2597.43
253.87	2598.01	266.53	2597.98	273.82	2598.02	276.3	2598.26		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	65.33	.058	149.5	.035	162.79	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
70.7	76.2	144.15	144.15	144.15	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2591.82	Element			
Vel Head (ft)	0.19	Wt. n-Val.	0.058	0.058	0.043
W.S. Elev (ft)	2591.64	Reach Len. (ft)	144.15	144.15	144.15
Crit W.S. (ft)	2591.52	Flow Area (sq ft)	1.34	7.65	38.96
E.G. Slope (ft/ft)	0.017758	Area (sq ft)	1.34	7.65	38.96
Q Total (cfs)	162.00	Flow (cfs)	1.97	31.73	128.30
Top Width (ft)	86.56	Top Width (ft)	4.48	5.50	76.58
Vel Total (ft/s)	3.38	Avg. Vel. (ft/s)	1.47	4.15	3.29
Max Chl Dpth (ft)	2.11	Hydr. Depth (ft)	0.30	1.39	0.51

Conv. Total (cfs)	1215.7	Conv. (cfs)	14.8	238.1	962.8
Length Wtd. (ft)	144.15	Wetted Per. (ft)	4.71	5.71	77.30
Min Ch El (ft)	2589.87	Shear (lb/sq ft)	0.31	1.49	0.56
Alpha	1.05	Stream Power (lb/ft s)	0.46	6.16	1.84
Frctn Loss (ft)	2.80	Cum Volume (acre-ft)	1.60	3.55	3.13
C & E Loss (ft)	0.02	Cum SA (acres)	2.47	1.97	4.81

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	56.56	70.70	1.97	1.34	4.71	1.21	0.30	1.47
2	Chan	70.70	71.80	5.20	1.38	1.17	3.21	1.25	3.77
3	Chan	71.80	72.90	8.17	1.81	1.16	5.04	1.64	4.52
4	Chan	72.90	74.00	7.93	1.75	1.13	4.89	1.59	4.53
5	Chan	74.00	75.10	6.05	1.49	1.13	3.74	1.35	4.07
6	Chan	75.10	76.20	4.38	1.23	1.13	2.71	1.11	3.58
7	ROB	76.20	116.22	44.34	20.78	40.08	27.37	0.52	2.13
8	ROB	116.22	156.24	43.16	10.69	27.61	26.64	0.39	4.04
9	ROB	156.24	196.26	40.80	7.49	9.60	25.19	0.80	5.45

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.1312

INPUT
Description: R.S. 1.1312
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2591.81	29.76	2592.34	42.46	2592.54	46.1	2590.72	54.35	2587.96
59	2587.36	63.8	2586.74	63.82	2586.74	66.2	2587.21	66.6	2587.31
72.12	2588.73	75.84	2588.67	89.7	2588.37	90.57	2588.13	93.9	2587.21
102.49	2588.12	104.39	2588.41	106.98	2588.5	125.03	2589.3	156.8	2589.73
166.8	2589.94	168.03	2590.08	180.41	2591.28	187.97	2591.54	203.36	2591.76
222.7	2592.92	234.82	2594.1						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	46.1	.058	63.8	.035	104.39	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
59	66.6	172.38	172.38	172.38	.3	.5

Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	39.65	2602

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2589.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.058	0.050	0.035
W.S. Elev (ft)	2588.64	Reach Len. (ft)	172.38	172.38	172.38
Crit W.S. (ft)	2588.64	Flow Area (sq ft)	5.22	12.16	18.34
E.G. Slope (ft/ft)	0.021397	Area (sq ft)	5.22	12.16	18.34
Q Total (cfs)	162.00	Flow (cfs)	16.38	71.52	74.10
Top Width (ft)	52.08	Top Width (ft)	6.67	7.60	37.81
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)	3.14	5.88	4.04
Max Chl Dpth (ft)	1.90	Hydr. Depth (ft)	0.78	1.60	0.48
Conv. Total (cfs)	1107.5	Conv. (cfs)	112.0	488.9	506.6
Length Wtd. (ft)	172.38	Wetted Per. (ft)	6.82	7.70	38.21

Min Ch El (ft)	2586.74	Shear (lb/sq ft)	1.02	2.11	0.64
Alpha	1.15	Stream Power (lb/ft s)	3.21	12.41	2.59
Frctn Loss (ft)	2.00	Cum Volume (acre-ft)	1.59	3.52	3.04
C & E Loss (ft)	0.04	Cum SA (acres)	2.45	1.95	4.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	47.20	59.00	16.38	5.22	6.82	10.11	0.78	3.14
2	Chan	59.00	60.52	8.89	2.09	1.53	5.49	1.37	4.26
3	Chan	60.52	62.04	11.11	2.39	1.53	6.86	1.57	4.65
4	Chan	62.04	63.56	13.52	2.69	1.53	8.34	1.77	5.03
5	Chan	63.56	65.08	21.22	2.72	1.55	13.10	1.79	7.79
6	Chan	65.08	66.60	16.79	2.27	1.55	10.36	1.49	7.39
7	ROB	66.60	100.24	64.72	15.53	28.37	39.95	0.55	4.17
8	ROB	100.24	133.89	9.38	2.81	9.85	5.79	0.29	3.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.0986

INPUT
Description: R.S. 1.0986
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2591.04	3.7	2591.31	8.47	2591.86	11.95	2591.44	17.55	2590.73
31.48	2589.18	44.93	2587.69	63.89	2585.59	64.68	2585.58	76.55	2585.32
76.81	2585.32	79.41	2584.86	87.67	2583.7	90.3	2583.07	93.59	2582.27
93.76	2582.23	97.55	2582.89	98	2582.99	102.85	2584.11	114.35	2584.11
152.45	2584.08	171.61	2584.07	186.81	2584.01	192.26	2584.46	193.98	2584.83
198.49	2585.36	234.31	2587.94	251.25	2591.06	254.81	2591.5	261.17	2592
272.7	2593	278.61	2592.99						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	87.67	.035	97.55	.04	114.35	.025	193.98	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
90.3	98	171.81	171.81	171.81	.3	.5

Blocked Obstructions num= 1

Sta L	Sta R	Elev
119.5	163.2	2594

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2584.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.036	0.035	0.030
W.S. Elev (ft)	2584.54	Reach Len. (ft)	171.81	171.81	171.81
Crit W.S. (ft)	2584.54	Flow Area (sq ft)	5.51	14.73	24.95
E.G. Slope (ft/ft)	0.007259	Area (sq ft)	5.51	14.73	24.95
Q Total (cfs)	162.00	Flow (cfs)	16.16	80.24	65.60
Top Width (ft)	67.19	Top Width (ft)	8.58	7.70	50.91
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)	2.93	5.45	2.63
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.64	1.91	0.49
Conv. Total (cfs)	1901.4	Conv. (cfs)	189.7	941.8	769.9
Length Wtd. (ft)	171.81	Wetted Per. (ft)	8.71	7.87	51.96
Min Ch El (ft)	2582.23	Shear (lb/sq ft)	0.29	0.85	0.22
Alpha	1.43	Stream Power (lb/ft s)	0.84	4.62	0.57
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	1.57	3.47	2.95
C & E Loss (ft)	0.08	Cum SA (acres)	2.42	1.92	4.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	72.24	90.30	16.16	5.51	8.71	9.98	0.64	2.93
2	Chan	90.30	91.84	12.49	2.54	1.58	7.71	1.65	4.91
3	Chan	91.84	93.38	17.56	3.12	1.58	10.84	2.03	5.63
4	Chan	93.38	94.92	20.55	3.42	1.57	12.69	2.22	6.02
5	Chan	94.92	96.46	16.89	3.03	1.56	10.43	1.97	5.57
6	Chan	96.46	98.00	12.75	2.61	1.57	7.87	1.70	4.88
7	ROB	98.00	134.12	27.45	11.87	22.06	16.94	0.55	2.31
8	ROB	134.12	170.24	9.47	3.26	7.50	5.84	0.46	2.90
9	ROB	170.24	206.37	28.68	9.82	22.39	17.70	0.44	2.92

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.0661

INPUT
Description: R.S. 1.0661 Immediately Upstream of Placid Place
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-68	2584	-35	2582	0	2581.54	.1	2581.54	.56	2581.54
.9	2581.55	1.49	2581.54	8.77	2581.48	27.73	2581.35	33.96	2581.6
40.23	2581.84	53.47	2582.13	54.35	2582.1	70.36	2581.88	73.59	2581.89
74.23	2581.87	89.76	2582.47	96.53	2581.97	100.4	2581.56	101.96	2581.39
104.73	2581.23	113.8	2581.2	122.45	2581.39	123	2581.46	126.12	2581.84
126.13	2581.84	127.67	2582.02	131.18	2581.93	133.39	2581.77	137.53	2581.59

140.5	2580.87	141.71	2580.58	147.67	2580.35	149.87	2580.69	150.29	2580.76
152	2580.88	153	2580.95	153.5	2580.99	154.8	2581.08	158.34	2581.27
159.69	2582	171.46	2585.03	175.13	2585.39	179.49	2585.49	185.29	2586.49
197.59	2586.98	201.45	2586.78	204.31	2586.89	218.02	2587.35	226.1	2586.42
236.23	2585.06	239.08	2585.04	255.14	2584.79	257.71	2584.87	268.91	2585.8
276.68	2586.26	282.43	2586.47	291.57	2587.24	298.44	2587.73	302.51	2587.99

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-68	.025	33.96	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
140.5	152	40.66	40.66	40.66	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-68	133	2580.65	F
160	302.51	2580.65	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2582.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.031	0.040	0.040
W.S. Elev (ft)	2581.93	Reach Len. (ft)	40.66	40.66	40.66
Crit W.S. (ft)	2581.82	Flow Area (sq ft)	43.74	15.73	5.76
E.G. Slope (ft/ft)	0.006387	Area (sq ft)	43.74	15.73	5.76
Q Total (cfs)	162.00	Flow (cfs)	90.68	57.30	14.02
Top Width (ft)	142.32	Top Width (ft)	123.25	11.50	7.57
Vel Total (ft/s)	2.48	Avg. Vel. (ft/s)	2.07	3.64	2.44
Max Chl Dpth (ft)	1.58	Hydr. Depth (ft)	0.35	1.37	0.76
Conv. Total (cfs)	2027.1	Conv. (cfs)	1134.6	717.0	175.5
Length Wtd. (ft)	40.66	Wetted Per. (ft)	123.43	11.57	7.75
Min Ch El (ft)	2580.35	Shear (lb/sq ft)	0.14	0.54	0.30
Alpha	1.23	Stream Power (lb/ft s)	0.29	1.97	0.72
Frctn Loss (ft)		Cum Volume (acre-ft)	1.47	3.41	2.89
C & E Loss (ft)		Cum SA (acres)	2.16	1.88	4.33

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	-68.00	-27.80	0.01	0.03	2.11	0.00	0.01	0.27
2	LOB	-27.80	12.40	21.89	11.20	40.20	13.51	0.28	1.95
3	LOB	12.40	52.60	33.32	12.52	32.09	20.57	0.39	2.66
4	LOB	52.60	92.80	0.11	0.34	9.37	0.07	0.04	0.32
5	LOB	92.80	133.00	30.21	16.46	32.07	18.65	0.51	1.84
6	LOB	133.00	140.50	5.13	3.19	7.59	3.17	0.43	1.61
7	Chan	140.50	142.80	10.23	2.96	2.34	6.31	1.29	3.46
8	Chan	142.80	145.10	12.45	3.31	2.30	7.69	1.44	3.76
9	Chan	145.10	147.40	13.76	3.51	2.30	8.49	1.53	3.91
10	Chan	147.40	149.70	12.44	3.32	2.32	7.68	1.44	3.74
11	Chan	149.70	152.00	8.43	2.62	2.31	5.20	1.14	3.21
12	ROB	152.00	160.00	14.02	5.76	7.75	8.66	0.76	2.44

CULVERT

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.0604

INPUT
Description: R.S. 1.0604
Distance from Upstream XS = 11.3
Deck/Roadway Width = 17.7
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 11

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2581.06	2578	49.4	2581.77	2578	59.03	2581.46	2578
112.78	2581.12	2578	127.88	2580.65	2578	143.49	2582.42	2578

157.5	2582.6	2578	165.73	2582.47	2578	172.81	2583.16	2578
187.76	2583.49	2578	309.01	2588.76	2578			

Upstream Bridge Cross Section Data
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-68	2584	-35	2582	0	2581.54	.1	2581.54	.56	2581.54
.9	2581.55	1.49	2581.54	8.77	2581.48	27.73	2581.35	33.96	2581.6
40.23	2581.84	53.47	2582.13	54.35	2582.1	70.36	2581.88	73.59	2581.89
74.23	2581.87	89.76	2582.47	96.53	2581.97	100.4	2581.56	101.96	2581.39
104.73	2581.23	113.8	2581.2	122.45	2581.39	123	2581.46	126.12	2581.84
126.13	2581.84	127.67	2582.02	131.18	2581.93	133.39	2581.77	137.53	2581.59
140.5	2580.87	141.71	2580.58	147.67	2580.35	149.87	2580.69	150.29	2580.76
152	2580.88	153	2580.95	153.5	2580.99	154.8	2581.08	158.34	2581.27
159.69	2582	171.46	2585.03	175.13	2585.39	179.49	2585.49	185.29	2586.49
197.59	2586.98	201.45	2586.78	204.31	2586.89	218.02	2587.35	226.1	2586.42
236.23	2585.06	239.08	2585.04	255.14	2584.79	257.71	2584.87	268.91	2585.8
276.68	2586.26	282.43	2586.47	291.57	2587.24	298.44	2587.73	302.51	2587.99

Manning's n Values num= 2

Sta	n Val	Sta	n Val
-68	.025	33.96	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
140.5	152	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-68	133	2580.65	F
160	302.51	2580.65	F

Downstream Deck/Roadway Coordinates
num= 13

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2582.34	2578	20.29	2581.26	2578	52.47	2580.55	2578
78.28	2580.59	2578	95.85	2581.28	2578	112.27	2580.81	2578
137.86	2580.77	2578	157.32	2580.36	2578	191.65	2582.42	2578
204.07	2582.5	2578	259.55	2582.49	2578	280.92	2581.85	2578
357.62	2586.3	2578						

Downstream Bridge Cross Section Data
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2582.28	21.18	2581.01	35.96	2580.65	49.95	2580.06	51.78	2579.98
56.82	2579.88	70.52	2579.9	70.54	2579.9	70.55	2579.9	87.98	2581.44
96.67	2581.52	102.44	2581.32	105.98	2580.96	115.31	2580.53	126.71	2580.51
135.35	2580.33	144.48	2580.37	155.72	2580.32	157.44	2580.34	160.74	2580.52
164.38	2580.7	174.53	2581.27	180.75	2581.74	183.15	2581.83	183.17	2581.83
188.46	2582.02	189.58	2582.07	196.9	2581	197.9	2580.19	198	2580.11
198.47	2579.72	201.37	2579.76	204.5	2579.77	206.3	2580.08	206.5	2580.12
209.96	2580.71	212.81	2582.36	230.02	2582.31	242.82	2582.68	248.6	2582.71
253.88	2582.62	261.13	2582.56	263.17	2582.57	272.28	2581.9	277.16	2581.66
280.13	2581.52	309.28	2583.79	318.63	2584.46	337.02	2585.47	343.11	2585.54
345.96	2585.71								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	102.44	.025	183.15	.04	201.37	.035	230.02	.025
277.16	.04	337.02	.025						

Bank Sta: Left	Right	Coeff Contr.	Expan.
198	206.5	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	185	2580.15	F
219	345.96	2580.15	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins = 2580
Energy head used in spillway design =

Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Circular	2	

FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 1 - Headwall
Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
10.3	19.7	.024	.024	0	.5	1

Number of Barrels = 3
Upstream Elevation = 2579.62
Centerline Stations

Sta.	Sta.	Sta.
150.7	153.1	155.5

Downstream Elevation = 2579.32
Centerline Stations

Sta.	Sta.	Sta.
202.2	204.6	207

CULVERT OUTPUT Profile #PF 1 Culv Group: Culvert #1

Q Culv Group (cfs)	48.16	Culv Full Len (ft)	
# Barrels	3	Culv Vel US (ft/s)	5.75
Q Barrel (cfs)	16.05	Culv Vel DS (ft/s)	6.61
E.G. US. (ft)	2582.05	Culv Inv El Up (ft)	2579.62
W.S. US. (ft)	2581.93	Culv Inv El Dn (ft)	2579.32
E.G. DS (ft)	2580.90	Culv Frctn Ls (ft)	0.35
W.S. DS (ft)	2580.70	Culv Exit Loss (ft)	0.54
Delta EG (ft)	1.15	Culv Entr Loss (ft)	0.26
Delta WS (ft)	1.23	Q Weir (cfs)	113.84
E.G. IC (ft)	2582.04	Weir Sta Lft (ft)	-36.22
E.G. OC (ft)	2582.05	Weir Sta Rgt (ft)	140.44
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	2581.28	Weir Max Depth (ft)	0.87
Culv WS Outlet (ft)	2580.76	Weir Avg Depth (ft)	0.39
Culv Nml Depth (ft)	1.78	Weir Flow Area (sq ft)	61.08
Culv Crt Depth (ft)	1.44	Min El Weir Flow (ft)	2581.21

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.0584

INPUT
Description: R.S. 1.0584 Immediately Downstream of Placid Place
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2582.28	21.18	2581.01	35.96	2580.65	49.95	2580.06	51.78	2579.98
56.82	2579.88	70.52	2579.9	70.54	2579.9	70.55	2579.9	87.98	2581.44
96.67	2581.52	102.44	2581.32	105.98	2580.96	115.31	2580.53	126.71	2580.51
135.35	2580.33	144.48	2580.37	155.72	2580.32	157.44	2580.34	160.74	2580.52
164.38	2580.7	174.53	2581.27	180.75	2581.74	183.15	2581.83	183.17	2581.83
188.46	2582.02	189.58	2582.07	196.9	2581	197.9	2580.19	198	2580.11
198.47	2579.72	201.37	2579.76	204.5	2579.77	206.3	2580.08	206.5	2580.12
209.96	2580.71	212.81	2582.36	230.02	2582.31	242.82	2582.68	248.6	2582.71
253.88	2582.62	261.13	2582.56	263.17	2582.57	272.28	2581.9	277.16	2581.66
280.13	2581.52	309.28	2583.79	318.63	2584.46	337.02	2585.47	343.11	2585.54
345.96	2585.71								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	102.44	.025	183.15	.04	201.37	.035	230.02	.025
277.16	.04	337.02	.025						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
198	206.5	150	144.14	140	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	185	2580.15	F
219	345.96	2580.15	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2580.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.035	0.037	0.035
W.S. Elev (ft)	2580.70	Reach Len. (ft)	150.00	144.14	140.00
Crit W.S. (ft)	2580.70	Flow Area (sq ft)	38.95	7.61	0.99
E.G. Slope (ft/ft)	0.016686	Area (sq ft)	38.95	7.61	0.99
Q Total (cfs)	162.00	Flow (cfs)	123.40	36.23	2.36
Top Width (ft)	111.26	Top Width (ft)	99.35	8.50	3.41
Vel Total (ft/s)	3.41	Avg. Vel. (ft/s)	3.17	4.76	2.38
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)	0.39	0.90	0.29
Conv. Total (cfs)	1254.1	Conv. (cfs)	955.3	280.5	18.3
Length Wtd. (ft)	146.16	Wetted Per. (ft)	99.62	8.67	3.46
Min Ch El (ft)	2579.72	Shear (lb/sq ft)	0.41	0.91	0.30
Alpha	1.10	Stream Power (lb/ft s)	1.29	4.35	0.71
Frctn Loss (ft)	2.17	Cum Volume (acre-ft)	1.43	3.40	2.89
C & E Loss (ft)	0.14	Cum SA (acres)	2.06	1.87	4.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	0.00	37.00	0.07	0.13	3.17	0.04	0.04	0.55
2	LOB	37.00	74.00	78.44	23.30	37.03	48.42	0.63	3.37
3	LOB	74.00	111.00	2.53	1.40	5.65	1.56	0.25	1.81
4	LOB	111.00	148.00	27.11	9.23	36.42	16.73	0.25	2.94
5	LOB	148.00	185.00	14.88	4.68	16.42	9.19	0.29	3.18
6	LOB	185.00	198.00	0.37	0.22	0.94	0.23	0.30	1.72
7	Chan	198.00	199.70	6.72	1.57	1.84	4.15	0.92	4.29
8	Chan	199.70	201.40	7.51	1.62	1.70	4.63	0.95	4.63
9	Chan	201.40	203.10	8.35	1.60	1.70	5.15	0.94	5.23
10	Chan	203.10	204.80	8.19	1.58	1.70	5.05	0.93	5.18
11	Chan	204.80	206.50	5.47	1.25	1.73	3.38	0.73	4.39
12	ROB	206.50	219.00	2.36	0.99	3.46	1.46	0.29	2.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 1.0311

INPUT
Description: R.S. 1.0311
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2585.38	9.75	2584.9	16.92	2583.94	34.05	2582.26	38.91	2581.65

55.2	2579.77	59.86	2579.39	68.1	2578.86	69.77	2578.73	77.72	2577.87
87.21	2577.63	96.48	2577.44	102.8	2575.09	102.99	2575.02	104.49	2574.6
104.84	2574.49	105.62	2574.74	107.3	2575.11	119.95	2577.87	148.99	2577.87
152.42	2577.87	156.02	2578.04	157.66	2577.69	162.83	2577.4	170.69	2577.84
176.86	2578.17	179.88	2578.25	188.56	2578.86	198.35	2581.04	208.59	2583.64
211.84	2583.69	220.28	2583.66	224.93	2583.62	227.48	2583.55	230.27	2583.66
254.53	2583.65	261.35	2583.6	269.12	2583.45	280.62	2583.19	280.68	2583.19
283.12	2583.02	291.11	2581.22	296.91	2579.64	297.21	2579.6	298.05	2579.63
305.4	2580.06	307.62	2580.22	314.79	2581	332.51	2582.98	336.4	2583.52
342.11	2584.49	347.01	2584.82	361.08	2585.48	365.73	2585.24		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	105.62	.035	119.95	.04	162.83	.025	314.79	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
102.8	107.3	246.8	246.8	246.8	.3	.5

Blocked Obstructions num= 1

Sta L	Sta R	Elev
205	282.8	2586

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2577.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.040	0.038	0.035
W.S. Elev (ft)	2577.22	Reach Len. (ft)	246.80	246.80	246.80
Crit W.S. (ft)	2577.22	Flow Area (sq ft)	6.09	10.84	10.19
E.G. Slope (ft/ft)	0.013256	Area (sq ft)	6.09	10.84	10.19
Q Total (cfs)	162.00	Flow (cfs)	26.01	85.20	50.78
Top Width (ft)	19.89	Top Width (ft)	5.72	4.50	9.66
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)	4.27	7.86	4.99
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	1.06	2.41	1.05
Conv. Total (cfs)	1407.1	Conv. (cfs)	225.9	740.0	441.1
Length Wtd. (ft)	246.80	Wetted Per. (ft)	6.11	4.67	9.89
Min Ch El (ft)	2574.49	Shear (lb/sq ft)	0.83	1.92	0.85
Alpha	1.21	Stream Power (lb/ft s)	3.52	15.11	4.25
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	1.35	3.37	2.87
C & E Loss (ft)	0.17	Cum SA (acres)	1.88	1.85	4.30

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	82.24	102.80	26.01	6.09	6.11	16.06	1.06	4.27
2	Chan	102.80	103.70	14.60	2.04	0.94	9.01	2.27	7.15
3	Chan	103.70	104.60	17.47	2.27	0.94	10.78	2.52	7.69
4	Chan	104.60	105.50	18.73	2.38	0.94	11.56	2.64	7.88
5	Chan	105.50	106.40	18.27	2.17	0.92	11.28	2.41	8.44
6	Chan	106.40	107.30	16.14	1.99	0.92	9.96	2.21	8.12
7	ROB	107.30	158.99	50.78	10.19	9.89	31.35	1.05	4.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.9843

INPUT
Description: R.S. 0.9843
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2582.33	2.23	2582.37	7.88	2582.47	32.63	2575.12	47.7	2571.83
50.34	2571.25	50.6	2571.19	55.5	2571.89	56.8	2572.07	63.33	2573
63.46	2573.01	82.63	2572.49	86.14	2572.46	89.4	2572.57	94.61	2572.76
155.82	2575.01	164.09	2575.3	166.49	2575.24	185.01	2574.74	213.63	2573.65
244.57	2572.81	246.2	2572.94	253.34	2573.17	279.46	2573.72	285.52	2574.31
285.81	2574.33	306.32	2575.98	313.72	2576.68	323.2	2577.07	333.85	2578.23
344.01	2579.16	361.37	2581.52						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	50.34	.035	63.33	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
47.7	55.5	212.32	212.32	212.32	.1	.3

Right Levee Station= 164.09 Elevation= 2575.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2573.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.040	0.037	0.038
W.S. Elev (ft)	2573.23	Reach Len. (ft)	212.32	212.32	212.32
Crit W.S. (ft)	2573.23	Flow Area (sq ft)	4.51	13.29	26.47
E.G. Slope (ft/ft)	0.010776	Area (sq ft)	4.51	13.29	26.47
Q Total (cfs)	162.00	Flow (cfs)	13.51	78.77	69.72
Top Width (ft)	66.20	Top Width (ft)	6.43	7.80	51.97
Vel Total (ft/s)	3.66	Avg. Vel. (ft/s)	3.00	5.93	2.63
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)	0.70	1.70	0.51
Conv. Total (cfs)	1560.6	Conv. (cfs)	130.1	758.8	671.6
Length Wtd. (ft)	212.32	Wetted Per. (ft)	6.58	7.92	52.07
Min Ch El (ft)	2571.19	Shear (lb/sq ft)	0.46	1.13	0.34
Alpha	1.55	Stream Power (lb/ft s)	1.38	6.69	0.90
Frctn Loss (ft)	2.44	Cum Volume (acre-ft)	1.32	3.30	2.77
C & E Loss (ft)	0.02	Cum SA (acres)	1.84	1.82	4.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	38.16	47.70	13.51	4.51	6.58	8.34	0.70	3.00
2	Chan	47.70	49.26	12.46	2.46	1.60	7.69	1.57	5.07
3	Chan	49.26	50.82	18.09	2.98	1.59	11.17	1.91	6.06
4	Chan	50.82	52.38	19.66	2.96	1.58	12.14	1.90	6.63
5	Chan	52.38	53.94	15.97	2.62	1.58	9.86	1.68	6.10
6	Chan	53.94	55.50	12.59	2.27	1.58	7.77	1.45	5.55
7	ROB	55.50	109.80	69.72	26.47	52.07	43.04	0.51	2.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.9441

INPUT
Description: R.S. 0.9441
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2578.64	9.76	2578.16	13.42	2577.78	14.09	2577.64	19.98	2576.6
25.56	2576.47	44.94	2573.82	55.31	2573.5	68.8	2572.2	85.8	2570.85
86.97	2570.7	87.44	2570.65	88.4	2570.6	99.42	2569.9	102.86	2569.64
103.43	2569.59	109.7	2568.33	111.16	2568.03	112.47	2567.79	112.48	2567.79
113.55	2567.59	119.3	2568.43	129.9	2569.99	130.82	2570.04	141.87	2570.02
145.36	2569.8	155.1	2569.54	168.66	2569.72	228.49	2569.87	239.72	2569.8
243.78	2569.72	260.79	2571.2	261.23	2571.24	261.47	2571.25	262.68	2571.34
266.79	2571.69	284.57	2573.04	286.55	2573.08	298.25	2574.22	305.79	2574.88
313.43	2575.67	324.18	2576.86	329.61	2577.6	345.63	2579.81	354.69	2580.53
359.49	2580.87								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	103.43	.035	113.55	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
109.7	119.3	135	129.21	125	.3	.5

Right Levee Station= 130.82 Elevation= 2570.04

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2570.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.035	0.038	0.040
W.S. Elev (ft)	2569.84	Reach Len. (ft)	135.00	129.21	125.00
Crit W.S. (ft)	2569.84	Flow Area (sq ft)	5.92	17.80	6.76
E.G. Slope (ft/ft)	0.012287	Area (sq ft)	5.92	17.80	6.76
Q Total (cfs)	162.00	Flow (cfs)	23.97	116.12	21.91
Top Width (ft)	28.68	Top Width (ft)	9.50	9.60	9.59
Vel Total (ft/s)	5.31	Avg. Vel. (ft/s)	4.05	6.52	3.24
Max Chl Dpth (ft)	2.25	Hydr. Depth (ft)	0.62	1.85	0.71
Conv. Total (cfs)	1461.5	Conv. (cfs)	216.2	1047.6	197.7
Length Wtd. (ft)	129.50	Wetted Per. (ft)	9.63	9.73	9.69
Min Ch El (ft)	2567.59	Shear (lb/sq ft)	0.47	1.40	0.54
Alpha	1.22	Stream Power (lb/ft s)	1.91	9.15	1.73
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	1.30	3.22	2.69
C & E Loss (ft)	0.25	Cum SA (acres)	1.81	1.77	3.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	87.76	109.70	23.97	5.92	9.63	14.79	0.62	4.05
2	Chan	109.70	111.62	21.58	3.28	1.96	13.32	1.71	6.59
3	Chan	111.62	113.54	29.85	3.98	1.95	18.43	2.07	7.51
4	Chan	113.54	115.46	27.12	4.05	1.94	16.74	2.11	6.69
5	Chan	115.46	117.38	21.37	3.52	1.94	13.19	1.83	6.08
6	Chan	117.38	119.30	16.20	2.98	1.94	10.00	1.55	5.44
7	ROB	119.30	130.82	21.91	6.76	9.69	13.52	0.71	3.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.9196

INPUT
Description: R.S. 0.9196 Immediately Upstream of Pima Road
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2574.15	1.36	2574.15	2.2	2574.15	14.87	2574.13	16.3	2574.11
39.83	2573.41	43.34	2573.32	60.83	2572.19	65.38	2572.08	80.2	2571.19
86.02	2571.06	102.23	2569.86	105.44	2569.75	117.62	2569.28	120.48	2569.15
133.33	2566.97	134.9	2566.7	134.98	2566.7	135.06	2566.69	135.47	2566.68
145	2566.41	149.52	2566.28	154.25	2566.15	161.57	2565.94	161.65	2565.94
161.93	2565.94	172	2566.3	176.07	2566.45	177.68	2566.5	180.41	2566.96
187.2	2567.29	188.27	2567.28	200.4	2567.28	208.15	2567.53	211.46	2567.52
226.13	2568.23	231.19	2568.45	247.95	2569.49	253.92	2570.2	256.33	2569.91
256.65	2569.93	273.28	2570.72	275.28	2570.85	287.6	2571.92	299.78	2572.93
301.55	2573.02	319.1	2575.66	322.41	2576.04	324.39	2576.34	329.36	2576.76
349.15	2578.76								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	65.38	.04	135.47	.035	176.07	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
145	172	93.97	93.97	93.97	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	137	2570.65	F
180	349.15	2570.65	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2569.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.035	0.035	0.037
W.S. Elev (ft)	2569.70	Reach Len. (ft)	93.97	93.97	93.97
Crit W.S. (ft)	2567.17	Flow Area (sq ft)	25.43	95.87	25.71
E.G. Slope (ft/ft)	0.000199	Area (sq ft)	61.11	95.87	147.48
Q Total (cfs)	198.00	Flow (cfs)	32.91	133.55	31.53
Top Width (ft)	143.05	Top Width (ft)	38.32	27.00	77.73
Vel Total (ft/s)	1.35	Avg. Vel. (ft/s)	1.29	1.39	1.23
Max Chl Dpth (ft)	3.76	Hydr. Depth (ft)	3.18	3.55	3.21
Conv. Total (cfs)	14039.0	Conv. (cfs)	2333.7	9469.4	2235.9
Length Wtd. (ft)	93.97	Wetted Per. (ft)	8.00	27.01	8.04
Min Ch El (ft)	2565.94	Shear (lb/sq ft)	0.04	0.04	0.04
Alpha	1.01	Stream Power (lb/ft s)	0.05	0.06	0.05

Frctn Loss (ft)	Cum Volume (acre-ft)	1.19	3.05	2.47
C & E Loss (ft)	Cum SA (acres)	1.73	1.72	3.85

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	82.20	109.60	0.00	0.16	2.92	0.00	0.06	0.00
2	LOB	109.60	137.00	0.00	35.52	27.62	0.00	1.30	0.00
3	LOB	137.00	145.00	32.91	25.43	8.00	16.62	3.18	1.29
4	Chan	145.00	150.40	24.47	18.20	5.40	12.36	3.37	1.34
5	Chan	150.40	155.80	26.32	19.01	5.40	13.29	3.52	1.38
6	Chan	155.80	161.20	28.26	19.84	5.40	14.27	3.67	1.42
7	Chan	161.20	166.60	28.46	19.92	5.40	14.37	3.69	1.43
8	Chan	166.60	172.00	26.04	18.89	5.40	13.15	3.50	1.38
9	ROB	172.00	180.00	31.53	25.71	8.04	15.93	3.21	1.23
10	ROB	180.00	213.83	0.00	80.65	33.85	0.00	2.38	0.00
11	ROB	213.83	247.66	0.00	40.87	33.88	0.00	1.21	0.00
12	ROB	247.66	281.49	0.00	0.25	2.09	0.00	0.12	0.00

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.9042

INPUT
Description: Culvert ID No. 11 - Pima Road Culvert
Inverts obtained from field survey
See TDN for survey information
Distance from Upstream XS = 13.5
Deck/Roadway Width = 67
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	2570.65	2564	355.72	2575.54	2564

Upstream Bridge Cross Section Data
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2574.15	1.36	2574.15	2.2	2574.15	14.87	2574.13	16.3	2574.11
39.83	2573.41	43.34	2573.32	60.83	2572.19	65.38	2572.08	80.2	2571.19
86.02	2571.06	102.23	2569.86	105.44	2569.75	117.62	2569.28	120.48	2569.15
133.33	2566.97	134.9	2566.7	134.98	2566.7	135.06	2566.69	135.47	2566.68
145	2566.41	149.52	2566.28	154.25	2566.15	161.57	2565.94	161.65	2565.94
161.93	2565.94	172	2566.3	176.07	2566.45	177.68	2566.5	180.41	2566.96
187.2	2567.29	188.27	2567.28	200.4	2567.28	208.15	2567.53	211.46	2567.52
226.13	2568.23	231.19	2568.45	247.95	2569.49	253.92	2570.2	256.33	2569.91
256.65	2569.93	273.28	2570.72	275.28	2570.85	287.6	2571.92	299.78	2572.93
301.55	2573.02	319.1	2575.66	322.41	2576.04	324.39	2576.34	329.36	2576.76
349.15	2578.76								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	65.38	.04	135.47	.035	176.07	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
145	172	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	137	2570.65	F

```
     180  349.15 2570.65       F

Downstream  Deck/Roadway Coordinates
   num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 2569.22    2564  365.28 2574.32    2564

Downstream Bridge Cross Section Data
Station Elevation Data    num=      49
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  2570.3   17.22 2570.17   19.55 2570.19   22.18 2570.19   44.09 2569.92
   46.71 2569.98   66.75  2569.8   86.79 2570.44   89.73 2570.49  107.54 2570.64
   111.2  2570.7  129.57 2570.79  134.61 2570.79   137.5 2570.66   152.5 2570.11
  155.48 2570.15  175.24 2568.98  176.93 2568.73  181.29 2564.93   181.3 2564.91
   181.4 2564.72  181.51 2564.52   181.7 2564.52   181.9 2564.51  187.17 2564.34
  193.24 2564.32  193.67 2564.38  193.68 2564.38     196 2564.68  202.67 2565.55
  203.42 2565.64  209.42 2565.95  215.54 2568.76  217.92 2568.81  230.14  2570.3
  240.14 2570.57   240.2 2570.57  246.14 2570.76  263.52  2572.1  268.11 2572.15
  286.48 2573.33  288.75 2573.57  293.87 2574.41  306.19 2575.84  314.12 2576.51
  327.56 2577.28  336.97 2577.71  349.93 2578.52  353.03 2578.46

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0    .025   137.5     .04  187.17    .035  203.42     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
         181.4     196            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     166 2569.18       F
     212  353.03 2569.18       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =  2568.5
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Culvert #1          Arch  3.1667    4.75
FHWA Chart # 41- Arch; Corrugated metal
FHWA Scale # 1 - 90 Degree headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
               12.5      69     .024      .024        0                  .5                 1
Number of Barrels =  3
Upstream   Elevation =  2566.37
Centerline Stations
    Sta.    Sta.    Sta.
     145   151.9   158.8
Downstream Elevation =  2564.55
Centerline Stations
    Sta.    Sta.    Sta.
   185.6   192.5   199.4

CULVERT OUTPUT  Profile #PF 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)        198.00    Culv Full Len (ft)
  # Barrels                      3    Culv Vel US (ft/s)          8.19
  Q Barrel (cfs)             66.00    Culv Vel DS (ft/s)          9.32
  E.G. US. (ft)            2569.73    Culv Inv El Up (ft)      2566.37
  W.S. US. (ft)            2569.70    Culv Inv El Dn (ft)      2564.55
  E.G. DS (ft)             2566.67    Culv Frctn Ls (ft)          1.76
  W.S. DS (ft)             2566.10    Culv Exit Loss (ft)         0.78
  Delta EG (ft)               3.06    Culv Entr Loss (ft)         0.52
  Delta WS (ft)               3.60    Q Weir (cfs)
  E.G. IC (ft)             2569.43    Weir Sta Lft (ft)
```

E.G. OC (ft)	2569.73	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	2568.17	Weir Max Depth (ft)	
Culv WS Outlet (ft)	2566.11	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.56	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.80	Min El Weir Flow (ft)	2571.66

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.9018

INPUT
Description: R.S. 0.9018 Immediately Downstream of Pima Road
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2570.3	17.22	2570.17	19.55	2570.19	22.18	2570.19	44.09	2569.92
46.71	2569.98	66.75	2569.8	86.79	2570.44	89.73	2570.49	107.54	2570.64
111.2	2570.7	129.57	2570.79	134.61	2570.79	137.5	2570.66	152.5	2570.11
155.48	2570.15	175.24	2568.98	176.93	2568.73	181.29	2564.93	181.3	2564.91
181.4	2564.72	181.51	2564.52	181.7	2564.52	181.9	2564.51	187.17	2564.34
193.24	2564.32	193.67	2564.38	193.68	2564.38	196	2564.68	202.67	2565.55
203.42	2565.64	209.42	2565.95	215.54	2568.76	217.92	2568.81	230.14	2570.3
240.14	2570.57	240.2	2570.57	246.14	2570.76	263.52	2572.1	268.11	2572.15
286.48	2573.33	288.75	2573.57	293.87	2574.41	306.19	2575.84	314.12	2576.51
327.56	2577.28	336.97	2577.71	349.93	2578.52	353.03	2578.46		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	137.5	.04	187.17	.035	203.42	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
181.4	196	144	147.77	152	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	166	2569.18	F
212	353.03	2569.18	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2566.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.040	0.037	0.035
W.S. Elev (ft)	2566.10	Reach Len. (ft)	144.00	147.77	152.00
Crit W.S. (ft)	2566.10	Flow Area (sq ft)	0.92	24.73	8.77
E.G. Slope (ft/ft)	0.012921	Area (sq ft)	0.92	24.73	8.77
Q Total (cfs)	198.00	Flow (cfs)	2.31	160.50	35.19
Top Width (ft)	29.79	Top Width (ft)	1.45	14.60	13.74
Vel Total (ft/s)	5.75	Avg. Vel. (ft/s)	2.51	6.49	4.01
Max Chl Dpth (ft)	1.78	Hydr. Depth (ft)	0.64	1.69	0.64
Conv. Total (cfs)	1741.8	Conv. (cfs)	20.4	1411.9	309.6
Length Wtd. (ft)	147.38	Wetted Per. (ft)	2.01	14.74	13.84
Min Ch El (ft)	2564.32	Shear (lb/sq ft)	0.37	1.35	0.51
Alpha	1.12	Stream Power (lb/ft s)	0.93	8.78	2.05
Frctn Loss (ft)	1.26	Cum Volume (acre-ft)	1.13	2.92	2.30
C & E Loss (ft)	0.20	Cum SA (acres)	1.69	1.67	3.75

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	166.00	181.40	2.31	0.92	2.01	1.17	0.64	2.51
2	Chan	181.40	184.32	26.65	4.72	3.04	13.46	1.61	5.65
3	Chan	184.32	187.24	30.29	5.00	2.92	15.30	1.71	6.06
4	Chan	187.24	190.16	36.19	5.15	2.92	18.28	1.76	7.03
5	Chan	190.16	193.08	36.53	5.17	2.92	18.45	1.77	7.06
6	Chan	193.08	196.00	30.84	4.69	2.94	15.58	1.61	6.58
7	ROB	196.00	212.00	35.19	8.77	13.84	17.77	0.64	4.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.8739

INPUT
Description: R.S. 0.8739
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2569.09	7.9	2567.74	31.46	2563.7	37.41	2562.69	74.02	2562.94
90.78	2562.84	101.8	2562.94	108.04	2563.06	123.4	2563.27	127.18	2563.37
135.1	2561.92	136.38	2561.68	137.32	2561.49	138.16	2561.31	143.2	2561.92
148.12	2562.52	150.95	2563.11	155.37	2563.15	170.61	2563.7	176.96	2563.91
180.79	2564.07	181.9	2564.18	202.52	2565.92	214.38	2568.15	220.26	2568.77
230.62	2569.31	242.33	2569.32	250.93	2569.97	254.64	2570.25	256.66	2570.05

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.032	108.04	.04	127.18	.035	148.12	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
135.1	143.2	171.71	171.71	171.71	.3	.5

Left Levee Station= 127.18 Elevation= 2563.37

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2563.55	Element			
Vel Head (ft)	0.18	Wt. n-Val.	0.033	0.035	0.036
W.S. Elev (ft)	2563.38	Reach Len. (ft)	171.71	171.71	171.71
Crit W.S. (ft)	2563.38	Flow Area (sq ft)	47.19	14.25	9.10
E.G. Slope (ft/ft)	0.006035	Area (sq ft)	47.19	14.25	9.10
Q Total (cfs)	198.00	Flow (cfs)	105.54	67.95	24.51
Top Width (ft)	128.32	Top Width (ft)	101.74	8.10	18.48
Vel Total (ft/s)	2.81	Avg. Vel. (ft/s)	2.24	4.77	2.69
Max Chl Dpth (ft)	2.07	Hydr. Depth (ft)	0.46	1.76	0.49
Conv. Total (cfs)	2548.8	Conv. (cfs)	1358.7	874.7	315.5
Length Wtd. (ft)	171.71	Wetted Per. (ft)	101.94	8.20	18.58
Min Ch El (ft)	2561.31	Shear (lb/sq ft)	0.17	0.65	0.18
Alpha	1.44	Stream Power (lb/ft s)	0.39	3.12	0.50
Frctn Loss (ft)	1.09	Cum Volume (acre-ft)	1.05	2.86	2.27
C & E Loss (ft)	0.00	Cum SA (acres)	1.52	1.64	3.70

rning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	25.44	50.87	24.80	10.03	17.57	12.52	0.57	2.47
2	LOB	50.87	76.31	29.76	12.98	25.44	15.03	0.51	2.29
3	LOB	76.31	101.74	27.98	12.51	25.44	14.13	0.49	2.24
4	LOB	101.74	127.18	7.69	5.87	25.44	3.88	0.23	1.31
5	LOB	127.18	135.10	15.32	5.80	8.05	7.74	0.73	2.64
6	Chan	135.10	136.72	11.63	2.61	1.65	5.87	1.61	4.46
7	Chan	136.72	138.34	15.71	3.13	1.65	7.94	1.93	5.02
8	Chan	138.34	139.96	16.08	3.16	1.63	8.12	1.95	5.10
9	Chan	139.96	141.58	13.47	2.84	1.63	6.81	1.75	4.75
10	Chan	141.58	143.20	11.06	2.52	1.63	5.58	1.56	4.39
11	ROB	143.20	165.89	24.51	9.10	18.58	12.38	0.49	2.69

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.8413

INPUT
Description: R.S. 0.8413
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2566.71	13.01	2566.68	17.41	2566.42	22.25	2565.87	47.26	2562.85
53.51	2562.78	61.24	2562.07	70.89	2561.16	73.67	2560.98	74.41	2560.91
89.36	2559.57	91.77	2559.59	97.75	2559.79	102.9	2558.73	103.14	2558.68
106.42	2558.05	107.15	2558.15	110.31	2558.54	111.4	2558.66	121.91	2559.84
123.08	2559.92	130.72	2560.08	136.86	2559.99	143.25	2559.91	158.11	2560.04
224.25	2559.91	232.47	2559.99	235.62	2559.97	239.2	2559.72	249.22	2559.04
249.7	2559.25	251.77	2559.35	280	2560.34	281.16	2560.41	297.96	2561.54
300.54	2561.62	301.05	2561.68	317.17	2563.7	325.97	2564.76	333.08	2565.43
335.75	2565.67	339.37	2565.84	346.07	2566.23				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	47.26	.032	74.41	.04	103.14	.035	110.31	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
102.9	111.4	160	166.4	172	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2560.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2560.22	Reach Len. (ft)	160.00	166.40	172.00
Crit W.S. (ft)	2560.22	Flow Area (sq ft)	11.93	15.65	60.28
E.G. Slope (ft/ft)	0.006713	Area (sq ft)	11.93	15.65	60.28
Q Total (cfs)	198.00	Flow (cfs)	25.00	79.34	93.67
Top Width (ft)	194.31	Top Width (ft)	20.75	8.50	165.06
Vel Total (ft/s)	2.25	Avg. Vel. (ft/s)	2.10	5.07	1.55
Max Chl Dpth (ft)	2.17	Hydr. Depth (ft)	0.57	1.84	0.37
Conv. Total (cfs)	2416.6	Conv. (cfs)	305.1	968.3	1143.2
Length Wtd. (ft)	169.78	Wetted Per. (ft)	20.89	8.60	165.23

Min Ch El (ft)	2558.05	Shear (lb/sq ft)	0.24	0.76	0.15
Alpha	2.36	Stream Power (lb/ft s)	0.50	3.87	0.24
Frctn Loss (ft)	0.28	Cum Volume (acre-ft)	0.93	2.80	2.13
C & E Loss (ft)	0.05	Cum SA (acres)	1.28	1.60	3.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	61.74	82.32	0.00	0.00	0.17	0.00	0.01	0.12
2	LOB	82.32	102.90	25.00	11.93	20.72	12.62	0.58	2.10
3	Chan	102.90	104.60	13.14	2.81	1.73	6.64	1.65	4.68
4	Chan	104.60	106.30	18.02	3.37	1.73	9.10	1.98	5.35
5	Chan	106.30	108.00	19.49	3.51	1.72	9.84	2.07	5.54
6	Chan	108.00	109.70	16.30	3.16	1.71	8.23	1.86	5.16
7	Chan	109.70	111.40	12.39	2.81	1.71	6.26	1.65	4.41
8	ROB	111.40	158.33	29.54	18.63	47.01	14.92	0.40	1.59
9	ROB	158.33	205.27	11.28	10.45	46.93	5.70	0.22	1.08
10	ROB	205.27	252.20	35.70	20.87	47.01	18.03	0.44	1.71
11	ROB	252.20	299.14	17.15	10.32	24.28	8.66	0.43	1.66

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.8098

INPUT
Description: R.S. 0.8098
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2560.99	8.94	2562.01	10.75	2562.05	25.42	2560.05	42.16	2557.33
47.16	2557.27	55.7	2555.75	56.87	2555.54	58.13	2555.33	58.36	2555.29
62.5	2555.79	63	2555.85	63.6	2555.92	66.19	2556.23	73.91	2557.07
96.36	2556.57	119.07	2556.49	122.22	2556.57	151.45	2556.57	151.49	2556.56
151.51	2556.56	151.54	2556.56	167.97	2556.57	182.65	2556.37	194.05	2556.51
208.17	2556.18	211.48	2556.21	236.28	2555.12	237.69	2555.12	238.64	2555.11
241.97	2555.37	248.17	2555.39	268.74	2555.67	280.01	2555.77	284.18	2555.83
288.91	2556.23	296.37	2556.69	308.7	2557.39	315.91	2557.69	328.9	2558.4
333.85	2558.74	344.87	2559.54	345.57	2559.54	347.19	2559.71	365.06	2560.85
382.22	2562.16								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	56.87	.035	66.19	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

55.7 62.5 101.01 98.13 96 .3 .5
Right Levee Station= 73.91 Elevation= 2557.07

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2557.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2557.08	Reach Len. (ft)	101.01	98.13	96.00
Crit W.S. (ft)	2557.08	Flow Area (sq ft)	4.95	10.52	199.60
E.G. Slope (ft/ft)	0.000738	Area (sq ft)	4.95	10.52	199.60
Q Total (cfs)	198.00	Flow (cfs)	3.76	15.82	178.41
Top Width (ft)	254.96	Top Width (ft)	7.46	6.80	240.70
Vel Total (ft/s)	0.92	Avg. Vel. (ft/s)	0.76	1.50	0.89
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)	0.66	1.55	0.83
Conv. Total (cfs)	7288.6	Conv. (cfs)	138.5	582.4	6567.6
Length Wtd. (ft)	97.18	Wetted Per. (ft)	7.58	6.87	240.86
Min Ch El (ft)	2555.29	Shear (lb/sq ft)	0.03	0.07	0.04
Alpha	1.08	Stream Power (lb/ft s)	0.02	0.11	0.03
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	0.90	2.75	1.62
C & E Loss (ft)	0.17	Cum SA (acres)	1.22	1.57	2.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	44.56	55.70	3.76	4.95	7.58	1.90	0.66	0.76
2	Chan	55.70	57.06	2.57	1.97	1.38	1.30	1.45	1.30
3	Chan	57.06	58.42	3.69	2.29	1.38	1.86	1.68	1.61
4	Chan	58.42	59.78	3.76	2.31	1.37	1.90	1.70	1.63
5	Chan	59.78	61.14	3.17	2.09	1.37	1.60	1.53	1.52
6	Chan	61.14	62.50	2.63	1.86	1.37	1.33	1.37	1.41
7	ROB	62.50	73.91	5.91	7.24	11.48	2.98	0.63	0.82
8	ROB	73.91	135.57	13.80	26.72	61.67	6.97	0.43	0.52
9	ROB	135.57	197.23	21.27	34.64	61.67	10.74	0.56	0.61
10	ROB	197.23	258.90	94.86	84.96	61.70	47.91	1.38	1.12
11	ROB	258.90	320.56	42.57	46.03	44.35	21.50	1.04	0.92

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.7913

INPUT
Description: R.S. 0.7913

Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2558.38	5.23	2558.91	11.88	2559.57	20.71	2558.86	39.83	2556.7
57.17	2556.36	82.77	2555.51	86.42	2555.4	99.34	2555.14	103.36	2554.49
107	2553.68	108	2553.46	109.11	2553.21	114.77	2553.06	117.42	2552.9
128	2553.43	128.18	2553.44	139.34	2554.94	161.59	2555.02	169.84	2555.03
173.08	2554.96	185.32	2554.75	188.82	2555.26	194.25	2556.3	202.98	2556.38
211.71	2556.54	217.07	2556.62	234.34	2556.97	246.7	2557.19	249.82	2557.18
251.86	2557.28	263.62	2557.27	271.03	2557.55	302.56	2557.53	307.14	2557.51
330.12	2558.62	341.37	2558.83	343.23	2558.76	349.34	2559.46	349.35	2559.46
360.45	2559.17	382.15	2559.25	389.75	2559.22	392.03	2559.24	392.86	2559.26

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	109.11	.035	128	.04	188.82	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
108	128	84	84.8	86	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2555.10	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2554.53	Reach Len. (ft)	84.00	84.80	86.00
Crit W.S. (ft)	2554.53	Flow Area (sq ft)	2.60	27.85	4.65
E.G. Slope (ft/ft)	0.014597	Area (sq ft)	2.60	27.85	4.65
Q Total (cfs)	198.00	Flow (cfs)	7.54	176.38	14.08
Top Width (ft)	33.23	Top Width (ft)	4.91	20.00	8.32
Vel Total (ft/s)	5.64	Avg. Vel. (ft/s)	2.89	6.33	3.03
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.53	1.39	0.56
Conv. Total (cfs)	1638.8	Conv. (cfs)	62.4	1459.9	116.5
Length Wtd. (ft)	84.91	Wetted Per. (ft)	5.03	20.05	8.39
Min Ch El (ft)	2552.90	Shear (lb/sq ft)	0.47	1.27	0.50
Alpha	1.15	Stream Power (lb/ft s)	1.37	8.02	1.53
Frctn Loss (ft)	1.03	Cum Volume (acre-ft)	0.89	2.70	1.39
C & E Loss (ft)	0.04	Cum SA (acres)	1.21	1.54	2.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	86.40	108.00	7.54	2.60	5.03	3.81	0.53	2.89
2	Chan	108.00	112.00	31.19	5.27	4.03	15.75	1.32	5.92
3	Chan	112.00	116.00	38.21	5.84	4.00	19.30	1.46	6.54
4	Chan	116.00	120.00	43.44	6.31	4.01	21.94	1.58	6.89
5	Chan	120.00	124.00	35.82	5.62	4.01	18.09	1.40	6.38
6	Chan	124.00	128.00	27.72	4.82	4.01	14.00	1.20	5.75
7	ROB	128.00	180.97	14.08	4.65	8.39	7.11	0.56	3.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.7752

INPUT
Description: R.S. 0.7752
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2558.3	1.8	2558.46	32.96	2554.67	36.89	2554.19	44.96	2554.17
79.57	2554.14	84.94	2553.55	88.11	2553.45	93.58	2553.11	95.54	2553.4
100.35	2552.66	105.1	2551.99	108.71	2551.48	108.72	2551.48	109.16	2551.42
114.2	2552	115.3	2552.12	116.58	2552.26	122.99	2553.01	131.41	2553
133.59	2553.22	134.1	2553.29	147.74	2555.63	148.91	2555.61	153.31	2555.6
176.4	2555.38	182.84	2555.76	195.52	2556.53	199.4	2556.55	212.58	2556.62
240.7	2556.9	249.3	2556.88	271.73	2556.89	286.57	2556.24	287.59	2556.14
288.36	2556.07	296.14	2555.52	296.68	2555.49	296.76	2555.48	296.98	2555.48
302.37	2555.69	318.93	2555.97	336.34	2556.13	351.23	2556.19	364.13	2556.47
374.09	2556.6	376.58	2556.59						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	100.35	.035	116.58	.04	147.74	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
105.1	114.2	262	274.5	290	.3	.5

Blocked Obstructions num= 1

Sta L	Sta R	Elev
312	376.58	2559

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2554.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.036	0.035	0.038
W.S. Elev (ft)	2553.56	Reach Len. (ft)	262.00	274.50	290.00
Crit W.S. (ft)	2553.56	Flow Area (sq ft)	10.81	16.90	15.43
E.G. Slope (ft/ft)	0.010213	Area (sq ft)	10.81	16.90	15.43
Q Total (cfs)	198.00	Flow (cfs)	37.50	108.92	51.58
Top Width (ft)	50.88	Top Width (ft)	20.28	9.10	21.50
Vel Total (ft/s)	4.59	Avg. Vel. (ft/s)	3.47	6.45	3.34
Max Chl Dpth (ft)	2.14	Hydr. Depth (ft)	0.53	1.86	0.72
Conv. Total (cfs)	1959.2	Conv. (cfs)	371.1	1077.8	510.4
Length Wtd. (ft)	278.31	Wetted Per. (ft)	20.42	9.17	21.59
Min Ch El (ft)	2551.42	Shear (lb/sq ft)	0.34	1.17	0.46
Alpha	1.33	Stream Power (lb/ft s)	1.17	7.57	1.52
Frctn Loss (ft)	2.64	Cum Volume (acre-ft)	0.88	2.66	1.37
C & E Loss (ft)	0.05	Cum SA (acres)	1.19	1.51	2.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	84.08	105.10	37.50	10.81	20.42	18.94	0.53	3.47
2	Chan	105.10	106.92	18.76	3.10	1.84	9.47	1.70	6.05
3	Chan	106.92	108.74	23.71	3.57	1.84	11.98	1.96	6.65
4	Chan	108.74	110.56	26.14	3.78	1.83	13.20	2.08	6.92
5	Chan	110.56	112.38	22.14	3.42	1.83	11.18	1.88	6.48
6	Chan	112.38	114.20	18.18	3.04	1.83	9.18	1.67	5.99
7	ROB	114.20	166.68	51.58	15.43	21.59	26.05	0.72	3.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.7232

INPUT
Description: R.S. 0.7232
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2556.44	5.64	2556.94	7.93	2557.09	9.14	2556.97	36.22	2552.2
44.67	2550.85	50.24	2550.59	68.08	2550.04	122.27	2549.49	136.93	2549.76
150.58	2549.68	157.85	2549.44	168.6	2546.55	169.24	2546.38	170.66	2546.03
172.21	2546.23	174.62	2546.49	175.5	2546.59	189.02	2548.07	190.56	2547.94
194.11	2547.9	222.95	2547.91	227.03	2547.92	235.53	2548.12	239.81	2548.49
245.78	2548.84	265.36	2551.39	275.45	2552.15	278.83	2552.35	282.54	2552.41
298.57	2552.9	311.07	2553.52	314.97	2553.86	318.07	2553.84	322.04	2553.63
324.76	2553.61	345.49	2553.67	346.74	2553.81	352.01	2554.68	356.14	2554.57

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	169.24	.035	189.02	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
168.6	175.5	98.7	107.04	117.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2548.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.040	0.035	0.037
W.S. Elev (ft)	2548.34	Reach Len. (ft)	98.70	107.04	117.70
Crit W.S. (ft)	2548.34	Flow Area (sq ft)	5.97	14.02	33.03
E.G. Slope (ft/ft)	0.008860	Area (sq ft)	5.97	14.02	33.03
Q Total (cfs)	198.00	Flow (cfs)	18.94	87.84	91.21
Top Width (ft)	76.15	Top Width (ft)	6.66	6.90	62.59
Vel Total (ft/s)	3.73	Avg. Vel. (ft/s)	3.17	6.26	2.76
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.90	2.03	0.53
Conv. Total (cfs)	2103.5	Conv. (cfs)	201.2	933.2	969.0
Length Wtd. (ft)	109.57	Wetted Per. (ft)	6.90	7.00	62.69
Min Ch El (ft)	2546.03	Shear (lb/sq ft)	0.48	1.11	0.29
Alpha	1.57	Stream Power (lb/ft s)	1.52	6.94	0.80
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	0.83	2.56	1.21
C & E Loss (ft)	0.03	Cum SA (acres)	1.10	1.46	1.95

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	134.88	168.60	18.94	5.97	6.90	9.57	0.90	3.17
2	Chan	168.60	169.98	15.75	2.72	1.42	7.95	1.97	5.79
3	Chan	169.98	171.36	20.85	3.10	1.41	10.53	2.25	6.73
4	Chan	171.36	172.74	19.28	2.95	1.39	9.74	2.13	6.55
5	Chan	172.74	174.12	17.03	2.73	1.39	8.60	1.98	6.23

6	Chan	174.12	175.50	14.92	2.52	1.39	7.54	1.83	5.91
7	ROB	175.50	211.63	73.99	23.36	36.21	37.37	0.65	3.17
8	ROB	211.63	247.76	17.22	9.66	26.47	8.70	0.37	1.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.7029

INPUT
Description: R.S. 0.7029
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2548.81	1.09	2548.78	12.41	2548.93	21.34	2549.05	37.47	2548.82
37.97	2548.82	39.18	2548.81	39.97	2548.8	47.81	2548.55	50.13	2548.59
100.12	2548.24	111.5	2548.19	123.12	2548.26	136.45	2548.14	143.79	2547.82
154.44	2546.93	157.23	2547	167.79	2547.4	178.85	2547.29	188.99	2546.99
189.97	2546.96	198.51	2547.1	203.38	2547.31	210.99	2546.97	211.71	2546.94
212.8	2546.85	220.44	2546.19	222.51	2546.16	233.48	2545.95	235.07	2545.5
235.45	2545.36	237.26	2544.73	237.6	2544.61	238.99	2544.12	242.83	2544.1
248.89	2544.35	250.44	2544.43	251.8	2544.62	252.39	2544.7	266.15	2546.74
268.71	2546.6	286.66	2544.76	289.94	2544.57	290.5	2544.54	304.04	2546.04
315.81	2547.5	322.41	2547.41	345.77	2546.85	353.01	2546.71	354.07	2546.71
368.06	2547.86	370.19	2547.96	383.15	2547.87	387.89	2547.55	389.33	2547.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	248.89	.035	268.71	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
237.6	251.8	102.3	102.3	102.3	.1	.3

Right Levee Station= 266.15 Elevation= 2546.74

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2546.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.040	0.039	0.035
W.S. Elev (ft)	2545.95	Reach Len. (ft)	102.30	102.30	102.30
Crit W.S. (ft)	2545.95	Flow Area (sq ft)	2.61	24.00	5.98
E.G. Slope (ft/ft)	0.016261	Area (sq ft)	2.61	24.00	5.98
Q Total (cfs)	198.00	Flow (cfs)	8.82	164.66	24.52
Top Width (ft)	27.29	Top Width (ft)	4.10	14.20	8.98
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	3.38	6.86	4.10
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)	0.64	1.69	0.67
Conv. Total (cfs)	1552.7	Conv. (cfs)	69.2	1291.3	192.3
Length Wtd. (ft)	102.30	Wetted Per. (ft)	4.31	14.30	9.08
Min Ch El (ft)	2544.10	Shear (lb/sq ft)	0.61	1.70	0.67
Alpha	1.13	Stream Power (lb/ft s)	2.08	11.69	2.74
Frctn Loss (ft)	1.44	Cum Volume (acre-ft)	0.82	2.52	1.16
C & E Loss (ft)	0.03	Cum SA (acres)	1.09	1.44	1.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water

surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	190.08	237.60	8.82	2.61	4.31	4.46	0.64	3.38
2	Chan	237.60	240.44	32.12	4.85	2.92	16.22	1.71	6.63
3	Chan	240.44	243.28	37.06	5.22	2.84	18.72	1.84	7.10
4	Chan	243.28	246.12	34.70	5.02	2.84	17.53	1.77	6.91
5	Chan	246.12	248.96	31.06	4.69	2.84	15.69	1.65	6.63
6	Chan	248.96	251.80	29.72	4.23	2.86	15.01	1.49	7.03
7	ROB	251.80	266.15	24.52	5.98	9.08	12.38	0.67	4.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.6835

INPUT
Description: R.S. 0.6835
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2551.7	.05	2551.71	1.05	2551.76	7.27	2551.56	14.75	2550.87
17.57	2550.54	33.15	2548.58	46.6	2547.32	50.68	2547.31	53.4	2547.28
66.99	2547.23	73.56	2547.02	86.55	2546.59	88.43	2546.55	108.49	2546.61
109.51	2546.63	110.76	2546.66	118.77	2546.51	138.02	2546.23	145.74	2546.23
153.76	2546.08	155.43	2546.06	167.98	2545.95	188.71	2545.9	204.05	2545.9
210.21	2543.75	213	2542.74	214.76	2542.11	216.13	2542.17	221.31	2542.35
223.12	2542.4	224.4	2542.52	226	2542.66	226.78	2542.73	229.43	2542.94
240.47	2543.84	247.58	2544.43	248.35	2544.47	249.15	2544.54	260.15	2545.33
284.53	2545.42	286.8	2545.37	287.16	2545.36	287.87	2545.37	304.91	2544.61
333.27	2543.89	335.97	2543.85	337.13	2543.76	353.6	2542.63	362.32	2543.24
367.77	2543.57	379.43	2544.21	392.69	2544.22	401.38	2544.37	411.13	2545.08
417.88	2545.37	422.24	2545.9	432.48	2546.83	440.77	2547.57	452.02	2548.72
456.14	2549.17	463.48	2548.47						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	210.21	.035	223.12	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
213	226	196	191.74	186	.1	.3

Right Levee Station= 284.53 Elevation= 2545.42

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2544.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.035	0.036	0.040
W.S. Elev (ft)	2544.08	Reach Len. (ft)	196.00	191.74	186.00
Crit W.S. (ft)	2544.08	Flow Area (sq ft)	2.47	22.47	12.25
E.G. Slope (ft/ft)	0.012345	Area (sq ft)	2.47	22.47	12.25
Q Total (cfs)	198.00	Flow (cfs)	9.43	148.47	40.09
Top Width (ft)	34.02	Top Width (ft)	3.72	13.00	17.30
Vel Total (ft/s)	5.32	Avg. Vel. (ft/s)	3.83	6.61	3.27
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)	0.66	1.73	0.71
Conv. Total (cfs)	1782.1	Conv. (cfs)	84.9	1336.3	360.9
Length Wtd. (ft)	191.01	Wetted Per. (ft)	3.95	13.13	17.36
Min Ch El (ft)	2542.11	Shear (lb/sq ft)	0.48	1.32	0.54

Alpha	1.26	Stream Power (lb/ft s)	1.84	8.72	1.78
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)	0.81	2.46	1.14
C & E Loss (ft)	0.00	Cum SA (acres)	1.08	1.41	1.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	170.40	213.00	9.43	2.47	3.95	4.76	0.66	3.83
2	Chan	213.00	215.60	30.16	4.54	2.71	15.23	1.75	6.65
3	Chan	215.60	218.20	35.02	4.88	2.60	17.69	1.88	7.17
4	Chan	218.20	220.80	32.25	4.65	2.60	16.29	1.79	6.94
5	Chan	220.80	223.40	29.33	4.43	2.60	14.82	1.70	6.63
6	Chan	223.40	226.00	21.71	3.98	2.61	10.97	1.53	5.46
7	ROB	226.00	284.53	40.09	12.25	17.36	20.25	0.71	3.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.6472

INPUT
Description: R.S. 0.6472
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2550.64	.6	2550.62	1	2550.57	7.55	2549.71	11.39	2549.43
27.32	2547.37	40.09	2546.2	64.05	2544.61	71.53	2544.39	72.73	2544.33
74.56	2544.23	85.76	2543.62	90.7	2543.36	105.04	2542.51	107.39	2542.35
107.8	2542.33	110.73	2542.22	111.04	2542.19	121.3	2539.51	122.1	2539.3
122.61	2539.17	122.71	2539.16	122.89	2539.16	130.37	2539.08	135.93	2539.03
136	2539.05	136.5	2539.18	136.8	2539.25	137.8	2539.5	138.72	2539.73
142.38	2540.36	156.81	2540.76	167.78	2541.16	179.15	2541.27	196.65	2541.44
211.7	2541.57	218.53	2541.44	222.2	2541.37	228.7	2541.23	264.59	2540.85
276.61	2541.13	290.96	2541.2	292.44	2541.17	301.29	2541.07	306.97	2541.17
322.94	2540.95	337.59	2540.63	339.48	2540.48	346.05	2539.83	352.04	2540.09
361.49	2540.42	381.66	2541.55	385.25	2541.73	385.78	2541.73	386.39	2541.74
401.88	2542.27	427.29	2544.03	428.15	2544.07	428.59	2544.11	429.38	2544.15
442.54	2545.28								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	122.61	.035	135.93	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
122.1	136.8	220	210.37	202	.1	.3

Right Levee Station= 211.7 Elevation= 2541.57

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2541.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2541.08	Reach Len. (ft)	220.00	210.37	202.00
Crit W.S. (ft)	2541.08	Flow Area (sq ft)	6.06	29.08	15.74
E.G. Slope (ft/ft)	0.009942	Area (sq ft)	6.06	29.08	15.74
Q Total (cfs)	250.00	Flow (cfs)	20.29	190.84	38.87
Top Width (ft)	50.29	Top Width (ft)	6.81	14.70	28.78
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)	3.35	6.56	2.47
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)	0.89	1.98	0.55
Conv. Total (cfs)	2507.2	Conv. (cfs)	203.5	1914.0	389.8
Length Wtd. (ft)	210.73	Wetted Per. (ft)	7.04	14.74	28.90
Min Ch El (ft)	2539.03	Shear (lb/sq ft)	0.53	1.22	0.34
Alpha	1.44	Stream Power (lb/ft s)	1.79	8.03	0.83
Frctn Loss (ft)	2.31	Cum Volume (acre-ft)	0.79	2.35	1.08
C & E Loss (ft)	0.00	Cum SA (acres)	1.06	1.35	1.72

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	97.68	122.10	20.29	6.06	7.04	8.12	0.89	3.35
2	Chan	122.10	125.04	35.76	5.63	2.96	14.30	1.91	6.35
3	Chan	125.04	127.98	38.01	5.76	2.94	15.20	1.96	6.60
4	Chan	127.98	130.92	39.02	5.85	2.94	15.61	1.99	6.67
5	Chan	130.92	133.86	39.95	5.93	2.94	15.98	2.02	6.73
6	Chan	133.86	136.80	38.11	5.91	2.97	15.24	2.01	6.45
7	ROB	136.80	211.70	38.87	15.74	28.90	15.55	0.55	2.47

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.6074

INPUT
Description: R.S. 0.6074
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2543.98	5.55	2543.63	16.99	2543.12	22.06	2542.89	28.85	2542.59
30.57	2542.45	40.69	2541.66	42.98	2541.5	66.11	2539.73	71.68	2539.46
83.82	2538.3	94.91	2537.13	102.97	2536.63	107.8	2536.09	108.75	2535.98
112.02	2535.72	113.49	2535.76	119.39	2535.92	120.21	2535.94	121.11	2536.12
121.3	2536.15	132.07	2538.08	133.71	2538.15	159.06	2538.31	178	2538.16
185.55	2538.04	193.63	2537.73	204.15	2537.33	206.81	2537.22	213.52	2537.49
219.1	2537.87	222.72	2538.02	226.04	2538.07	233.9	2538.03	240.5	2538.15
276.55	2538.28	280.83	2538.55	283.92	2538.31	292.25	2538.74	293.9	2538.86

307.32 2539.83 313.29 2540.51 318.46 2540.72 326.44 2541.6 334.8 2542.22
335.17 2542.25

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	108.75	.035	121.11	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
107.8	121.3	291.44	291.44	291.44	.1	.3

Right Levee Station= 159.06 Elevation= 2538.31

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2538.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2537.71	Reach Len. (ft)	291.44	291.44	291.44
Crit W.S. (ft)	2537.71	Flow Area (sq ft)	14.87	24.92	6.82
E.G. Slope (ft/ft)	0.012173	Area (sq ft)	14.87	24.92	6.82
Q Total (cfs)	250.00	Flow (cfs)	52.68	173.85	23.47
Top Width (ft)	40.64	Top Width (ft)	18.42	13.50	8.72
Vel Total (ft/s)	5.36	Avg. Vel. (ft/s)	3.54	6.98	3.44
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)	0.81	1.85	0.78
Conv. Total (cfs)	2265.9	Conv. (cfs)	477.5	1575.7	212.7
Length Wtd. (ft)	291.44	Wetted Per. (ft)	18.50	13.54	8.86
Min Ch El (ft)	2535.72	Shear (lb/sq ft)	0.61	1.40	0.58
Alpha	1.31	Stream Power (lb/ft s)	2.16	9.76	2.01
Frctn Loss (ft)	3.50	Cum Volume (acre-ft)	0.74	2.22	1.02
C & E Loss (ft)	0.01	Cum SA (acres)	1.00	1.28	1.64

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	86.24	107.80	52.68	14.87	18.50	21.07	0.81	3.54
2	Chan	107.80	110.50	31.01	4.75	2.71	12.40	1.76	6.53
3	Chan	110.50	113.20	38.48	5.27	2.71	15.39	1.95	7.30
4	Chan	113.20	115.90	37.62	5.20	2.70	15.05	1.92	7.24
5	Chan	115.90	118.60	35.26	5.00	2.70	14.11	1.85	7.05
6	Chan	118.60	121.30	31.47	4.70	2.72	12.59	1.74	6.69
7	ROB	121.30	159.06	23.47	6.82	8.86	9.39	0.78	3.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.5522

INPUT
Description: R.S. 0.5522

Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2537.54	1.53	2537.52	30.06	2535.53	41.18	2534.93	49.32	2534.36
58.45	2533.67	71.09	2533.02	83.1	2532.79	168.53	2533.35	186.64	2533.56
187.22	2533.56	187.34	2533.56	187.88	2533.33	193.9	2530.39	194.3	2530.19
197.66	2530.3	202.18	2530.27	211.19	2530.09	212.37	2530.06	213.1	2530.29
213.12	2530.3	213.22	2530.33	213.8	2530.52	223.34	2533.62	232.79	2533.6
234.32	2533.59	235.63	2533.04	242.33	2530.27	247.8	2532.16	252.58	2533.17
262.66	2533.12	262.76	2533.12	262.77	2533.12	277.4	2534.11	288.88	2535
304.15	2536.24	326.18	2538.37	330.1	2538.74	336.18	2539.12	336.84	2539.16
338.85	2539.04								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	194.3	.035	212.37	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
193.9	213.1	165	171.05	178	.1	.3

Right Levee Station= 223.34 Elevation= 2533.62

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2532.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.64	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2531.98	Reach Len. (ft)	165.00	171.05	178.00
Crit W.S. (ft)	2531.89	Flow Area (sq ft)	2.58	33.92	4.37
E.G. Slope (ft/ft)	0.011862	Area (sq ft)	2.58	33.92	4.37
Q Total (cfs)	250.00	Flow (cfs)	8.35	226.39	15.27
Top Width (ft)	27.64	Top Width (ft)	3.25	19.20	5.19
Vel Total (ft/s)	6.12	Avg. Vel. (ft/s)	3.23	6.67	3.49
Max Chl Dpth (ft)	1.92	Hydr. Depth (ft)	0.79	1.77	0.84
Conv. Total (cfs)	2295.4	Conv. (cfs)	76.6	2078.6	140.2
Length Wtd. (ft)	171.01	Wetted Per. (ft)	3.62	19.29	5.46
Min Ch El (ft)	2530.06	Shear (lb/sq ft)	0.53	1.30	0.59
Alpha	1.11	Stream Power (lb/ft s)	1.71	8.69	2.07
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)	0.68	2.02	0.99
C & E Loss (ft)	0.02	Cum SA (acres)	0.92	1.17	1.59

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	155.12	193.90	8.35	2.58	3.62	3.34	0.79	3.23
2	Chan	193.90	197.74	43.18	6.63	3.89	17.27	1.73	6.51
3	Chan	197.74	201.58	42.50	6.50	3.84	17.00	1.69	6.54
4	Chan	201.58	205.42	44.34	6.66	3.84	17.74	1.74	6.66
5	Chan	205.42	209.26	47.63	6.96	3.84	19.05	1.81	6.85
6	Chan	209.26	213.10	48.73	7.17	3.88	19.49	1.87	6.80
7	ROB	213.10	223.34	15.27	4.37	5.46	6.11	0.84	3.49

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.5198

INPUT

Description: R.S. 0.5198
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2534.25	3.33	2534.27	10.67	2533.69	21.81	2532.68	51.3	2529.78
53.65	2530.06	55.02	2530.27	79.45	2530.54	87.58	2530.61	122.08	2530.63
138.32	2530.59	147.43	2528.19	148.4	2527.87	150.47	2527.2	156.64	2527.47
159.63	2527.52	159.7	2527.55	160.5	2527.94	161.01	2528.18	165.51	2531.08
169.92	2531.17	175.7	2531.35	180.48	2531.38	199.65	2531.72	200.53	2531.68
206.69	2531.42	216.41	2531.06	237.67	2529.2	248.13	2528.43	249.8	2528.33
258.24	2528.04	269.06	2527.68	289.37	2528.31	291.31	2528.37	291.56	2528.35
297.46	2527.79	304.22	2527.13	304.41	2527.12	304.79	2527.12	312.68	2526.81
317.16	2524.31	317.65	2524.15	317.98	2524.05	318.47	2524.32	325.04	2526.66
334.25	2526.7	337.72	2526.74	339.02	2526.73	341.27	2526.92	350.45	2527.64
352.73	2527.77	370.21	2528.93	374.59	2529.2	376.08	2529.37	388.16	2530.57
390.16	2530.8	394.63	2531.23	401.39	2532.04	402.77	2531.89		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	147.43	.035	161.01	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
148.4	160.5	256	251.77	248	.1	.3

Right Levee Station= 199.65 Elevation= 2531.72

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2530.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.038	0.035	0.038
W.S. Elev (ft)	2529.69	Reach Len. (ft)	256.00	251.77	248.00
Crit W.S. (ft)	2529.69	Flow Area (sq ft)	5.89	27.29	2.61
E.G. Slope (ft/ft)	0.011964	Area (sq ft)	5.89	27.29	2.61
Q Total (cfs)	250.00	Flow (cfs)	24.21	215.45	10.34
Top Width (ft)	21.63	Top Width (ft)	6.67	12.10	2.86
Vel Total (ft/s)	6.99	Avg. Vel. (ft/s)	4.11	7.90	3.97
Max Chl Dpth (ft)	5.64	Hydr. Depth (ft)	0.88	2.26	0.91
Conv. Total (cfs)	2285.6	Conv. (cfs)	221.3	1969.7	94.5
Length Wtd. (ft)	251.87	Wetted Per. (ft)	6.92	12.31	3.36
Min Ch El (ft)	2527.20	Shear (lb/sq ft)	0.64	1.66	0.58
Alpha	1.15	Stream Power (lb/ft s)	2.61	13.07	2.30
Frctn Loss (ft)	3.24	Cum Volume (acre-ft)	0.67	1.90	0.97
C & E Loss (ft)	0.08	Cum SA (acres)	0.90	1.11	1.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	118.72	148.40	24.21	5.89	6.92	9.68	0.88	4.11
2	Chan	148.40	150.82	40.69	5.33	2.53	16.27	2.20	7.63
3	Chan	150.82	153.24	49.01	5.87	2.42	19.60	2.42	8.36
4	Chan	153.24	155.66	45.50	5.61	2.42	18.20	2.32	8.11
5	Chan	155.66	158.08	42.47	5.38	2.42	16.99	2.22	7.89
6	Chan	158.08	160.50	37.79	5.10	2.52	15.12	2.11	7.42
7	ROB	160.50	199.65	10.34	2.61	3.36	4.14	0.91	3.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.4721

INPUT
Description: R.S. 0.4721
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2530.32	4.71	2530.34	10.79	2530.27	29.76	2523.05	29.8	2523.04
30.97	2522.64	32.45	2522.65	49.01	2522.78	53.31	2522.73	53.33	2522.73
53.94	2522.72	55.2	2523.01	64.36	2525.13	72.77	2526.43	77.11	2526.47
80.82	2526.17	90.09	2526.1	115.54	2525.58	125.52	2525.43	128.88	2525.36
152.54	2524.83	152.91	2524.82	153.93	2524.8	196.8	2523.85	201.59	2522.86
206.92	2521.65	208.82	2522.06	217.31	2524.67	221.13	2525.23	223.68	2525.4
235.2	2526.31	235.5	2526.31	236.92	2526.39	253.24	2527.87	257.27	2528.16
262.22	2528.55	279.03	2529.34	286.61	2529.9	302.37	2531.4	302.48	2531.4
306.55	2531.24								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	32.45	.035	53.31	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
29.8	55.2	195	188.89	184	.1	.3

Right Levee Station= 77.11 Elevation= 2526.47

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2524.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2524.20	Reach Len. (ft)	195.00	188.89	184.00
Crit W.S. (ft)	2524.16	Flow Area (sq ft)	1.78	37.29	3.06
E.G. Slope (ft/ft)	0.013907	Area (sq ft)	1.78	37.29	3.06
Q Total (cfs)	250.00	Flow (cfs)	5.20	235.50	9.30
Top Width (ft)	33.60	Top Width (ft)	3.06	25.40	5.14
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)	2.92	6.32	3.04
Max Chl Dpth (ft)	2.55	Hydr. Depth (ft)	0.58	1.47	0.59
Conv. Total (cfs)	2120.0	Conv. (cfs)	44.1	1997.0	78.9
Length Wtd. (ft)	188.83	Wetted Per. (ft)	3.27	25.50	5.27
Min Ch El (ft)	2522.64	Shear (lb/sq ft)	0.47	1.27	0.50
Alpha	1.08	Stream Power (lb/ft s)	1.38	8.02	1.53
Frctn Loss (ft)	2.52	Cum Volume (acre-ft)	0.64	1.71	0.96
C & E Loss (ft)	0.01	Cum SA (acres)	0.88	1.00	1.55

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	23.84	29.80	5.20	1.78	3.27	2.08	0.58	2.92
2	Chan	29.80	34.88	46.62	7.63	5.15	18.65	1.50	6.11
3	Chan	34.88	39.96	50.55	7.67	5.08	20.22	1.51	6.59
4	Chan	39.96	45.04	48.34	7.47	5.08	19.34	1.47	6.47
5	Chan	45.04	50.12	46.30	7.28	5.08	18.52	1.43	6.36
6	Chan	50.12	55.20	43.69	7.24	5.11	17.48	1.42	6.04
7	ROB	55.20	77.11	9.30	3.06	5.27	3.72	0.59	3.04

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.4363

INPUT
Description: R.S. 0.4363
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2527.97	1.82	2527.98	3.49	2527.98	22.58	2526.22	24.05	2526.08
24.95	2525.97	37.71	2524.54	47.06	2523.42	51.2	2522.98	62.11	2522.8
79.36	2522.59	85.32	2522.33	87.83	2521.6	95.9	2520.03	96.96	2519.82
104.17	2519.74	107.81	2519.66	108.83	2519.79	110.8	2520.05	116.8	2520.82
117.35	2521	129.38	2523.06	130.17	2523.02	145.76	2522.5	147.51	2522.43
154.09	2522.13	157.35	2521.9	161.97	2520.61	165.03	2519.84	165.07	2519.85
171.13	2521.24	178.47	2522.91	183.12	2523.39	218.22	2527.4	228.99	2528.58
231.63	2528.63	233.62	2528.63	239.96	2528.7	244.13	2528.73		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	96.96	.035	108.83	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
95.9	110.8	150	155.33	165	.1	.3

Right Levee Station= 129.38 Elevation= 2523.06

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2522.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2521.63	Reach Len. (ft)	150.00	155.33	165.00
Crit W.S. (ft)	2521.63	Flow Area (sq ft)	6.57	27.47	8.72
E.G. Slope (ft/ft)	0.012793	Area (sq ft)	6.57	27.47	8.72
Q Total (cfs)	250.00	Flow (cfs)	23.59	193.75	32.66
Top Width (ft)	33.30	Top Width (ft)	8.17	14.90	10.23
Vel Total (ft/s)	5.85	Avg. Vel. (ft/s)	3.59	7.05	3.75
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)	0.80	1.84	0.85
Conv. Total (cfs)	2210.3	Conv. (cfs)	208.6	1713.0	288.7
Length Wtd. (ft)	155.86	Wetted Per. (ft)	8.33	14.95	10.36
Min Ch El (ft)	2519.66	Shear (lb/sq ft)	0.63	1.47	0.67
Alpha	1.22	Stream Power (lb/ft s)	2.26	10.35	2.52
Frctn Loss (ft)	1.94	Cum Volume (acre-ft)	0.63	1.57	0.93
C & E Loss (ft)	0.00	Cum SA (acres)	0.85	0.91	1.52

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	76.72	95.90	23.59	6.57	8.33	9.44	0.80	3.59
2	Chan	95.90	98.88	35.70	5.30	3.00	14.28	1.78	6.73
3	Chan	98.88	101.86	39.78	5.50	2.98	15.91	1.85	7.23
4	Chan	101.86	104.84	41.01	5.61	2.98	16.40	1.88	7.32
5	Chan	104.84	107.82	43.05	5.77	2.98	17.22	1.94	7.46
6	Chan	107.82	110.80	34.21	5.29	3.01	13.68	1.78	6.47

7	ROB	110.80	129.38	32.66	8.72	10.36	13.06	0.85	3.75

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.4069

INPUT
Description: R.S. 0.4069
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2526.45	2.86	2526.41	12.1	2526.41	17.9	2526.31	24.13	2525.99
29.3	2525.52	40.92	2524.81	69.23	2522.54	80.21	2521.53	81.88	2521.37
85.27	2521.15	113.66	2519.61	116.23	2519.5	117.99	2519.45	121.38	2518.93
123.79	2518.66	126.18	2518.56	135.6	2518.71	142.78	2519.46	143.69	2519.34
153.41	2518.08	154.57	2517.97	155.17	2517.79	155.6	2517.77	157.44	2517.67
166.15	2517.18	169	2517.67	169.38	2517.73	169.77	2517.82	176.27	2519.22
178.2	2519.57	178.55	2519.65	189.34	2519.22	191.64	2519.16	199.66	2517.69
200.71	2517.48	201.61	2517.73	202.29	2517.6	203.87	2517.77	205.06	2517.85
209.68	2518.2	214.42	2518.31	226.17	2519.85	229.51	2520.91	251.12	2523.72
254.62	2524.06	258.18	2524.45	265.86	2525.06	273.48	2525.57	276.47	2525.59
278.76	2525.75	299.26	2526.28	305.83	2526.65				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	157.44	.035	169.38	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
155.6	169	203	211.29	220	.1	.3

Left Levee Station= 142.78 Elevation= 2519.46
Right Levee Station= 178.55 Elevation= 2519.65

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2520.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.040	0.035	0.039
W.S. Elev (ft)	2519.41	Reach Len. (ft)	203.00	211.29	220.00
Crit W.S. (ft)	2519.41	Flow Area (sq ft)	10.04	26.05	7.17
E.G. Slope (ft/ft)	0.012161	Area (sq ft)	10.04	26.05	7.17
Q Total (cfs)	250.00	Flow (cfs)	35.45	187.15	27.40
Top Width (ft)	34.15	Top Width (ft)	12.44	13.40	8.32
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)	3.53	7.18	3.82
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)	0.81	1.94	0.86
Conv. Total (cfs)	2267.1	Conv. (cfs)	321.5	1697.1	248.5
Length Wtd. (ft)	211.34	Wetted Per. (ft)	12.56	13.46	8.50
Min Ch El (ft)	2517.18	Shear (lb/sq ft)	0.61	1.47	0.64
Alpha	1.26	Stream Power (lb/ft s)	2.14	10.56	2.45
Frctn Loss (ft)	2.50	Cum Volume (acre-ft)	0.60	1.48	0.90
C & E Loss (ft)	0.00	Cum SA (acres)	0.82	0.86	1.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	142.78	155.60	35.45	10.04	12.56	14.18	0.81	3.53
2	Chan	155.60	158.28	28.11	4.59	2.68	11.24	1.71	6.12
3	Chan	158.28	160.96	35.27	4.99	2.68	14.11	1.86	7.07
4	Chan	160.96	163.64	40.15	5.40	2.68	16.06	2.01	7.44
5	Chan	163.64	166.32	45.22	5.80	2.69	18.09	2.16	7.80
6	Chan	166.32	169.00	38.40	5.28	2.72	15.36	1.97	7.27
7	ROB	169.00	178.55	27.40	7.17	8.50	10.96	0.86	3.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.3669

INPUT
Description: R.S. 0.3669
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2526.74	9.81	2526.09	13.5	2525.75	18.89	2525.36	32.67	2524.78
41.12	2524.76	59.25	2525.05	61.79	2525.08	81.28	2523.98	83.21	2523.82
84.48	2523.76	100.61	2522.43	104.77	2521.9	111.85	2520.92	124.43	2519.37
131.15	2518.64	147.71	2518.3	153.12	2518.07	154.25	2517.86	159.71	2517.84
163.33	2517.97	173.62	2517.86	183.18	2517.67	191.05	2517.08	199.15	2516.5
208.99	2514.94	210.2	2514.66	211.33	2514.39	213.89	2514.34	222.14	2514.14
224.4	2514.58	231.75	2515.99	238.39	2517.17	239.97	2517.19	240.66	2517.24
245.99	2517.45	261.75	2518.42	265.23	2518.76	284.08	2517.48	293.03	2516.93
295.41	2516.86	305.73	2515.26	308.45	2514.94	316.73	2515.94	319.46	2516.26
325.04	2516.25	332.2	2516.3	334.4	2516.45	337.57	2516.63	349.71	2517.61
365.89	2519.32	368.52	2519.5	370.25	2519.56	371.89	2519.61	375.35	2519.78
396.7	2520.88	404.96	2521.27	411.43	2521.35	412.91	2521.32		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	211.33	.035	231.75	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
210.2	224.4	57.8	57.8	57.8	.3	.5

Right Levee Station= 265.23 Elevation= 2518.76

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2516.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.040	0.035	0.035
W.S. Elev (ft)	2516.26	Reach Len. (ft)	57.80	57.80	57.80
Crit W.S. (ft)	2516.26	Flow Area (sq ft)	7.23	27.73	7.34
E.G. Slope (ft/ft)	0.011532	Area (sq ft)	7.23	27.73	7.34
Q Total (cfs)	250.00	Flow (cfs)	23.80	194.43	31.77
Top Width (ft)	32.57	Top Width (ft)	9.52	14.20	8.85
Vel Total (ft/s)	5.91	Avg. Vel. (ft/s)	3.29	7.01	4.33
Max Chl Dpth (ft)	2.12	Hydr. Depth (ft)	0.76	1.95	0.83
Conv. Total (cfs)	2328.0	Conv. (cfs)	221.6	1810.5	295.9
Length Wtd. (ft)	57.80	Wetted Per. (ft)	9.65	14.28	9.01
Min Ch El (ft)	2514.14	Shear (lb/sq ft)	0.54	1.40	0.59

Alpha	1.19	Stream Power (lb/ft s)	1.78	9.80	2.54
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	0.56	1.35	0.87
& E Loss (ft)	0.13	Cum SA (acres)	0.76	0.79	1.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	168.16	210.20	23.80	7.23	9.65	9.52	0.76	3.29
2	Chan	210.20	213.04	33.27	5.18	2.87	13.31	1.82	6.43
3	Chan	213.04	215.88	38.56	5.48	2.84	15.43	1.93	7.03
4	Chan	215.88	218.72	40.86	5.68	2.84	16.35	2.00	7.20
5	Chan	218.72	221.56	43.24	5.87	2.84	17.29	2.07	7.36
6	Chan	221.56	224.40	38.49	5.51	2.88	15.40	1.94	6.99
7	ROB	224.40	265.23	31.77	7.34	9.01	12.71	0.83	4.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

OSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.3560

INPUT
Description: R.S. 0.3560
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2522.07	2.11	2521.9	2.61	2521.83	12.99	2521.11	27	2522.46
36.46	2523.11	40.15	2522.76	49.56	2521.87	55.23	2521.31	69.86	2519.92
71.41	2519.82	84.61	2518.95	88.31	2518.69	97.28	2518.5	101.66	2518.3
108.19	2517.85	122.03	2517.25	132.46	2516.9	134.22	2516.87	136.79	2516.54
140.33	2516.12	151.6	2515.39	155.06	2514.99	156.32	2514.85	160	2514.17
161	2513.99	163.94	2513.45	167.39	2513.43	170.54	2513.49	180.21	2513.67
182	2514.01	188.92	2515.3	191.84	2515.88	203.57	2515.84	234.56	2515.37
246.82	2515.14	252.17	2514.45	255.26	2514.12	263.4	2515.64	264.82	2515.81
285.15	2515.62	297.04	2515.7	297.56	2515.73	323.35	2517.38	330.3	2517.98
343.16	2518.74	354.46	2519.33	358.31	2519.55	362.03	2519.79		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	167.39	.035	180.21	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
161	182	61	61	61	.1	.3

Right Levee Station= 191.84 Elevation= 2515.88

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2515.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.040	0.037	0.040
W.S. Elev (ft)	2515.53	Reach Len. (ft)	61.00	61.00	61.00
Crit W.S. (ft)	2515.21	Flow Area (sq ft)	7.26	40.86	6.16

E.G. Slope (ft/ft)	0.007135	Area (sq ft)	7.26	40.86	6.16
Q Total (cfs)	250.00	Flow (cfs)	16.64	217.39	15.97
Top Width (ft)	40.57	Top Width (ft)	11.51	21.00	8.06
Vel Total (ft/s)	4.61	Avg. Vel. (ft/s)	2.29	5.32	2.59
Max Chl Dpth (ft)	2.10	Hydr. Depth (ft)	0.63	1.95	0.76
Conv. Total (cfs)	2959.7	Conv. (cfs)	197.0	2573.7	189.0
Length Wtd. (ft)	61.00	Wetted Per. (ft)	11.62	21.08	8.20
Min Ch El (ft)	2513.43	Shear (lb/sq ft)	0.28	0.86	0.33
Alpha	1.20	Stream Power (lb/ft s)	0.64	4.59	0.87
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	0.55	1.30	0.86
C & E Loss (ft)	0.03	Cum SA (acres)	0.75	0.77	1.43

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	128.80	161.00	16.64	7.26	11.62	6.66	0.63	2.29
2	Chan	161.00	165.20	37.70	7.93	4.25	15.08	1.89	4.75
3	Chan	165.20	169.40	47.81	8.75	4.20	19.12	2.08	5.46
4	Chan	169.40	173.60	48.51	8.48	4.20	19.40	2.02	5.72
5	Chan	173.60	177.80	45.42	8.15	4.20	18.17	1.94	5.57
6	Chan	177.80	182.00	37.95	7.55	4.23	15.18	1.80	5.03
7	ROB	182.00	191.84	15.97	6.16	8.20	6.39	0.76	2.59

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.3444

INPUT
Description: R.S. 0.3444
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2520.85	3.99	2521.2	10.3	2521.02	13.17	2520.87	21.93	2519.76
42.93	2517.41	46.51	2517.91	64.64	2521.31	66.11	2521.23	75.78	2521.06
77.8	2521.03	83.77	2520.75	86.41	2520.42	93.72	2519.78	111.32	2518.38
130.85	2515.71	134.78	2515.17	155.34	2514.59	157.45	2514.51	159.55	2513.75
162	2512.85	162.36	2512.72	172.8	2512.51	174.31	2512.48	174.53	2512.51
177	2512.77	188.33	2513.98	189.91	2514.14	191.9	2514.17	199.89	2514.58
203.77	2514.61	207.45	2514.7	219.75	2514.57	228.43	2514.47	230.09	2514.44
234.2	2513.26	234.82	2513.2	245.86	2513.88	254.37	2514.2	257.56	2514.16
273.12	2514.2	279.81	2514.19	288.47	2514.82	291.77	2515.09	302.71	2516
305.74	2516.26	324.42	2517.57	331.67	2517.96	342.37	2518.68	344.6	2518.84
345.03	2518.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	162.36	.035	174.53	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
162	177	179.07	179.07	179.07	.3	.5

Right Levee Station= 207.45 Elevation= 2514.7

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2515.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2514.58	Reach Len. (ft)	179.07	179.07	179.07
Crit W.S. (ft)	2514.58	Flow Area (sq ft)	4.11	29.48	16.84
E.G. Slope (ft/ft)	0.013608	Area (sq ft)	4.11	29.48	16.84
Q Total (cfs)	295.00	Flow (cfs)	13.07	222.44	59.49
Top Width (ft)	44.04	Top Width (ft)	6.25	15.00	22.79

Vel Total (ft/s)	5.85	Avg. Vel. (ft/s)	3.18	7.55	3.53
Max Chl Dpth (ft)	2.09	Hydr. Depth (ft)	0.66	1.97	0.74
Conv. Total (cfs)	2528.8	Conv. (cfs)	112.0	1906.8	510.0
Length Wtd. (ft)	179.07	Wetted Per. (ft)	6.55	15.04	22.87
Min Ch El (ft)	2512.48	Shear (lb/sq ft)	0.53	1.67	0.63
Alpha	1.34	Stream Power (lb/ft s)	1.69	12.56	2.21
Frctn Loss (ft)	2.29	Cum Volume (acre-ft)	0.54	1.25	0.84
C & E Loss (ft)	0.19	Cum SA (acres)	0.74	0.74	1.41

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	129.60	162.00	13.07	4.11	6.55	4.43	0.66	3.18
2	Chan	162.00	165.00	41.19	5.61	3.02	13.96	1.87	7.34
3	Chan	165.00	168.00	44.49	5.81	3.00	15.08	1.94	7.65
4	Chan	168.00	171.00	46.83	6.00	3.00	15.87	2.00	7.81
5	Chan	171.00	174.00	49.21	6.18	3.00	16.68	2.06	7.97
6	Chan	174.00	177.00	40.72	5.88	3.02	13.80	1.96	6.92
7	ROB	177.00	207.45	59.49	16.84	22.87	20.17	0.74	3.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.3105

INPUT
Description: R.S. 0.3105
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2519.18	1.99	2519.35	3.92	2519.36	22.99	2517.53	53.3	2514.73
63.22	2514.09	102.7	2512.19	102.85	2512.21	103.46	2512.17	105.16	2512.13
116.61	2511.77	122.8	2511.56	123.27	2511.56	124.24	2511.55	133.51	2511.4
136.75	2511	139.7	2510.56	140.78	2510.4	155.69	2510.29	161.25	2510.33
162.33	2510.33	163.34	2510.41	163.36	2510.41	165.1	2510.54	175.72	2511.35
176.35	2511.45	176.7	2511.47	177.55	2511.18	180.2	2510.31	183.31	2510.57
193.88	2511.69	203.22	2511.62	206.62	2511.67	209.59	2511.65	220.51	2512.5
222.98	2512.66	224.93	2512.84	241.45	2514.87	252.95	2515.56	265.7	2516.47
285.94	2517.26	290.22	2517.43	300.82	2518.38	304.17	2518.61	311.48	2518.85
323.52	2518.77								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	161.25	.035	175.72	.04	311.48	.032

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

139.7	165.1		195	190.59	186	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2512.13	Element			
Vel Head (ft)	0.34	Wt. n-Val.	0.040	0.039	0.038
W.S. Elev (ft)	2511.80	Reach Len. (ft)	195.00	190.59	186.00
Crit W.S. (ft)	2511.63	Flow Area (sq ft)	9.07	36.67	26.21
E.G. Slope (ft/ft)	0.012083	Area (sq ft)	9.07	36.67	26.21
Q Total (cfs)	295.00	Flow (cfs)	19.36	195.03	80.60
Top Width (ft)	95.68	Top Width (ft)	23.91	25.40	46.37
Vel Total (ft/s)	4.10	Avg. Vel. (ft/s)	2.14	5.32	3.07
Max Chl Dpth (ft)	1.51	Hydr. Depth (ft)	0.38	1.44	0.57
Conv. Total (cfs)	2683.7	Conv. (cfs)	176.2	1774.3	733.3
Length Wtd. (ft)	189.21	Wetted Per. (ft)	23.98	25.42	46.67
Min Ch El (ft)	2510.29	Shear (lb/sq ft)	0.29	1.09	0.42
Alpha	1.28	Stream Power (lb/ft s)	0.61	5.79	1.30
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)	0.51	1.12	0.75
C & E Loss (ft)	0.01	Cum SA (acres)	0.68	0.66	1.26

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	111.76	139.70	19.36	9.07	23.98	6.56	0.38	2.14
2	Chan	139.70	144.78	35.87	7.06	5.09	12.16	1.39	5.08
3	Chan	144.78	149.86	38.26	7.34	5.08	12.97	1.44	5.22
4	Chan	149.86	154.94	39.93	7.53	5.08	13.53	1.48	5.30
5	Chan	154.94	160.02	40.40	7.58	5.08	13.70	1.49	5.33
6	Chan	160.02	165.10	40.57	7.16	5.09	13.75	1.41	5.67
7	ROB	165.10	196.78	78.60	24.18	31.98	26.64	0.76	3.25
8	ROB	196.78	228.47	2.00	2.03	14.69	0.68	0.14	0.99

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.2744

INPUT
Description: R.S. 0.2744
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2514.37	3.55	2514.51	14.5	2513.52	30.1	2512.04	39.8	2509.77
47.7	2507.78	49.22	2507.4	57.24	2507.36	58.47	2507.33	59.88	2507.59
61	2507.72	65.62	2508.23	68.09	2508.15	71.81	2508.11	71.82	2508.11
76.8	2508.07	78.49	2507.94	79.73	2507.86	98.37	2508.95	99.07	2508.99
99.13	2508.99	99.15	2508.99	99.22	2508.99	139.85	2509.28	149.6	2509.44
160.93	2509.55	188.81	2509.91	195.22	2510.14	199.98	2510.33	217.62	2511.48
226.84	2511.98	232.49	2512.33	239.67	2513.18	241.83	2513.46	264.14	2516.66
266.79	2516.63								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	30.1	.058	49.22	.035	59.88	.04	239.67	.032

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
47.7	61	65	71.5	77	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2509.67	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.058	0.038	0.040

W.S. Elev (ft)	2509.22	Reach Len. (ft)	65.00	71.50	77.00
Crit W.S. (ft)		Flow Area (sq ft)	4.14	23.82	41.02
E.G. Slope (ft/ft)	0.014000	Area (sq ft)	4.14	23.82	41.02
Q Total (cfs)	295.00	Flow (cfs)	9.88	160.01	125.11
Top Width (ft)	89.95	Top Width (ft)	5.73	13.30	70.92
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)	2.39	6.72	3.05
Max Chl Dpth (ft)	1.89	Hydr. Depth (ft)	0.72	1.79	0.58
Conv. Total (cfs)	2493.2	Conv. (cfs)	83.5	1352.3	1057.4
Length Wtd. (ft)	72.25	Wetted Per. (ft)	5.91	13.38	70.99
Min Ch El (ft)	2507.33	Shear (lb/sq ft)	0.61	1.56	0.51
Alpha	1.56	Stream Power (lb/ft s)	1.46	10.45	1.54
Frctn Loss (ft)	0.63	Cum Volume (acre-ft)	0.48	0.99	0.61
C & E Loss (ft)	0.01	Cum SA (acres)	0.61	0.58	1.01

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	38.16	47.70	9.88	4.14	5.91	3.35	0.72	2.39
2	Chan	47.70	50.36	24.63	4.56	2.71	8.35	1.72	5.40
3	Chan	50.36	53.02	35.04	4.88	2.66	11.88	1.84	7.18
4	Chan	53.02	55.68	35.46	4.92	2.66	12.02	1.85	7.21
5	Chan	55.68	58.34	36.02	4.97	2.66	12.21	1.87	7.26
6	Chan	58.34	61.00	28.86	4.49	2.69	9.78	1.69	6.43
7	ROB	61.00	102.16	122.68	37.86	41.23	41.59	0.92	3.24
8	ROB	102.16	143.32	2.43	3.16	29.76	0.82	0.11	0.77

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.2609

INPUT
Description: R.S. 0.2609
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2508.16	3.62	2508.3	16.84	2509.4	22.3	2509.89	28.45	2510.24
42.52	2509.75	49.77	2509.4	83.47	2507.95	84.47	2507.97	88.56	2508.03
109.05	2508.25	110.7	2507.91	115	2506.92	115.5	2506.81	116	2506.7
118.32	2506.16	119.87	2506.11	128.38	2506.22	128.65	2506.21	129.32	2506.32
131	2506.61	131.5	2506.7	132	2506.78	132.3	2506.83	140.56	2508.19
142.26	2508.22	154	2508.43	163.56	2508.45	207.4	2508.96	213.09	2509.28
221.23	2509.54	234.6	2509.96	241.59	2510.55	246.8	2510.75	249.66	2511.12
255	2511.56	255.34	2511.6	257.39	2511.74	271.05	2512.88		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	116	.035	132.3	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
116	132	70	66.8	65	.1	.3

Left Levee Station= 28.45 Elevation= 2510.24

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2509.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.040	0.035	0.040
W.S. Elev (ft)	2508.63	Reach Len. (ft)	70.00	66.80	65.00
Crit W.S. (ft)	2508.63	Flow Area (sq ft)	26.42	37.69	17.12
E.G. Slope (ft/ft)	0.005967	Area (sq ft)	26.42	37.69	17.12

Q Total (cfs)	295.00	Flow (cfs)	50.62	217.82	26.56
Top Width (ft)	110.93	Top Width (ft)	48.24	16.00	46.69
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	1.92	5.78	1.55
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)	0.55	2.36	0.37
Conv. Total (cfs)	3818.8	Conv. (cfs)	655.2	2819.7	343.9
Length Wtd. (ft)	67.21	Wetted Per. (ft)	48.43	16.11	46.81
Min Ch El (ft)	2506.11	Shear (lb/sq ft)	0.20	0.87	0.14
Alpha	1.93	Stream Power (lb/ft s)	0.39	5.04	0.21
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.46	0.93	0.56
C & E Loss (ft)	0.05	Cum SA (acres)	0.57	0.55	0.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	50.34	72.23	0.25	0.43	4.47	0.08	0.10	0.57
2	LOB	72.23	94.11	19.67	11.25	21.90	6.67	0.51	1.75
3	LOB	94.11	116.00	30.70	14.74	22.06	10.41	0.67	2.08
4	Chan	116.00	119.20	40.64	7.28	3.26	13.78	2.27	5.59
5	Chan	119.20	122.40	48.23	8.00	3.20	16.35	2.50	6.03
6	Chan	122.40	125.60	47.01	7.88	3.20	15.93	2.46	5.97
7	Chan	125.60	128.80	45.70	7.75	3.20	15.49	2.42	5.90
8	Chan	128.80	132.00	36.24	6.78	3.25	12.29	2.12	5.35
9	ROB	132.00	159.81	25.47	15.12	27.93	8.63	0.54	1.68
10	ROB	159.81	187.62	1.10	2.01	18.88	0.37	0.11	0.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.2482

INPUT
Description: R.S. 0.2482 Windmill Road Crossing
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2507.64	6.18	2507.41	17.15	2507.03	28.6	2506.55	51.19	2505.52
63.2	2504.98	77.66	2504.58	94.34	2504.08	107.86	2504.01	108.5	2504
109.78	2503.99	138.3	2503.74	156.56	2503.95	162	2504.06	173.69	2504.31
194.56	2505.11	206.38	2505.43	208.89	2505.5	227.84	2505.81	246.96	2506.11
258.53	2506.16	270.41	2505.84	289.51	2505.63	295.92	2505.39	306.69	2505.09
309.47	2505.04	320.41	2504.78	322.58	2504.67	330.66	2504.71	331.63	2504.72
331.85	2504.71	334.26	2504.84	338.39	2505.01	341.51	2505.17	346.78	2505.38
369.73	2506.77	378.98	2507.49	393.84	2508.32	408.65	2509.15	436.69	2510.51
447.5	2511.07	451.8	2511.34						

Manning's n Values num= 1

Sta	n Val
0	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
108.5	162	242	251.6	265	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2505.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2504.84	Reach Len. (ft)	242.00	251.60	265.00
Crit W.S. (ft)	2504.72	Flow Area (sq ft)	20.82	51.34	12.96
E.G. Slope (ft/ft)	0.004985	Area (sq ft)	20.82	51.34	12.96
Q Total (cfs)	295.00	Flow (cfs)	56.45	209.64	28.92
Top Width (ft)	135.04	Top Width (ft)	40.07	53.50	41.47
Vel Total (ft/s)	3.47	Avg. Vel. (ft/s)	2.71	4.08	2.23
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)	0.52	0.96	0.31
Conv. Total (cfs)	4178.1	Conv. (cfs)	799.5	2969.0	409.5
Length Wtd. (ft)	250.99	Wetted Per. (ft)	40.08	53.50	41.49
Min Ch El (ft)	2503.74	Shear (lb/sq ft)	0.16	0.30	0.10
Alpha	1.14	Stream Power (lb/ft s)	0.44	1.22	0.22
Frctn Loss (ft)	1.81	Cum Volume (acre-ft)	0.42	0.87	0.53
C & E Loss (ft)	0.01	Cum SA (acres)	0.50	0.50	0.84

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	65.10	86.80	7.25	4.76	18.37	2.46	0.26	1.52
2	LOB	86.80	108.50	49.20	16.06	21.70	16.68	0.74	3.06
3	Chan	108.50	119.20	36.23	9.43	10.70	12.28	0.88	3.84
4	Chan	119.20	129.90	42.88	10.43	10.70	14.54	0.97	4.11
5	Chan	129.90	140.60	49.59	11.38	10.70	16.81	1.06	4.36
6	Chan	140.60	151.30	45.30	10.78	10.70	15.36	1.01	4.20
7	Chan	151.30	162.00	35.63	9.33	10.70	12.08	0.87	3.82
8	ROB	162.00	219.96	27.22	11.20	25.40	9.23	0.44	2.43
9	ROB	219.96	277.92						
10	ROB	277.92	335.88	1.70	1.77	16.09	0.58	0.11	0.96

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.2005

INPUT
Description: R.S. 0.2005
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2510.24	.18	2510.23	8.22	2509.34	15.63	2509.6	18.41	2509.52
22.46	2510.11	34.69	2508.77	47.24	2505.62	59.23	2503.27	66.13	2501.99
66.72	2501.88	72.72	2501.73	79.67	2501.62	81.66	2501.53	83.39	2501.61
97.56	2502.96	99.94	2502.94	104.17	2503.11	112.84	2503.23	115.35	2503.38
124.48	2503.24	130.9	2501.68	131.7	2501.46	134.24	2500.77	136.34	2500.83
141.53	2500.99	144	2501.45	153.72	2503.28	154.01	2503.32	154.51	2503.33
211.92	2503.83	218.89	2503.95	219.6	2503.92	222.06	2503.81	247.49	2502.68
250.36	2502.44	259.33	2501.89	266.06	2502.4	267.22	2502.49	267.25	2502.49
267.31	2502.5	287.41	2503.22	293.92	2503.54	307.89	2504.33	319.52	2504.35
321.36	2504.46	333.67	2506.1	334.27	2506.11	342.33	2505.67		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	72.72	.058	136.34	.035	144	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
131.7	144	140	129.6	120	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2503.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.052	0.041	0.040
W.S. Elev (ft)	2502.92	Reach Len. (ft)	140.00	129.60	120.00
Crit W.S. (ft)		Flow Area (sq ft)	36.29	23.60	22.22
E.G. Slope (ft/ft)	0.011305	Area (sq ft)	36.29	23.60	22.22
Q Total (cfs)	295.00	Flow (cfs)	100.12	138.50	56.38
Top Width (ft)	98.57	Top Width (ft)	41.82	12.30	44.45
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)	2.76	5.87	2.54
Max Chl Dpth (ft)	2.14	Hydr. Depth (ft)	0.87	1.92	0.50
Conv. Total (cfs)	2774.5	Conv. (cfs)	941.7	1302.6	530.2
Length Wtd. (ft)	129.24	Wetted Per. (ft)	42.16	12.44	44.65
Min Ch El (ft)	2500.77	Shear (lb/sq ft)	0.61	1.34	0.35
Alpha	1.55	Stream Power (lb/ft s)	1.68	7.86	0.89
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	0.26	0.65	0.43
C & E Loss (ft)	0.02	Cum SA (acres)	0.27	0.31	0.58

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	52.68	79.02	56.60	17.32	17.97	19.19	0.97	3.27
2	LOB	79.02	105.36	34.62	14.76	18.13	11.74	0.82	2.35
3	LOB	105.36	131.70	8.89	4.21	6.06	3.01	0.72	2.11
4	Chan	131.70	134.16	17.17	4.40	2.55	5.82	1.79	3.90
5	Chan	134.16	136.62	24.84	5.19	2.46	8.42	2.11	4.78
6	Chan	136.62	139.08	36.20	5.01	2.46	12.27	2.04	7.22
7	Chan	139.08	141.54	33.98	4.83	2.46	11.52	1.96	7.04
8	Chan	141.54	144.00	26.30	4.17	2.50	8.92	1.69	6.31
9	ROB	144.00	183.67	17.57	5.70	7.92	5.95	0.73	3.08
10	ROB	183.67	223.33						
11	ROB	223.33	263.00	30.19	11.61	20.83	10.23	0.56	2.60
12	ROB	263.00	302.66	8.62	4.91	15.91	2.92	0.31	1.75

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.1760

INPUT
Description: R.S. 0.1760
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2508.5	5.1	2508.03	22.74	2505.35	27.62	2504.65	29.54	2504.32
31.05	2503.08	35	2500.1	35.5	2499.72	35.8	2499.5	36.3	2499.12
36.73	2498.79	42.39	2499.01	49.1	2499.16	53	2499.42	56.51	2499.66
61.14	2500.33	74.17	2501.18	130.11	2501.87	146.07	2501.98	149.31	2501.92
154.69	2501.95	180.09	2501.73	181.73	2501.71	182.33	2501.6	191.36	2499.98
191.84	2500.05	193.12	2500.11	202.74	2501.05	204.14	2501.24	206.63	2501.1
211.68	2501.48	214.11	2501.78	216.32	2501.83	219.12	2502.1	220.86	2502.21
238.61	2503.67	240.42	2503.8	245.27	2504.02	258.45	2504.45	259.27	2504.48

264.53 2504.6 271.78 2505.02 289.81 2506.09

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	22.74	.058	42.39	.035	56.51	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
35.8	53	96.6	96.6	96.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2501.51	Element			
Vel Head (ft)	0.55	Wt. n-Val.	0.058	0.042	0.038
W.S. Elev (ft)	2500.96	Reach Len. (ft)	96.60	96.60	96.60
Crit W.S. (ft)	2500.96	Flow Area (sq ft)	1.41	32.39	20.34
E.G. Slope (ft/ft)	0.015335	Area (sq ft)	1.41	32.39	20.34
Q Total (cfs)	295.00	Flow (cfs)	3.13	213.98	77.89
Top Width (ft)	52.75	Top Width (ft)	1.94	17.20	33.62
Vel Total (ft/s)	5.45	Avg. Vel. (ft/s)	2.22	6.61	3.83
Max Chl Dpth (ft)	2.17	Hydr. Depth (ft)	0.73	1.88	0.60
Conv. Total (cfs)	2382.2	Conv. (cfs)	25.3	1727.9	629.0
Length Wtd. (ft)	96.60	Wetted Per. (ft)	2.42	17.45	33.83
Min Ch El (ft)	2498.79	Shear (lb/sq ft)	0.56	1.78	0.58
Alpha	1.20	Stream Power (lb/ft s)	1.24	11.74	2.20
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	0.20	0.57	0.37
C & E Loss (ft)	0.05	Cum SA (acres)	0.20	0.27	0.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	28.64	35.80	3.13	1.41	2.42	1.06	0.73	2.22
2	Chan	35.80	39.24	34.03	7.00	3.68	11.54	2.03	4.86
3	Chan	39.24	42.68	36.48	6.89	3.44	12.37	2.00	5.30
4	Chan	42.68	46.12	52.71	6.54	3.44	17.87	1.90	8.06
5	Chan	46.12	49.56	49.14	6.27	3.44	16.66	1.82	7.83
6	Chan	49.56	53.00	41.61	5.68	3.45	14.10	1.65	7.32
7	ROB	53.00	100.36	54.43	12.44	17.83	18.45	0.70	4.38
8	ROB	100.36	147.72						
9	ROB	147.72	195.09	18.75	5.71	9.27	6.36	0.62	3.28
10	ROB	195.09	242.45	4.71	2.19	6.73	1.60	0.33	2.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.1577

INPUT

Description: R.S. 0.1577
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2507.86	.96	2507.75	22.21	2502.82	26.21	2501.68	27.1	2501.22
33	2497.96	33.42	2497.73	41.73	2497.45	41.78	2497.44	41.79	2497.44
42.59	2497.42	43.07	2497.51	45.4	2497.93	56.41	2499.94	65.29	2499.83
66.69	2499.88	78.41	2498.38	79.55	2498.21	80.45	2498.35	87.98	2499.53
89.25	2499.66	92.2	2499.72	103.74	2499.91	110.1	2498.9	114.33	2498.21
121.61	2499.39	122.71	2499.61	123.41	2499.66	154.5	2503.77	160.58	2504.69
162.4	2504.96	165.37	2505.04	176.53	2505.01	183.84	2504.48		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.058	33.42	.035	43.07	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
33	45.4	142.83	142.83	142.83	.1	.3

Left Levee Station= 2 Elevation=

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2500.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.058	0.037	0.040
W.S. Elev (ft)	2499.82	Reach Len. (ft)	142.83	142.83	142.83
Crit W.S. (ft)	2499.64	Flow Area (sq ft)	3.13	27.42	44.56
E.G. Slope (ft/ft)	0.008109	Area (sq ft)	3.13	27.42	44.56
Q Total (cfs)	295.00	Flow (cfs)	6.29	167.53	121.18
Top Width (ft)	77.45	Top Width (ft)	3.36	12.40	61.69
Vel Total (ft/s)	3.93	Avg. Vel. (ft/s)	2.01	6.11	2.72
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	0.93	2.21	0.72
Conv. Total (cfs)	3275.9	Conv. (cfs)	69.8	1860.4	1345.7
Length Wtd. (ft)	142.83	Wetted Per. (ft)	3.84	12.51	62.33
Min Ch El (ft)	2497.42	Shear (lb/sq ft)	0.41	1.11	0.36
Alpha	1.58	Stream Power (lb/ft s)	0.83	6.78	0.98
Frctn Loss (ft)	1.52	Cum Volume (acre-ft)	0.20	0.50	0.30
C & E Loss (ft)	0.03	Cum SA (acres)	0.19	0.23	0.37

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	26.80	33.00	6.29	3.13	3.84	2.13	0.93	2.01
2	Chan	33.00	35.48	29.64	5.20	2.54	10.05	2.10	5.70
3	Chan	35.48	37.96	34.41	5.46	2.48	11.66	2.20	6.31
4	Chan	37.96	40.44	36.62	5.66	2.48	12.41	2.28	6.47
5	Chan	40.44	42.92	38.73	5.86	2.49	13.13	2.36	6.61
6	Chan	42.92	45.40	28.14	5.24	2.52	9.54	2.11	5.37
7	ROB	45.40	73.09	32.99	12.02	16.49	11.18	0.74	2.75
8	ROB	73.09	100.78	42.29	16.55	25.29	14.34	0.66	2.56
9	ROB	100.78	128.46	45.90	16.00	20.56	15.56	0.79	2.87

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Windmill Wash

REACH: Combined Branch RS: 0.1306

PUT
Description: R.S. 0.1306
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2501.29	10.69	2500.57	17.55	2500.11	18.62	2500.09	20.14	2500.15
33.4	2500.34	48.98	2499.81	76.22	2498.75	76.23	2498.75	84.83	2498.69
85.53	2498.67	90.58	2499.17	92.85	2499.35	93.63	2499.27	107.17	2498.94
111.92	2498.73	112.9	2498.64	117.84	2497.48	119.12	2497.39	124.47	2496.5
130.74	2496.51	133.71	2496.62	134.82	2496.71	138.36	2496.33	139.2	2496.17
139.63	2496.09	140.94	2496.08	142.88	2495.99	148.53	2495.74	149.8	2496.14
152.79	2497.09	157.46	2499.15	173.58	2500.31	216.3	2502.57	218.28	2502.59

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	84.83	.058	139.63	.035	152.79	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
139.2	149.8	87	90.4	94	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2498.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.058	0.035	0.035
W.S. Elev (ft)	2497.96	Reach Len. (ft)	87.00	90.40	94.00
Crit W.S. (ft)	2497.96	Flow Area (sq ft)	27.86	21.39	4.89
E.G. Slope (ft/ft)	0.014600	Area (sq ft)	27.86	21.39	4.89
Q Total (cfs)	295.00	Flow (cfs)	96.40	172.12	26.48
Top Width (ft)	38.98	Top Width (ft)	23.41	10.60	4.97
Vel Total (ft/s)	5.45	Avg. Vel. (ft/s)	3.46	8.05	5.42
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	1.19	2.02	0.98
Conv. Total (cfs)	2441.4	Conv. (cfs)	797.8	1424.5	219.1
Length Wtd. (ft)	90.29	Wetted Per. (ft)	23.58	10.68	5.30
Min Ch El (ft)	2495.74	Shear (lb/sq ft)	1.08	1.83	0.84
Alpha	1.49	Stream Power (lb/ft s)	3.73	14.69	4.56
Frctn Loss (ft)	1.28	Cum Volume (acre-ft)	0.15	0.42	0.22
C & E Loss (ft)	0.01	Cum SA (acres)	0.15	0.20	0.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	111.36	139.20	96.40	27.86	23.58	32.68	1.19	3.46
2	Chan	139.20	141.32	28.39	3.96	2.13	9.62	1.87	7.16
3	Chan	141.32	143.44	32.99	4.13	2.12	11.18	1.95	7.99
4	Chan	143.44	145.56	35.72	4.33	2.12	12.11	2.04	8.25
5	Chan	145.56	147.68	38.49	4.53	2.12	13.05	2.14	8.50
6	Chan	147.68	149.80	36.53	4.44	2.18	12.38	2.09	8.23
7	ROB	149.80	163.50	26.48	4.89	5.30	8.98	0.98	5.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.1135

INPUT
Description: R.S. 0.1135
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2504.95	4.87	2504.84	14.54	2503.71	17.4	2503.38	33.46	2501.42
55.2	2498.91	56.3	2498.85	57.7	2498.74	79.12	2496.83	84.96	2495.12
87.8	2494.45	89.05	2494.15	93.28	2494.16	96.37	2494.16	101.08	2494.16
103.4	2494.45	106.29	2494.81	107.7	2494.96	112.57	2495.25	125.38	2496.23
136.54	2496.49	146.76	2496.7	166.25	2496.57	167.71	2496.53	177.36	2496.53
182.4	2496.42								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.04	57.7	.058	89.05	.035	101.08	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
87.8	103.4	111	106.46	102	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2496.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.058	0.038	0.040
W.S. Elev (ft)	2496.14	Reach Len. (ft)	111.00	106.46	102.00
Crit W.S. (ft)	2496.14	Flow Area (sq ft)	5.63	30.42	16.38
E.G. Slope (ft/ft)	0.013860	Area (sq ft)	5.63	30.42	16.38
Q Total (cfs)	295.00	Flow (cfs)	15.36	218.74	60.90
Top Width (ft)	42.75	Top Width (ft)	6.33	15.60	20.82
Vel Total (ft/s)	5.63	Avg. Vel. (ft/s)	2.73	7.19	3.72
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)	0.89	1.95	0.79
Conv. Total (cfs)	2505.8	Conv. (cfs)	130.5	1858.0	517.3
Length Wtd. (ft)	105.33	Wetted Per. (ft)	6.55	15.65	20.89
Min Ch El (ft)	2494.15	Shear (lb/sq ft)	0.74	1.68	0.68
Alpha	1.31	Stream Power (lb/ft s)	2.03	12.09	2.52
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	0.11	0.37	0.19
C & E Loss (ft)	0.02	Cum SA (acres)	0.12	0.17	0.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	70.24	87.80	15.36	5.63	6.55	5.21	0.89	2.73
2	Chan	87.80	90.92	38.33	6.02	3.16	12.99	1.93	6.36
3	Chan	90.92	94.04	47.21	6.19	3.12	16.00	1.98	7.63
4	Chan	94.04	97.16	47.12	6.18	3.12	15.97	1.98	7.62
5	Chan	97.16	100.28	47.12	6.18	3.12	15.97	1.98	7.62
6	Chan	100.28	103.40	38.96	5.85	3.14	13.21	1.87	6.66
7	ROB	103.40	119.20	59.63	15.41	15.86	20.21	0.98	3.87
8	ROB	119.20	135.00	1.26	0.96	5.04	0.43	0.19	1.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.0933

INPUT
Description: R.S. 0.0933
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2497.15	.98	2497.07	1.51	2497.11	12.88	2497.61	17.11	2498.48
26.78	2500.87	30.28	2501.67	32.09	2501.15	39.2	2498.02	45.25	2493.95
47.5	2492.63	48.34	2492.14	51.64	2492.22	60.65	2492.42	63.2	2492.53
63.21	2492.53	64.52	2492.59	70.48	2492.85	74.35	2493.02	78.91	2493.24
81.35	2493.48	87.63	2494.06	106.3	2495.27	106.93	2495.19	109.31	2495.43
115.87	2495.73	116.15	2495.71	120.54	2495.54	126.32	2495.27		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	30.28	.058	51.64	.035	87.63	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
47.5	63.2	152.76	152.76	152.76	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2494.63	Element			
Vel Head (ft)	0.58	Wt. n-Val.	0.058	0.039	0.035
W.S. Elev (ft)	2494.05	Reach Len. (ft)	152.76	152.76	152.76
Crit W.S. (ft)	2494.05	Flow Area (sq ft)	1.72	27.21	21.90
E.G. Slope (ft/ft)	0.015526	Area (sq ft)	1.72	27.21	21.90
Q Total (cfs)	295.00	Flow (cfs)	3.99	183.21	107.80
Top Width (ft)	42.45	Top Width (ft)	2.40	15.70	24.35
Vel Total (ft/s)	5.80	Avg. Vel. (ft/s)	2.31	6.73	4.92
Max Chl Dpth (ft)	1.91	Hydr. Depth (ft)	0.72	1.73	0.90
Conv. Total (cfs)	2367.5	Conv. (cfs)	32.0	1470.4	865.1
Length Wtd. (ft)	152.76	Wetted Per. (ft)	2.79	15.84	24.40
Min Ch El (ft)	2492.14	Shear (lb/sq ft)	0.60	1.67	0.87
Alpha	1.10	Stream Power (lb/ft s)	1.38	11.21	4.28
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)	0.10	0.30	0.15
C & E Loss (ft)	0.02	Cum SA (acres)	0.11	0.13	0.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	38.00	47.50	3.99	1.72	2.79	1.35	0.72	2.31
2	Chan	47.50	50.64	26.58	5.73	3.27	9.01	1.83	4.63
3	Chan	50.64	53.78	39.20	5.71	3.14	13.29	1.82	6.86
4	Chan	53.78	56.92	42.16	5.49	3.14	14.29	1.75	7.67
5	Chan	56.92	60.06	39.40	5.28	3.14	13.36	1.68	7.47
6	Chan	60.06	63.20	35.88	4.99	3.14	12.16	1.59	7.19
7	ROB	63.20	75.82	88.16	15.70	12.64	29.88	1.24	5.61
8	ROB	75.82	88.45	19.64	6.20	11.76	6.66	0.53	3.17

Warning: The energy equation could not be balanced within the specified number of iterations. The

program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.0644

INPUT
Description: R.S. 0.0644
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2494.55	3.98	2494.7	8.55	2494.73	18.26	2495.56	22.79	2495.97
31.91	2495.17	49.35	2494.22	59.84	2494.17	78.58	2494.4	82.88	2494.43
83.48	2494.42	84.25	2494.08	91.18	2490.79	94.92	2490.8	98.74	2490.85
102.97	2489.98	103.4	2489.72	103.54	2489.64	105.83	2489.57	107.88	2489.53
114.42	2489.42	115	2489.66	124.82	2493.72	125.03	2493.8	127.45	2493.74
170.06	2492.88	176.06	2492.57	179.96	2492.53	183.26	2492.46	184	2492.46

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	22.79	.04	94.92	.035	124.82	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
103.4	115	207	211.7	217	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2492.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.036	0.035	0.035
W.S. Elev (ft)	2491.78	Reach Len. (ft)	207.00	211.70	217.00
Crit W.S. (ft)	2491.78	Flow Area (sq ft)	14.97	26.23	5.44
E.G. Slope (ft/ft)	0.011304	Area (sq ft)	14.97	26.23	5.44
Q Total (cfs)	295.00	Flow (cfs)	67.69	203.09	24.22
Top Width (ft)	31.04	Top Width (ft)	14.31	11.60	5.13
Vel Total (ft/s)	6.33	Avg. Vel. (ft/s)	4.52	7.74	4.45
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)	1.05	2.26	1.06
Conv. Total (cfs)	2774.6	Conv. (cfs)	636.6	1910.2	227.8
Length Wtd. (ft)	211.59	Wetted Per. (ft)	14.69	11.67	5.55
Min Ch El (ft)	2489.42	Shear (lb/sq ft)	0.72	1.59	0.69
Alpha	1.19	Stream Power (lb/ft s)	3.25	12.28	3.08
Frctn Loss (ft)	2.29	Cum Volume (acre-ft)	0.07	0.20	0.10
C & E Loss (ft)	0.00	Cum SA (acres)	0.08	0.08	0.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	82.72	103.40	67.69	14.97	14.69	22.95	1.05	4.52
2	Chan	103.40	105.72	37.82	5.03	2.34	12.82	2.17	7.51
3	Chan	105.72	108.04	39.87	5.18	2.32	13.52	2.23	7.70
4	Chan	108.04	110.36	41.12	5.27	2.32	13.94	2.27	7.80
5	Chan	110.36	112.68	42.31	5.36	2.32	14.34	2.31	7.89
6	Chan	112.68	115.00	41.98	5.38	2.37	14.23	2.32	7.80
7	ROB	115.00	128.80	24.22	5.44	5.55	8.21	1.06	4.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.0243

INPUT
Description: R.S. 0.0243
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2491.03	2.07	2491.15	10.44	2491.14	13.55	2491.12	18.47	2491.04
25.8	2490.71	26.57	2490.64	34.31	2489.69	38.31	2489.15	55.5	2488.5
61.37	2488.21	69	2486.29	69.03	2486.28	70.1	2486.04	72.29	2486.05
74.37	2486.08	81.04	2486.19	81.5	2486.27	85.78	2487.01	90.91	2488.19
107.26	2489.31	123.46	2490.43	124.18	2490.39				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	18.47	.04	61.37	.035	85.78	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
69	81.5	83	86	89	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2489.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.	0.035	0.035	0.036
W.S. Elev (ft)	2488.48	Reach Len. (ft)	83.00	86.00	89.00
Crit W.S. (ft)	2488.48	Flow Area (sq ft)	10.14	29.60	13.02
E.G. Slope (ft/ft)	0.010435	Area (sq ft)	10.14	29.60	13.02
Q Total (cfs)	338.00	Flow (cfs)	46.62	227.60	63.78
Top Width (ft)	39.29	Top Width (ft)	13.12	12.50	13.66
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)	4.60	7.69	4.90
Max Chl Dpth (ft)	2.44	Hydr. Depth (ft)	0.77	2.37	0.95
Conv. Total (cfs)	3308.7	Conv. (cfs)	456.3	2228.0	624.4
Length Wtd. (ft)	86.38	Wetted Per. (ft)	13.37	12.54	13.87
Min Ch El (ft)	2486.04	Shear (lb/sq ft)	0.49	1.54	0.61
Alpha	1.15	Stream Power (lb/ft s)	2.27	11.83	3.00
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	0.01	0.07	0.05
C & E Loss (ft)	0.08	Cum SA (acres)	0.02	0.02	0.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	55.20	69.00	46.62	10.14	13.37	13.79	0.77	4.60
2	Chan	69.00	71.50	45.82	5.96	2.53	13.56	2.39	7.68
3	Chan	71.50	74.00	47.40	6.06	2.50	14.02	2.42	7.82
4	Chan	74.00	76.50	46.21	5.97	2.50	13.67	2.39	7.74

5	Chan	76.50	79.00	44.89	5.86	2.50	13.28	2.35	7.65
6	Chan	79.00	81.50	43.29	5.74	2.51	12.81	2.30	7.54
7	ROB	81.50	90.04	62.65	12.06	8.71	18.54	1.41	5.20
8	ROB	90.04	98.57	1.13	0.96	5.16	0.33	0.19	1.17

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Windmill Wash
REACH: Combined Branch RS: 0.0080

INPUT
Description: R.S. 0.0080
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2489.57	.43	2489.58	.64	2489.58	1.48	2489.56	14.58	2489.19
16.56	2489.06	17.83	2488.98	19.33	2488.91	34.05	2487.54	37.1	2484.81
37.6	2484.45	38.4	2483.87	42.51	2483.99	42.53	2484	48.39	2484.31
48.4	2484.31	49	2484.51	49.5	2484.67	53.8	2486.08	58.87	2487.46
59.73	2487.44	69.18	2487.05	83.76	2486.63	91.27	2486.69	94.77	2486.7
134.77	2488	170.57	2490	188.77	2492				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	19.33	.04	38.4	.035	48.39	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
37.6	49	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2487.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.040	0.036	0.040
W.S. Elev (ft)	2487.42	Reach Len. (ft)			
Crit W.S. (ft)	2487.26	Flow Area (sq ft)	5.20	37.99	39.84
E.G. Slope (ft/ft)	0.004790	Area (sq ft)	5.20	37.99	39.84
Q Total (cfs)	338.00	Flow (cfs)	14.66	240.75	82.59
Top Width (ft)	81.25	Top Width (ft)	3.42	11.40	66.43
Vel Total (ft/s)	4.07	Avg. Vel. (ft/s)	2.82	6.34	2.07
Max Chl Dpth (ft)	3.55	Hydr. Depth (ft)	1.52	3.33	0.60
Conv. Total (cfs)	4883.5	Conv. (cfs)	211.8	3478.4	1193.3
Length Wtd. (ft)		Wetted Per. (ft)	4.53	11.63	66.88
Min Ch El (ft)	2483.87	Shear (lb/sq ft)	0.34	0.98	0.18
Alpha	1.81	Stream Power (lb/ft s)	0.97	6.19	0.37
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Divided flow computed for this cross-section.
Note: Manning's n values were composited to a single value in the main channel.

Profile #PF 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	30.08	37.60	14.66	5.20	4.53	4.34	1.52	2.82
2	Chan	37.60	39.88	47.84	7.83	2.47	14.15	3.43	6.11
3	Chan	39.88	42.16	52.79	7.92	2.28	15.62	3.47	6.67
4	Chan	42.16	44.44	50.38	7.71	2.29	14.91	3.38	6.54
5	Chan	44.44	46.72	47.43	7.43	2.28	14.03	3.26	6.38

6	Chan	46.72	49.00	42.32	7.10	2.31	12.52	3.12	5.96
7	ROB	49.00	76.95	41.31	18.91	26.90	12.22	0.71	2.18
8	ROB	76.95	104.91	39.10	18.58	27.96	11.57	0.66	2.10
9	ROB	104.91	132.86	2.18	2.35	12.02	0.64	0.20	0.93

Warning: Divided flow computed for this cross-section.
Note: Manning's n values were composited to a single value in the main channel.

SUMMARY OF MANNING'S N VALUES

River:Windmill Wash

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7
South Branch	0.4414	.025	.04	.045	.04			
South Branch	0.4246	.025	.04	.045	.04			
South Branch	0.4064	.025	.04	.045	.04			
South Branch	0.3881	.025	.04	.045	.04			
South Branch	0.3626	.025	.04	.045	.04			
South Branch	0.3477	.04	.045	.04	.025			
South Branch	0.3206	.04	.045	.04	.025			
South Branch	0.3142	.025						
South Branch	0.3087	.04	.045	.04				
South Branch	0.2943	.025	.04	.045	.04			
South Branch	0.2598	.025	.04	.045	.04			
South Branch	0.2381	.025	.04	.045	.04			
South Branch	0.2104	.04	.045	.04	.025			
South Branch	0.1947	.04	.045	.04	.025			
South Branch	0.1700	.04	.045	.04				
South Branch	0.1554	.025	.04	.045	.04			
South Branch	0.1333	.025	.04	.045	.04	.025		
South Branch	0.1163	.025	.04					
South Branch	0.1083	Culvert						
South Branch	0.1002	.04	.045	.04				
South Branch	0.0751	.04	.045	.04				
South Branch	0.0582	.04	.045	.04				
South Branch	0.0395	.04	.035	.04				
North Branch	1.6576	.04	.035	.04	.032			
North Branch	1.6069	.04	.035	.04	.032			
North Branch	1.5545	.04	.035	.04	.032			
North Branch	1.5334	.04	.035	.04				
North Branch	1.5241	.025						
North Branch	1.5180	.04	.035	.04				
North Branch	1.4884	.04	.035	.04				
North Branch	1.4665	.04	.035	.04				
North Branch	1.4494	.04	.035	.04				
North Branch	1.4322	.04	.035	.04				
North Branch	1.4212	.04	.025	.04	.035	.04		
North Branch	1.3983	.025	.04	.035	.04			
North Branch	1.3786	Culvert						
North Branch	1.3577	.04	.058	.035	.04	.032		
North Branch	1.3498	.04	.058	.032	.04	.032		
North Branch	1.3431	.04	.058	.035	.04	.032		
North Branch	1.3385	Culvert						
North Branch	1.3364	.025	.058	.04	.025			
North Branch	1.3215	.025	.058	.032	.04			
North Branch	1.3110	.04	.058	.035	.04			
North Branch	1.2940	Culvert						
North Branch	1.2930	.04	.035	.04	.032			
North Branch	1.2630	.04	.035	.04	.032			
North Branch	1.2388	.04	.035	.04	.032	.025		
Combined Branch	1.1975	.04	.058	.035	.04			
Combined Branch	1.1585	.025	.058	.035	.04			
Combined Branch	1.1312	.025	.058	.035	.04			
Combined Branch	1.0986	.04	.035	.04	.025	.04		
Combined Branch	1.0661	.025	.04					
Combined Branch	1.0604	Culvert						
Combined Branch	1.0584	.04	.025	.04	.035	.025	.04	.025

Combined Branch	1.0311	.04	.035	.04	.025	.04
Combined Branch	0.9843	.04	.035	.04		
Combined Branch	0.9441	.04	.035	.04		
Combined Branch	0.9196	.025	.04	.035	.04	
Combined Branch	0.9042	Culvert				
Combined Branch	0.9018	.025	.04	.035	.04	
Combined Branch	0.8739	.032	.04	.035	.04	
Combined Branch	0.8413	.04	.032	.04	.035	.04
Combined Branch	0.8098	.04	.035	.04		
Combined Branch	0.7913	.04	.035	.04	.025	
Combined Branch	0.7752	.04	.035	.04	.025	
Combined Branch	0.7232	.04	.035	.04		
Combined Branch	0.7029	.04	.035	.04		
Combined Branch	0.6835	.04	.035	.04		
Combined Branch	0.6472	.04	.035	.04		
Combined Branch	0.6074	.04	.035	.04		
Combined Branch	0.5522	.04	.035	.04		
Combined Branch	0.5198	.04	.035	.04		
Combined Branch	0.4721	.04	.035	.04		
Combined Branch	0.4363	.04	.035	.04		
Combined Branch	0.4069	.04	.035	.04		
Combined Branch	0.3669	.04	.035	.04		
Combined Branch	0.3560	.04	.035	.04		
Combined Branch	0.3444	.04	.035	.04		
Combined Branch	0.3105	.04	.035	.04	.032	
Combined Branch	0.2744	.04	.058	.035	.04	.032
Combined Branch	0.2609	.04	.035	.04		
Combined Branch	0.2482	.025				
Combined Branch	0.2005	.04	.058	.035	.04	
Combined Branch	0.1760	.04	.058	.035	.04	
Combined Branch	0.1577	.058	.035	.04		
Combined Branch	0.1306	.04	.058	.035	.04	
Combined Branch	0.1135	.04	.058	.035	.04	
Combined Branch	0.0933	.025	.058	.035	.04	
Combined Branch	0.0644	.025	.04	.035	.04	
Combined Branch	0.0243	.025	.04	.035	.04	
Combined Branch	0.0080	.025	.04	.035	.04	

SUMMARY OF REACH LENGTHS

River: Windmill Wash

Reach	River Sta.	Left	Channel	Right
South Branch	0.4414	88.64	88.64	88.64
South Branch	0.4246	100	96.35	92
South Branch	0.4064	92	96.64	100
South Branch	0.3881	134.63	134.63	134.63
South Branch	0.3626	78.45	78.45	78.45
South Branch	0.3477	138	143.2	150
South Branch	0.3206	33.77	33.77	33.77
South Branch	0.3142	28.81	28.81	28.81
South Branch	0.3087	72	76.07	80
South Branch	0.2943	182.12	182.12	182.12
South Branch	0.2598	119	114.85	111
South Branch	0.2381	146.05	146.05	146.05
South Branch	0.2104	89	83.14	78
South Branch	0.1947	120	130.01	145
South Branch	0.1700	77.25	77.25	77.25
South Branch	0.1554	120	116.59	112
South Branch	0.1333	89.76	89.76	89.76
South Branch	0.1163	85.01	85.01	85.01
South Branch	0.1083	Culvert		
South Branch	0.1002	135	132.27	132
South Branch	0.0751	95	89.4	85
South Branch	0.0582	93	98.57	104
South Branch	0.0395			
North Branch	1.6576	275	267.67	261

North Branch	1.6069	273	276.68	282
North Branch	1.5545	106	111.61	117
North Branch	1.5334	48.84	48.84	48.84
North Branch	1.5241	32.45	32.45	32.45
North Branch	1.5180	150	155.99	165
North Branch	1.4884	122	115.71	110
North Branch	1.4665	90.48	90.48	90.48
North Branch	1.4494	87	90.78	95
North Branch	1.4322	58.04	58.04	58.04
North Branch	1.4212	119	120.94	122
North Branch	1.3983	220	214.37	214
North Branch	1.3786	Culvert		
North Branch	1.3577	40	41.55	43
North Branch	1.3498	34	35.28	37
North Branch	1.3431	35.69	35.69	35.69
North Branch	1.3385	Culvert		
North Branch	1.3364	78.46	78.46	78.46
North Branch	1.3215	58	55.44	53
North Branch	1.3110	95.03	95.03	95.03
North Branch	1.2940	Culvert		
North Branch	1.2930	156	158.4	162
North Branch	1.2630	127.78	127.78	127.78
North Branch	1.2388			
Combined Branch	1.1975	212	205.69	200
Combined Branch	1.1585	144.15	144.15	144.15
Combined Branch	1.1312	172.38	172.38	172.38
Combined Branch	1.0986	171.81	171.81	171.81
Combined Branch	1.0661	40.66	40.66	40.66
Combined Branch	1.0604	Culvert		
Combined Branch	1.0584	150	144.14	140
Combined Branch	1.0311	246.8	246.8	246.8
Combined Branch	0.9843	212.32	212.32	212.32
Combined Branch	0.9441	135	129.21	125
Combined Branch	0.9196	93.97	93.97	93.97
Combined Branch	0.9042	Culvert		
Combined Branch	0.9018	144	147.77	152
Combined Branch	0.8739	171.71	171.71	171.71
Combined Branch	0.8413	160	166.4	172
Combined Branch	0.8098	101.01	98.13	96
Combined Branch	0.7913	84	84.8	86
Combined Branch	0.7752	262	274.5	290
Combined Branch	0.7232	98.7	107.04	117.7
Combined Branch	0.7029	102.3	102.3	102.3
Combined Branch	0.6835	196	191.74	186
Combined Branch	0.6472	220	210.37	202
Combined Branch	0.6074	291.44	291.44	291.44
Combined Branch	0.5522	165	171.05	178
Combined Branch	0.5198	256	251.77	248
Combined Branch	0.4721	195	188.89	184
Combined Branch	0.4363	150	155.33	165
Combined Branch	0.4069	203	211.29	220
Combined Branch	0.3669	57.8	57.8	57.8
Combined Branch	0.3560	61	61	61
Combined Branch	0.3444	179.07	179.07	179.07
Combined Branch	0.3105	195	190.59	186
Combined Branch	0.2744	65	71.5	77
Combined Branch	0.2609	70	66.8	65
Combined Branch	0.2482	242	251.6	265
Combined Branch	0.2005	140	129.6	120
Combined Branch	0.1760	96.6	96.6	96.6
Combined Branch	0.1577	142.83	142.83	142.83
Combined Branch	0.1306	87	90.4	94
Combined Branch	0.1135	111	106.46	102
Combined Branch	0.0933	152.76	152.76	152.76
Combined Branch	0.0644	207	211.7	217
Combined Branch	0.0243	83	86	89
Combined Branch	0.0080	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Windmill Wash

Reach	River Sta.	Contr.	Expan.
South Branch	0.4414	.1	.3
South Branch	0.4246	.1	.3
South Branch	0.4064	.1	.3
South Branch	0.3881	.1	.3
South Branch	0.3626	.1	.3
South Branch	0.3477	.1	.3
South Branch	0.3206	.1	.3
South Branch	0.3142	.3	.5
South Branch	0.3087	.3	.5
South Branch	0.2943	.1	.3
South Branch	0.2598	.1	.3
South Branch	0.2381	.1	.3
South Branch	0.2104	.1	.3
South Branch	0.1947	.1	.3
South Branch	0.1700	.1	.3
South Branch	0.1554	.1	.3
South Branch	0.1333	.3	.5
South Branch	0.1163	.3	.5
South Branch	0.1083	Culvert	
South Branch	0.1002	.3	.5
South Branch	0.0751	.3	.5
South Branch	0.0582	.1	.3
South Branch	0.0395	.1	.3
North Branch	1.6576	.1	.3
North Branch	1.6069	.1	.3
North Branch	1.5545	.1	.3
North Branch	1.5334	.1	.3
North Branch	1.5241	.1	.3
North Branch	1.5180	.1	.3
North Branch	1.4884	.1	.3
North Branch	1.4665	.1	.3
North Branch	1.4494	.1	.3
North Branch	1.4322	.1	.3
North Branch	1.4212	.3	.5
North Branch	1.3983	.3	.5
North Branch	1.3786	Culvert	
North Branch	1.3577	.3	.5
North Branch	1.3498	.3	.5
North Branch	1.3431	.3	.5
North Branch	1.3385	Culvert	
North Branch	1.3364	.3	.5
North Branch	1.3215	.3	.5
North Branch	1.3110	.3	.5
North Branch	1.2940	Culvert	
North Branch	1.2930	.3	.5
North Branch	1.2630	.3	.5
North Branch	1.2388	.1	.3
Combined Branch	1.1975	.1	.3
Combined Branch	1.1585	.1	.3
Combined Branch	1.1312	.3	.5
Combined Branch	1.0986	.3	.5
Combined Branch	1.0661	.3	.5
Combined Branch	1.0604	Culvert	
Combined Branch	1.0584	.3	.5
Combined Branch	1.0311	.3	.5
Combined Branch	0.9843	.1	.3
Combined Branch	0.9441	.3	.5
Combined Branch	0.9196	.3	.5
Combined Branch	0.9042	Culvert	
Combined Branch	0.9018	.3	.5
Combined Branch	0.8739	.3	.5
Combined Branch	0.8413	.1	.3
Combined Branch	0.8098	.3	.5
Combined Branch	0.7913	.1	.3
Combined Branch	0.7752	.3	.5

Combined Branch	0.7232	.1	.3
Combined Branch	0.7029	.1	.3
Combined Branch	0.6835	.1	.3
Combined Branch	0.6472	.1	.3
Combined Branch	0.6074	.1	.3
Combined Branch	0.5522	.1	.3
Combined Branch	0.5198	.1	.3
Combined Branch	0.4721	.1	.3
Combined Branch	0.4363	.1	.3
Combined Branch	0.4069	.1	.3
Combined Branch	0.3669	.3	.5
Combined Branch	0.3560	.1	.3
Combined Branch	0.3444	.3	.5
Combined Branch	0.3105	.1	.3
Combined Branch	0.2744	.1	.3
Combined Branch	0.2609	.1	.3
Combined Branch	0.2482	.1	.3
Combined Branch	0.2005	.1	.3
Combined Branch	0.1760	.1	.3
Combined Branch	0.1577	.1	.3
Combined Branch	0.1306	.1	.3
Combined Branch	0.1135	.1	.3
Combined Branch	0.0933	.1	.3
Combined Branch	0.0644	.1	.3
Combined Branch	0.0243	.1	.3
Combined Branch	0.0080	.1	.3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 08

River: Windmill Wash Reach: South Branch RS: 0.4414 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.4246 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.4064 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: South Branch RS: 0.3881 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Windmill Wash Reach: South Branch RS: 0.3626 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.3477 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.3206 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.3142 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.3087 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.2943 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

River: Windmill Wash Reach: South Branch RS: 0.2598 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.2381 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.2104 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: South Branch RS: 0.1947 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: South Branch RS: 0.1700 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.1554 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: South Branch RS: 0.1333 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.1163 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: South Branch RS: 0.1083 Profile: PF 1 Culv: Culvert #1
Note: The normal depth exceeds the height of the culvert. The program assumes that the normal depth is equal to the height
of the culvert.
River: Windmill Wash Reach: South Branch RS: 0.1002 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.0751 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: South Branch RS: 0.0582 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: South Branch RS: 0.0395 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The cross-section end points had to be extended vertically for the computed water surface.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.6576 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: North Branch RS: 1.6069 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: North Branch RS: 1.5545 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.5334 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.5241 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.5180 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.4884 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.4665 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Windmill Wash Reach: North Branch RS: 1.4494 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.4212 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: North Branch RS: 1.3983 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: North Branch RS: 1.3577 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: North Branch RS: 1.3498 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: Windmill Wash Reach: North Branch RS: 1.3431 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: North Branch RS: 1.3385 Profile: PF 1 Culv: Culvert #1
Warning:During the culvert inlet computations, the program could not balance the culvert/weir flow. The reported inlet
energy grade answer may not be valid.
River: Windmill Wash Reach: North Branch RS: 1.3364 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: North Branch RS: 1.3215 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: North Branch RS: 1.3110 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: North Branch RS: 1.2930 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.2630 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: North Branch RS: 1.2388 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 1.1975 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 1.1585 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Windmill Wash Reach: Combined Branch RS: 1.1312 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 1.0986 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 1.0584 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 1.0311 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 0.9843 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.9441 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.9196 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: Combined Branch RS: 0.9018 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Windmill Wash Reach: Combined Branch RS: 0.8739 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.8413 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 0.8098 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.7913 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 0.7752 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.7232 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 0.7029 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.6835 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.6472 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.6074 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.5522 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.5198 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Windmill Wash Reach: Combined Branch RS: 0.4721 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Windmill Wash Reach: Combined Branch RS: 0.4363 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Windmill Wash Reach: Combined Branch RS: 0.4069 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Windmill Wash Reach: Combined Branch RS: 0.3669 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Windmill Wash Reach: Combined Branch RS: 0.3560 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Windmill Wash Reach: Combined Branch RS: 0.3444 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.3105 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Windmill Wash Reach: Combined Branch RS: 0.2744 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 0.2609 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.2482 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Windmill Wash Reach: Combined Branch RS: 0.2005 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: Windmill Wash Reach: Combined Branch RS: 0.1760 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.1577 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was
used.
River: Windmill Wash Reach: Combined Branch RS: 0.1306 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.1135 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.
River: Windmill Wash Reach: Combined Branch RS: 0.0933 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.0644 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water
surface that had the least amount of error between computed and assumed values.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.0243 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: Windmill Wash Reach: Combined Branch RS: 0.0080 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Note: Manning's n values were composited to a single value in the main channel.

HEC-RAS Model Summary Tables

Windmill Wash

HEC-RAS Plan: Plan 08 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)	
South Branch	0.4414	PF 1	54.00	2647.89	2649.44	2649.44	2649.69	0.013418	4.72	16.28	29.84	0.74
South Branch	0.4246	PF 1	54.00	2645.85	2647.52	2647.52	2647.91	0.019524	5.51	11.72	17.57	0.83
South Branch	0.4064	PF 1	54.00	2644.31	2645.54	2645.43	2645.70	0.016033	3.70	17.62	34.54	0.72
South Branch	0.3881	PF 1	54.00	2642.91	2643.70	2643.69	2643.91	0.020955	4.12	16.04	37.50	0.88
South Branch	0.3626	PF 1	54.00	2639.62	2640.70	2640.70	2641.00	0.022232	4.90	13.31	22.58	0.90
South Branch	0.3477	PF 1	54.00	2636.58	2638.37	2638.37	2638.76	0.017416	5.78	11.98	15.89	0.81
South Branch	0.3206	PF 1	54.00	2633.88	2635.14	2635.14	2635.32	0.015067	4.03	19.44	56.48	0.73
South Branch	0.3142	PF 1	54.00	2633.66	2634.40	2634.40	2634.58	0.008295	3.71	17.94	52.53	0.87
South Branch	0.3087	PF 1	54.00	2631.83	2632.72	2632.72	2633.05	0.027595	4.68	12.06	19.48	0.95
South Branch	0.2943	PF 1	54.00	2628.93	2630.73	2630.73	2631.19	0.019726	5.97	10.81	12.23	0.87
South Branch	0.2598	PF 1	54.00	2625.28	2626.96	2626.96	2627.37	0.021051	5.98	11.51	14.02	0.88
South Branch	0.2381	PF 1	54.00	2623.07	2624.54	2624.54	2624.95	0.020586	5.64	11.63	15.41	0.91
South Branch	0.2104	PF 1	54.00	2619.47	2621.10	2621.10	2621.52	0.020336	5.52	11.24	13.68	0.87
South Branch	0.1947	PF 1	54.00	2617.35	2619.21	2619.21	2619.67	0.018646	6.21	10.99	11.70	0.87
South Branch	0.1700	PF 1	54.00	2615.18	2616.44	2616.44	2616.78	0.021887	5.12	12.65	19.45	0.88
South Branch	0.1554	PF 1	54.00	2612.81	2614.32	2614.32	2614.73	0.022109	5.45	11.24	14.11	0.88
South Branch	0.1333	PF 1	54.00	2610.84	2612.10	2612.10	2612.11	0.000979	1.14	58.88	83.78	0.19
South Branch	0.1163	PF 1	54.00	2609.51	2611.65	2610.44	2611.65	0.000104	0.59	130.08	130.51	0.07
South Branch	0.1083		Culvert									
South Branch	0.1002	PF 1	131.00	2603.90	2607.13	2607.13	2607.94	0.019134	8.49	19.86	12.23	0.89
South Branch	0.0751	PF 1	131.00	2602.16	2604.19	2604.19	2604.59	0.015436	6.24	29.39	35.77	0.84
South Branch	0.0582	PF 1	131.00	2600.60	2602.70	2602.70	2603.03	0.014190	5.55	32.68	44.28	0.77
South Branch	0.0395	PF 1	131.00	2599.57	2601.37	2601.37	2601.63	0.009888	5.29	40.06	64.28	0.76
North Branch	1.6576	PF 1	64.00	2644.22	2646.16	2646.16	2646.70	0.013985	6.30	12.09	12.31	0.90
North Branch	1.6069	PF 1	64.00	2640.17	2641.73	2641.73	2641.91	0.008794	4.28	25.60	60.32	0.69
North Branch	1.5545	PF 1	64.00	2634.72	2636.04	2636.04	2636.36	0.013992	4.79	15.40	27.08	0.87
North Branch	1.5334	PF 1	64.00	2633.20	2634.18	2634.18	2634.43	0.019056	4.35	17.61	38.72	0.87
North Branch	1.5241	PF 1	64.00	2632.24	2632.89	2632.89	2633.12	0.009842	3.94	17.19	38.99	0.94
North Branch	1.5180	PF 1	64.00	2630.74	2631.73	2631.73	2632.02	0.015869	4.64	15.99	28.72	0.90
North Branch	1.4884	PF 1	64.00	2626.67	2628.39	2628.39	2628.80	0.012727	5.86	14.15	17.67	0.87
North Branch	1.4665	PF 1	64.00	2623.55	2625.60	2625.59	2626.13	0.012918	6.13	12.02	12.05	0.87
North Branch	1.4494	PF 1	64.00	2622.74	2624.48	2624.48	2624.91	0.013358	6.16	13.77	16.53	0.90
North Branch	1.4322	PF 1	64.00	2620.89	2622.37	2622.29	2622.65	0.010741	4.97	16.09	21.72	0.79
North Branch	1.4212	PF 1	64.00	2620.15	2621.50	2621.50	2621.90	0.015362	5.28	13.47	18.50	0.90
North Branch	1.3983	PF 1	64.00	2617.30	2620.22	2619.18	2620.30	0.001418	2.64	30.59	24.25	0.30
North Branch	1.3786		Culvert									
North Branch	1.3577	PF 1	64.00	2612.22	2615.61	2613.59	2615.63	0.000249	1.07	67.82	37.83	0.11
North Branch	1.3498	PF 1	64.00	2611.74	2615.61		2615.62	0.000100	1.07	103.39	63.79	0.10
North Branch	1.3431	PF 1	64.00	2611.48	2615.61	2613.01	2615.61	0.000027	0.54	185.90	83.20	0.05
North Branch	1.3385		Culvert									
North Branch	1.3364	PF 1	64.00	2610.44	2612.98	2612.01	2613.04	0.002042	2.28	38.83	33.52	0.27
North Branch	1.3215	PF 1	64.00	2608.76	2612.99		2613.00	0.000063	0.60	141.32	82.80	0.05
North Branch	1.3110	PF 1	77.00	2607.43	2612.99	2609.58	2612.99	0.000026	0.38	251.97	127.07	0.03
North Branch	1.2940		Culvert									
North Branch	1.2930	PF 1	131.00	2604.49	2607.40	2607.40	2607.87	0.008225	6.57	29.89	33.46	0.74
North Branch	1.2630	PF 1	131.00	2600.31	2602.71	2602.71	2603.31	0.011142	7.09	23.63	18.68	0.87
North Branch	1.2388	PF 1	131.00	2596.35	2599.46	2599.46	2600.10	0.010706	8.17	22.61	16.06	0.86
Combined Branch	1.1975	PF 1	162.00	2592.72	2595.59	2595.59	2595.91	0.007586	6.68	46.84	72.69	0.73
Combined Branch	1.1585	PF 1	162.00	2589.87	2591.64	2591.52	2591.82	0.017758	4.15	47.94	86.56	0.62
Combined Branch	1.1312	PF 1	162.00	2586.74	2588.64	2588.64	2589.01	0.021397	5.88	35.71	52.08	0.82
Combined Branch	1.0986	PF 1	162.00	2582.23	2584.54	2584.54	2584.82	0.007259	5.45	45.19	67.19	0.69
Combined Branch	1.0661	PF 1	162.00	2580.35	2581.93	2581.82	2582.05	0.006387	3.64	65.23	142.32	0.55
Combined Branch	1.0604		Culvert									
Combined Branch	1.0584	PF 1	162.00	2579.72	2580.70	2580.70	2580.90	0.016686	4.76	47.55	111.26	0.89
Combined Branch	1.0311	PF 1	162.00	2574.49	2577.22	2577.22	2577.89	0.013256	7.86	27.12	19.89	0.89
Combined Branch	0.9843	PF 1	162.00	2571.19	2573.23	2573.23	2573.56	0.010776	5.93	44.27	66.20	0.80
Combined Branch	0.9441	PF 1	162.00	2567.59	2569.84	2569.84	2570.37	0.012287	6.52	30.48	28.68	0.84
Combined Branch	0.9196	PF 1	198.00	2565.94	2569.70	2567.17	2569.73	0.000199	1.39	147.01	143.05	0.13
Combined Branch	0.9042		Culvert									
Combined Branch	0.9018	PF 1	198.00	2564.32	2566.10	2566.10	2566.67	0.012921	6.49	34.42	29.79	0.88
Combined Branch	0.8739	PF 1	198.00	2561.31	2563.38	2563.38	2563.55	0.006035	4.77	70.54	128.32	0.63
Combined Branch	0.8413	PF 1	198.00	2558.05	2560.22	2560.22	2560.40	0.006713	5.07	87.86	194.31	0.66
Combined Branch	0.8098	PF 1	198.00	2555.29	2557.08	2557.08	2557.09	0.000738	1.50	215.07	254.96	0.21
Combined Branch	0.7913	PF 1	198.00	2552.90	2554.53	2554.53	2555.10	0.014597	6.33	35.11	33.23	0.95
Combined Branch	0.7752	PF 1	198.00	2551.42	2553.56	2553.56	2554.00	0.010213	6.45	43.14	50.88	0.83
Combined Branch	0.7232	PF 1	198.00	2546.03	2548.34	2548.34	2548.68	0.008860	6.26	53.02	76.15	0.77
Combined Branch	0.7029	PF 1	198.00	2544.10	2545.95	2545.95	2546.59	0.016261	6.86	32.59	27.29	0.93
Combined Branch	0.6835	PF 1	198.00	2542.11	2544.08	2544.08	2544.63	0.012345	6.61	37.19	34.02	0.89
Combined Branch	0.6472	PF 1	250.00	2539.03	2541.08	2541.08	2541.62	0.009942	6.56	50.87	50.29	0.82
Combined Branch	0.6074	PF 1	250.00	2535.72	2537.71	2537.71	2538.30	0.012173	6.98	46.61	40.64	0.90
Combined Branch	0.5522	PF 1	250.00	2530.06	2531.98	2531.89	2532.62	0.011862	6.67	40.87	27.64	0.89
Combined Branch	0.5198	PF 1	250.00	2527.20	2529.69	2529.69	2530.56	0.011964	7.90	35.79	21.63	0.93
Combined Branch	0.4721	PF 1	250.00	2522.64	2524.20	2524.16	2524.79	0.013907	6.32	42.13	33.60	0.92
Combined Branch	0.4363	PF 1	250.00	2519.66	2521.63	2521.63	2522.28	0.012793	7.05	42.77	33.30	0.92
Combined Branch	0.4069	PF 1	250.00	2517.18	2519.41	2519.41	2520.06	0.012161	7.18	43.26	34.15	0.91
Combined Branch	0.3669	PF 1	250.00	2514.14	2516.26	2516.26	2516.90	0.011532	7.01	42.30	32.57	0.88
Combined Branch	0.3560	PF 1	250.00	2513.43	2515.53	2515.21	2515.92	0.007135	5.32	54.28	40.57	0.67
Combined Branch	0.3444	PF 1	295.00	2512.48	2514.58	2514.58	2515.29	0.013608	7.55	50.43	44.04	0.95
Combined Branch	0.3105	PF 1	295.00	2510.29	2511.80	2511.63	2512.13	0.012083	5.32	71.95	95.68	0.78

HEC-RAS Plan: Plan 08 Profile: PF 1 (Continued)

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)	
Combined Branch	0.2744	PF 1	295.00	2507.33	2509.22		2509.67	0.014000	6.72	68.98	89.95	0.88
Combined Branch	0.2609	PF 1	295.00	2506.11	2508.63	2508.63	2509.02	0.005967	5.78	81.23	110.93	0.66
Combined Branch	0.2482	PF 1	295.00	2503.74	2504.84	2504.72	2505.05	0.004985	4.08	85.12	135.04	0.73
Combined Branch	0.2005	PF 1	295.00	2500.77	2502.92		2503.23	0.011305	5.87	82.11	98.57	0.75
Combined Branch	0.1760	PF 1	295.00	2498.79	2500.96	2500.96	2501.51	0.015335	6.61	54.14	52.75	0.85
Combined Branch	0.1577	PF 1	295.00	2497.42	2499.82	2499.64	2500.20	0.008109	6.11	75.11	77.45	0.72
Combined Branch	0.1306	PF 1	295.00	2495.74	2497.96	2497.96	2498.65	0.014600	8.05	54.15	38.98	1.00
Combined Branch	0.1135	PF 1	295.00	2494.15	2496.14	2496.14	2496.79	0.013860	7.19	52.43	42.75	0.91
Combined Branch	0.0933	PF 1	295.00	2492.14	2494.05	2494.05	2494.63	0.015526	6.73	50.83	42.45	0.90
Combined Branch	0.0644	PF 1	295.00	2489.42	2491.78	2491.78	2492.52	0.011304	7.74	46.64	31.04	0.91
Combined Branch	0.0243	PF 1	338.00	2486.04	2488.48	2488.48	2489.22	0.010435	7.69	52.76	39.29	0.88
Combined Branch	0.0080	PF 1	338.00	2483.87	2487.42	2487.26	2487.89	0.004790	6.34	83.03	81.25	0.61

HEC-RAS Plan: Plan 08 Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
South Branch	0.4414	PF 1	2649.69	2649.44	0.24	1.42	0.01	3.75	33.51	16.73	29.84
South Branch	0.4246	PF 1	2647.91	2647.52	0.38	1.68	0.07	4.09	38.75	11.16	17.57
South Branch	0.4064	PF 1	2645.70	2645.54	0.16	1.79	0.01	0.27	26.76	26.96	34.54
South Branch	0.3881	PF 1	2643.91	2643.70	0.21	2.91	0.01	0.67	39.40	13.93	37.50
South Branch	0.3626	PF 1	2641.00	2640.70	0.30	1.54	0.01	1.84	37.28	14.88	22.58
South Branch	0.3477	PF 1	2638.76	2638.37	0.39	2.34	0.06	8.33	33.73	11.94	15.89
South Branch	0.3206	PF 1	2635.32	2635.14	0.18	0.37	0.00	2.11	36.22	15.66	56.48
South Branch	0.3142	PF 1	2634.58	2634.40	0.17	0.40	0.05	10.39	40.58	3.03	52.53
South Branch	0.3087	PF 1	2633.05	2632.72	0.33	1.76	0.04	1.03	52.37	0.60	19.48
South Branch	0.2943	PF 1	2631.19	2630.73	0.46	3.71	0.01	6.80	39.60	7.60	12.23
South Branch	0.2598	PF 1	2627.37	2626.96	0.41	2.40	0.00	15.14	30.77	8.09	14.02
South Branch	0.2381	PF 1	2624.95	2624.54	0.41	2.99	0.00	6.14	40.56	7.30	15.41
South Branch	0.2104	PF 1	2621.52	2621.10	0.42	1.61	0.00	3.57	45.88	4.54	13.68
South Branch	0.1947	PF 1	2619.67	2619.21	0.46	2.67	0.04	7.45	34.76	11.79	11.70
South Branch	0.1700	PF 1	2616.78	2616.44	0.34	1.70	0.01	3.19	40.02	10.79	19.45
South Branch	0.1554	PF 1	2614.73	2614.32	0.41	0.31	0.12	4.30	44.47	5.22	14.11
South Branch	0.1333	PF 1	2612.11	2612.10	0.01	0.02	0.00	0.57	6.06	47.37	83.78
South Branch	0.1163	PF 1	2611.65	2611.65	0.00			18.56	25.27	10.17	130.51
South Branch	0.1083		Culvert								
South Branch	0.1002	PF 1	2607.94	2607.13	0.81	2.27	0.20	25.38	72.55	33.08	12.23
South Branch	0.0751	PF 1	2604.59	2604.19	0.40	1.31	0.03	25.15	66.74	39.11	35.77
South Branch	0.0582	PF 1	2603.03	2602.70	0.33	1.18	0.02	4.72	75.77	50.51	44.28
South Branch	0.0395	PF 1	2601.63	2601.37	0.26	2.59	0.01	14.91	65.58	50.51	64.28
North Branch	1.6576	PF 1	2646.70	2646.16	0.54	2.92	0.11	6.81	53.45	3.73	12.31
North Branch	1.6069	PF 1	2641.91	2641.73	0.18	3.04	0.01	2.69	34.82	26.49	60.32
North Branch	1.5545	PF 1	2636.36	2636.04	0.32	1.81	0.02	2.49	54.40	7.10	27.08
North Branch	1.5334	PF 1	2634.43	2634.18	0.25	0.65	0.01	6.92	51.18	5.90	38.72
North Branch	1.5241	PF 1	2633.12	2632.89	0.23	0.40	0.01	1.75	61.10	1.15	38.99
North Branch	1.5180	PF 1	2632.02	2631.73	0.29	2.22	0.01	3.77	51.55	8.68	28.72
North Branch	1.4884	PF 1	2628.80	2628.39	0.41	1.48	0.01	10.32	43.42	10.26	17.67
North Branch	1.4665	PF 1	2626.13	2625.60	0.52	1.19	0.03	3.39	55.11	5.50	12.05
North Branch	1.4494	PF 1	2624.91	2624.48	0.44	1.08	0.05	10.02	40.46	13.51	16.53
North Branch	1.4322	PF 1	2622.65	2622.37	0.28	0.74	0.01	21.72	34.52	7.76	21.72
North Branch	1.4212	PF 1	2621.90	2621.50	0.40	0.40	0.16	1.04	57.54	5.42	18.50
North Branch	1.3983	PF 1	2620.30	2620.22	0.08			14.44	41.71	7.85	24.25
North Branch	1.3786		Culvert								
North Branch	1.3577	PF 1	2615.63	2615.61	0.02	0.01	0.00	5.99	23.87	34.14	37.83
North Branch	1.3498	PF 1	2615.62	2615.61	0.01	0.00	0.00	15.95	18.16	29.89	63.79
North Branch	1.3431	PF 1	2615.61	2615.61	0.00			14.07	16.42	33.51	83.20
North Branch	1.3385		Culvert								
North Branch	1.3364	PF 1	2613.04	2612.98	0.05	0.01	0.03	14.70	30.24	19.05	33.52
North Branch	1.3215	PF 1	2613.00	2612.99	0.00	0.00	0.00	5.85	14.38	43.77	82.80
North Branch	1.3110	PF 1	2612.99	2612.99	0.00			10.57	7.44	58.99	127.07
North Branch	1.2940		Culvert								
North Branch	1.2930	PF 1	2607.87	2607.40	0.46	1.51	0.04	21.90	76.52	32.58	33.46
North Branch	1.2630	PF 1	2603.31	2602.71	0.60	1.40	0.01	19.85	87.06	24.09	18.68
North Branch	1.2388	PF 1	2600.10	2599.46	0.64	1.93	0.10	27.16	55.38	48.46	16.06
Combined Branch	1.1975	PF 1	2595.91	2595.59	0.32	2.25	0.04	30.02	56.83	75.15	72.69
Combined Branch	1.1585	PF 1	2591.82	2591.64	0.19	2.80	0.02	1.97	31.73	128.30	86.56
Combined Branch	1.1312	PF 1	2589.01	2588.64	0.37	2.00	0.04	16.38	71.52	74.10	52.08
Combined Branch	1.0986	PF 1	2584.82	2584.54	0.29	1.17	0.08	16.16	80.24	65.60	67.19
Combined Branch	1.0661	PF 1	2582.05	2581.93	0.12			90.68	57.30	14.02	142.32
Combined Branch	1.0604		Culvert								
Combined Branch	1.0584	PF 1	2580.90	2580.70	0.20	2.17	0.14	123.40	36.23	2.36	111.26
Combined Branch	1.0311	PF 1	2577.89	2577.22	0.67	2.94	0.17	26.01	85.20	50.78	19.89
Combined Branch	0.9843	PF 1	2573.56	2573.23	0.32	2.44	0.02	13.51	78.77	69.72	66.20
Combined Branch	0.9441	PF 1	2570.37	2569.84	0.53	0.07	0.25	23.97	116.12	21.91	28.68
Combined Branch	0.9196	PF 1	2569.73	2569.70	0.03			32.91	133.55	31.53	143.05
Combined Branch	0.9042		Culvert								
Combined Branch	0.9018	PF 1	2566.67	2566.10	0.58	1.26	0.20	2.31	160.50	35.19	29.79
Combined Branch	0.8739	PF 1	2563.55	2563.38	0.18	1.09	0.00	105.54	67.95	24.51	128.32
Combined Branch	0.8413	PF 1	2560.40	2560.22	0.19	0.28	0.05	25.00	79.34	93.67	194.31
Combined Branch	0.8098	PF 1	2557.09	2557.08	0.01	0.19	0.17	3.76	15.82	178.41	254.96
Combined Branch	0.7913	PF 1	2555.10	2554.53	0.57	1.03	0.04	7.54	176.38	14.08	33.23
Combined Branch	0.7752	PF 1	2554.00	2553.56	0.44	2.64	0.05	37.50	108.92	51.58	50.88
Combined Branch	0.7232	PF 1	2548.68	2548.34	0.34	1.29	0.03	18.94	87.84	91.21	76.15
Combined Branch	0.7029	PF 1	2546.59	2545.95	0.65	1.44	0.03	8.82	164.66	24.52	27.29
Combined Branch	0.6835	PF 1	2544.63	2544.08	0.55	2.08	0.00	9.43	148.47	40.09	34.02
Combined Branch	0.6472	PF 1	2541.62	2541.08	0.54	2.31	0.00	20.29	190.84	38.87	50.29
Combined Branch	0.6074	PF 1	2538.30	2537.71	0.58	3.50	0.01	52.68	173.85	23.47	40.64
Combined Branch	0.5522	PF 1	2532.62	2531.98	0.64	2.04	0.02	8.35	226.39	15.27	27.64
Combined Branch	0.5198	PF 1	2530.56	2529.69	0.87	3.24	0.08	24.21	215.45	10.34	21.63

HEC-RAS Plan: Plan 08 Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
Combined Branch	0.4721	PF 1	2524.79	2524.20	0.59	2.52	0.01	5.20	235.50	9.30	33.60
Combined Branch	0.4363	PF 1	2522.28	2521.63	0.65	1.94	0.00	23.59	193.75	32.66	33.30
Combined Branch	0.4069	PF 1	2520.06	2519.41	0.65	2.50	0.00	35.45	187.15	27.40	34.15
Combined Branch	0.3669	PF 1	2516.90	2516.26	0.65	0.52	0.13	23.80	194.43	31.77	32.57
Combined Branch	0.3560	PF 1	2515.92	2515.53	0.39	0.60	0.03	16.64	217.39	15.97	40.57
Combined Branch	0.3444	PF 1	2515.29	2514.58	0.71	2.29	0.19	13.07	222.44	59.49	44.04
Combined Branch	0.3105	PF 1	2512.13	2511.80	0.34	2.46	0.01	19.36	195.03	80.60	95.68
Combined Branch	0.2744	PF 1	2509.67	2509.22	0.44	0.63	0.01	9.88	160.01	125.11	89.95
Combined Branch	0.2609	PF 1	2509.02	2508.63	0.40	0.37	0.05	50.62	217.82	26.56	110.93
Combined Branch	0.2482	PF 1	2505.05	2504.84	0.21	1.81	0.01	56.45	209.64	28.92	135.04
Combined Branch	0.2005	PF 1	2503.23	2502.92	0.31	1.69	0.02	100.12	138.50	56.38	98.57
Combined Branch	0.1760	PF 1	2501.51	2500.96	0.55	1.05	0.05	3.13	213.98	77.89	52.75
Combined Branch	0.1577	PF 1	2500.20	2499.82	0.38	1.52	0.03	6.29	167.53	121.18	77.45
Combined Branch	0.1306	PF 1	2498.65	2497.96	0.69	1.28	0.01	96.40	172.12	26.48	38.98
Combined Branch	0.1135	PF 1	2496.79	2496.14	0.65	1.54	0.02	15.36	218.74	60.90	42.75
Combined Branch	0.0933	PF 1	2494.63	2494.05	0.58	2.01	0.02	3.99	183.21	107.80	42.45
Combined Branch	0.0644	PF 1	2492.52	2491.78	0.74	2.29	0.00	67.69	203.09	24.22	31.04
Combined Branch	0.0243	PF 1	2489.22	2488.48	0.73	0.59	0.08	46.62	227.60	63.78	39.29
Combined Branch	0.0080	PF 1	2487.89	2487.42	0.47			14.66	240.75	82.59	81.25

APPENDIX F

Erosion and Sediment Transport Supporting Documentation

Erosion and sediment transport was not analyzed in this study.

Galloway Wash Middle Branch

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.p04
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.g02
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.f01
eport File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.nt
e[illegible]d profiles: PF 1;PF 2
a[illegible]9/05/2003
ime: 10:58:04 AM

ECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
alMidBrnch,GalMidBrnch						
1.6862		0.032	0.032	0.035	0.1	0.3
		-----	0.025	0.025		
		-----	0.035	-----		
1.6631		0.058	0.025	-----	0.1	0.3
		0.032	0.035	-----		
1.6502		0.058	-----	-----	0.1	0.3
		0.032	-----	-----		
		0.025	-----	-----		
1.6346		0.025	-----	-----	0.1	0.3
		0.032	-----	-----		
		0.025	-----	-----		
1.619		0.058	0.032	-----	0.1	0.3
		0.032	0.025	-----		
		0.025	0.058	-----		
		0.058	-----	-----		
		0.04	-----	-----		
		0.058	-----	-----		
		0.025	-----	-----		
		0.032	-----	-----		
1.606		0.058	0.025	-----	0.3	0.5
		0.025	0.04	-----		
		0.04	-----	-----		
		0.025	-----	-----		
		0.032	-----	-----		
		0.025	-----	-----		
1.5884		0.058	-----	-----	0.3	0.5
		0.025	-----	-----		
[illegible]		0.04	-----	-----		
		0.025	-----	-----		
		0.058	-----	-----		
		0.025	-----	-----		
		0.058	-----	-----		
1.5702		0.058	0.032	0.058	0.3	0.5
		0.04	0.058	0.025		
		0.025	-----	0.058		
		0.04	-----	0.04		
		0.058	-----	-----		
		0.032	-----	-----		
1.5371		0.04	0.058	0.032	0.3	0.5
		0.025	0.032	0.058		
		0.04	-----	0.025		
		0.058	-----	0.04		
1.5177		0.04	0.058	0.032	0.1	0.3
		0.025	0.032	0.058		
		0.04	-----	0.025		
		0.058	-----	0.04		
1.4952		0.04	0.058	0.032	0.3	0.5
		0.058	0.032	0.058		
		-----	-----	0.025		
		-----	-----	0.04		
1.4639		0.058	0.058	0.032	0.3	0.5
		0.04	0.032	0.058		
		0.058	-----	0.04		
		-----	-----	0.025		
		-----	-----	0.04		
1.4317		0.058	0.04	0.032	0.3	0.5
		0.04	0.032	0.058		
		-----	-----	0.04		
		-----	-----	0.025		
1.4056		0.058	-----	-----	0.1	0.3
		0.04	-----	-----		
[illegible]		0.032	-----	-----		
1[illegible]6		0.04	0.058	0.032	0.1	0.3
		0.058	0.032	0.058		
		-----	-----	0.04		
		-----	-----	0.032		
		-----	-----	0.04		
		-----	-----	0.025		
1.3579		0.04	0.058	0.04	0.1	0.3
		0.058	0.032	0.032		
		-----	0.04	0.058		

	-----	-----	0.025		
1.3323	0.04	0.032	0.032	0.1	0.3
	0.058	-----	0.04		
	-----	-----	0.032		
	-----	-----	0.058		
	-----	-----	0.025		
1.2985	0.04	0.058	0.032	0.1	0.3
	0.058	0.032	0.04		
	-----	-----	0.058		
	-----	-----	0.04		
	-----	-----	0.032		
	-----	-----	0.058		
	-----	-----	0.025		
	-----	-----	0.032		
1.269	0.058	0.032	0.058	0.1	0.3
	0.04	0.058	0.04		
	0.032	-----	0.032		
	-----	-----	0.058		
	-----	-----	0.04		
	-----	-----	0.025		
	-----	-----	0.032		
1.2355	0.04	0.058	0.04	0.1	0.3
	0.058	0.032	0.032		
	-----	0.04	0.04		
	-----	-----	0.025		
	-----	-----	0.032		
1.1974	0.058	-----	-----	0.1	0.3
	0.025	-----	-----		
	0.058	-----	-----		
	0.032	-----	-----		
1.1895	0.058	-----	-----	0.1	0.3
	0.025	-----	-----		
1.1825	0.058	0.058	0.032	0.3	0.5
	-----	0.032	0.058		
	-----	-----	0.04		
	-----	-----	0.028		
	-----	-----	0.04		
	-----	-----	0.025		
	-----	-----	0.032		
1.1546	0.058	0.058	0.032	0.3	0.5
	-----	0.032	0.058		
	-----	-----	0.04		
	-----	-----	0.028		
	-----	-----	0.04		
	-----	-----	0.025		
1.1118	0.058	0.058	0.032	0.3	0.5
	0.04	0.032	0.04		
	0.058	-----	0.028		
	-----	-----	0.04		
	-----	-----	0.025		
	-----	-----	0.04		
1.078	0.058	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.058	-----	-----		
	0.032	-----	-----		
1.0256	0.058	0.058	0.04	0.1	0.3
	0.04	0.032	0.025		
	0.058	0.04	0.04		
.9784	0.058	0.058	0.04	0.1	0.3
	0.04	0.032	0.025		
	0.058	0.04	0.04		
.9552	0.058	0.058	0.04	0.1	0.3
	0.04	0.032	0.025		
	0.058	0.04	0.04		
.9366	0.058	0.058	0.032	0.1	0.3
	0.04	0.032	0.058		
	0.058	-----	0.025		
	-----	-----	0.058		
.9152	0.058	0.058	0.032	0.1	0.3
	0.04	0.032	0.058		
	0.032	-----	0.025		
	0.058	-----	0.058		
	-----	-----	0.04		
.8808	0.04	0.032	0.058	0.1	0.3
	0.032	0.058	0.025		
	-----	-----	0.04		
.8	0.04	0.04	0.04	0.1	0.3
	-----	0.032	0.032		
	-----	0.058	0.058		
	-----	0.04	0.025		
	-----	-----	0.04		
.8041	0.058	0.04	0.058	0.3	0.5
	0.04	0.032	0.04		
	-----	0.058	0.035		
	-----	-----	0.04		
	-----	-----	0.025		
	-----	-----	0.04		

.756	0.058	0.032	0.058	0.3	0.5
	0.04	0.058	0.04		
	0.032	-----	0.025		
	-----	-----	0.04		
.7272	0.058	-----	-----	0.1	0.3
	0.032	-----	-----		
.6777	0.058	0.058	0.058	0.1	0.3
	-----	0.032	0.025		
	-----	0.058	0.04		
.[illegible]	0.025	0.058	0.058	0.1	0.3
	0.058	0.032	0.025		
	-----	0.058	0.04		
.5954	0.058	0.028	0.058	0.1	0.3
	0.025	0.058	0.04		
	0.058	-----	-----		
	0.028	-----	-----		
.5644	0.058	0.028	0.058	0.1	0.3
	0.025	0.058	0.04		
	0.04	-----	-----		
	0.058	-----	-----		
	0.028	-----	-----		
.5272	0.058	0.025	0.028	0.1	0.3
	0.025	0.028	0.04		
	0.04	-----	-----		
	0.025	-----	-----		
.5212	0.058	-----	-----	0.3	0.5
	0.025	-----	-----		
	0.04	-----	-----		
	0.025	-----	-----		
.5157	0.025	0.025	0.028	0.3	0.5
	0.04	0.028	0.04		
	0.025	-----	-----		
.5006	0.025	-----	-----	0.3	0.5
	0.04	-----	-----		
	0.025	-----	-----		
	0.04	-----	-----		
	0.028	-----	-----		
	0.058	-----	-----		
	0.028	-----	-----		
.4858	0.04	-----	-----	0.1	0.3
	0.025	-----	-----		
	0.04	-----	-----		
	0.025	-----	-----		
	0.04	-----	-----		
	0.058	-----	-----		
	0.028	-----	-----		
.4697	0.04	0.058	0.028	0.1	0.3
	0.025	0.028	0.04		
	0.04	-----	0.025		
	0.025	-----	-----		
	0.04	-----	-----		
	0.058	-----	-----		
.4428	0.04	0.04	0.028	0.1	0.3
	0.025	0.028	0.058		
	0.04	-----	0.025		
.4243	0.04	-----	-----	0.1	0.3
	0.025	-----	-----		
	0.04	-----	-----		
	0.028	-----	-----		
.4037	0.04	-----	-----	0.1	0.3
	0.025	-----	-----		
	0.04	-----	-----		
	0.058	-----	-----		
	0.028	-----	-----		
.3785	0.04	-----	-----	0.1	0.3
	0.028	-----	-----		
alMidBrnch,GalMidBrnch Comb					
.3517	0.058	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.028	-----	-----		
.3065	0.04	0.04	0.04	0.1	0.3
	-----	0.028	0.025		
	-----	0.04	-----		
.2629	0.04	0.04	0.04	0.1	0.3
	-----	0.028	-----		
.2268	0.04	0.058	-----	0.1	0.3
	0.058	0.028	-----		
	-----	0.04	-----		
.2[illegible]	0.04	0.058	-----	0.1	0.3
	0.058	0.028	-----		
	-----	0.04	-----		
.1766	0.04	0.058	-----	0.1	0.3
	0.058	0.028	-----		
	-----	0.04	-----		
.1637	0.04	0.058	-----	0.1	0.3
	0.058	0.028	-----		
	-----	0.04	-----		

.1462	0.04	0.058	-----	0.1	0.3
	0.058	0.028	-----		
	-----	0.04	-----		
.1223	0.04	0.058	0.04	0.1	0.3
	0.058	0.028	-----		
.1024	0.04	0.058	0.04	0.1	0.3
	0.058	0.028	-----		
.0806	0.025	0.058	-----	0.1	0.3
[illegible]	0.058	0.028	-----		
	-----	0.04	-----		
.0643	0.025	0.058	-----	0.1	0.3
	0.058	0.028	-----		
	-----	0.04	-----		
.0415	0.058	0.058	-----	0.1	0.3
	-----	0.028	-----		
	-----	0.04	-----		
.0164	0.04	0.058	0.04	0.1	0.3
	0.058	0.028	-----		
alMidBrnch Trib,GalMidBrnch	Trib				
0	0.058	0.028	-----	0.1	0.3
	-----	0.04	-----		
.2762	0.04	0.04	0.058	0.1	0.3
	-----	0.035	0.04		
.2568	0.025	0.04	-----	0.1	0.3
	0.04	0.035	-----		
	-----	0.04	-----		
.2437	0.025	0.04	-----	0.1	0.3
	0.04	0.035	-----		
	-----	0.04	-----		
.2045	0.04	0.058	-----	0.1	0.3
	0.025	0.035	-----		
	0.058	0.04	-----		
.176	0.058	0.035	0.04	0.3	0.5
	0.025	0.04	0.025		
	0.058	-----	0.04		
.1568	0.025	0.035	0.04	0.3	0.5
	0.058	-----	0.025		
	-----	-----	0.04		
.1295	0.025	-----	-----	0.3	0.5
	0.058	-----	-----		
	0.035	-----	-----		
.1105	0.058	0.035	0.035	0.1	0.3
	-----	-----	0.04		
[illegible]	0.025	-----	-----	0.1	0.3
.09[illegible]	0.04	0.035	0.04	0.1	0.3
.0792	0.04	0.035	0.04	0.1	0.3
.0439	0.04	0.035	0.04	0.1	0.3

--Summary of Statistics---

	Minimum	Maximum
eft Overbank n Value:	0.025	0.058
ight Overbank n Value:	0.025	0.058
hannel n Value:	0.025	0.058
ontraction Coefficient:	0.1	0.3
xpansion Coefficient:	0.3	0.5

OUGHNESS COEFFICIENT CHECK

S: 1.6862
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 1.6346
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 0.101
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

R[illegible]ION LOSS COEFFICIENT CHECK
--[illegible]---

S: 1.606
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.5884
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5

respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.5702
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S 1.5371
T 2 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.4952
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.4639
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.4317
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.1825
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.1546
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.1118
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S 0.8041
T 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.756
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.5212
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.5157
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.5006
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.176
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.1568
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S 0.1295
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

OUGHNESS COEFFICIENT AT STRUCTURES

---END---

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.p04
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.g02
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.f01
e[illegible]File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.xs
e[illegible]d profiles: PF 1;PF 2
ate: 09/05/2003
ime: 11:11:45 AM

ECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
alMidBrnch,GalMidBrnch						
1.6862	205.89	121.83	115.6	195.56	2094	D,C
1.6631	113.07	68.33	61.66	378.37	2094	D,C
1.6502	102.24	82.38	78.46	511.36	2094	D,C
1.6346	170.62	82.17	78.25	544.81	2094	D,C
1.619	221.23	68.64	63.2	280.97	2094	D,C
1.606	85	92.13	97	152.71	2094	D,C
1.5884	96.1	96.1	96.1	372.76	2124	D,C
1.5702	175.21	175.01	184	147.53	2124	D,C
1.5371	100	102.43	106	518.49	2124	C
1.5177	118.8	118.8	118.8	466.78	2124	D,C
1.4952	156.42	165.35	171.61	301.2	2124	C
1.4639	134.51	169.92	207.7	316.83	2124	C
1.4317	137.81	137.81	137.81	331.97	2153	D,C
1.4056	126.72	126.72	126.72	295.24	2153	C
1.3816	125.14	125.14	125.14	263.02	2153	D,C
1.3579	135.17	135.17	135.17	287.48	2153	C
1.3323	209.05	178.15	147.07	257.81	2153	C
1.2985	155.67	155.67	155.67	281.15	2153	C
1.269	176.88	176.88	181.64	379.52	2153	D,C
1.2355	214.98	201.45	191.86	353.71	2153	C
1.1974	43.12	41.71	37.95	302.36	2153	C
1.1895	36.79	36.79	36.79	286.32	2153	C
1.1825	147.45	147.45	147.45	227.89	2153	D,C
1.1546	230	225.98	222	161.12	2153	D,C
1.1118	173	178.46	184	107.69	2153	D,C
1[illegible]	275.2	276.66	276.66	229.49	2153	D,C
1[illegible]	246.2	248.96	248.96	206.02	2153	D,C
0.[illegible]4	180.19	122.83	107.98	186	2153	D,C
0.9552	103	98.21	94	246.95	2153	C
0.9366	112.99	112.99	112.99	243.83	2153	D,C
0.9152	174	181.79	183.55	220.12	2179	C
0.8808	143.83	193.76	240.82	168.99	2179	D,C
0.8441	133.2	210.9	324.8	209.66	2179	D,C
0.8041	181	254.24	302.74	341.33	2179	D,C
0.756	151.9	151.9	150.6	215.86	2179	C
0.7272	288.21	261.22	169.76	233.55	2179	C
0.6777	164.17	163.01	154.02	227.47	2179	C
0.6468	282.09	271.75	262.9	175.46	2204	C
0.5954	124.62	163.51	203.49	227.51	2204	C
0.5644	139.45	196.63	211	235.96	2204	C
0.5272	31.8	31.8	42	278.38	2210	C
0.5212	28.7	28.7	30	279.95	2210	C
0.5157	79.67	79.67	79.67	272.57	2210	C
0.5006	75	78.14	82	109.74	2210	C
0.4858	82	85.01	88	146.21	2210	C
0.4697	141.89	141.89	141.89	81.81	2210	D,C
0.4428	101	97.68	83.93	97.55	2210	C
0.4243	108.66	108.66	102.7	111.37	2210	D,C
0.4037	135	133.14	131.5	138.28	2210	C
0.3785	141.67	141.67	140.2	137.52	2210	D,C
0.3517	0	0	0	172.76	2210	C
alMidBrnch,GalMidBrnch Comb						
0.3065	229.34	230.51	232	105.1	2423	C
0.2629	190.4	190.4	191.1	89.92	2423	C
0.2268	96	94.01	90	72.32	2423	C
0.209	170	171.22	187	71.78	2423	C
0.1766	80	68.29	70	82.91	2423	D,C
0.1637	93	92.25	92.1	79.85	2423	D,C
0.1462	130	125.85	110	80.93	2423	D,C
0.[illegible]3	100	105.52	120	136.76	2423	D,C
0[illegible]	120	115.08	100	94.01	2423	D,C
0.[illegible]5	80	86	92	85.5	2423	D,C
0.0643	120	120.31	135	99.46	2423	D,C
0.0415	145	132.52	130	105.11	2423	C
0.0164	80	86.57	90	134.73	2423	D,C
0	0	0	0	122.2	2423	C
alMidBrnch Trib,GalMidBrnch Trib						
0.2762	90.17	102.5	110.24	58.93	209	D,C
0.2568	58.44	69.35	72.94	80.22	209	C
0.2437	190	206.48	210.3	113.67	209	D

0.2045	163.1	150.87	114.84	94.85	228	D,C
0.176	103.9	101.4	90.5	101.06	228	D,C
0.1568	144.1	143.86	127.19	103.13	228	C,B
0.1295	32.29	100.61	73.16	115.36	228	C
0.1105	59.13	50.03	115.75	77.89	228	C
0.101	125.84	29.81	58.17	67.36	247	C
0.0954	92.6	85.04	76	80.12	247	D,C
0.0792	201.78	186.6	183.43	102.8	247	C
0[illegible]	0	0	0	56.29	247	

=blocked obstruction XS SC 05
=critial depth XS SC 03
=divided flow XS SC 01
=cross section extended XS SC 02
=known water-surface XS SC 04

ISTANCE CHECK

S JT 01 Junction option is used.
For flood insurance study, this option should be used
if the tributary and main stream can have coincident peaks,
or it may be used for the stream without floodway.
It may also be used if the discharges at different time periods
are known from the rainfall-runoff model.
How to remove the junction is explained under Help.

PACING CHECK

NEFFECTIVE FLOW CHECK

S: 1.5371
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.4639
S[illegible]01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

ISCHARGE CHECK

S DC 02 Constant dicharge used for the GalMidBrnch,GalMidBrnch Comb

OCATION CHECK

S: 1.078
S LC 01 Lenchl Up/TopwdthAct Dn = 1.34
MaxChlDpth Up/MaxChlDpth Dn = 1.17
TopwdthAct Up/TopwdthAct Dn = 1.11
This cross section is located too far upstream from the
critical depth cross section.

S: 0.3065
S LC 01 Lenchl Up/TopwdthAct Dn = 2.56
MaxChlDpth Up/MaxChlDpth Dn = 1.38
TopwdthAct Up/TopwdthAct Dn = 1.17
This cross section is located too far upstream from the
critical depth cross section.

S: 0.1223
S LC 01 Lenchl Up/TopwdthAct Dn = 1.12
MaxChlDpth Up/MaxChlDpth Dn = 1.13
TopwdthAct Up/TopwdthAct Dn = 1.45
This cross section is located too far upstream from the
critical depth cross section.

S[illegible] 0.1295
S[illegible]01 Lenchl Up/TopwdthAct Dn = 1.29
MaxChlDpth Up/MaxChlDpth Dn = 1.10
TopwdthAct Up/TopwdthAct Dn = 1.48
This cross section is located too far upstream from the
critical depth cross section.

OUNDARY CONDITION CHECK

```
S BC 02 The name of the stream is GalMidBrnch,GalMidBrnch
        Critical is specified as the upstream boundary
        for profile PF 1

S BC 02 The name of the stream is GalMidBrnch,GalMidBrnch Comb
        Known WS = 2396.5 is specified as the downstream boundary
        for profile PF 1

S [illegible]02 The name of the stream is GalMidBrnch Trib,GalMidBrnch Trib
        Critical is specified as the upstream boundary
        for profile PF 1


ATERAL WEIRS CHECK
----------------------

--END---
```

CHECK-RAS Program: Floodway Check
Encroachment Method, Starting WSEL, Floodway Width, and Surcharge Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.p04
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.g02
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.f01
epo File: P:\162944\floodplain mapping\HEC-RAS files\Final\Galloway Wash Middle Branch\MG_Final.fw
e d profiles: PF 1;PF 2
at 9/05/2003
ime: 10:58:11 AM

ECNO	Method	Surcharge	EncStaL	EncStaR	LStaEff	RStaEff	Structure
alMidBrnch,GalMidBrnch							
1.6862					137.31	425.92	
1.6862	1	0.42	249.43	424	249.43	424	
1.6631					110.66	604.68	
1.6631	1	0.66	321.91	605.2	321.91	605.05	
1.6502					108.66	657.42	
1.6502	1	0.71	400.01	657.46	400.01	657.46	
1.6346					123.52	691.92	
1.6346	1	0.54	493.44	676.68	493.44	676.68	
1.619					476	770.35	
1.619	1	0.52	638.19	765.68	638.19	765.68	
1.606					144.58	395.98	
1.606	1	0.87	186.37	399.34	186.37	399.34	
1.5884					152.38	576.83	
1.5884	1	0.82	216.14	481.48	216.14	481.48	
1.5702					219.9	546.22	
1.5702	1	-0.06	219.9	487	220.22	457.06	
1.5371					-5.33	513.15	
1.5371	1	0.24	156.28	369.42	156.28	369.42	
1.5177					66.13	561.95	
1.5177	1	0.58	291.42	463.47	291.42	463.47	
1.4952					49.33	350.53	
1.4952	1	0.05	258	332	258	332	
1.4639					34.62	351.45	
1.4639	1	0.31	210	313.32	210	313.32	
1.4317					55.93	400.99	
1.4317	1	0.55	229.37	356.19	229.37	356.19	
1					60.46	355.7	
1	1	0.53	131	245.7	131	245.7	
1.3816					96.48	363.03	
1.3816	1	0.59	138.61	267.22	138.61	267.22	
1.3579					224.16	511.64	
1.3579	1	0.76	315	457.98	315	457.98	
1.3323					173.64	431.46	
1.3323	1	0.58	231.47	345.36	231.47	345.36	
1.2985					185.5	466.65	
1.2985	1	0.54	225.74	336.83	225.74	336.83	
1.269					56.98	454.69	
1.269	1	0.61	93.07	240.87	93.07	240.87	
1.2355					77.1	430.81	
1.2355	1	0.27	81.91	178.35	81.91	178.35	
1.1974					73.95	376.31	
1.1974	1	0.51	98.98	220.18	98.98	220.18	
1.1895					95.02	381.34	
1.1895	1	0.25	112.06	297	112.06	297	
1.1825					64.78	388.55	
1.1825	1	0.95	90	340	90	340	
1.1546					85.99	368.54	
1.1546	1	0.12	95.56	368.54	95.56	368.54	
1.1118					169.64	451.8	
1.1118	1	0.11	327	433.6	327	433.6	
1.078					165.41	508.08	
1.078	1	0.51	428.23	508.08	428.23	508.08	
1.0256					66.5	405.69	
1.0256	1	0.03	290.11	346.08	290.11	346.08	
0.9784					72.39	320.91	
0.9784	1	0.34	194.31	265.07	194.31	265.07	
0.9552					65.11	312.06	
0.9552	1	0.21	224.18	304.32	224.18	304.32	
0.9366					53.11	300.29	
0.9366	1	0.29	190.67	272	190.67	272	
0					55.44	275.56	
0	1	0.41	143.07	231.51	143.07	231.51	
0.					51.64	249.93	
0.8808	1	0.48	68.75	146.59	68.75	146.59	
0.8441					87.07	340.06	
0.8441	1	0.48	88	190.22	88	190.22	
0.8041					80	471.79	
0.8041	1	0.51	83	235.54	83	235.54	
0.756					98.88	314.73	
0.756	1	0.05	107	257.08	107	257.08	
0.7272					96.7	330.25	

0.7272	1	0.46	98.41	189.77	98.41	189.77
0.6777					49.54	277.02
0.6777	1	0	51.19	122.3	51.19	122.3
0.6468					55.61	231.07
0.6468	1	0.42	57.79	137.9	57.79	137.9
0.5954					75.69	303.19
0.5954	1	0.23	188.5	258.82	188.5	258.82
0.5644					75.14	311.1
0[illegible]	1	0.27	177.81	254.84	177.81	254.84
0[illegible]					107.92	386.3
0.5272	1	0.22	277.48	354.38	277.48	354.38
0.5212					110.36	390.31
0.5212	1	0.23	287.05	363.32	287.05	363.32
0.5157					118.31	390.88
0.5157	1	0.24	292	368.6	292	368.6
0.5006					312.78	422.52
0.5006	1	0.54	350.07	416.38	350.07	416.38
0.4858					292.55	438.76
0.4858	1	0.18	378.49	432	378.49	432
0.4697					298.55	434.74
0.4697	1	0	365.19	427.76	365.19	427.76
0.4428					338.38	435.93
0.4428	1	0.02	341.3	412.54	341.3	412.54
0.4243					234.01	355.3
0.4243	1	-0.04	253.13	326.51	253.13	326.51
0.4037					139.53	277.81
0.4037	1	-0.06	154.1	214.48	154.1	214.48
0.3785					64.67	225.33
0.3785	1	-0.07	71	127	71	127
0.3517					25.52	198.28
0.3517	1	-0.04	26	81.11	26	81.11
alMidBrnch,GalMidBrnch Comb						
0.3065					41.05	146.15
0.3065	1	-0.04	46.53	122	46.53	122
0.2629					69.88	159.8
0.2629	1	0.02	75.7	154.27	75.7	154.27
0.2268					39.43	111.76
0.2268	1	-0.02	48.51	106.73	48.51	106.73
0.209					40.81	112.58
0.209	1	0.03	45.64	104.55	45.64	104.55
0.1766					59.12	244.51
0.1766	1	0.32	65.35	109.9	65.35	109.9
0[illegible]					176.63	348.22
0[illegible]	1	0	183.73	234.32	183.73	234.32
0.1[illegible]2					83.4	316.21
0.1462	1	-0.02	140.77	204.85	140.77	204.85
0.1223					55.98	281.62
0.1223	1	-0.07	117.46	178.26	117.46	178.26
0.1024					51.56	162.82
0.1024	1	-0.05	84.74	159.49	84.74	159.49
0.0806					63.37	248.23
0.0806	1	0	63.37	248.23	63.38	248.22
0.0643					52.26	237.99
0.0643	1	0	63	140.5	63	140.5
0.0415					60.17	165.27
0.0415	1	0.07	60.17	165.27	60.17	165.27
0.0164					83.32	235.1
0.0164	1	0	113.2	231.77	113.2	231.77
0					25.83	148.03
0	1	0.02	28.29	140.26	28.29	140.26
alMidBrnch Trib,GalMidBrnch Trib						
0.2762					34.48	137.95
0.2762	1	-0.09	36.41	58.87	36.41	58.87
0.2568					68.7	148.92
0.2568	1	0.2	77.93	116.9	77.93	116.9
0.2437					45.21	161.53
0.2437	1	0.54	115.64	140.79	115.64	140.79
0.2045					64.99	219.85
0.2045	1	0.35	64.51	120.48	64.53	120.48
0.176					57.2	220.11
0.176	1	0.63	58.36	85.97	58.36	85.97
0.1568					49.15	152.28
0.1568	1	0.42	50.59	90.44	50.59	90.44
0.1295					59.77	175.13
0.1295	1	0.55	83.28	108.25	83.28	108.25
0.1105					89.33	167.22
0.1[illegible]05	1	0.5	97.55	118.32	97.55	118.32
0[illegible]					102.49	169.84
0[illegible]	1	0.29	114.85	165.19	114.85	165.19
0.0954					74.8	174.25
0.0954	1	0.11	124	145.34	124	145.34
0.0792					89.98	192.78
0.0792	1	0.08	101.92	159.24	101.92	159.24
0.0439					102.25	158.54
0.0439	1	0.42	103.53	156.27	103.53	156.27

NCROACHMENT METHOD CHECK

LOODWAY WIDTH CHECK

S: 1.6862
W 3 The right channel bank station may not be at the proper location.

S: 1.6631
W FW 03 The Left channel bank station may not be at the proper location.

S: 1.6346
W FW 03 The right channel bank station may not be at the proper location.

S: 1.619
W FW 03 The Left channel bank station may not be at the proper location.

S: 1.5702
W FW 03 The right channel bank station may not be at the proper location.

S: 1.4952
W FW 03 The right channel bank station may not be at the proper location.

S: 1.4639
W FW 03 The right channel bank station may not be at the proper location.

S: 1.4317
W FW 03 The right channel bank station may not be at the proper location.

S: 1.3816
W FW 03 The right channel bank station may not be at the proper location.

S: 1.3579
W FW 03 The Left channel bank station may not be at the proper location.

S: 1.3579
W FW 03 The right channel bank station may not be at the proper location.

S: 1.3323
W FW 03 The right channel bank station may not be at the proper location.

S: 1.2985
W FW 03 The right channel bank station may not be at the proper location.

S: 1.2355
W FW 03 The Left channel bank station may not be at the proper location.

S: 1.2355
W FW 03 The right channel bank station may not be at the proper location.

S: 1.1895
W FW 03 The Left channel bank station may not be at the proper location.

S: 1.1895
W FW 03 The right channel bank station may not be at the proper location.

S: 1.1546
W 3 The Left channel bank station may not be at the proper location.

S: 1.1118
W FW 03 The Left channel bank station may not be at the proper location.

S: 1.078
W FW 03 The right channel bank station may not be at the proper location.

S: 0.9784
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.9784
W FW 03 The right channel bank station may not be at the proper location.

S: 0.9152
W FW 03 The right channel bank station may not be at the proper location.

S: 0.8808
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.8808
W FW 03 The right channel bank station may not be at the proper location.

S: 0.8441
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.8441
W FW 03 The right channel bank station may not be at the proper location.

S: 0.756
W FW 03 The right channel bank station may not be at the proper location.

S: 0.7272
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.6777
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.5644
W [illegible]3 The right channel bank station may not be at the proper location.

S: 0.5272
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.5212
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.5212
W FW 03 The right channel bank station may not be at the proper location.

S: 0.5157
W FW 03 The right channel bank station may not be at the proper location.

S: 0.4858
W FW 03 The right channel bank station may not be at the proper location.

S: 0.4428
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.4243
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.4243
W FW 03 The right channel bank station may not be at the proper location.

S[illegible] 0.3785
W [illegible]3 The Left channel bank station may not be at the proper location.

S: 0.3065
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.3065
W FW 03 The right channel bank station may not be at the proper

location.

S: 0.2629
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.209
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1766
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1637
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1462
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1462
W FW 03 The right channel bank station may not be at the proper location.

S: 0.1223
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1223
W FW 03 The right channel bank station may not be at the proper location.

S: 0.1024
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1024
W FW 03 The right channel bank station may not be at the proper location.

S: 0.0806
W [illegible]3 The Left channel bank station may not be at the proper location.

S: 0.0643
W FW 03 The right channel bank station may not be at the proper location.

S: 0.0164
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.0164
W FW 03 The right channel bank station may not be at the proper location.

S: 0
W FW 03 The Left channel bank station may not be at the proper location.

S: 0
W FW 03 The right channel bank station may not be at the proper location.

S: 0.2762
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.2762
W FW 03 The right channel bank station may not be at the proper location.

S: 0.2568
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.2568
W FW 03 The right channel bank station may not be at the proper location.

S: 0.2437
W FW 03 The right channel bank station may not be at the proper location.

S: 0.176

W FW 03 The right channel bank station may not be at the proper location.

S: 0.1568
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1568
W [illegible]3 The right channel bank station may not be at the proper location.

S: 0.1295
W FW 03 The right channel bank station may not be at the proper location.

S: 0.1105
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.1105
W FW 03 The right channel bank station may not be at the proper location.

S: 0.101
W FW 03 The right channel bank station may not be at the proper location.

S: 0.0954
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.0792
W FW 03 The Left channel bank station may not be at the proper location.

S: 0.0792
W FW 03 The right channel bank station may not be at the proper location.

S: 0.0439
W FW 03 The Left channel bank station may not be at the proper location.

S[illegible] 0.0439
W [illegible]03 The right channel bank station may not be at the proper location.

URCHARGE CHECK

ISCHARGE CHECK

TARTING WATER-SURFACE ELEVATION CHECK

--END---

Galloway Wash Middle Branch CHECK RAS Message Explanations

TO: Tony Bokich

COPIES: File

FROM: Rob Lyons

DATE: March 20, 2003

ROUGHNESS COEFFICIENT CHECK

NT RC 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The washes in Carefree are desert washes and sometimes have barren land on the overbanks resulting in lower Manning's n values than the 0.035.

TRANSITION LOSS COEFFICIENT CHECK

NT TL 02

The results of this check were reviewed for each message. The expansion and contraction coefficients for the cross sections in question were purposefully increased to account for rapid expansion and contraction that was predicted based on the local topographic features.

DISTANCE CHECK

XS JT 01

A node exists at the junction in the HEC-1 model to calculate the peak flow.

INEFFECTIVE FLOW CHECK

XS IF 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The levee option was used often in the model to represent the hydraulic conditions of the braided channel geometry.

DISCHARGE CHECK

Galloway Wash, Combined

XS DC 02

The Combined reach is relatively short without a hydrologically significant change in drainage area from the upper end and the lower end.

LOCATION CHECK

XS LC 01

Due to the steep and irregular terrain of the study area, project specific checks were performed to analyze the need for additional cross sections. Refer to Section 5 of the TDN. Changes in energy, head loss, top width, Q[L], Q[C], and Q[R] were all reviewed from cross section to cross section. Cross sections were added where the change was significant. In locations where the top width changed by more than 150% from one cross section to the next, the contraction and expansion coefficients were increased to 0.3 and 0.5, respectively. The Flood Control District's experience is that additional cross sections would result in negligible changes in flood water surface elevations.

BOUNDARY CONDITION CHECK

XS BC 02

HEC-RAS is run assuming that the flow condition is supercritical or a mixed flow regime. Where the wash enters another wash, the water surface elevation for the same event is known and the delineation project contract number is referenced on the floodplain work maps. All other boundary conditions are documented in the TDN.

FLOODWAY WIDTH CHECK

R.S. 0.7272

FW FW 01

This message is reporting false information about the model. Refer to the HEC-RAS encroachment tables. The left encroachment station is set at the left channel station.

FLOODWAY WIDTH CHECK

FW FW 03

Due to the unique braided, shallow channel geometry of the washes modeled in Carefree, AZ, bank stations were generally selected based on break in vegetation when more hydraulic information was necessary that would be reported in the overbanks.

FLOODWAY WIDTH CHECK

FW FW 04

This message is reporting false information about the model. Moe Khine with Dewberry was contacted to investigate the issue has advised that the current version of CHECK-RAS, Version 1.1, has a bug related to this message. The problem will be fixed on the next version of CHECK-RAS once the proposed budget is approved by FEMA.

Eastern Pima Wash

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.p06
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.g01
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.f01
epo[illegible] File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.nt
e[illegible]d profiles: PF 1
a[illegible]9/05/2003
ime: 11:25:00 AM

ECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
nnamed Eastern,Pima						
1.0178		0.04	0.045	-----	0.1	0.3
		0.045	0.04	-----		
.9929		0.04	-----	-----	0.1	0.3
		0.058	-----	-----		
		0.045	-----	-----		
.9653		0.04	-----	-----	0.1	0.3
		0.045	-----	-----		
.9247		0.025	0.045	-----	0.1	0.3
		0.04	0.04	-----		
		0.045	-----	-----		
.9088		0.025	0.04	0.045	0.1	0.3
		0.04	0.045	0.04		
.8993		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.032		
.8747		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.032		
		-----	-----	0.025		
.856		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.032		
		-----	-----	0.025		
.8342		0.04	0.04	0.045	0.1	0.3
		-----	0.045	0.04		
		-----	-----	0.025		
.8168		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.025		
.8111		0.025	-----	-----	0.1	0.3
.8[illegible]		0.04	0.04	0.04	0.1	0.3
		0.025	0.045	0.032		
		0.04	0.04	-----		
.7856		0.025	0.045	0.04	0.1	0.3
		0.04	0.04	0.032		
		0.045	-----	-----		
.7661		0.04	-----	-----	0.1	0.3
		0.045	-----	-----		
.7351		0.032	-----	-----	0.1	0.3
		0.04	-----	-----		
		0.045	-----	-----		
.7049		0.025	-----	-----	0.1	0.3
		0.032	-----	-----		
		0.045	-----	-----		
.6852		0.025	0.035	0.04	0.1	0.3
		0.04	0.04	0.025		
		0.035	-----	-----		
.6541		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
.6387		0.04	-----	-----	0.1	0.3
		0.035	-----	-----		
.6098		0.058	-----	-----	0.1	0.3
		0.035	-----	-----		
.5931		0.025	0.058	0.035	0.1	0.3
		0.058	0.035	0.04		
		-----	-----	0.025		
.5707		0.058	0.058	0.035	0.1	0.3
		-----	0.035	0.04		
		-----	-----	0.025		
.5548		0.058	0.058	0.035	0.1	0.3
		-----	0.035	0.04		
		-----	-----	0.025		
		-----	-----	0.04		
.5494		0.025	-----	-----	0.1	0.3
.5[illegible]		0.04	0.045	0.04	0.1	0.3
		0.058	0.04	0.025		
		0.045	-----	-----		
.5234		0.04	0.045	0.058	0.1	0.3
		0.045	0.058	0.025		
.4988		0.04	-----	-----	0.1	0.3
		0.045	-----	-----		
.4801		0.025	-----	-----	0.1	0.3
		0.04	-----	-----		
		0.045	-----	-----		
.46		0.04	0.045	0.058	0.1	0.3

0.045 0.058 0.025

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.p06
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.g01
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.f01
e File: P:\162944\floodplain mapping\HEC-RAS files\Final\Eastern Pima Wash\PM_Final.xs
e d profiles: PF 1
ate: 09/05/2003
ime: 11:25:03 AM

ECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
nnamed Eastern,Pima						
1.0178	131.24	131.24	131.24	16.94	71	C
0.9929	150	145.52	141	19.44	71	C
0.9653	214	214.56	220	25.96	71	C
0.9247	80	83.94	90	23.59	71	
0.9088	50.17	50.17	50.17	14.02	71	C
0.8993	140	129.91	122	22.32	71	C
0.8747	105	98.82	94	57.36	71	C
0.856	120	115.1	110	39.75	71	D
0.8342	85	91.99	97	30.13	71	C
0.8168	30.03	30.03	30.03	62.07	71	
0.8111	29	29	29	41.13	71	C
0.8056	112	105.53	100	41.47	71	C
0.7856	100	103.21	110	11.28	71	C
0.7661	180	163.18	150	21.46	71	D,C
0.7351	159.77	159.77	159.77	20.09	71	C
0.7049	100	104.01	110	18.49	71	C
0.6852	163.92	163.92	163.92	18.12	71	C
0.6541	78	81.39	85	15.23	71	C
0.6387	144	152.82	162	28.01	71	D,C
0.6098	88.24	88.24	88.24	27.54	71	C
0.5931	130	118.13	110	18.75	71	
0.5707	90	83.73	79	42.83	71	C
0.5548	28.55	28.55	28.55	45.9	134	
0.5494	35.47	35.47	35.47	57.91	134	C
0.5427	92	102.19	112	27.34	134	C
0	122	129.67	138	25.76	134	
0	102	98.5	96	42.86	134	C
0.4 1	106.21	106.21	106.21	39.5	134	C
0.46	110	117	125	29.7	134	D,C
0.4379	178.93	178.93	178.93	22.75	134	C
0.404	85	89.94	95	42.09	134	C
0.3869	80	77.98	76	34.95	134	C
0.3722	96	92.55	86	41.39	134	C
0.3547	87.61	87.61	87.61	37.15	134	C
0.3381	60.88	60.88	60.88	35.49	134	
0.3265	127.96	127.96	127.96	16.95	134	D,C
0.3023	70	78.08	90	48.73	134	C
0.2875	62.12	62.12	62.12	81.66	134	C
0.2757	56.52	56.52	56.52	82.15	134	
0.265	56	51.92	50	40.81	134	
0.2552	168	161.76	158	38.58	134	C
0.2246	85	79.82	75	90.28	295	C
0.2095	27.45	27.45	27.45	79.65	295	C
0.2043	142	139.6	138	126.62	295	D
0.1778	109	111.68	115	69.68	295	D,C
0.1567	216.91	216.91	216.91	76.11	295	D
0.1156	159.4	159.4	159.4	41.78	295	C
0.0854	80	73.4	70	56.14	295	
0.0715	160	170.83	185	45.36	295	
0.0391	170.13	170.13	170.13	92.81	295	D,C
0.0069	0	0	0	142.01	323	D

=blocked obstruction XS SC 05
=critial depth XS SC 03
=divided flow XS SC 01
=cross section extended XS SC 02
=known water-surface XS SC 04

I E CHECK

PACING CHECK

NEFFECTIVE FLOW CHECK

ISCHARGE CHECK

OCATION CHECK

S: 0.4801
S LC 01 Lenchl Up/TopwdthAct Dn = 3.58
MaxChlDpth Up/MaxChlDpth Dn = 1.46
TopwdthAct Up/TopwdthAct Dn = 1.33
This cross section is located too far upstream from the critical depth cross section.

S: 0.1567
S LC 01 Lenchl Up/TopwdthAct Dn = 5.19
MaxChlDpth Up/MaxChlDpth Dn = 1.45
TopwdthAct Up/TopwdthAct Dn = 1.82
This cross section is located too far upstream from the critical depth cross section.

OUNDARY CONDITION CHECK

S BC 02 The name of the stream is Unnamed Eastern,Pima
Known WS = 2560.5 is specified as the downstream boundary for profile PF 1

S BC 02 The name of the stream is Unnamed Eastern,Pima
Critical is specified as the upstream boundary for profile PF 1

ATERAL WEIRS CHECK

--END---

Eastern Pima Wash CHECK RAS Message Explanations

TO: Tony Bokich

COPIES: File

FROM: Rob Lyons

DATE: March 20, 2003

ROUGHNESS COEFFICIENT CHECK

NT RC 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The washes in Carefree are desert washes and sometimes have barren land on the overbanks resulting in lower Manning's n values than the 0.035.

LOCATION CHECK

XS LC 01

Due to the steep and irregular terrain of the study area, project specific checks were performed to analyze the need for additional cross sections. Refer to Section 5 of the TDN. Changes in energy, head loss, top width, Q[L], Q[C], and Q[R] were all reviewed from cross section to cross section. Cross sections were added where the change was significant. In locations where the top width changed by more than 150% from one cross section to the next, the contraction and expansion coefficients were increased to 0.3 and 0.5, respectively. The Flood Control District's experience is that additional cross sections would result in negligible changes in flood water surface elevations.

BOUNDARY CONDITION CHECK

XS BC 02

HEC-RAS is run assuming that the flow condition is supercritical or a mixed flow regime. Where the wash enters another wash, the water surface elevation for the same event is known and the delineation project contract number is referenced on the floodplain work maps. All other boundary conditions are documented in the TDN.

Unnamed Tributary to Stagecoach Pass Wash

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

'roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.prj
'lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.p01
;eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.g01
'low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.f01
;eport File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.nt
;el[illegible]d profiles: PF 1
)at[illegible]4/03/2003
'ime: 1:53:18 PM

;ECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
Innamed Eastern,Trib to Stagecoa						
.8707		0.032	-----	-----	0.1	0.3
		0.035	-----	-----		
.844		0.032	0.032	0.035	0.1	0.3
		-----	0.035	0.032		
.8171		0.032	0.035	0.035	0.1	0.3
		-----	-----	0.032		
		-----	-----	0.04		
		-----	-----	0.025		
.7934		0.058	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
		-----	-----	0.025		
.7626		0.058	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
		-----	-----	0.025		
		-----	-----	0.04		
.7537	Culvert-Up	0.058	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
		-----	-----	0.025		
		-----	-----	0.04		
.7537	Culvert-Dn	0.04	0.045	0.04	0.3	0.5
		-----	0.04	0.025		
		-----	-----	0.04		
.7448		0.04	0.045	0.04	0.3	0.5
		-----	0.04	0.025		
		-----	-----	0.04		
.7265		0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
[illegible]		0.045	-----	-----		
.6[illegible]		0.04	-----	-----	0.1	0.3
		0.045	-----	-----		
.6449		0.025	-----	-----	0.1	0.3
		0.04	-----	-----		
		0.045	-----	-----		
.6242		0.025	0.035	0.035	0.1	0.3
		0.04	-----	0.025		
		-----	-----	0.04		
.6025		0.04	0.058	0.04	0.3	0.5
		0.058	0.035	0.025		
		-----	-----	0.04		
.583		0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
.5727	Culvert-Up	0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
.5727	Culvert-Dn	0.025	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
.5624		0.025	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
.5394		0.025	0.035	0.035	0.3	0.5
		0.04	-----	0.04		
		0.025	-----	-----		
		0.04	-----	-----		
.5198		0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
		0.025	-----	-----		
		0.035	-----	-----		
.517	Culvert-Up	0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
		0.025	-----	-----		
		0.035	-----	-----		
.517	Culvert-Dn	0.025	0.035	0.04	0.3	0.5
		0.04	0.04	0.025		
[illegible]		0.025	-----	-----		
		0.035	-----	-----		
.5142		0.025	0.035	0.04	0.3	0.5
		0.04	0.04	0.025		
		0.025	-----	-----		
		0.035	-----	-----		
.5053		0.025	0.025	0.035	0.3	0.5
		0.04	0.035	0.04		
		0.025	-----	0.025		
.494		0.025	0.025	0.035	0.3	0.5
		0.04	0.035	0.04		

		0.025	-----	0.025		
.491	Culvert-Up	0.025	0.025	0.035	0.3	0.5
		0.04	0.035	0.04		
		0.025	-----	0.025		
.491	Culvert-Dn	0.025	0.058	-----	0.3	0.5
		0.04	0.035	-----		
		0.025	0.04	-----		
		0.058	-----	-----		
.4[illegible]		0.025	0.058	-----	0.3	0.5
		0.04	0.035	-----		
		0.025	0.04	-----		
		0.058	-----	-----		
.473		0.04	0.058	0.035	0.3	0.5
		0.025	0.035	0.04		
		0.058	-----	-----		
.4567		0.04	0.04	0.035	0.1	0.3
		0.025	0.035	0.04		
		0.04	-----	-----		
.4398		0.025	0.035	0.035	0.1	0.3
		0.04	-----	0.04		
.4246		0.04	0.035	0.035	0.1	0.3
		-----	-----	0.04		
.4017		0.04	0.04	-----	0.1	0.3
		-----	0.035	-----		
		-----	0.04	-----		
.3933		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
.3828		0.04	0.04	0.035	0.3	0.5
		-----	0.035	0.04		
.3647		0.04	-----	-----	0.3	0.5
		0.035	-----	-----		
.3527	Culvert-Up	0.04	-----	-----	0.3	0.5
		0.035	-----	-----		
.3527	Culvert-Dn	0.025	0.035	0.04	0.3	0.5
		0.04	-----	-----		
.3407		0.025	0.035	0.04	0.3	0.5
		0.04	-----	-----		
.3101		0.04	0.04	-----	0.3	0.5
		-----	0.035	-----		
		-----	0.04	-----		
.2669		0.04	0.058	0.058	0.1	0.3
		0.058	0.035	0.025		
		-----	0.058	-----		
.2[illegible]		0.04	0.04	0.058	0.1	0.3
		-----	0.035	0.025		
.2384		0.04	0.04	0.025	0.1	0.3
		0.025	0.025	0.058		
		0.04	-----	0.04		
.2321		0.025	-----	-----	0.1	0.3
.2263		0.04	0.04	0.035	0.1	0.3
		0.025	0.035	0.04		
		0.04	-----	0.025		
.2046		0.04	0.04	0.035	0.1	0.3
		0.035	0.035	0.04		
		0.04	-----	0.025		
.1698		0.04	0.035	-----	0.1	0.3
		0.035	0.04	-----		
.1377		0.04	0.04	-----	0.1	0.3
		-----	0.035	-----		
		-----	0.04	-----		
.1174		0.04	0.035	-----	0.1	0.3
		0.035	0.04	-----		
.0867		0.04	0.035	0.035	0.1	0.3
		-----	-----	0.04		
		-----	-----	0.025		
.0637		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
		-----	-----	0.025		
.0394		0.04	0.04	0.04	0.1	0.3
		-----	0.035	-----		
.0186		0.04	0.035	-----	0.1	0.3
		0.035	0.04	-----		

--Summary of Statistics---

	Minimum	Maximum
eft[illegible]erbank n Value:	0.025	0.058
ig[illegible]erbank n Value:	0.025	0.058
ha[illegible] n Value:	0.025	0.058
ontraction Coefficient:	0.1	0.3
xpansion Coefficient:	0.3	0.5

OUGHNESS COEFFICIENT CHECK

S: 0.844

T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 0.8171
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 0.2321
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RANSITION LOSS COEFFICIENT CHECK

S: 0.7265
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.473
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.3101
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

OUGHNESS COEFFICIENT AT STRUCTURES

--END---

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

:oject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.p01
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.g01
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.f01
ep[illegible]ile: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.xs
el[illegible] profiles: PF 1
ate: 04/03/2003
ime: 1:53:19 PM

ECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
nnamed Eastern,Trib to Stagecoa						
0.8707	141.07	141.07	136.9	13.65	84	C
0.844	142.22	142.22	146.2	13.94	84	C
0.8171	124.7	124.74	124.8	20.46	84	D,C
0.7934	162.6	162.59	161.4	33.06	84	C
0.7626	93.97	93.97	114.9	85.06	84	
0.7537	Culvert #1-Up					
0.7537	Culvert #1-Dn					
0.7448	96.73	96.73	96.73	9.92	84	C
0.7265	258.1	258.33	258.9	11.42	84	
0.6776	172.5	172.55	172.6	11.16	84	
0.6449	109.59	109.59	109.59	10.16	84	C
0.6242	114.2	114.29	114.4	8.62	84	C
0.6025	104.8	102.81	100.1	25.19	152	
0.583	111.4	109.24	109	73.76	152	D
0.5727	Culvert #1-Up					
0.5727	Culvert #1-Dn					
0.5624	120.8	121.38	123.9	27.89	152	C
0.5394	102.9	103.26	104.2	53.76	152	C
0.5198	29.43	29.43	29.43	49.34	152	
0.517	Culvert #1-Up					
0.517	Culvert #1-Dn					
0.5142	47.41	47.41	47.41	42.25	152	C
0.5053	59.29	59.29	59.29	40.79	152	C
0.494	31.7	31.71	31.75	66.4	152	
0.491	Culvert #1-Up					
0.4[illegible]	Culvert #1-Dn					
0.[illegible]	79.2	79.2	79.2	23.4	152	C
0.[illegible]	89.9	86.33	85.4	26.42	152	C
0.4567	90.6	88.82	84.6	21.21	152	C
0.4398	83.5	80.3	78.9	61.62	152	C
0.4246	90.6	121.06	145.2	30.19	152	C
0.4017	41	44.35	50	52.04	152	
0.3933	51	55.44	60	32.56	152	
0.3828	95.2	95.61	96	76.12	225	C
0.3647	127	126.99	126.9	134.15	225	
0.3527	Culvert #1-Up					
0.3527	Culvert #1-Dn					
0.3407	154	161.24	168.3	28.69	225	C
0.3101	238	228.12	222	31.85	225	C
0.2669	64.42	64.42	64.42	60.22	225	C
0.2547	80	86.06	91	88.49	225	C
0.2384	33.7	33.67	33.6	108.3	225	C
0.2321	30.1	30.7	30.9	128.07	225	
0.2263	126.4	114.54	101.3	100.84	225	D,C
0.2046	180.9	183.33	184.7	41.5	225	D,C
0.1698	169	169.42	169.6	25.52	225	C
0.1377	107.2	107.28	107.3	24.93	225	
0.1174	162.2	162.25	162.3	39.77	225	C
0.0867	121.61	121.61	121.61	46.16	225	C
0.0637	128.06	128.06	128.06	38.25	225	C
0.0394	108.4	109.67	110	28.74	225	C
0.0186	0	0	0	79.39	225	

=blocked obstruction XS SC 05
=critial depth XS SC 03
=divided flow XS SC 01
=cross section extended XS SC 02
=known water-surface XS SC 04

IS[illegible]E CHECK

PACING CHECK

NEFFECTIVE FLOW CHECK

S: 0.8707
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.844
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.7934
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.7448
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.7265
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6776
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6449
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6242
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6242
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.3933
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.3828
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.2669
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.2547
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.2046
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.1174
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

IS GE CHECK

OCATION CHECK

S: 0.473
S LC 01 Lenchl Up/TopwdthAct Dn = 4.07
MaxChlDpth Up/MaxChlDpth Dn = 1.16
TopwdthAct Up/TopwdthAct Dn = 1.25

```
        This cross section is located too far upstream from the
        critical depth cross section.

S:      0.4398
S LC 01 Lenchl Up/TopwdthAct Dn = 2.66
        MaxChlDpth Up/MaxChlDpth Dn = 1.29
        TopwdthAct Up/TopwdthAct Dn = 2.04
        This cross section is located too far upstream from the
        critical depth cross section.

S:      0.0867
S LC 01 Lenchl Up/TopwdthAct Dn = 3.18
        MaxChlDpth Up/MaxChlDpth Dn = 1.30
        TopwdthAct Up/TopwdthAct Dn = 1.21
        This cross section is located too far upstream from the
        critical depth cross section.


OUNDARY CONDITION CHECK
-----------------------

S BC 02 The name of the stream is Unnamed Eastern,Trib to Stagecoa
        Known WS = 2617.1 is specified as the downstream boundary
        for profile PF 1

S BC 02 The name of the stream is Unnamed Eastern,Trib to Stagecoa
        Critical is specified as the upstream boundary
        for profile PF 1


ATERAL WEIRS CHECK
----------------------

--END---
```

CHECK-RAS Program: Structure Check

:oject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.prj
.an File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.p01
:ometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.g01
:ow File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.f01
:port File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Tributary to Stachcoach Pass Wash\SCP_Final.br
:lected profiles: PF 1
:te /03/2003
:m 53:21 PM

;	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
:nnamed Eastern,Trib to Stagecoa						
).8707			2713.3	2712.74	2710.48	
).844			2710.71	2710.16	2707.83	
).8171			2707.18	2706.75	2705.26	
).7934			2705.13	2704.8	2702.95	
).7626			2702.68	2702.66	2700.69	
).7537	2702.3	2701.91	0	2702.3	2699.3	Culvert #1-Up
).7537	2699.8	2701.12	0	2699.8	2696.8	Culvert #1-Dn
).7448			2698.61	2697.97	2695.34	
).7265			2694.75	2694.2	2691.74	
).6776			2689.22	2688.72	2685.98	
).6449			2685.88	2685.16	2682.53	
).6242			2683.43	2682.71	2679.9	
).6025			2679.97	2679.65	2676.92	
).583			2679.54	2679.47	2674.39	
).5727	2674.59	2678.2	0	2674.59	2672.09	Culvert #1-Up
).5727	2673.69	2678.09	0	2673.69	2671.19	Culvert #1-Dn
).5624			2675.1	2674.57	2672.43	
0.5394			2672.33	2672.02	2670.22	
0.5198			2671.37	2671.28	2668.36	
0.517	2669.24	2669.69	0	2669.24	2666.74	Culvert #1-Up
0.517	2668.9	2669.48	0	2668.9	2666.4	Culvert #1-Dn
0.5142			2670.84	2670.47	2667.74	
0.5053			2670.28	2669.86	2667.01	
0.494			2669.81	2669.76	2664.97	
0.491	2667.15	2669.12	0	2667.15	2664.65	Culvert #1-Up
0.491	2666.82	2669.12	0	2666.82	2664.32	Culvert #1-Dn
0.488			2666.64	2666.03	2664.14	
0.			2665.02	2664.42	2661.63	
0.			2663.27	2662.62	2660.21	
0.			2661.84	2661.51	2659	
0.4246			2660.43	2659.92	2657.98	
0.4017			2657.93	2657.81	2656.28	
0.3933			2657.64	2657.3	2655.86	
0.3828			2657.19	2656.96	2654.45	
0.3647			2656.59	2656.57	2652.64	
0.3527	2653.79	2655.66	0	2653.79	2650.79	Culvert #1-Up
0.3527	2652.5	2655.66	0	2652.5	2649.5	Culvert #1-Dn
0.3407			2651.96	2651.27	2649.31	
0.3101			2649.4	2648.77	2646.2	
0.2669			2644.82	2644.43	2642.61	
0.2547			2643.53	2643.15	2641.11	
0.2384			2641.05	2640.79	2639.87	
0.2321			2640.09	2640	2638.79	
0.2263			2639.97	2639.66	2637.83	
0.2046			2635.56	2635.08	2633.55	
0.1698			2632.49	2631.76	2629.36	
0.1377			2628.82	2628.31	2625.19	
0.1174			2627.86	2627.26	2624.37	
0.0867			2624.26	2623.77	2620.59	
0.0637			2621.13	2620.57	2618.12	
0.0394			2619.11	2618.33	2615.27	
0.0186			2617.16	2617.1	2613.39	

.IVER/REACH: Unnamed Eastern, Trib to Stagecoa
.IVER STATION: 0.7537
'YPE OF STRUCTURE: Culvert

'escription:	Culvert #153, Suppl. Survey performed 11-01-02
'ist ce from Upstream XS:	17.4
'e adway Width:	60.1
'ei efficient:	2.6
laximum allowable submergence for weir flow:	0.95
:levation at which weir flow begins:	2701
'eir crest shape:	Broad Crested

:ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual

l	0.7934	162.59	2704.8	2705.13	33.06	
3	0.7626	93.97	2702.66	2702.68	85.06	
	0.7537	79.30	2702.3	0	0	Culvert #1-Up
	0.7537	6.37	2699.8	0	0	Culvert #1-Dn
2	0.7448	96.73	2697.97	2698.61	9.92	
.	0.7265	258.33	2694.2	2694.75	11.42	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
l	0	75	2701.73	0	56	2697.5
2	96	350.75	2701.73	79	235.16	2697.5

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ılvert Group					75	96	U
					56	79	D

JLVERT:
ılvert Name: Culvert #1
ıape: Circular Rise: 3 Span: 0 Barrels: 2
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 1 - Headwall
olution Crit:Highest U.S. EG

pstrmDist:	8.3	Length:	79.3	n-Value:	0.024		
ıtLossCoef:	0.5	ExtLossCoef:	1	CulvInvElU	2699.3	CulvInvElD	2696.8
CntStaU:	83.03	RCntStaU:	87.56	LCntStaD	66.09	RCntStaD	70.08

ılvert Depth Blocked: 0

ulv Area:	14.14	CulvQ:	49.76	MinTopRd:	2701.91

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	81.53	89.06	2702.86	2701.91	2701.91	2702.3	U
	64.59	71.58	2703.04	2701.12	2701.12	2699.8	D

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		49.76	34.24	Highest U.S. EG	Pressure and Weir Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 0.7537 This is Culvert #1
V PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2702.68 is greater than MinTopRd of 2701.91.
2. CulvWSIn of 2702.30 is greater than or equal to MxLoCdU of 2702.30.
3. CulvWSOut of 2699.80 is greater than or equal to MxLoCdD of 2699.80.

ISTANCE CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

S: 0.7448 This is section 2
T G 05 Weir flow occurs at Culvert Group 1
All ineffective flow elevations at Section 2 are less than the WSEL at Section 2.
The velocity head at Section 2 is more than 0.5 foot and more than the velocity head at Section 1.
Section 2 should be recoded to represent the natural valley cross section.

IVER/REACH: Unnamed Eastern, Trib to Stagecoa
IVER STATION: 0.5727

'PE OF STRUCTURE: Culvert

escription:	Triple 30" CMP culverts under Wildflower Road @ i
.stance from Upstream XS:	30
eck/Roadway Width:	53.2
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
Elevation at which weir flow begins:	2678
eir [illegible]st shape:	Broad Crested

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.6025	102.81	2679.65		2679.97	25.19	
3	0.583	109.24	2679.47		2679.54	73.76	
	0.5727	99.60	2674.59		0	0	Culvert #1-Up
	0.5727	7.04	2673.69		0	0	Culvert #1-Dn
2	0.5624	121.38	2674.57		2675.1	27.89	
1	0.5394	103.26	2672.02		2672.33	53.76	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	107	2678.09	0	117	2674
2	124.45	284.64	2678.09	147	201	2674

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					107	124.45	U
					117	147	D

JLVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 2.5 Span: 0 Barrels: 3
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olu[illegible] Crit:Highest U.S. EG

ps[illegible]ist:	2.6	Length:	99.6	n-Value:	0.024		
ntLossCoef:	0.9	ExtLossCoef:	1	CulvInvElU	2672.09	CulvInvElD	2671.19
CntStaU:	113.8	RCntStaU:	120.2	LCntStaD	127.7	RCntStaD	134.1

ulvert Depth Blocked: 0

ulv Area:	14.73	CulvQ:	5.78	MinTopRd:	2678.16	

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	112.55	121.45	2678.2	2678.31	2678.2	2674.59	U
	126.45	135.35	2678.09	2678.31	2678.09	2673.69	D

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		5.78	146.14	Highest U.S. EG	Pressure and Weir Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 0.5727 This is Culvert #1
V PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2679.54 is greater than MinTopRd of 2678.16.
2. CulvWSIn of 2674.59 is greater than or equal to MxLoCdU of 2674.59.
3. CulvWSOut of 2673.69 is greater than or equal to MxLoCdD of 2673.69.

'IS[illegible] CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

:: 0.5624 This is section 2
' GD 05 Weir flow occurs at Culvert Group 1
All ineffective flow elevations at Section 2 are less than
the WSEL at Section 2.
The velocity head at Section 2 is more than 0.5 foot and more than
the velocity head at Section 1.
Section 2 should be recoded to represent the natural valley
cross section.

:VER/REACH: Unnamed Eastern, Trib to Stagecoa
:VER STATION: 0.517
'PE OF STRUCTURE: Culvert

---

escription:	Driveway Culvert off of Wildflower Drive
.stance from Upstream XS:	7.5
eck/Roadway Width:	13.7
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
Elevation at which weir flow begins:	2669.9
eir crest shape:	Broad Crested

---

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.5394	103.26	2672.02		2672.33	53.76	
3	0.5198	29.43	2671.28		2671.37	49.34	
	0.517	19.90	2669.24		0	0	Culvert #1-Up
	0.517	4.53	2668.9		0	0	Culvert #1-Dn
2	0.5142	47.41	2670.47		2670.84	42.25	
1	0.5053	59.29	2669.86		2670.28	40.79	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	106	2670.23	0	106	2669.57
2	123	218.85	2670.23	126	229.93	2669.57

---

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					106	123	U
					106	126	D

ULVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 2.5 Span: 0 Barrels: 3
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olution Crit:Highest U.S. EG

pstrmDist:	5	Length:	19.9	n-Value:	0.024		
ntLossCoef:	0.9	ExtLossCoef:	1	CulvInvElU	2666.74	CulvInvElD	2666.4
CntStaU:	112	RCntStaU:	118	LCntStaD	114	RCntStaD	120
ulvert Depth Blocked:	0						

---

ulv Area:	14.73	CulvQ:	15.58	MinTopRd:	2670.01

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	110.75	119.25	2669.69	2670.48	2669.69	2669.24	U
	112.75	121.25	2669.48	2670.21	2669.48	2668.9	D

---

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ul #1		15.58	136.42	Highest U.S. EG	Pressure and Weir Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 0.517 This is Culvert #1

' PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2671.37 is greater than MinTopRd of 2670.01.
2. CulvWSIn of 2669.24 is greater than or equal to MxLoCdU of 2669.24.
3. CulvWSOut of 2668.90 is greater than or equal to MxLoCdD of 2668.90.

:STANCE CHECK

ILV COEFFICIENT CHECK

JLVERT CRITERIA CHECK

IEFFECTIVE FLOW CHECK

[VER/REACH: Unnamed Eastern, Trib to Stagecoa
[VER STATION: 0.491
/PE OF STRUCTURE: Culvert

---

escription:	Driveway Culverts off of Wildflower Drive
istance from Upstream XS:	7
eck/Roadway Width:	12.5
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2669.12
eir crest shape:	Broad Crested

---

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.5053	59.29	2669.86		2670.28	40.79	
3	0.494	31.71	2669.76		2669.81	66.4	
	0.491	19.40	2667.15		0	0	Culvert #1-Up
	0.491	8.41	2666.82		0	0	Culvert #1-Dn
2	0.488	79.20	2666.03		2666.64	23.4	
1	0.473	86.33	2664.42		2665.02	26.42	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	128	2669.12	0	124	2665.5
2	142	264.97	2669.12	150	253.04	2665.5

---

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					128	142	U
					124	150	D

ULVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 2.5 Span: 0 Barrels: 3
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olution Crit:Highest U.S. EG

pstrmDist:	3.9	Length:	19.4	n-Value:	0.024		
ntLossCoef:	0.9	ExtLossCoef:	1	CulvInvElU	2664.65	CulvInvElD	2664.32
CntStaU:	132	RCntStaU:	138	LCntStaD	133	RCntStaD	139
ulvert Depth Blocked:	0						

---

ulv Area:	14.73	CulvQ:	99	MinTopRd:	2669.13

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ul #1	130.75	139.25	2669.12	2669.12	2669.12	2667.15	U
	131.75	140.25	2669.16	2669.12	2669.12	2666.82	D

---

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		99	53	Highest U.S. EG	Pressure and Weir Flow

EOMETRIC CHECK

ʔPE OF FLOW CHECK

ʒ: 0.491 This is Culvert #1
7 PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2669.81 is greater than MinTopRd of 2669.13.
2. CulvWSIn of 2667.15 is greater than or equal to MxLoCdU of 2667.15.
3. CulvWSOut of 2666.82 is greater than or equal to MxLoCdD of 2666.82.

ISTANCE CHECK

JLVERT COEFFICIENT CHECK

JLVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

IVER/REACH: Unnamed Eastern, Trib to Stagecoa
IVER STATION: 0.3527
ʔPE OF STRUCTURE: Culvert
---

escription:	Driveway Culvert off of Stardust Lane
istance from Upstream XS:	28.2
eck/Roadway Width:	71.7
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2655.1
eir crest shape:	Broad Crested

---

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	[illegible]3828	95.61	2656.96		2657.19	76.12	
3	[illegible]647	126.99	2656.57		2656.59	134.15	
	[illegible]3527	81.20	2653.79		0	0	Culvert #1-Up
	0.3527	21.09	2652.5		0	0	Culvert #1-Dn
2	0.3407	161.24	2651.27		2651.96	28.69	
1	0.3101	228.12	2648.77		2649.4	31.85	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	113	2655.67	0	84	2651
2	158	220.06	2655.67	142	203.69	2651

---

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					113	158	U
					84	142	D

ULVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 3 Span: 0 Barrels: 2
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 1 - Headwall
olution Crit:Highest U.S. EG

pstrmDist:	24.7	Length:	81.2	n-Value:	0.024		
ntLossCoef:	0.5	ExtLossCoef:	1	CulvInvElU	2650.79	CulvInvElD	2649.5
CntStaU:	132.9	RCntStaU:	136.9	LCntStaD	108	RCntStaD	112

ulvert Depth Blocked: 0

---

ul[illegible]ea: 14.14 CulvQ: 60.56 MinTopRd: 2655.67

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	131.4	138.4	2655.66	2655.66	2655.66	2653.79	U
	106.5	113.5	2655.77	2655.66	2655.66	2652.5	D

---

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ılvert #1		60.56	164.44	Highest U.S. EG	Pressure and Weir Flow

EOMETRIC CHECK

(PF FLOW CHECK

S: 0.3527 This is Culvert #1
/ PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2656.59 is greater than MinTopRd of 2655.67.
2. CulvWSIn of 2653.79 is greater than or equal to MxLoCdU of 2653.79.
3. CulvWSOut of 2652.50 is greater than or equal to MxLoCdD of 2652.50.

ISTANCE CHECK

JLVERT COEFFICIENT CHECK

JLVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

S: 0.3407 This is section 2
T GD 05 Weir flow occurs at Culvert Group 1
All ineffective flow elevations at Section 2 are less than
the WSEL at Section 2.
The velocity head at Section 2 is more than 0.5 foot and more than
the velocity head at Section 1.
Section 2 should be recoded to represent the natural valley
cross section.

--END

Unnamed Tributary to Stagecoach Pass Wash CHECK RAS Message Explanations

TO: Tony Bokich

COPIES: File

FROM: Rob Lyons

DATE: March 20, 2003

ROUGHNESS COEFFICIENT CHECK

NT RC 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The washes in Carefree are desert washes and sometimes have barren land on the overbanks resulting in lower Manning's n values than the 0.035.

TRANSITION LOSS COEFFICIENT CHECK

NT TL 02

The results of this check were reviewed for each message. The expansion and contraction coefficients for the cross sections in question were purposefully increased to account for rapid expansion and contraction that was predicted based on the local topographic features.

INEFFECTIVE FLOW CHECK

XS IF 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The levee option was used often in the model to represent the hydraulic conditions of the braided channel geometry.

LOCATION CHECK

XS LC 01

Due to the steep and irregular terrain of the study area, project specific checks were performed to analyze the need for additional cross sections. Refer to Section 5 of the TDN. Changes in energy, head loss, top width, Q[L], Q[C], and Q[R] were all reviewed from cross section to cross section. Cross sections were added where the change was significant. In locations where the top width changed by more than 150% from one cross section to the next, the contraction and expansion coefficients were increased to 0.3 and 0.5, respectively. The Flood Control District's experience is that additional cross sections would result in negligible changes in flood water surface elevations.

BOUNDARY CONDITION CHECK

XS BC 02

HEC-RAS is run assuming that the flow condition is supercritical or a mixed flow regime. Where the wash enters another wash, the water surface elevation for the same event is known and the delineation project contract number is referenced on the floodplain work maps. All other boundary conditions are documented in the TDN.

INEFFECTIVE FLOW CHECK

RS: 0.7448

RS: 0.5624

RS: 0.3407

ST GD 05

The ground data does not include the road profile or any part of the structure. The natural channel changes as it approaches the culvert inlet.

Unnamed Central Tributary to Cave Creek

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.p02
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.g02
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.f02
epo[illegible] File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.nt
e[illegible]d profiles: PF 1
a[illegible]9/10/2003
ime: 7:36:17 AM

ECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
nnamed Central,Main						
2.2214		0.058	0.058	0.032	0.1	0.3
		-----	0.032	0.058		
2.2064		0.04	0.032	-----	0.1	0.3
		-----	0.04	-----		
2.1828		0.04	-----	-----	0.1	0.3
		0.058	-----	-----		
		0.032	-----	-----		
2.1684		0.058	0.058	0.032	0.1	0.3
		-----	0.032	0.04		
2.1443		0.04	0.058	0.032	0.1	0.3
		0.058	0.032	0.04		
2.1205		0.04	0.058	0.058	0.1	0.3
		0.058	0.032	0.04		
		-----	0.058	-----		
2.0829		0.04	0.058	0.058	0.1	0.3
		0.058	0.032	0.04		
		-----	0.058	-----		
2.0456		0.04	0.058	0.028	0.1	0.3
		0.058	0.028	0.058		
		-----	-----	0.04		
2.0048		0.04	0.058	0.028	0.1	0.3
		0.058	0.028	0.058		
		-----	-----	0.025		
1.9633		0.04	0.058	0.028	0.1	0.3
		0.058	0.028	0.058		
1.9389		0.04	0.058	0.028	0.1	0.3
		0.058	0.028	0.058		
1[illegible]		0.04	0.058	0.058	0.1	0.3
		0.025	0.028	0.025		
		0.058	0.058	0.058		
1.9042		0.04	0.04	0.028	0.1	0.3
		-----	0.028	0.025		
		-----	-----	0.058		
		-----	-----	0.025		
1.8875		0.025	0.025	0.04	0.1	0.3
		-----	0.04	0.028		
		-----	-----	0.04		
		-----	-----	0.025		
		-----	-----	0.04		
1.8644		0.025	0.025	0.04	0.1	0.3
		-----	0.04	0.058		
		-----	-----	0.028		
		-----	-----	0.04		
1.8424		0.025	0.058	0.04	0.1	0.3
		0.058	0.028	0.058		
		0.04	0.04	0.04		
		0.058	-----	-----		
1.8096		0.025	0.032	0.058	0.1	0.3
		0.058	0.058	0.04		
		0.04	-----	0.025		
		0.04	-----	0.032		
		0.032	-----	-----		
1.7593		0.025	-----	-----	0.1	0.3
		0.058	-----	-----		
		0.04	-----	-----		
		0.058	-----	-----		
		0.035	-----	-----		
1.7007		0.025	0.058	0.035	0.1	0.3
		0.058	0.035	0.058		
		-----	-----	0.04		
		-----	-----	0.025		
1[illegible]		0.032	0.035	0.032	0.1	0.3
		0.058	0.032	0.058		
		0.035	-----	0.04		
		-----	-----	0.032		
1.6113		0.032	0.058	0.032	0.1	0.3
		0.058	0.032	0.058		
		-----	-----	0.04		
		-----	-----	0.032		
		-----	-----	0.025		
1.5812		0.025	0.032	0.058	0.1	0.3

	0.058	0.058	0.04		
	0.032	-----	0.025		
1.5549	0.025	0.032	0.04	0.1	0.3
	0.058	0.035	0.025		
	0.032	0.04	-----		
1.5234	0.025	0.058	0.04	0.1	0.3
	0.058	0.04	0.025		
	0.032	-----	-----		
	0.04	-----	-----		
	0.035	-----	-----		
	0.058	-----	-----		
1.4675	0.025	-----	-----	0.1	0.3
	0.058	-----	-----		
	0.032	-----	-----		
	0.04	-----	-----		
	0.032	-----	-----		
	0.058	-----	-----		
1.4233	0.032	0.04	0.032	0.1	0.3
	0.04	0.032	0.058		
	0.032	-----	0.04		
	0.04	-----	-----		
	0.032	-----	-----		
	0.04	-----	-----		
1.3724	0.025	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.032	-----	-----		
	0.04	-----	-----		
	0.032	-----	-----		
	0.04	-----	-----		
	0.032	-----	-----		
	0.058	-----	-----		
	0.04	-----	-----		
1.3235	0.025	0.04	-----	0.1	0.3
	0.04	0.035	-----		
	0.032	0.025	-----		
	0.04	-----	-----		
	0.035	-----	-----		
	0.04	-----	-----		
1.2701	0.025	0.058	0.035	0.1	0.3
	0.04	0.035	0.04		
	0.035	-----	0.025		
	0.04	-----	-----		
	0.058	-----	-----		
1[illegible]	0.025	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.035	-----	-----		
	0.04	-----	-----		
	0.058	-----	-----		
	0.035	-----	-----		
1.1824	0.025	0.058	0.035	0.1	0.3
	0.04	0.035	0.058		
	0.035	-----	0.04		
	0.04	-----	0.025		
	0.058	-----	-----		
1.1329	0.025	0.058	0.032	0.1	0.3
	0.04	0.032	0.058		
	0.032	-----	0.04		
	0.04	-----	-----		
	0.058	-----	-----		
1.0627	0.025	0.058	0.058	0.1	0.3
	0.04	0.035	0.04		
	0.058	0.058	-----		
1.0158	0.025	0.058	0.032	0.1	0.3
	0.04	0.032	0.058		
	0.058	-----	0.04		
.9888	0.025	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.058	-----	-----		
	0.035	-----	-----		
nnamed Central,North					
.9593	0.025	0.058	0.04	0.1	0.3
	0.04	0.032	0.032		
	0.058	0.04	0.058		
.9285	0.032	-----	-----	0.3	0.5
	0.058	-----	-----		
	0.04	-----	-----		
n[illegible]d Central,South					
.[illegible]	0.032	0.032	0.058	0.3	0.5
	-----	0.058	0.04		
.9065	0.04	0.04	0.035	0.1	0.3
	-----	0.035	0.04		
.8919	0.025	-----	-----	0.1	0.3
	0.035	-----	-----		
	0.04	-----	-----		

--Summary of Statistics---

	Minimum	Maximum
eft Overbank n Value:	0.025	0.058
ight Overbank n Value:	0.025	0.058
hannel n Value:	0.025	0.058
ontraction Coefficient:	0.1	0.3
xpansion Coefficient:	0.3	0.5

OU[illegible]SS COEFFICIENT CHECK

S: 1.8875
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 1.8644
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 0.9094
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RANSITION LOSS COEFFICIENT CHECK

S: 0.9285
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.9094
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

OUGHNESS COEFFICIENT AT STRUCTURES

-[illegible]--

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.p02
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.g02
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.f02
ep File: P:\162944\floodplain mapping\HEC-RAS files\Final\Unnamed Central Tributary to Cave Creek\UC_Final.xs
el d profiles: PF 1
ate: 09/10/2003
ime: 7:36:18 AM

ECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
nnamed Central,Main						
2.2214	78.81	78.81	78.81	41.72	1796	C
2.2064	123	125.07	128	61.06	1796	C
2.1828	75	76.03	77	57.23	2455	C
2.1684	120	126.95	135	62.28	2455	
2.1443	127	125.66	125	99.7	2483	D
2.1205	198	198.53	199	39.07	2483	C
2.0829	200	196.6	194	153.5	2483	C
2.0456	215.71	215.71	215.71	90.72	2511	D,C
2.0048	222	218.88	216	64.62	2511	C,B
1.9633	128.83	128.83	128.83	62.28	2511	C
1.9389	103	103.96	105	77.53	2511	C
1.9192	79.2	79.2	79.2	137.97	2580	C
1.9042	92	87.75	85	136.65	2580	
1.8875	122.24	122.24	122.24	329.98	2580	C
1.8644	116.16	116.16	116.16	175.11	2580	C
1.8424	175	173.5	173.5	193.25	2580	D,C
1.8096	275	265.44	262	366.9	2602	D,C
1.7593	312	309.44	308	382.93	2602	C
1.7007	302	298.32	296	285.47	2602	C
1.6442	173.71	173.71	173.71	315.71	2602	C
1.6113	155	158.56	163	253.32	2602	E
1.5812	135	139.14	143	171.49	2773	E,C,B
1.5549	162	166.32	172	208.35	2773	C
1.5234	310	295.15	295	290.94	2965	
1.4675	233.32	233.32	233.32	372.09	2989	D,C
1	275	268.89	265	449.34	2989	D,C
1	258.19	258.19	258.19	501.57	2989	D,C
1. 5	282.18	282.18	282.18	708.79	3060	D
1.2701	274	277.62	285	337.16	2428	D
1.2175	192	185.11	181	499.89	2428	D,C
1.1824	255	261.36	270	542.61	2952	D,C
1.1329	400	370.66	358	439.62	2952	C
1.0627	255	247.63	245	254.24	2952	C
1.0158	140	142.56	145	289.44	2952	C
0.9888	152	155.76	160	304.27	3043	C
0.9593	0	0	0	452.85	3043	D,C
nnamed Central,North						
0.9285	98	101.15	105	397.23	2270	E,C
0.9094	129.89	129.89	129.89	112.79	2270	D
nnamed Central,South						
0.9065	77.06	77.06	77.06	223.08	793	D,C
0.8919	101	106.73	110	387.84	663	E

=blocked obstruction XS SC 05
=critial depth XS SC 03
=divided flow XS SC 01
=cross section extended XS SC 02
=known water-surface XS SC 04

ISTANCE CHECK

PACING CHECK

NE CTIVE FLOW CHECK

S: 2.0829
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.9633
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements

for levees are met.

S: 1.9389
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.9042
S 1 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.9042
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.8875
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.8875
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.8644
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.6113
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.5812
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S 1.5549
S 1 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.0627
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.9593
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.9285
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.9285
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

ISCHARGE CHECK

S: 1.2701
S DC 01 Discharge decreases in the downstream direction.

S: 0.8919
S DC 01 Discharge decreases in the downstream direction.

S 2 Constant dicharge used for the Unnamed Central,North

OCATION CHECK

S: 2.1443
S LC 01 Lenchl Up/TopwdthAct Dn = 3.22
MaxChlDpth Up/MaxChlDpth Dn = 1.14
TopwdthAct Up/TopwdthAct Dn = 2.55

```
        This cross section is located too far upstream from the
        critical depth cross section.

S:      2.0829
S LC 01 Lenchl Up/TopwdthAct Dn = 2.17
        MaxChlDpth Up/MaxChlDpth Dn = 1.65
        TopwdthAct Up/TopwdthAct Dn = 1.69
        This cross section is located too far upstream from the
        critical depth cross section.

S:      2.0456
S LC 01 Lenchl Up/TopwdthAct Dn = 3.34
        MaxChlDpth Up/MaxChlDpth Dn = 1.13
        TopwdthAct Up/TopwdthAct Dn = 1.40
        This cross section is located too far upstream from the
        critical depth cross section.


OUNDARY CONDITION CHECK
-----------------------

S BC 02 The name of the stream is Unnamed Central,Main
        Known WS = 2266.55 is specified as the upstream boundary
        for profile PF 1

S BC 02 The name of the stream is Unnamed Central,North
        Known WS = 2141.52 is specified as the downstream boundary
        for profile PF 1

S BC 02 The name of the stream is Unnamed Central,South
        Known WS = 2141.52 is specified as the downstream boundary
        for profile PF 1


ATERAL WEIRS CHECK
----------------------

--END---
```

Unnamed Central Tributary to Cave Creek CHECK RAS Message Explanations

TO: Tony Bokich

COPIES: File

FROM: Rob Lyons

DATE: March 20, 2003

ROUGHNESS COEFFICIENT CHECK

NT RC 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The washes in Carefree are desert washes and sometimes have barren land on the overbanks resulting in lower Manning's n values than the 0.035.

TRANSITION LOSS COEFFICIENT CHECK

NT TL 02

The results of this check were reviewed for each message. The expansion and contraction coefficients for the cross sections in question were purposefully increased to account for rapid expansion and contraction that was predicted based on the local topographic features.

INEFFECTIVE FLOW CHECK

XS IF 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The levee option was used often in the model to represent the hydraulic conditions of the braided channel geometry.

DISCHARGE CHECK

XS DC 01

A flow split exists in this location. Refer to the Floodplain Workmaps and Summery of Flows worksheet in the TDN.

DISCHARGE CHECK

XS DC 02

The North Branch reach in the model is less than 400 feet. There are only two cross sections on this reach and no significant increase in discharge is expected at the downstream cross section.

LOCATION CHECK

XS LC 01

Due to the steep and irregular terrain of the study area, project specific checks were performed to analyze the need for additional cross sections. Refer to Section 5 of the TDN. Changes in energy, head loss, top width, Q[L], Q[C], and Q[R] were all reviewed from cross section to cross section. Cross sections were added where the change was significant. In locations where the top width changed by more than 150% from one cross section to the next, the contraction and expansion coefficients were increased to 0.3 and 0.5, respectively. The Flood Control District's experience is that additional cross sections would result in negligible changes in flood water surface elevations.

BOUNDARY CONDITION CHECK

XS BC 02

HEC-RAS is run assuming that the flow condition is supercritical or a mixed flow regime. Where the wash enters another wash, the water surface elevation for the same event is known and the delineation project contract number is referenced on the floodplain work maps. All other boundary conditions are documented in the TDN.

Windmill Wash

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.p08
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.g01
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.f01
ep File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.nt
e d profiles: PF 1
a 09/05/2003
ime: 11:49:01 AM

ECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
indmill Wash,South Branch						
.4414		0.025	0.04	0.045	0.1	0.3
		0.04	0.045	0.04		
.4246		0.025	-----	-----	0.1	0.3
		0.04	-----	-----		
		0.045	-----	-----		
.4064		0.025	0.04	0.045	0.1	0.3
		0.04	0.045	0.04		
.3881		0.025	0.045	-----	0.1	0.3
		0.04	0.04	-----		
		0.045	-----	-----		
.3626		0.025	0.045	-----	0.1	0.3
		0.04	0.04	-----		
		0.045	-----	-----		
.3477		0.04	-----	-----	0.1	0.3
		0.045	-----	-----		
.3206		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.025		
.3142		0.025	-----	-----	0.3	0.5
.3087		0.04	0.045	-----	0.3	0.5
		0.045	0.04	-----		
.2943		0.025	0.04	0.045	0.1	0.3
		0.04	0.045	0.04		
.2598		0.025	0.045	0.045	0.1	0.3
		0.04	-----	0.04		
.2381		0.025	0.045	-----	0.1	0.3
		0.04	0.04	-----		
		0.045	-----	-----		
.		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.025		
.1947		0.04	0.045	0.04	0.1	0.3
		0.045	0.04	0.025		
.17		0.04	0.045	-----	0.1	0.3
		0.045	0.04	-----		
.1554		0.025	0.04	0.045	0.1	0.3
		0.04	0.045	0.04		
.1333		0.025	0.045	0.04	0.3	0.5
		0.04	0.04	0.025		
		0.045	-----	-----		
.1163		0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
.1083	Culvert-Up	0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
.1083	Culvert-Dn	0.04	-----	-----	0.3	0.5
		0.045	-----	-----		
.1002		0.04	-----	-----	0.3	0.5
		0.045	-----	-----		
.0751		0.04	0.04	0.045	0.3	0.5
		-----	0.045	0.04		
.0582		0.04	0.04	0.045	0.1	0.3
		-----	0.045	0.04		
indmill Wash,North Branch						
.0395		0.04	0.035	-----	0.1	0.3
		0.035	0.04	-----		
1.6576		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
		-----	-----	0.032		
1.6069		0.04	0.035	0.04	0.1	0.3
		0.035	0.04	0.032		
1.5545		0.04	-----	-----	0.1	0.3
		0.035	-----	-----		
1		0.04	-----	-----	0.1	0.3
		0.035	-----	-----		
		0.04	-----	-----		
1.5241		0.025	-----	-----	0.1	0.3
1.518		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
1.4884		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
1.4665		0.04	-----	-----	0.1	0.3
		0.035	-----	-----		
1.4494		0.04	0.04	0.035	0.1	0.3

		-----	0.035	0.04		
1.4322		0.04	-----	-----	0.1	0.3
		0.035	-----	-----		
1.4212		0.04	0.04	0.035	0.3	0.5
		0.025	0.035	0.04		
		0.04	-----	-----		
1.3983		0.025	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
1[illegible]	Culvert-Up	0.025	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
1.3786	Culvert-Dn	0.04	0.058	0.035	0.3	0.5
		0.058	0.035	0.04		
		-----	-----	0.032		
1.3577		0.04	0.058	0.035	0.3	0.5
		0.058	0.035	0.04		
		-----	-----	0.032		
1.3498		0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
		0.032	-----	-----		
1.3431		0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
		0.035	-----	-----		
1.3385	Culvert-Up	0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
		0.035	-----	-----		
1.3385	Culvert-Dn	0.025	0.058	0.04	0.3	0.5
		0.058	0.04	0.025		
1.3364		0.025	0.058	0.04	0.3	0.5
		0.058	0.04	0.025		
1.3215		0.025	0.058	0.032	0.3	0.5
		0.058	0.032	0.04		
1.311		0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
1.294	Culvert-Up	0.04	-----	-----	0.3	0.5
		0.058	-----	-----		
1.294	Culvert-Dn	0.04	-----	-----	0.3	0.5
		0.035	-----	-----		
1.293		0.04	-----	-----	0.3	0.5
		0.035	-----	-----		
1.263		0.04	0.035	0.035	0.3	0.5
		-----	-----	0.04		
		-----	-----	0.032		
i[illegible]1 Wash,Combined Branch						
1[illegible]		0.04	-----	-----	0.1	0.3
		0.035	-----	-----		
1.1975		0.04	-----	-----	0.1	0.3
		0.058	-----	-----		
		0.035	-----	-----		
1.1585		0.025	-----	-----	0.1	0.3
		0.058	-----	-----		
1.1312		0.025	0.058	0.035	0.3	0.5
		0.058	0.035	0.04		
1.0986		0.04	0.035	0.04	0.3	0.5
		0.035	0.04	0.025		
		-----	-----	0.04		
1.0661		0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
1.0604	Culvert-Up	0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
1.0604	Culvert-Dn	0.04	0.04	0.035	0.3	0.5
		0.025	0.035	0.025		
		0.04	-----	0.04		
		-----	-----	0.025		
1.0584		0.04	0.04	0.035	0.3	0.5
		0.025	0.035	0.025		
		0.04	-----	0.04		
		-----	-----	0.025		
1.0311		0.04	0.04	0.035	0.3	0.5
		-----	0.035	0.04		
		-----	-----	0.025		
		-----	-----	0.04		
.9843		0.04	0.04	0.035	0.1	0.3
		-----	0.035	0.04		
.9441		0.04	0.035	-----	0.3	0.5
		0.035	0.04	-----		
.9196		0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
		0.035	-----	-----		
[illegible]	Culvert-Up	0.025	-----	-----	0.3	0.5
		0.04	-----	-----		
		0.035	-----	-----		
.9042	Culvert-Dn	0.025	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
.9018		0.025	0.04	0.035	0.3	0.5
		0.04	0.035	0.04		
.8739		0.032	-----	-----	0.3	0.5
		0.04	-----	-----		

	0.035	-----	-----		
.8413	0.04	0.04	-----	0.1	0.3
	0.032	0.035	-----		
	0.04	0.04	-----		
.8098	0.04	0.04	0.035	0.3	0.5
	-----	0.035	0.04		
.7913	0.04	0.04	0.04	0.1	0.3
	-----	0.035	0.025		
.	0.04	-----	-----	0.3	0.5
	0.035	-----	-----		
.7232	0.04	0.04	0.035	0.1	0.3
	-----	0.035	0.04		
.7029	0.04	0.04	0.035	0.1	0.3
	-----	0.035	0.04		
.6835	0.04	0.035	-----	0.1	0.3
	0.035	0.04	-----		
.6472	0.04	0.04	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.6074	0.04	0.04	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.5522	0.04	0.04	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.5198	0.04	-----	-----	0.1	0.3
	0.035	-----	-----		
.4721	0.04	0.04	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.4363	0.04	0.04	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.4069	0.04	0.04	0.035	0.1	0.3
	-----	0.035	0.04		
.3669	0.04	0.04	0.035	0.3	0.5
	-----	0.035	0.04		
.356	0.04	0.04	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.3444	0.04	0.04	-----	0.3	0.5
	-----	0.035	-----		
	-----	0.04	-----		
.	0.04	0.04	0.035	0.1	0.3
	-----	0.035	0.04		
	-----	-----	0.032		
.2744	0.04	0.058	0.04	0.1	0.3
	0.058	0.035	0.032		
	-----	0.04	-----		
.2609	0.04	0.035	0.035	0.1	0.3
	-----	-----	0.04		
.2482	0.025	-----	-----	0.1	0.3
.2005	0.04	0.058	0.04	0.1	0.3
	0.058	0.035	-----		
.176	0.04	0.058	0.035	0.1	0.3
	0.058	0.035	0.04		
.1577	0.058	0.058	-----	0.1	0.3
	-----	0.035	-----		
	-----	0.04	-----		
.1306	0.04	0.058	0.035	0.1	0.3
	0.058	0.035	0.04		
.1135	0.04	0.058	-----	0.1	0.3
	0.058	0.035	-----		
	-----	0.04	-----		
.0933	0.025	0.058	0.035	0.1	0.3
	0.058	0.035	0.04		
.0644	0.025	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.035	-----	-----		
.0243	0.025	-----	-----	0.1	0.3
	0.04	-----	-----		
	0.035	-----	-----		
.008	0.025	0.04	-----	0.1	0.3
	0.04	0.035	-----		
	-----	0.04	-----		

-[illegible]mary of Statistics---

	Minimum	Maximum
eft Overbank n Value:	0.025	0.058
ight Overbank n Value:	0.025	0.045
hannel n Value:	0.032	0.058
ontraction Coefficient:	0.1	0.3
xpansion Coefficient:	0.3	0.5

OUGHNESS COEFFICIENT CHECK

S: 0.3142
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 1.5241
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

S: 0.2482
T RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RANSITION LOSS COEFFICIENT CHECK

S: 0.3142
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.3087
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.0751
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.263
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.1312
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 1.0311
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.8739
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.8098
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.7752
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.3669
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

S: 0.3444
T TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

OUGHNESS COEFFICIENT AT STRUCTURES

--END---

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.p08
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.g01
lo[illegible]ile: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.f01
e[illegible] File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.xs
e[illegible]ed profiles: PF 1
ate: 09/05/2003
ime: 11:49:02 AM

ECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
indmill Wash,South Branch						
0.4414	88.64	88.64	88.64	30.14	56	C
0.4246	100	96.35	92	19.15	56	D,C
0.4064	92	96.64	100	34.97	56	D
0.3881	134.63	134.63	134.63	38.11	56	
0.3626	78.45	78.45	78.45	22.82	56	C
0.3477	138	143.2	150	16.46	56	C
0.3206	33.77	33.77	33.77	58.25	56	D,C
0.3142	28.81	28.81	28.81	53.61	56	C
0.3087	72	76.07	80	19.72	56	C
0.2943	182.12	182.12	182.12	12.45	56	C
0.2598	119	114.85	111	14.15	56	C
0.2381	146.05	146.05	146.05	15.64	56	C
0.2104	89	83.14	78	13.79	56	C
0.1947	120	130.01	145	12.05	56	C
0.17	77.25	77.25	77.25	19.65	56	C
0.1554	120	116.59	112	14.29	56	C
0.1333	89.76	89.76	89.76	83.78	56	C
0.1163	85.01	85.01	85.01	131.68	56	
0.1083	Culvert #1-Up					
0.1083	Culvert #1-Dn					
0.1002	135	132.27	132	12.44	136	C
0.0751	95	89.4	85	36.25	136	C
0.0582	93	98.57	104	44.32	136	C
0.0395	0	0	0	64.39	136	E,C
'in[illegible]ill Wash,North Branch						
1[illegible]	275	267.67	261	12.46	66	C
1[illegible]	273	276.68	282	60.18	66	C
1.[illegible]5	106	111.61	117	27.77	66	C
1.5334	48.84	48.84	48.84	40.32	66	C
1.5241	32.45	32.45	32.45	39.26	66	C
1.518	150	155.99	165	28.99	66	C
1.4884	122	115.71	110	17.88	66	C
1.4665	90.48	90.48	90.48	12.15	66	
1.4494	87	90.78	95	16.77	66	C
1.4322	58.04	58.04	58.04	21.97	66	
1.4212	119	120.94	122	18.73	66	C
1.3983	220	214.37	214	20.48	66	
1.3786	Culvert #1-Up					
1.3786	Culvert #1-Dn					
1.3577	40	41.55	43	34.82	66	
1.3498	34	35.28	37	64.28	66	
1.3431	35.69	35.69	35.69	83.51	66	
1.3385	Culvert #1-Up					
1.3385	Culvert #1-Dn					
1.3364	78.46	78.46	78.46	33.12	66	
1.3215	58	55.44	53	82.47	66	
1.311	95.03	95.03	95.03	126.06	80	
1.294	Culvert #1-Up					
1.294	Culvert #1-Dn					
1.293	156	158.4	162	33.64	136	C
1.263	127.78	127.78	127.78	18.86	136	C
1.2388	0	0	0	17.56	136	C
'indmill Wash,Combined Branch						
1.1975	212	205.69	200	73.09	167	C
1.1585	144.15	144.15	144.15	86.52	167	D
1.1312	172.38	172.38	172.38	55.48	167	D,C,B
1.0986	171.81	171.81	171.81	67.37	167	D,C,B
1.0661	40.66	40.66	40.66	152.41	167	D
1.0604	Culvert #1-Up					
1[illegible]4	Culvert #1-Dn					
1[illegible]4	150	144.14	140	112.63	167	D,C
1[illegible].1	246.8	246.8	246.8	20.12	167	C,B
0.9843	212.32	212.32	212.32	67.19	167	C
0.9441	135	129.21	125	151.16	167	C
0.9196	93.97	93.97	93.97	43	205	
0.9042	Culvert #1-Up					
0.9042	Culvert #1-Dn					
0.9018	144	147.77	152	29.89	205	C
0.8739	171.71	171.71	171.71	128.32	205	C
0.8413	160	166.4	172	194.87	205	C

0.8098	101.01	98.13	96	254.96	205	C
0.7913	84	84.8	86	33.67	205	C
0.7752	262	274.5	290	51.23	205	C,B
0.7232	98.7	107.04	117.7	76.64	205	C
0.7029	102.3	102.3	102.3	27.37	205	C
0.6835	196	191.74	186	34.05	205	C
0.6472	220	210.37	202	51.9	262	C
0[illegible]4	291.44	291.44	291.44	41.35	262	C
0[illegible]2	165	171.05	178	27.85	262	
0[illegible]8	256	251.77	248	22.01	262	C
0.4721	195	188.89	184	33.85	262	
0.4363	150	155.33	165	33.78	262	C
0.4069	203	211.29	220	60.26	262	C
0.3669	57.8	57.8	57.8	33.21	262	C
0.356	61	61	61	35.37	262	C
0.3444	179.07	179.07	179.07	135.87	311	C
0.3105	195	190.59	186	96.9	311	
0.2744	65	71.5	77	97.47	311	
0.2609	70	66.8	65	113.49	311	E,C
0.2482	242	251.6	265	138.62	311	D
0.2005	140	129.6	120	101.89	311	D
0.176	96.6	96.6	96.6	54.85	311	D,C
0.1577	142.83	142.83	142.83	89.54	311	D
0.1306	87	90.4	94	39.31	311	C
0.1135	111	106.46	102	43.43	311	C
0.0933	152.76	152.76	152.76	43.17	311	C
0.0644	207	211.7	217	31.28	311	C
0.0243	83	86	89	42.51	357	C
0.008	0	0	0	119.41	357	

=blocked obstruction XS SC 05
=critial depth XS SC 03
=divided flow XS SC 01
=cross section extended XS SC 02
=known water-surface XS SC 04

ISTANCE CHECK

P[illegible] CHECK
[illegible]

NEFFECTIVE FLOW CHECK

S: 0.2104
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.1947
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.1554
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.1333
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 1.6069
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.9843
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.9441
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.8739
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements

for levees are met.

S: 0.8098
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.7029
S [illegible]1 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6835
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6472
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.6074
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.5522
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.5198
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.4721
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.4363
S [illegible]1 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.4069
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.4069
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.3669
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.356
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.3444
S IF 01 Right Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S: 0.2609
S IF 01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

S [illegible] 0.1577
S [illegible]01 Left Levee option is used at this river station
Please investigate whether the NFIP requirements
for levees are met.

ISCHARGE CHECK

S: 0.1002

```
S DC 03 Discharge is different between the upstream side and downstream
        side of the structure

S:      1.293
S DC 03 Discharge is different between the upstream side and downstream
        side of the structure


O[illegible]N CHECK
-[illegible]---------

S:      1.6069
S LC 01 Lenchl Up/TopwdthAct Dn = 9.96
        MaxChlDpth Up/MaxChlDpth Dn = 1.16
        TopwdthAct Up/TopwdthAct Dn = 2.17
        This cross section is located too far upstream from the
        critical depth cross section.

S:      1.293
S LC 01 Lenchl Up/TopwdthAct Dn = 8.40
        MaxChlDpth Up/MaxChlDpth Dn = 1.20
        TopwdthAct Up/TopwdthAct Dn = 1.78
        This cross section is located too far upstream from the
        critical depth cross section.

S:      0.8098
S LC 01 Lenchl Up/TopwdthAct Dn = 2.91
        MaxChlDpth Up/MaxChlDpth Dn = 1.18
        TopwdthAct Up/TopwdthAct Dn = 7.57
        This cross section is located too far upstream from the
        critical depth cross section.

S:      0.7232
S LC 01 Lenchl Up/TopwdthAct Dn = 3.91
        MaxChlDpth Up/MaxChlDpth Dn = 1.26
        TopwdthAct Up/TopwdthAct Dn = 2.80
        This cross section is located too far upstream from the
        critical depth cross section.


OUNDARY CONDITION CHECK
-----------------------

S [illegible]2 The name of the stream is Windmill Wash,South Branch
        Critical is specified as the upstream boundary
        for profile PF 1

S BC 02 The name of the stream is Windmill Wash,North Branch
        Critical is specified as the upstream boundary
        for profile PF 1

S BC 02 The name of the stream is Windmill Wash,Combined Branch
        Known WS = 2488.48 is specified as the downstream boundary
        for profile PF 1


ATERAL WEIRS CHECK
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--END---
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CHECK-RAS Program: Structure Check

roject File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.prj
lan File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.p08
eometry File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.g01
low File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.f01
eport File: P:\162944\floodplain mapping\HEC-RAS files\Final\Windmill Wash\WM_Final.br
el[illegible]ed profiles: PF 1
a[illegible]9/05/2003
i[illegible]11:49:04 AM

S	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
indmill Wash,South Branch						
0.4414			2649.71	2649.46	2647.89	
0.4246			2647.93	2647.56	2645.85	
0.4064			2645.71	2645.55	2644.31	
0.3881			2643.93	2643.71	2642.91	
0.3626			2641.02	2640.71	2639.62	
0.3477			2638.79	2638.4	2636.58	
0.3206			2635.33	2635.15	2633.88	
0.3142			2634.59	2634.42	2633.66	
0.3087			2633.07	2632.74	2631.83	
0.2943			2631.22	2630.76	2628.93	
0.2598			2627.4	2626.98	2625.28	
0.2381			2624.98	2624.57	2623.07	
0.2104			2621.55	2621.12	2619.47	
0.1947			2619.7	2619.25	2617.35	
0.17			2616.8	2616.45	2615.18	
0.1554			2614.76	2614.34	2612.81	
0.1333			2612.12	2612.1	2610.84	
0.1163			2611.69	2611.69	2609.51	
0.1083	2610.28	2611.45	0	2610.2	2607.28	Culvert #1-Up
0.1083	2609.4	2611.05	0	2608.7	2606.4	Culvert #1-Dn
0.1002			2608	2607.19	2603.9	
0.0751			2604.62	2604.21	2602.16	
0.0582			2603.06	2602.7	2600.6	
0.0395			2601.65	2601.39	2599.57	
indmill Wash,North Branch						
1.6576			2646.73	2646.18	2644.22	
1.6069			2641.92	2641.73	2640.17	
1[illegible]			2636.38	2636.06	2634.72	
1[illegible]			2634.45	2634.2	2633.2	
1.[illegible]1			2633.13	2632.89	2632.24	
1.518			2632.04	2631.75	2630.74	
1.4884			2628.83	2628.41	2626.67	
1.4665			2626.16	2625.62	2623.55	
1.4494			2624.94	2624.5	2622.74	
1.4322			2622.68	2622.39	2620.89	
1.4212			2621.93	2621.52	2620.15	
1.3983			2620.39	2620.31	2617.3	
1.3786	2619.97	2622.52	0	2618.42	2615.97	Culvert #1-Up
1.3786	2616.05	2619.97	0	2615.63	2612.05	Culvert #1-Dn
1.3577			2615.65	2615.63	2612.22	
1.3498			2615.64	2615.63	2611.74	
1.3431			2615.64	2615.64	2611.48	
1.3385	2611.92	2615.1	0	2611.92	2609.92	Culvert #1-Up
1.3385	2611.53	2614.01	0	2611.53	2609.53	Culvert #1-Dn
1.3364			2613.02	2612.96	2610.44	
1.3215			2612.98	2612.97	2608.76	
1.311			2612.97	2612.97	2607.43	
1.294	2608.51	2612.11	0	2608.51	2606.51	Culvert #1-Up
1.294	2606.78	2611.47	0	2606.78	2604.78	Culvert #1-Dn
1.293			2607.9	2607.41	2604.49	
1.263			2603.36	2602.75	2600.31	
1.2388			2600.15	2599.52	2596.35	
indmill Wash,Combined Branch						
1.1975			2595.93	2595.6	2592.72	
1.1585			2591.83	2591.64	2589.87	
1.1312			2589.03	2588.68	2586.74	
1.0986			2584.84	2584.55	2582.23	
1.0661			2582.08	2581.97	2580.35	
1.0604	2581.62	2581.2	0	2581.3	2579.62	Culvert #1-Up
1.0604	2581.32	2580.36	0	2580.77	2579.32	Culvert #1-Dn
1.0584			2580.91	2580.72	2579.72	
1[illegible]1			2577.93	2577.25	2574.49	
0[illegible]			2573.57	2573.26	2571.19	
0.[illegible]1			2570.27	2570.07	2567.59	
0.9196			2569.82	2569.79	2565.94	
0.9042	2569.54	2571.75	0	2568.22	2566.37	Culvert #1-Up
0.9042	2567.72	2569.92	0	2566.15	2564.55	Culvert #1-Dn
0.9018			2566.71	2566.13	2564.32	
0.8739			2563.57	2563.38	2561.31	
0.8413			2560.41	2560.23	2558.05	
0.8098			2557.09	2557.08	2555.29	
0.7913			2555.14	2554.57	2552.9	

0.7752	2554.03	2553.59	2551.42
0.7232	2548.7	2548.37	2546.03
0.7029	2546.64	2545.95	2544.1
0.6835	2544.67	2544.08	2542.11
0.6472	2541.67	2541.13	2539.03
0.6074	2538.35	2537.76	2535.72
0.5522	2532.69	2532.02	2530.06
0.5198	2530.65	2529.76	2527.2
0.[illegible]	2524.85	2524.24	2522.64
0.[illegible]	2522.34	2521.68	2519.66
0.4069	2519.9	2519.47	2517.18
0.3669	2516.97	2516.31	2514.14
0.356	2515.9	2515.22	2513.43
0.3444	2515	2514.71	2512.48
0.3105	2512.17	2511.82	2510.29
0.2744	2509.72	2509.28	2507.33
0.2609	2509.07	2508.65	2506.11
0.2482	2505.08	2504.86	2503.74
0.2005	2503.27	2502.95	2500.77
0.176	2501.57	2501.02	2498.79
0.1577	2500.27	2499.89	2497.42
0.1306	2498.72	2498.01	2495.74
0.1135	2496.86	2496.18	2494.15
0.0933	2494.69	2494.1	2492.14
0.0644	2492.6	2491.83	2489.42
0.0243	2489.3	2488.56	2486.04
0.008	2488.58	2488.48	2483.87

IVER/REACH: Windmill Wash, South Branch
IVER STATION: 0.1083
YPE OF STRUCTURE: Culvert

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escription:	Culvert No. 164 at Milky Way
istance from Upstream XS:	20.5
eck/Roadway Width:	50.7
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2610
eir crest shape:	Broad Crested

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ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.1333	89.76	2612.1		2612.12	83.78	
3	0.1163	85.01	2611.69		2611.69	131.68	
	0.1083	66.60	2610.2		0	0	Culvert #1-Up
	0.1083	10.81	2608.7		0	0	Culvert #1-Dn
2	0.1002	132.27	2607.19		2608	12.44	
1	0.0751	89.40	2604.21		2604.62	36.25	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	192.7	2611.34	0	168	2607
2	210.7	286.91	2611.34	189	283.58	2607

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pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					192.7	210.7	U
					168	189	D

ULVERT:
ulvert Name: Culvert #1

hape:	Circular	Rise:	3	Span:	0	Barrels:	1

HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olution Crit:Highest U.S. EG

ps[illegible]ist:	7.6	Length:	66.6	n-Value:	0.024		
nt[illegible]sCoef:	0.9	ExtLossCoef:	1	CulvInvElU	2607.28	CulvInvElD	2606.4
CntStaU:	201.6	RCntStaU:	201.6	LCntStaD	176.8	RCntStaD	176.8

ulvert Depth Blocked: 0

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ulv Area:	7.07	CulvQ:	49.96	MinTopRd:	2611.44

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	200.1	203.1	2611.7	2611.45	2611.45	2610.28	U
	175.3	178.3	2611.14	2611.05	2611.05	2609.4	D

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
u. #1		49.96	6.04	Highest U.S. EG	Pressure and Weir Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 0.1083 This is Culvert #1
V PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2611.69 is greater than MinTopRd of 2611.44.
2. CulvWSIn of 2610.20 is less than MxLoCdU of 2610.28.
3. CulvWSOut of 2608.70 is less than MxLoCdD of 2609.40.
4. Q/AD^0.5 of 4.08 is greater than or equal to 4.0.

ISTANCE CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

S: 0.1002 This is section 2
T GD 05 Weir flow occurs at Culvert Group 1
All ineffective flow elevations at Section 2 are less than the WSEL at Section 2.
The velocity head at Section 2 is more than 0.5 foot and more than the velocity head at Section 1.
Section 2 should be recoded to represent the natural valley cross section.

IVER/REACH:	Windmill Wash, North Branch
IVER STATION:	1.3786
YPE OF STRUCTURE:	Culvert

escription:	R.S. 1.3786 - Driveway Culvert
istance from Upstream XS:	19
eck/Roadway Width:	159
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2618
eir crest shape:	Broad Crested

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	1.4212	120.94	2621.52		2621.93	18.73	
3	1.3983	214.37	2620.31		2620.39	20.48	
	1.3786	187.00	2618.42		0	0	Culvert #1-Up
	1.3786	16.87	2615.63		0	0	Culvert #1-Dn
2	1.3577	41.55	2615.63		2615.65	34.82	
1	1.3498	35.28	2615.63		2615.64	64.28	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	117	2622.52	0	21	2619.29
2	141	216.37	2622.52	67	133.26	2619.29

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					117	141	U
					21	67	D

JLVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 4 Span: 0 Barrels: 1
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olution Crit:Highest U.S. EG

ps Dist:	10.5	Length:	187	n-Value:	0.024		
n Coef:	0.9	ExtLossCoef:	1	CulvInvElU	2615.97	CulvInvElD	2612.05
Cr aU:	129.1	RCntStaU:	129.1	LCntStaD	42.9	RCntStaD	42.9
ulvert Depth Blocked:	0						

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ulv Area: 12.57 CulvQ: 66 MinTopRd: 2622.53

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	127.1	131.1	2622.52	2623.8	2622.52	2619.97	U
	40.9	44.9	2619.97	2620.48	2619.97	2616.05	D

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ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		66	0	Highest U.S. EG	Low Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 1.3786 This is Culvert #1
V LF 01 Type of flow is low flow because,
1. EGEL 3 of 2620.39 is less than or equal to MinTopRd of 2622.53.
2. CulvWSIn of 2618.42 is less than MxLoCdU of 2619.97.
3. CulvWSout of 2615.63 is less than MxLoCdD of 2616.05.
4. Q/AD^0.5 of 2.63 is less than 4.0.

I E CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

IVER/REACH: Windmill Wash, North Branch
IVER STATION: 1.3385
YPE OF STRUCTURE: Culvert

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escription:	R.S. 1.3385 Driveway Culvert
istance from Upstream XS:	9
eck/Roadway Width:	11
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2614
eir crest shape:	Broad Crested

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ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	1.3498	35.28	2615.63		2615.64	64.28	
3	1.3431	35.69	2615.64		2615.64	83.51	
	1.3385	20.50	2611.92		0	0	Culvert #1-Up
	3385	11.19	2611.53		0	0	Culvert #1-Dn
2	3364	78.46	2612.96		2613.02	33.12	
1	3215	55.44	2612.97		2612.98	82.47	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	73	2615.1	0	53	2612
2	81	154.29	2615.1	82	137.32	2612

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pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					73	81	U
					53	82	D

J[illegible]:
ul[illegible]t Name: Culvert #1
hape: Circular Rise: 2 Span: 0 Barrels: 1
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olution Crit:Highest U.S. EG

pstrmDist:	4	Length:	20.5	n-Value:	0.024		
ntLossCoef:	0.9	ExtLossCoef:	1	CulvInvElU	2609.92	CulvInvElD	2609.53
CntStaU:	77.1	RCntStaU:	77.1	LCntStaD	64.9	RCntStaD	64.9

ulvert Depth Blocked: 0

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ulv Area: 3.14 CulvQ: 24.79 MinTopRd: 2615.11

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	76.1	78.1	2615.1	2615.18	2615.1	2611.92	U
	63.9	65.9	2614.01	2614.22	2614.01	2611.53	D

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ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		24.79	41.53	Highest U.S. EG	Pressure and Weir Flow

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EOMETRIC CHECK

YPE OF FLOW CHECK

S[illegible] 1.3385 This is Culvert #1
V [illegible] 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2615.64 is greater than MinTopRd of 2615.11.
2. CulvWSIn of 2611.92 is greater than or equal to MxLoCdU of 2611.92.
3. CulvWSOut of 2611.53 is greater than or equal to MxLoCdD of 2611.53.

ISTANCE CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

IVER/REACH: Windmill Wash, North Branch
IVER STATION: 1.294
YPE OF STRUCTURE: Culvert

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escription:	No. 163 Milky Way Culvert
istance from Upstream XS:	24
eck/Roadway Width:	53
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2609
eir crest shape:	Broad Crested

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e[illegible]	[illegible]ver [illegible]cation	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	1.3215	55.44	2612.97		2612.98	82.47	
3	1.311	95.03	2612.97		2612.97	126.06	
	1.294	81.35	2608.51		0	0	Culvert #1-Up
	1.294	5.18	2606.78		0	0	Culvert #1-Dn
2	1.293	158.40	2607.41		2607.9	33.64	
1	1.263	127.78	2602.75		2603.36	18.86	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	53	2611.65	0	47	2607
2	71	168.92	2611.65	61	171.75	2607

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					53	71	U
					47	61	D

ULVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 2 Span: 0 Barrels: 1
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 3 - Pipe projecting from fill
olution Crit:Highest U.S. EG

pstrmDist:	8.5	Length:	81.35	n-Value:	0.024		
ntLossCoef:	0.9	ExtLossCoef:	1	CulvInvElU	2606.51	CulvInvElD	2604.78
CntStaU:	64.4	RCntStaU:	64.4	LCntStaD	51.9	RCntStaD	51.9

ulvert Depth Blocked: 0

ulv Area:	3.14	CulvQ:	25.71	MinTopRd:	2612.1	

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	63.4	65.4	2612.11	2612.64	2612.11	2608.51	U
	50.9	52.9	2611.47	2612.49	2611.47	2606.78	D

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		25.71	53.67	Highest U.S. EG	Pressure and Weir Flow

EO. RIC CHECK

YPE OF FLOW CHECK

S: 1.294 This is Culvert #1
V PW 01 Type of flow is pressure and weir flow because,
1. EGEL 3 of 2612.97 is greater than MinTopRd of 2612.10.
2. CulvWSIn of 2608.51 is greater than or equal to MxLoCdU of 2608.51.
3. CulvWSOut of 2606.78 is greater than or equal to MxLoCdD of 2606.78.

ISTANCE CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

IVER/REACH: Windmill Wash, Combined Branch
IVER STATION: 1.0604
YPE OF STRUCTURE: Culvert

escription:	R.S. 1.0604
istance from Upstream XS:	11.3
ec adway Width:	17.7
e efficient:	2.6
ax n allowable submergence for weir flow:	0.95
levation at which weir flow begins:	2580
eir crest shape:	Broad Crested

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual

4	1.0986	171.81	2584.55	2584.84	67.37	
3	1.0661	40.66	2581.97	2582.08	152.41	
	1.0604	19.70	2581.3	0	0	Culvert #1-Up
	1.0604	10.66	2580.77	0	0	Culvert #1-Dn
2	1.0584	144.14	2580.72	2580.91	112.63	
1	1.0311	246.80	2577.25	2577.93	20.12	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	-68	133	2580.65	0	185	2580.15
2	160	302.51	2580.65	219	345.96	2580.15

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					133	160	U
					185	219	D

ULVERT:
ulvert Name: Culvert #1
hape: Circular Rise: 2 Span: 0 Barrels: 3
HWA Chart #: # 2 - Corrugated Metal Pipe C
HWA Scale #: # 1 - Headwall
olution Crit:Highest U.S. EG

pstrmDist:	10.3	Length:	19.7	n-Value:	0.024		
ntLossCoef:	0.5	ExtLossCoef:	1	CulvInvElU	2579.62	CulvInvElD	2579.32
CntStaU:	150.7	RCntStaU:	155.5	LCntStaD	202.2	RCntStaD	207

ulvert Depth Blocked: 0

ulv Area:	9.42	CulvQ:	48.81	MinTopRd:	2581.21

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	149.7	156.5	2581.2	2582.5	2581.2	2581.62	U
	201.2	208	2580.36	2581.85	2580.36	2581.32	D

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		48.81	118.19	Highest U.S. EG	Low and Weir Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 1.0604 This is Culvert #1
V LW 01 Type of flow is low and weir flow because,
1. EGEL 3 of 2582.08 is greater than MinTopRd of 2581.21.
2. CulvWSIn of 2581.30 is less than MxLoCdU of 2581.62.
3. CulvWSOut of 2580.77 is less than MxLoCdD of 2581.32.
4. Q/AD^0.5 of 3.66 is less than 4.0.

ISTANCE CHECK

ULVERT COEFFICIENT CHECK

ULVERT CRITERIA CHECK

NEFFECTIVE FLOW CHECK

IV REACH: Windmill Wash, Combined Branch
IVER STATION: 0.9042
YPE OF STRUCTURE: Culvert

escription:	Culvert ID No. 11 - Pima Road Culvert
istance from Upstream XS:	13.5
eck/Roadway Width:	67
eir Coefficient:	2.6
aximum allowable submergence for weir flow:	0.95

levation at which weir flow begins: 2568.5
eir crest shape: Broad Crested

ec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	9441	129.21	2570.07		2570.27	151.16	
3	.9196	93.97	2569.79		2569.82	43	
	0.9042	69.00	2568.22		0	0	Culvert #1-Up
	0.9042	12.47	2566.15		0	0	Culvert #1-Dn
2	0.9018	147.77	2566.13		2566.71	29.89	
1	0.8739	171.71	2563.38		2563.57	128.32	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	137	2570.65	0	166	2569.18
2	180	349.15	2570.65	212	353.03	2569.18

pening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
ulvert Group					137	180	U
					166	212	D

ULVERT:
ulvert Name: Culvert #1
hape: Arch Rise: 3.1667 Span: 4.75 Barrels: 3
HWA Chart #: # 41- Arch; Corrugated metal
HWA Scale #: # 1 - 90 Degree headwall
olution Crit:Highest U.S. EG

pstrmDist:	12.5	Length:	69	n-Value:	0.024		
ntLossCoef:	0.5	ExtLossCoef:	1	CulvInvElU	2566.37	CulvInvElD	2564.55
CntStaU:	145	RCntStaU:	158.8	LCntStaD	185.6	RCntStaD	199.4

ulvert Depth Blocked: 0

ul. .rea:	-9999	CulvQ:	205	MinTopRd:	2571.66

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
ulvert #1	142.63	161.18	2571.75	2572.64	2571.75	2569.54	U
	183.23	201.78	2569.92	2571.83	2569.92	2567.72	D

ame	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
ulvert #1		205	0	Highest U.S. EG	Low Flow

EOMETRIC CHECK

YPE OF FLOW CHECK

S: 0.9042 This is Culvert #1
V LF 01 Type of flow is low flow because,
1. EGEL 3 of 2569.82 is less than or equal to MinTopRd of 2571.66.
2. CulvWSIn of 2568.22 is less than MxLoCdU of 2569.54.
3. CulvWSout of 2566.15 is less than MxLoCdD of 2567.72.
4. (EGEL 3 - CulvInvUp) / Rise is less than 1.2

ISTANCE CHECK

ULVERT COEFFICIENT CHECK

UL f CRITERIA CHECK

NEFFECTIVE FLOW CHECK

--END

Windmill Wash CHECK RAS Message Explanations

TO: Tony Bokich

COPIES: File

FROM: Rob Lyons

DATE: March 20, 2003

ROUGHNESS COEFFICIENT CHECK

NT RC 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The washes in Carefree are desert washes and sometimes have barren land on the overbanks resulting in lower Manning's n values than the 0.035.

TRANSITION LOSS COEFFICIENT CHECK

NT TL 02

The results of this check were reviewed for each message. The expansion and contraction coefficients for the cross sections in question were purposefully increased to account for rapid expansion and contraction that was predicted based on the local topographic features.

INEFFECTIVE FLOW CHECK

XS IF 01

This message was disregarded for all cross sections due to the nature of the channel being modeled. The levee option was used often in the model to represent the hydraulic conditions of the braided channel geometry.

DISCHARGE CHECK

RS: 0.1002

RS: 1.2930

XS DC 03

This location is a culvert crossing at Milky Way for both Windmill Wash North and South Branch. It is anticipated that roadway overtopping would get mixed at this location so a conservative approach was taken. The overtopping flow was added to both the North and South Branch downstream of Milky Way until the branches converge at the confluence.

BOUNDARY CONDITION CHECK

XS BC 02

HEC-RAS is run assuming that the flow condition is supercritical or a mixed flow regime. Where the wash enters another wash, the water surface elevation for the same event is known and the delineation project contract number is referenced on the floodplain work maps. All other boundary conditions are documented in the TDN.

LOCATION CHECK

XS LC 01

Due to the steep and irregular terrain of the study area, project specific checks were performed to analyze the need for additional cross sections. Refer to Section 5 of the TDN. Changes in energy, head loss, top width, Q[L], Q[C], and Q[R] were all reviewed from cross section to cross section. Cross sections were added where the change was significant. In locations where the top width changed by more than 150% from one cross section to the next, the contraction and expansion coefficients were increased to 0.3 and 0.5, respectively. The Flood Control District's experience is that additional cross sections would result in negligible changes in flood water surface elevations.

BOUNDARY CONDITION CHECK

XS BC 02

HEC-RAS is run assuming that the flow condition is supercritical or a mixed flow regime. Where the wash enters another wash, the water surface elevation for the same event is known and the delineation project contract number is referenced on the floodplain work maps. All other boundary conditions are documented in the TDN.

INEFFECTIVE FLOW CHECK

RS: 0.1002

RS: 0.1083

ST GD 05

The ground data does not include the road profile or any part of the structure. The natural channel changes as it approaches the culvert inlet.

TOWN OF CAREFREE

100 EASY STREET
P.O. BOX 740
CAREFREE, ARIZONA 85377
(480) 488-3686 • FAX (480) 488-3845

TOWN COUNCIL MEMBERS, PLANNING AND ZONING COMMISSION AND STAFF

COUNCIL MEMBERS:

MAYOR ..... Edward C. Morgan
VICE MAYOR ..... Wayne Fulcher
COUNCILMAN ..... Robert Coady
COUNCILMAN ..... Greg Gardner
COUNCILMAN ..... Gary Hayward
COUNCILMAN ..... Lloyd Meyer
COUNCILMAN ..... David Schwan

PLANNING AND ZONING COMMISSION:

CHAIRMAN ..... Bill Meyer
VICE CHAIRMAN ..... Ron Clarke
MEMBER ..... Robert Brenner
MEMBER ..... Jamie Buchanan
MEMBER ..... Mike Eicher
MEMBER ..... Al Mascha
MEMBER ..... John Nimsky

TOWN HALL STAFF:

TOWN ADMINISTRATOR ..... Jonathan Pearson
TOWN CLERK/TREASURER ..... Betsy Wise
TOWN MARSHAL ..... Patrick Farmer
BUILDING OFFICIAL ..... Mike Tibbett
EXECUTIVE ASSISTANT ..... Janeen Dutcher
PLANNING DIRECTOR ..... Gary Neiss
ADMINISTRATIVE ASSISTANT ..... Nancy Zeno
PLANNING CLERK ..... Bev Peterson
ACCOUNTING ..... Jim Keen
PUBLIC WORKS SUPERINTENDENT ..... Stan Francom
EQUIPMENT OPERATORS ..... Travis Johnson
..... Dan Howard
..... Don Rowan
BOTANICAL GARDEN SPECIALIST ..... Jeanette Summers
COURT ADMINISTRATOR ..... Adrianne Larson
DEPUTY COURT CLERK/JCO ..... Julie Francis
DEPUTY COURT CLERK ..... Marilyn Dodge
COURT DATA ENTRY CLERK ..... Alex Brown

CONTRACT STAFF:

TOWN ATTORNEY ..... Thomas Chenal
TOWN PROSECUTOR ..... Thomas Parascandola
TOWN MAGISTRATE ..... K.C. Scull
CONSULTING ENGINEER ..... Dr. Erich Korsten
SHERIFF'S DEPT. ..... Sgt. Joe Sousa
RURAL METRO ..... Executive Assistant Chief Bob Hansen

February 10, 2006

SECTION 3

Solutions to Drainage Problems

As described above, numerous areas for potential drainage improvements were identified in the Town. Undertaking all potential improvements immediately is not financially feasible, and, therefore, a prioritization process is necessary.

3.1 Solution Categories

Drainage problem areas were found to range from simple solutions to extremely expensive improvements. The Town employs an existing engineering and maintenance staff, a potential resource for some of the improvements. Additionally, some of the sites are burdened by many constraints. Therefore, the problem sites were grouped into four different solution categories:

- Simple solutions using the Town's existing maintenance staff (2 sites)
- Private projects (on private property, homeowners associations) (12 sites)
- Intermediate solutions (40 sites)
- Complex solutions - high cost/low benefit, outside Town's jurisdiction (10 sites)

3.2 Alternative Evaluation

Further evaluation of the 42 sites in the Simple and Intermediate solution category was performed. A prioritization process was initiated to determine which sites should be advanced to the preliminary design stage. This procedure may also be used by the Town in preparing a Capital Improvements Plan.

3.3 Procedure for Ranking Problem Sites

The following procedure was used in developing prioritization for proposed improvements. In general, this procedure takes criteria elements, gives them a weight of importance, and then compares individual sites against each other.

Criteria elements are necessary to determine what is important to the Town. The project team developed the following criteria elements:

- Maintenance - How frequently must maintenance be performed at the problem site?
- Safety - Is there a public safety concern?
- Severity of Damage - How severe is the damage?
- Frequency - How often does the problem happen?
- Local Impact - How many properties does this problem affect?

For the Town's future use, they may want to consider other factors, such as cost, when creating a Capital Improvements Plan.

Source: Carefree Drainage Master Plan, Sept. 2003

Once the criteria elements were developed, a weight of importance was developed for each criteria using a decision matrix. This is determined by comparing each criteria element against every other criteria element, and deciding how much one is preferred over the other. This is translated into a numerical score, which becomes a weighting factor for the criteria element. An example scoring matrix is shown in Figure 21. A blank form is included as Figure 22.

After the weighting factors for the criteria elements have been determined, each individual problem location in the Town is scored against the criteria, based on the site-specific characteristics. For instance, a specific site is looked at for required maintenance. A different score is given if the site requires frequent maintenance over infrequent maintenance. A score is given, then the score is multiplied by the previously determined weight of importance for the criteria element. This procedure is completed for all criteria elements, and an overall numerical score for the site is obtained. The higher the numerical score, the higher priority the site should be given.

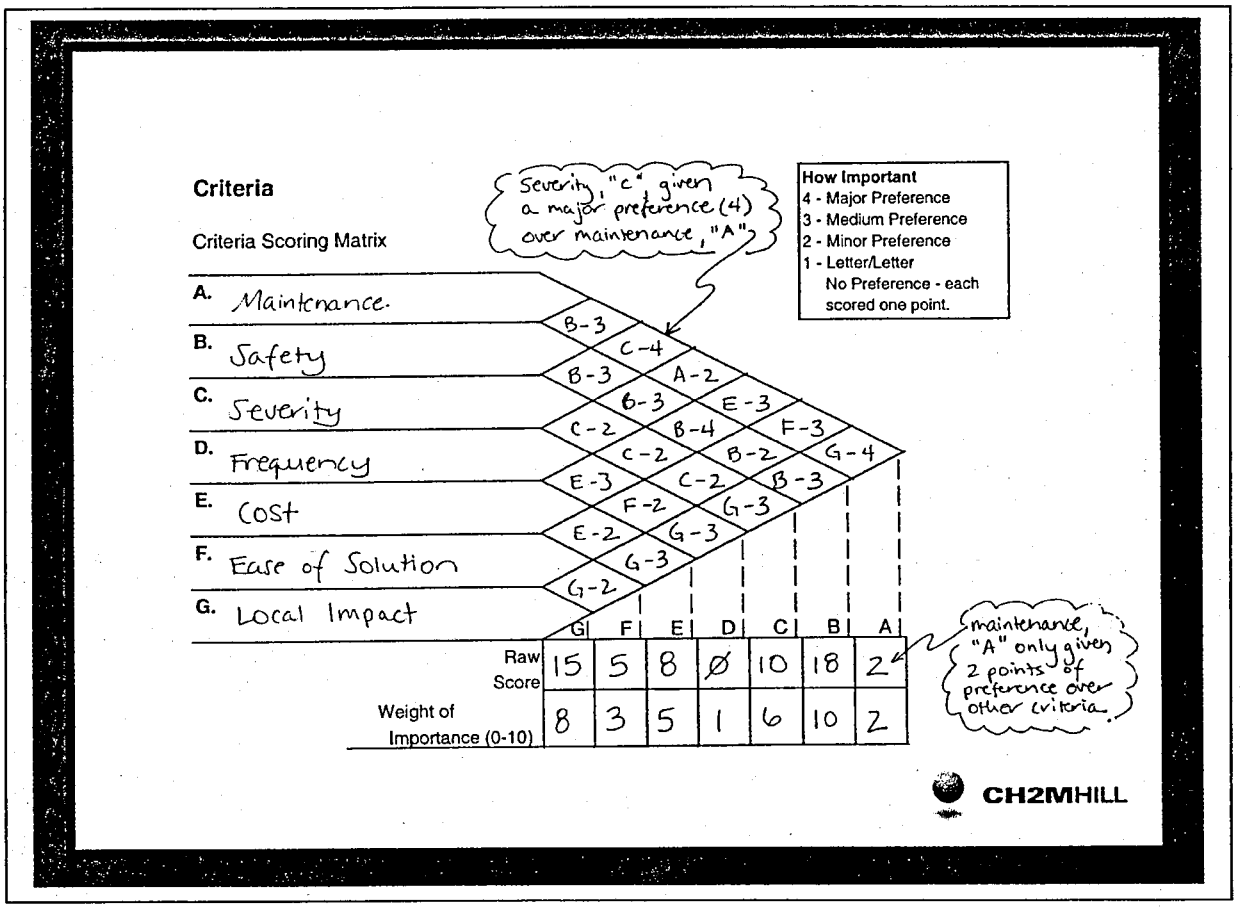


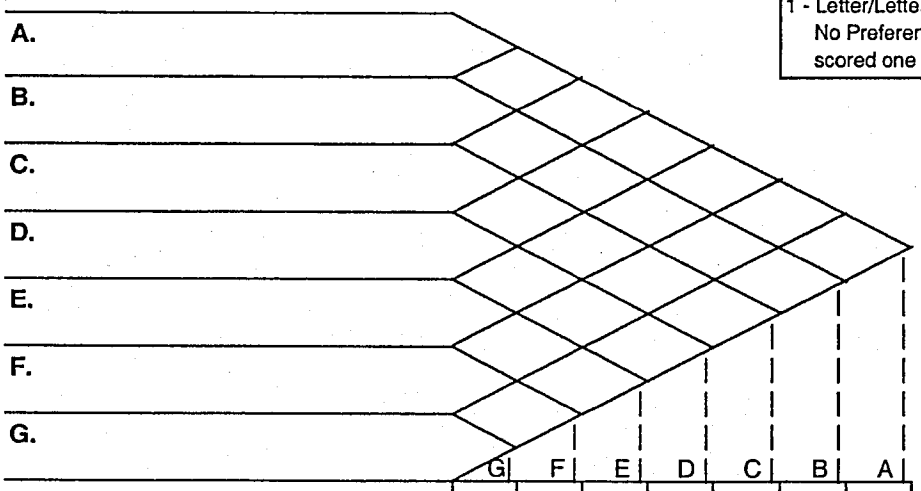
FIGURE 21. EXAMPLE SCORING MATRIX

4C. Matrix Analysis
Study No. _____

Criteria

Criteria Scoring Matrix

How Important
4 - Major Preference
3 - Medium Preference
2 - Minor Preference
1 - Letter/Letter
No Preference - each scored one point.



Alternatives Analysis Matrix	Weight of Importance (0-10)	G	F	E	D	C	B	A	**Total**
	Raw Score								
1.									
2.									
3.									
4.									
5.									
6.									
7.									

Excellent - 5; Very Good - 4; Good - 3; Fair - 2; Poor - 1

FIGURE 22. BLANK CRITERIA ANALYSIS FORM

SECTION 3

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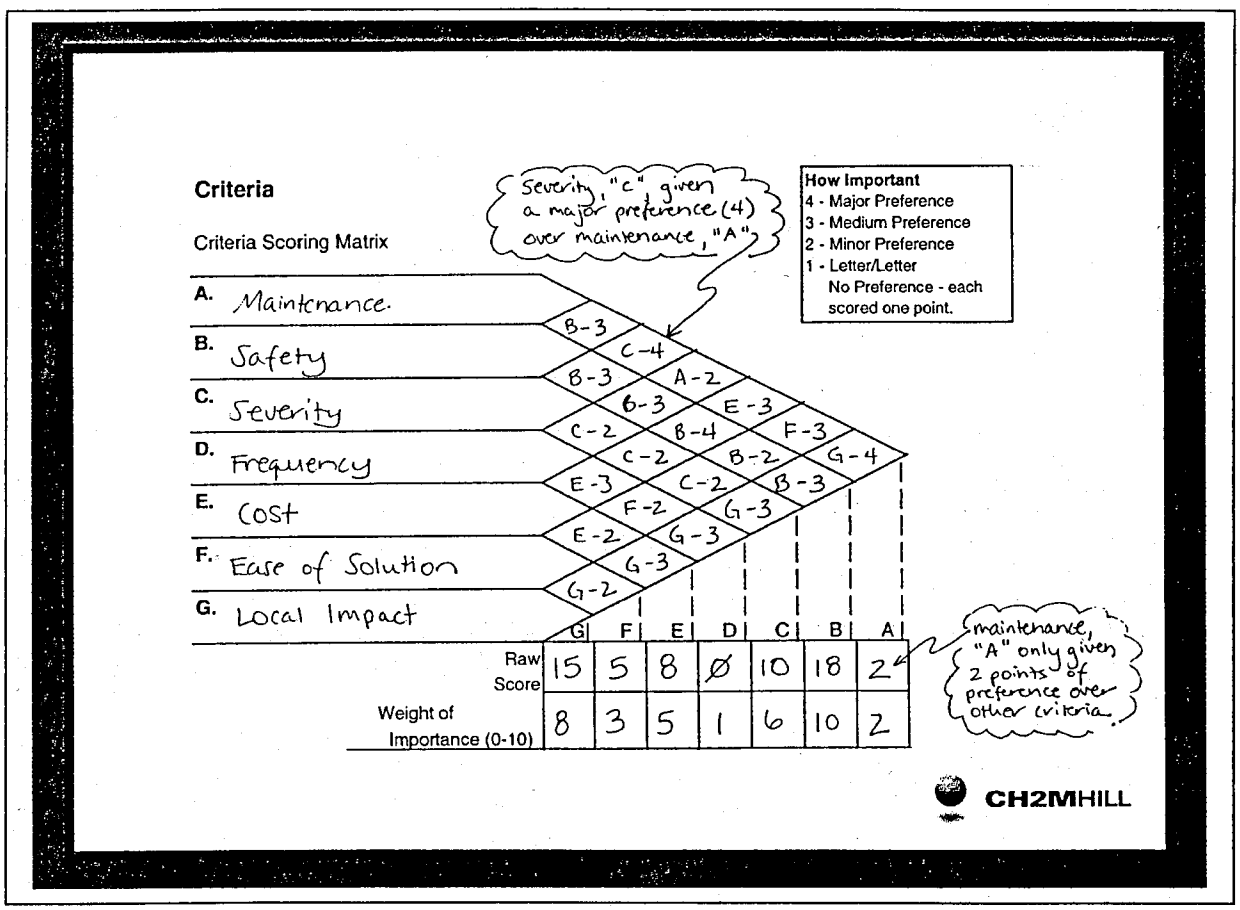

FIGURE 21. EXAMPLE SCORING MATRIX

4C. Matrix Analysis
Study No. _____

How Important
4 - Major Preference
3 - Medium Preference
2 - Minor Preference
1 - Letter/Letter
No Preference - each scored one point.

Criteria

Criteria Scoring Matrix

	G	F	E	D	C	B	A
A.							
B.							
C.							
D.							
E.							
F.							
G.							

Alternatives Analysis Matrix	Weight of Importance (0-10)	G	F	E	D	C	B	A	Total
	Raw Score								
1.									
2.									
3.									
4.									
5.									
6.									
7.									

Excellent - 5; Very Good - 4; Good - 3; Fair - 2; Poor - 1

FIGURE 22. BLANK CRITERIA ANALYSIS FORM

When Recorded Please Return To:
Flood Control District of Maricopa County
Attn: Public Works Lands & R/W Division (EGA)
2801 W. Durango
Phoenix, Arizona 85009

Agreement For Elevation Of Manufactured Home And Release Of Claims

This agreement is made and entered into by and between _____ _____, of Maricopa County, State of Arizona (hereinafter the OWNER), and the Flood Control District of Maricopa County, a political subdivision and municipal corporation of the State of Arizona, (hereinafter the DISTRICT.)

WHEREAS, previous storm events have caused moisture damage to the manufactured home located at _____ ; and

WHEREAS, the DISTRICT believes that elevating the manufactured home will reduce the risk of future moisture damage to the home and has agreed to make funds available for that elevation;

NOW, THEREFORE, in consideration of the premises and the promises stated hereinafter the OWNER and the DISTRICT hereby agree as follows:

1. The OWNER desires to have their residence, a manufactured home located at _____, elevated to avoid further moisture damage from flows during certain rainfall events.

2. The OWNER agrees to within three (3) months of this date enter into a contract with a firm or individual with the required skills and knowledge and holding the appropriate and required licenses to complete the work necessary to elevate the lowest structural member and all attendant utilities in a workmanlike and timely manner. This work shall include elevation of all ductwork of the OWNER'S manufactured home to at least twelve (12) inches above the regulatory flood elevation. This work shall also include construction of any foundation walls or structures or appurtenances as are

necessary to achieve the required elevation, restore full access and return the site to as close as possible to the pre-construction condition.

3. The contract for the work shall include all supervision, labor, materials, machinery, tools, supplies, services and utilities necessary for the complete and satisfactory elevation of the manufactured home. The contract shall include appropriate precautions to protect the manufactured home and the surrounding property and utilities from damage by the contractor's equipment. The contract shall also include all dirt work, excavation, backfill and grading, necessary concrete or steel piers, and any other necessary work to complete the elevation of the manufactured home. The contract shall also provide for the removal and disposal of any debris from the work done. The contract will also include construction and/or installation of any necessary steps and a sufficient landing by door areas to allow safe entry into the manufactured home.

4. The elevation to be achieved must be confirmed by the DISTRICT prior to work proceeding under this agreement.

5. The OWNER or his contractor is responsible for preparing necessary drawings and plans, securing building permits for the work, and obtaining necessary inspections for completion and move in.

6. When the elevation work is completed and the final drainage clearance has been approved, the OWNER shall submit to the DISTRICT for payment detailed written invoices for the full and complete work done by the contractor.

7. The DISTRICT shall review the invoice sent and shall reimburse the OWNER for the elevation costs incurred up to a total of $12,500.00. If it is necessary for the OWNER to vacate the manufactured home during the time the work is done, the DISTRICT will reimburse the OWNER an additional $100 per day for up to three days for food and lodging expenses. The OWNER may also elect to have the home professionally treated to prevent future mold growth and the DISTRICT will reimburse the OWNER up to an additional $1,200 for such a treatment.

8. The DISTRICT shall not reimburse the OWNER nor be responsible for work activities that are in excess of or beyond the scope of this agreement.

9. The OWNER shall require proof of sufficient insurance to cover the workmen and the work to be done by the contractor and the OWNER shall and hereby does release the DISTRICT of any and all liability of any kind relating to the elevation of the manufactured home. The OWNER shall protect itself by requiring the contractor to be responsible for all damages to persons or property that may occur as a result of the contractor's fault or negligence in connection with the work performed and by maintaining the OWNER's homeowner insurance in effect.

10. The OWNER agrees hereby to indemnify, defend and hold harmless the DISTRICT free from any and all claims for damages sustained by the contractor or the OWNER during the elevation of the manufactured home.

11. In consideration for the DISTRICT payment of the costs of elevating the manufactured home, the OWNER hereby releases, waives and agrees not to take any action against the DISTRICT for any and all claims for property damage and/or for loss due to injury, death or damage or any kind and nature resulting from the DISTRICTS performance of its obligations under this agreement. The OWNER specifically agrees to hold the DISTRICT harmless and to make no claims against the DISTRICT in regard to any future damages that may appear at, in or on the manufactured home after the elevation is complete, including any claims related to mold or any other moisture related problems in or on the home or for personal injuries to the OWNERS or other related to and mold or moisture related causes.

12. All work under this contract is subject to inspection and testing by the DISTRICT at all reasonable times, and any/all such inspections shall be performed in such a manner as will not unduly delay the work.

13. The OWNER understands the project will provide some protection but the manufactured home and the property may still be subject to damage from floods or overland flows that exceed the flood protection level. OWNER is advised that it should maintain insurance to cover flood and other water damage that may be affect the manufactured home in the future.

14. The OWNER agrees to notify the next owner of the property of this agreement and the need for insurance coverage.

15. OWNER is bound by this agreement to the greatest extent allowed by law. Anyone who succeeds to his rights and responsibilities, such as, but not

limited to, his heirs or the executor of his estate, is also bound. This agreement is made for the DISTRICT's benefit and all who succeed to the DISTRICT's rights and responsibilities, such as successors and assigns.

16. This agreement is subject to the terms of A.R.S. 38-511.

17. OWNER and DISTRICT understand and agree to the terms of this agreement and release. The OWNER has read this agreement including the waiver and disclaimer and fully understands its terms, and has signed it freely and voluntarily without any inducement, assurance, or guarantee being made by the DISTRICT.

_____
OWNER

_____
OWNER

STATE OF ARIZONA]
] §.
COUNTY OF MARICOPA]

The foregoing instrument was acknowledged before me this_____day of_____2003

By:_____

My Commission Expires:

_____
Notary Public

RECOMMENDED FOR APPROVAL:
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

Michael S. Ellegood, P.E. Date
Chief Engineer and General Manager

Michael D. Wilson Date
Manager, Land Management Division

ACCEPTED AND APPROVED:

BOARD OF DIRECTORS 0F FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Chairman of the Board

ATTEST:

Clerk of the Board

Date: