

August 2007

Conditional Letter of Map Revision

Decatur Access Road

from Iron Mountain Road
to Moccasin Road

prepared by

vtn nevada

07-09-1939R

FEMA
CONDITIONAL LETTER OF
MAP REVISION APPLICATION

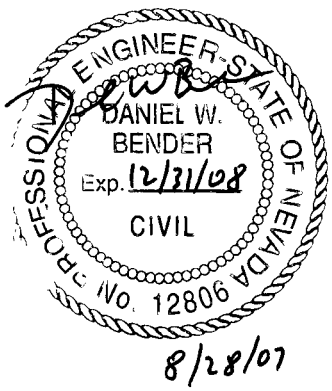
DECATUR BOULEVARD ACCESS ROAD
IRON MOUNTAIN ROAD TO MOCCASIN ROAD

PREPARED FOR:

CLARK COUNTY DEPARTMENT
OF PUBLIC WORKS
500 S. Grand Central Parkway, Ste. 2001
Las Vegas, NV 89155-4000

PREPARED BY:

VTN NEVADA
2727 S. Rainbow Boulevard
Las Vegas, NV 89146
(702) 247-4020



vtn nevada

August 2007

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Current FEMA Flood Zone Map
CCRFCD MPU Facilities Map

F. Data CD

Electronic Hydrologic and Hydraulic Model Files and Figures
Regional Flood Control District – Operations and Maintenance Manual

1.0 INTRODUCTION

The purpose of this Conditional Letter of Map Revision (CLOMR) is to analyze and address a needed revision to the AE flood zone on the Upper Las Vegas Wash, in Clark County, Nevada. The reach of Upper Las Vegas Wash in question is between the Upper Las Vegas Wash Detention Basin and Decatur Boulevard, approximately one quarter mile downstream of the detention basin outlet. Refer to Appendix A, Figure 1, Vicinity Map, for an overall view of the study area.

Due to the development occurring north of the Upper Las Vegas Wash, Decatur Boulevard is proposed to be extended across the wash to provide access to the north side of the wash. Clark County is in the process of developing construction plans for Decatur Boulevard (see attached plans in Appendix B). Since Decatur Boulevard will cross over the wash, a reinforced concrete box culvert (RCBC) is included with this project to provide conveyance of flood water under the proposed road.

Although the Decatur Boulevard crossing is approximately one-quarter mile downstream of the detention basin, all of the land west of Decatur Boulevard has been granted by BLM to the City of North Las Vegas for "Flood Control Purposes", refer to Appendix A, Figure 2, BLM Grant Exhibit. As a result of the Grant, this property is not currently and never will be privately developed. The only development upstream of the Decatur Boulevard wash crossing is the existing Upper Las Vegas Wash Detention Basin. This analysis will show that due to the proposed roadway and culvert improvements, the flood zone is impacted by this project, but the impact is of no significant consequence.

2.0 HYDROLOGY

The watershed in the Upper Las Vegas Wash area has not changed since the FIS study was completed in 1998. The hydrologic analysis presented in this report is based on the HEC-1 models presented in the Upper Las Vegas Wash FIS study. There are two HEC-1 models that analyzed this reach of the wash. One of the models analyzed a storm centering upstream of the Upper Las Vegas Wash Detention Basin, and the other one analyzed a storm centered below the Upper Las Vegas Wash Detention Basin, but upstream of the North Las Vegas Wash Detention Basin. From these two models, the flow rates for the Las Vegas Wash are as shown in Table 1.

Table 1

Description	HEC-1 Combination Point/HEC-1 Model	Tributary Area (mi^2)	100 Year Flow (cfs)
Upper Las Vegas Wash Detention Basin Outflow	ULWDB / sp_100.out	136.34	5,019
North Las Vegas Detention Basin Dike	DIVDIKE / ib_100.out	54.37	8,537

The FIS study reports a flow rate of 8,537 cfs for the flood having a 1% chance of being equaled or exceeded in any given year for the entire wash between the two detention basins. Based on the close proximity of Decatur Boulevard to the Upper Las Vegas Wash Detention Basin, the analysis in this report uses the flow rate for the Upper Las Vegas Wash Detention Basin outflow (5,019 cfs). That flow rate is used in both the pre-project and post-project models.

3.0 HYDRAULICS

Pre-Project Conditions – HEC-RAS

The purpose of the VTN existing conditions model is to identify current flood conditions by analyzing the base flow rate identified in the Hydrology section of this study in the existing wash. This model was developed by utilizing geometric data from the hydraulic models found in the current FIS studies. The cross-sections were renamed to reflect VTN stationing for purposes of comparison. These hydraulic models analyzed a flow rate of 5,019 cfs.

Post-Project Conditions – HEC-RAS

The intent of the post-project model is to provide an analysis of the wash with the proposed Decatur Access Road RCBC in the wash. The objective is to provide a comparison between the pre-project conditions and the post-project conditions and be able to verify the impact to the current FEMA flood zones and base flood elevations. The post-project model was developed with the same hydrology as the pre-project model, but includes the RCBC improvements for the Decatur Access Road. Upstream and downstream of the Decatur Access Road, this model incorporates the same channel geometrics as the pre-project model.

4.0 RESULTS

The HEC-RAS post-project model results show that base flood elevations are impacted by the proposed Decatur Access Road improvements, but the flood zone limits are not impacted due to the wash being sufficiently incised to contain the base flow rate. These results are shown on the Pre-Project and Post-Project work maps, and the Annotated Flood Zone Map, all included in Appendix A. Complete HEC-RAS results are included in Appendix C (Pre-Project model and Post-Project model). Electronic HEC-RAS files are included on the data CD in Appendix F.

To ensure continuity between the pre-project hydraulics and post-project hydraulics, tie-in points were analyzed upstream and downstream of the VTN channel improvements. Since the wash is well incised in the vicinity of Decatur Boulevard, the horizontal tie-in points are immediately upstream and downstream of Decatur Access Road. However, the upstream water surface elevations are impacted due to the contraction at the Decatur Access Road RCBC. Refer to Table 3 for a summary of this information:

Table 3

Tie-in Point	River Station	Pre-Project Water Surface Elevation	Post-Project Water Surface Elevation
Upstream	-1050	2338.31	2338.31
Upstream of RCBC	-2100	2331.96	2336.14
Downstream of RCBC	-2300	2330.45	2329.45
Downstream	-2600	2328.42	2328.42

5.0 CONCLUSION

With the Decatur Access Road Improvements, a RCBC structure will be constructed to convey flood waters under the road. These roadway improvements cross the Upper Las Vegas Wash approximately 1200 feet downstream of the Upper Las Vegas Wash Detention Basin. The peak discharge flow rate from that detention basin during a storm event having a 1% chance of being exceeded in any given year is approximately 5,019 cfs (flow rate taken from current FIS model named, sp_100.out). The hydraulic model of these improvements (post-project model) shows that the 100 Year flood limits will be contained in the natural wash, but the base flood elevations will be raised immediately upstream of Decatur Boulevard. Since all of the land west of Decatur Boulevard has been granted by BLM to the City of North Las Vegas for "Flood Control Purposes", this property will not be privately developed. The analysis in this study shows that due to the proposed roadway and culvert improvements the base flood elevations are impacted by this project, but the impact is of no significant consequence because the land is public land and will not be developed.

Below is a photo showing the current conditions of the area immediately downstream of the Upper Las Vegas Wash Detention Basin. This photo was taken from the top of the detention basin embankment, just south of the spillway. The view of the downstream wash shows how incised the wash is. In addition, the alignment of the proposed Decatur Access road can be seen here (the access road follows the existing dirt road that bisects the middle of the photo from left to right).



6.0 REFERENCES

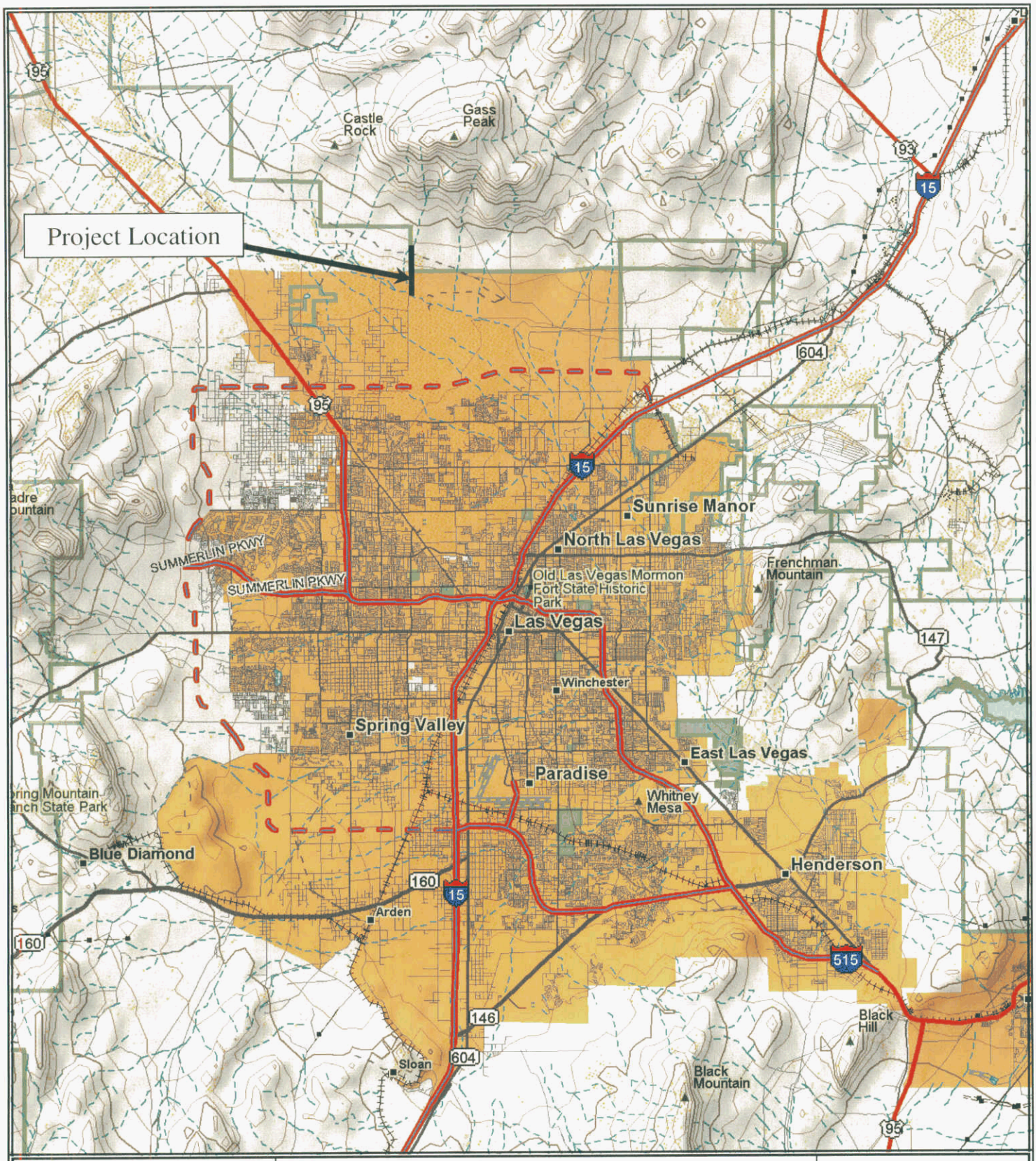
1. Clark County Regional Flood Control District, *Hydraulic Criteria and Drainage Design Manual*, August 1999.

2. Clark County Regional Flood Control District, *Flood Control Master Plan Update of the Las Vegas Valley*, 2002 – by PBS&J, G.C. Wallace, and Louis Berger Group.

3. Northwest Hydraulic Consultants, Inc., Upper Las Vegas Wash FIS Restudy (Contract: EMW – 95 – C – 4840), April 20, 1998.

Appendix A
Figures

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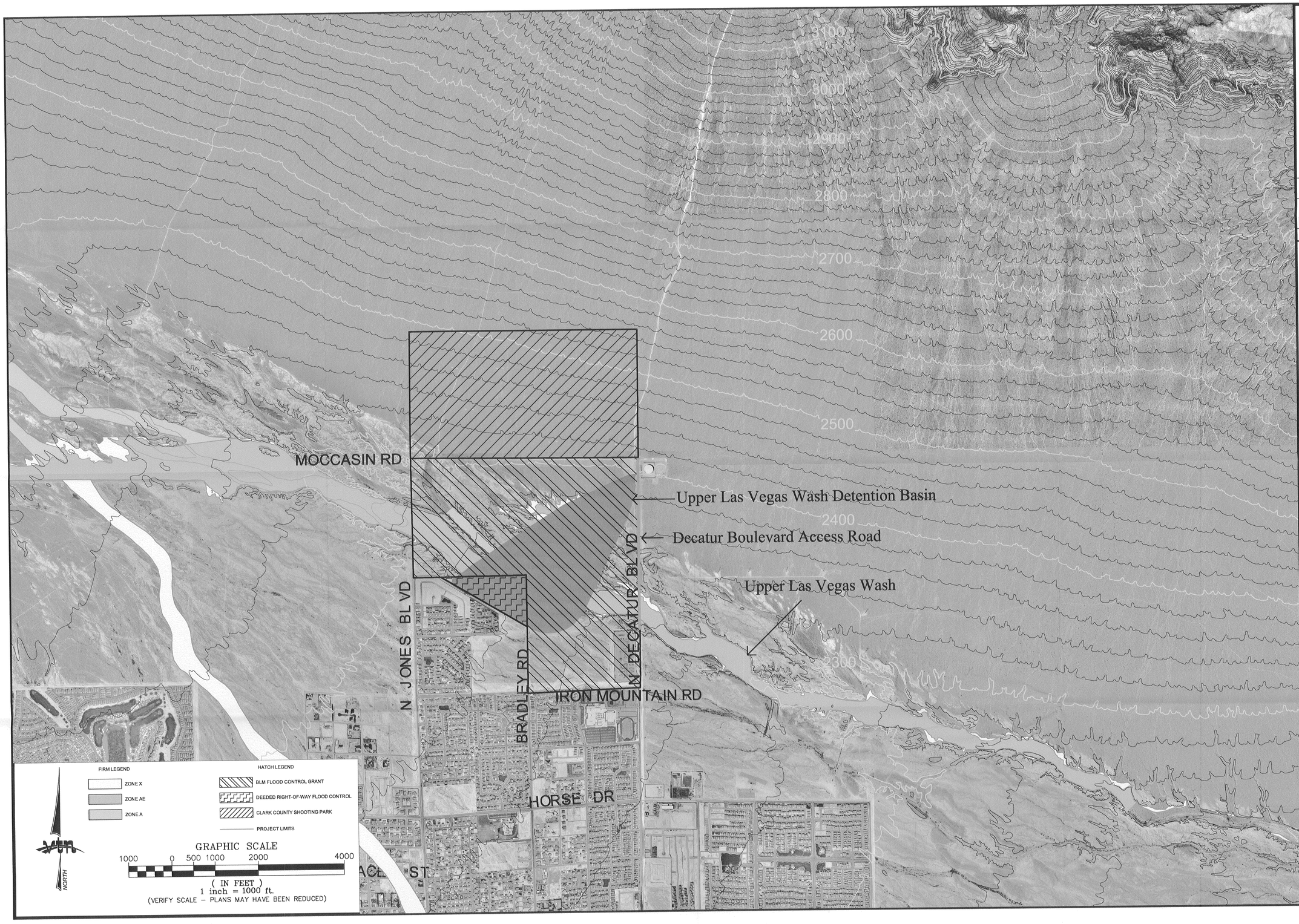


VTM CONSULTING

Vicinity Map
Decatur Boulevard Access Road
CLOMR

Figure 1

August 2007



REV	DATE	BY	REVISION

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-4597
FAX (702) 873-2597
WEB SITE WWW.VTNNV.COM
VTN CONSULTING

DECATUR BOULEVARD
ACCESS ROAD – CLOMR
BLM GRANT EXHIBIT

DRAWN BY: DAB	AUG 2007	SCALE: 1000	HORIZ.
DESIGNED BY: DAB	AUG 2007		VERT. NONE
CHECKED BY: DWB	AUG 2007		
PROJECT NO: 6722			

PROFESSIONAL ENGINEER-STATE OF NEVADA
DANIEL W. BENDER
EXP. 12/31/08
CIVIL
No. 12806

SHEET
FIGURE 2
OF SHEETS
DRAWING NO.

J:\JOBS\6722\CLOMR\dwg\FEMA BLM.dwg, Aug 29, 2007 - 1:21pm

Appendix B
Maps

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GRAPHIC SCALE

80 0 40 80 160

(IN FEET)

1 inch = 80 ft.

(VERIFY SCALE – PLANS MAY HAVE BEEN REDUCED)

NORTH

UPPER LAS VEGAS WASH DETENTION BASIN OUTLET

UPPER LAS VEGAS WASH

DECATUR BLVD. ACCESS ROAD IMPROVEMENTS

+10+00

+11+00

+12+00

+13+00

+14+00

+15+00

+16+00

+17+00

+18+00

+19+00

+20+00

+21+00

+22+00

+23+00

+24+00

+25+00

+26+00

+27+00

+28+00

+29+21.44

LEGEND

PRE–PROJECT 100–YEAR FLOOD ZONE (ZONE AE)

EXISTING FEMA FLOOD ZONE (ZONE AE)

PRELIMINARY NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER - STATE OF NEVADA

DANIEL W. BENDER

EXP: 12/31/08

CIVIL

No. 12805

vtn nevada

DECATUR ACCESS ROAD CLOMR
PRE-PROJECT WORK MAP

August 2007



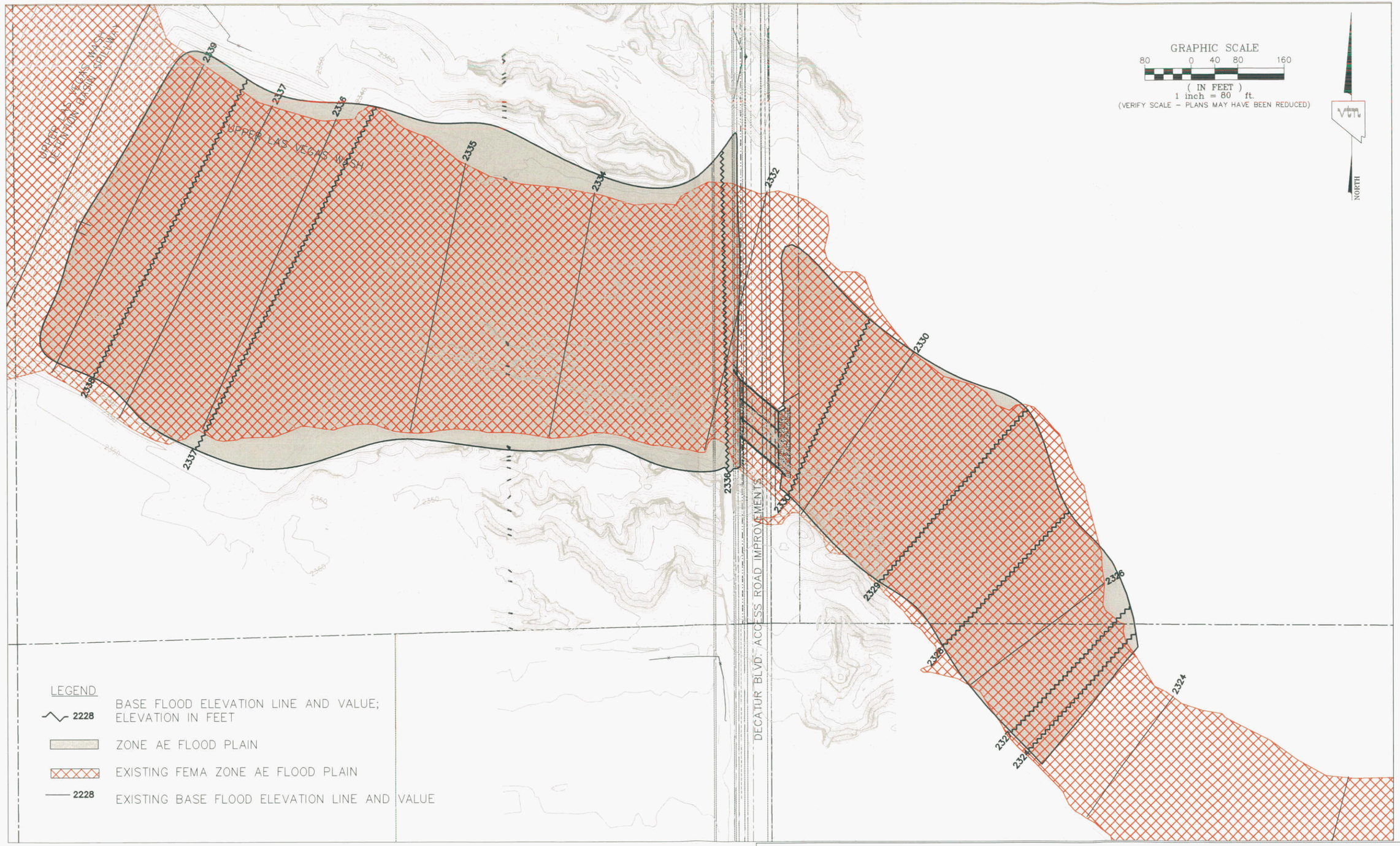
PRELIMINARY NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER-STATE OF NEVADA
DANIEL W BENDER
EXP: 12/31/08
CIVIL
No. 12806

vtn nevada

DECATUR ACCESS ROAD CLOMR
POST-PROJECT WORK MAP

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PANEL 1754 OF 4090

	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	32003	1754	E

MAP NUMBER 32003L1754 E

PRELIMINARY NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER-STATE OF NEVADA
DANIEL W BENDER
EXP. 12/31/08
CIVIL
No. 12806

vtn nevada

DECATUR ACCESS ROAD CLOMR ANNOTATED FLOOD-ZONE MAP

August 2007

Appendix C
HEC-RAS

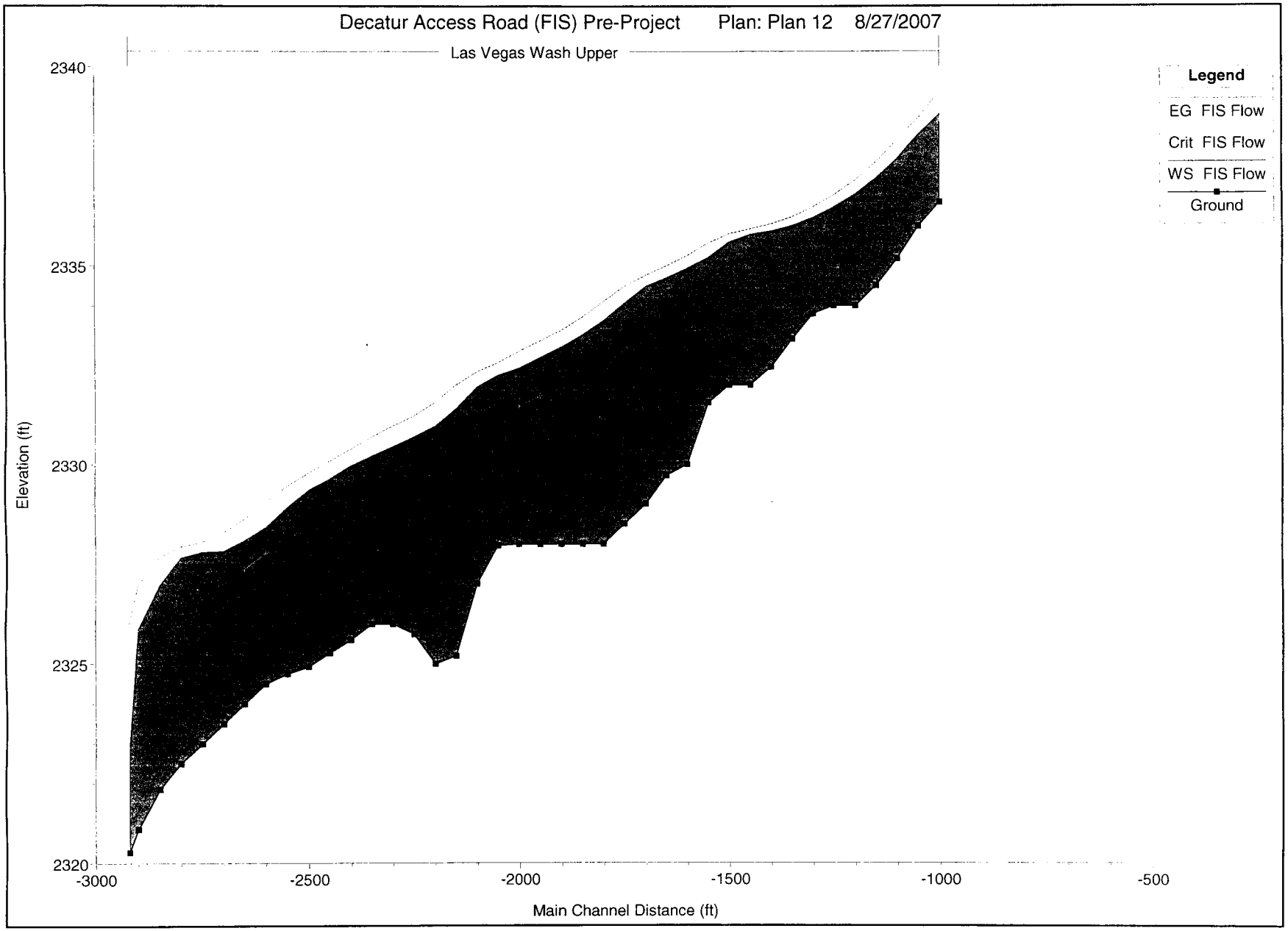
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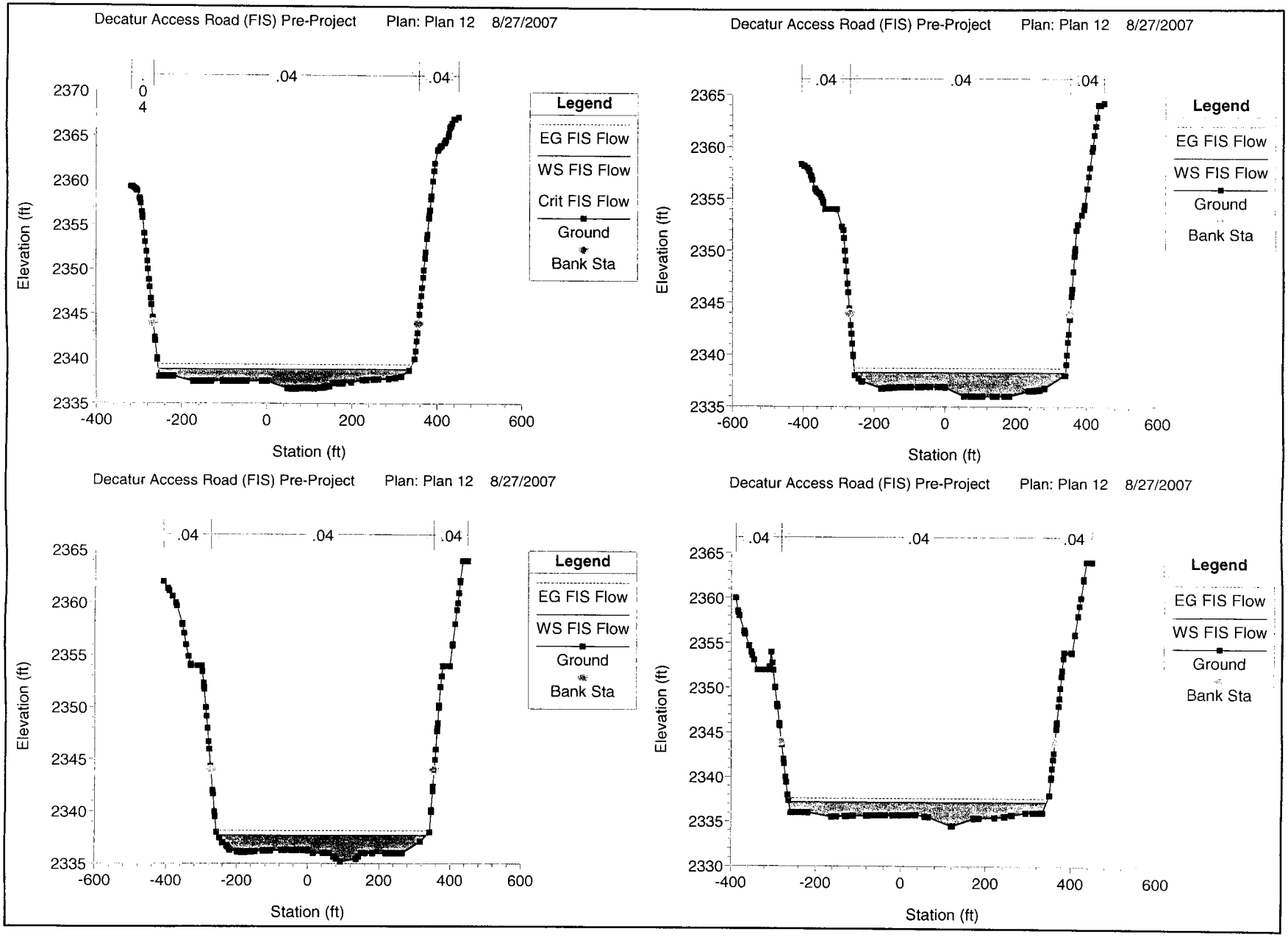
Pre-Project HEC-RAS Output

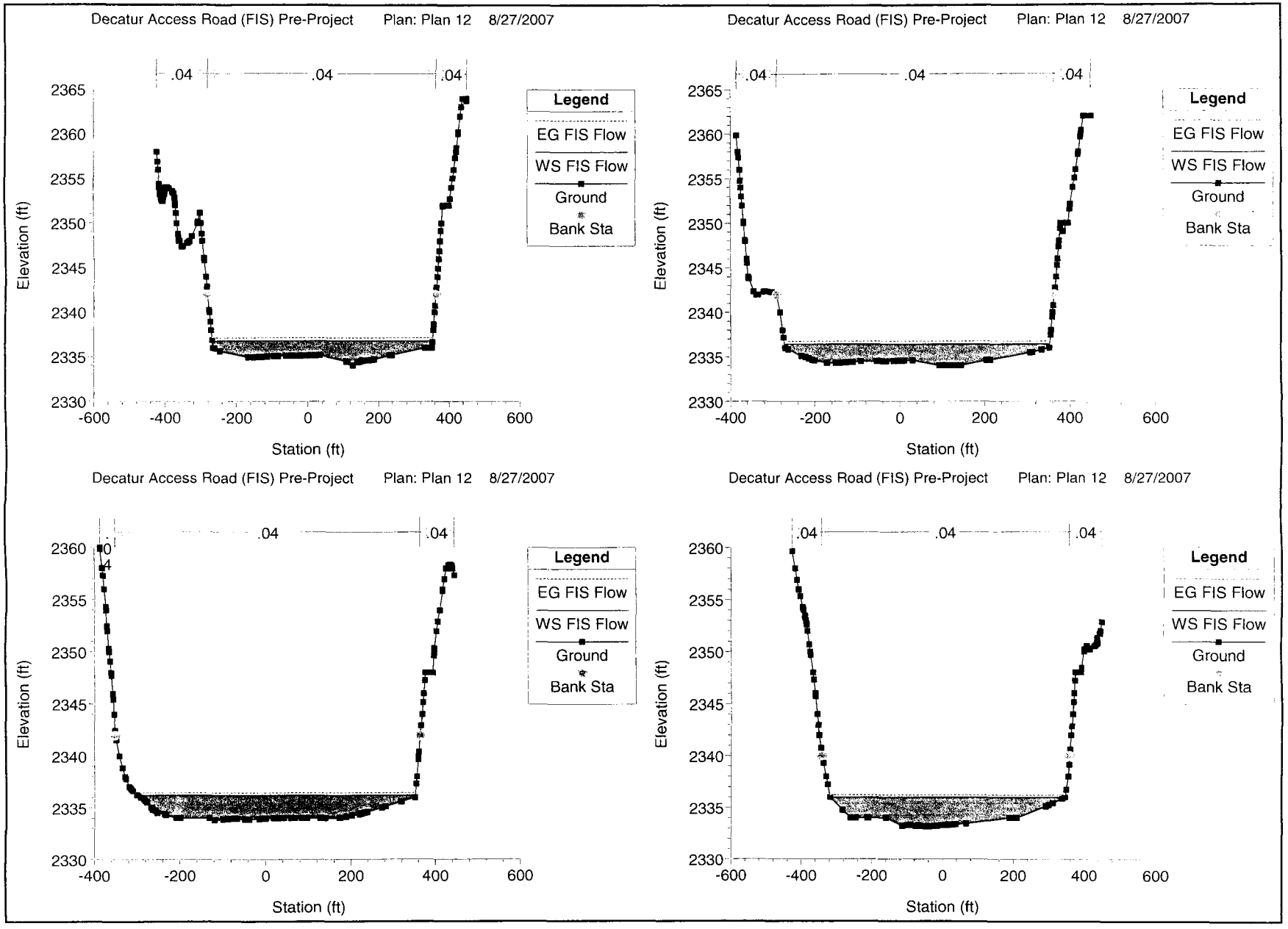
HEC-RAS Plan: Pre River: Las Vegas Wash Reach: Upper Profile: FIS Flow

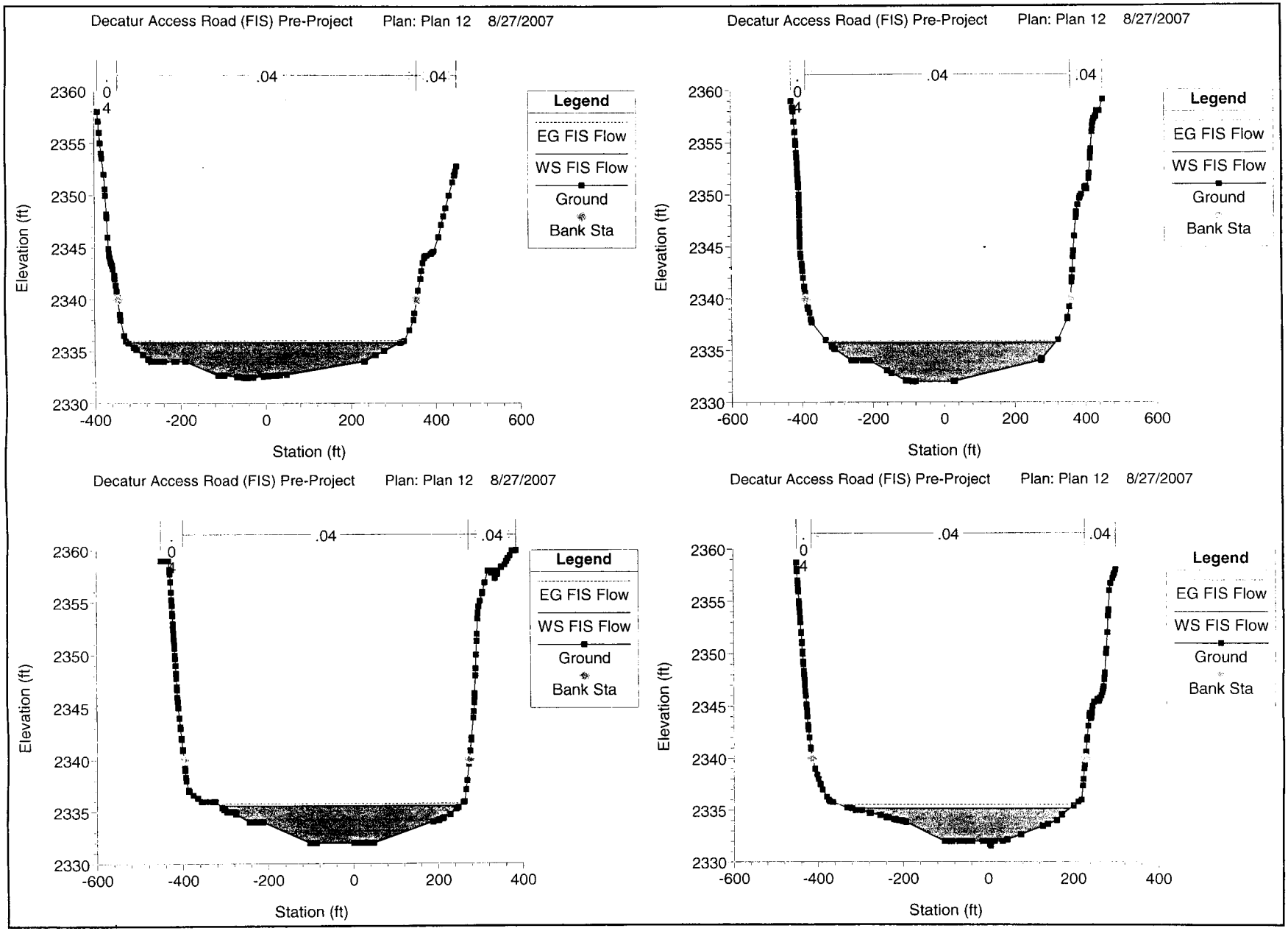
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Upper	-1000	FIS Flow	5019	2336.61	2338.83	2338.71	2339.39	0.016746	6.03	831.88	591.4	0.9
Upper	-1050	FIS Flow	5019	2336	2338.31		2338.72	0.009674	5.1	984.11	596.61	0.7
Upper	-1100	FIS Flow	5019	2335.18	2337.72		2338.18	0.011868	5.46	919.66	587.18	0.77
Upper	-1150	FIS Flow	5019	2334.5	2337.22		2337.62	0.009885	5.1	984.93	607.47	0.71
Upper	-1200	FIS Flow	5019	2334	2336.81		2337.16	0.008119	4.76	1055.48	622.95	0.64
Upper	-1250	FIS Flow	5019	2334	2336.48		2336.78	0.006398	4.42	1136.03	626.33	0.58
Upper	-1300	FIS Flow	5019	2333.79	2336.21		2336.48	0.005362	4.13	1215.42	649.71	0.53
Upper	-1350	FIS Flow	5019	2333.16	2336.01		2336.23	0.004042	3.76	1333.62	662.92	0.47
Upper	-1400	FIS Flow	5019	2332.45	2335.87		2336.05	0.002847	3.43	1463.56	642.99	0.4
Upper	-1450	FIS Flow	5019	2332	2335.79		2335.93	0.001819	3	1673.43	642.38	0.33
Upper	-1500	FIS Flow	5019	2332	2335.59		2335.8	0.003114	3.71	1352.99	565.09	0.42
Upper	-1550	FIS Flow	5019	2331.56	2335.2		2335.57	0.006728	4.85	1035.39	515.92	0.6
Upper	-1600	FIS Flow	5019	2330	2334.93		2335.25	0.005558	4.55	1103.96	523.86	0.55
Upper	-1650	FIS Flow	5019	2329.72	2334.69		2334.99	0.004715	4.38	1145.48	508.09	0.51
Upper	-1700	FIS Flow	5019	2329	2334.47		2334.76	0.004365	4.31	1165.55	500.54	0.5
Upper	-1750	FIS Flow	5019	2328.5	2334.05		2334.47	0.007127	5.2	964.55	449.95	0.63
Upper	-1800	FIS Flow	5019	2328	2333.62		2334.09	0.007814	5.53	907.42	413.22	0.66
Upper	-1850	FIS Flow	5019	2328	2333.26		2333.71	0.007257	5.36	937.11	424.69	0.64
Upper	-1900	FIS Flow	5019	2328	2332.95		2333.37	0.005883	5.21	963.67	388.94	0.58
Upper	-1950	FIS Flow	5019	2328	2332.69	2331.74	2333.1	0.004916	5.17	996.4	419.7	0.54
Upper	-2000	FIS Flow	5019	2328	2332.42	2331.48	2332.85	0.005304	5.26	972.16	417.82	0.56
Upper	-2050	FIS Flow	5019	2327.96	2332.25		2332.56	0.004801	4.52	1112.51	493.58	0.52
Upper	-2100	FIS Flow	5019	2327	2331.96		2332.33	0.004213	4.97	1050.81	429.59	0.51
Upper	-2150	FIS Flow	5019	2325.2	2331.4		2332	0.009822	6.29	815.04	399.73	0.74
Upper	-2200	FIS Flow	5019	2325	2330.97		2331.57	0.007696	6.27	826.53	351.78	0.68
Upper	-2250	FIS Flow	5019	2325.74	2330.7		2331.23	0.005369	5.86	873.34	306.64	0.58
Upper	-2300	FIS Flow	5019	2326	2330.45		2330.98	0.004549	5.93	905.23	351.21	0.55
Upper	-2350	FIS Flow	5019	2326	2330.22		2330.71	0.006	5.61	896.95	340.1	0.6
Upper	-2400	FIS Flow	5019	2325.6	2329.97		2330.4	0.005748	5.24	957.58	376.47	0.58
Upper	-2450	FIS Flow	5019	2325.27	2329.64		2330.09	0.006214	5.42	926.55	367.4	0.6
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Upper	-2550	FIS Flow	5019	2324.75	2328.92		2329.46	0.007338	5.89	851.91	337.77	0.65
Upper	-2600	FIS Flow	5019	2324.5	2328.42	2327.78	2329.06	0.008564	6.42	782.1	306.06	0.71
Upper	-2650	FIS Flow	5019	2324	2328.09	2327.37	2328.64	0.007223	5.96	842.82	324.75	0.65

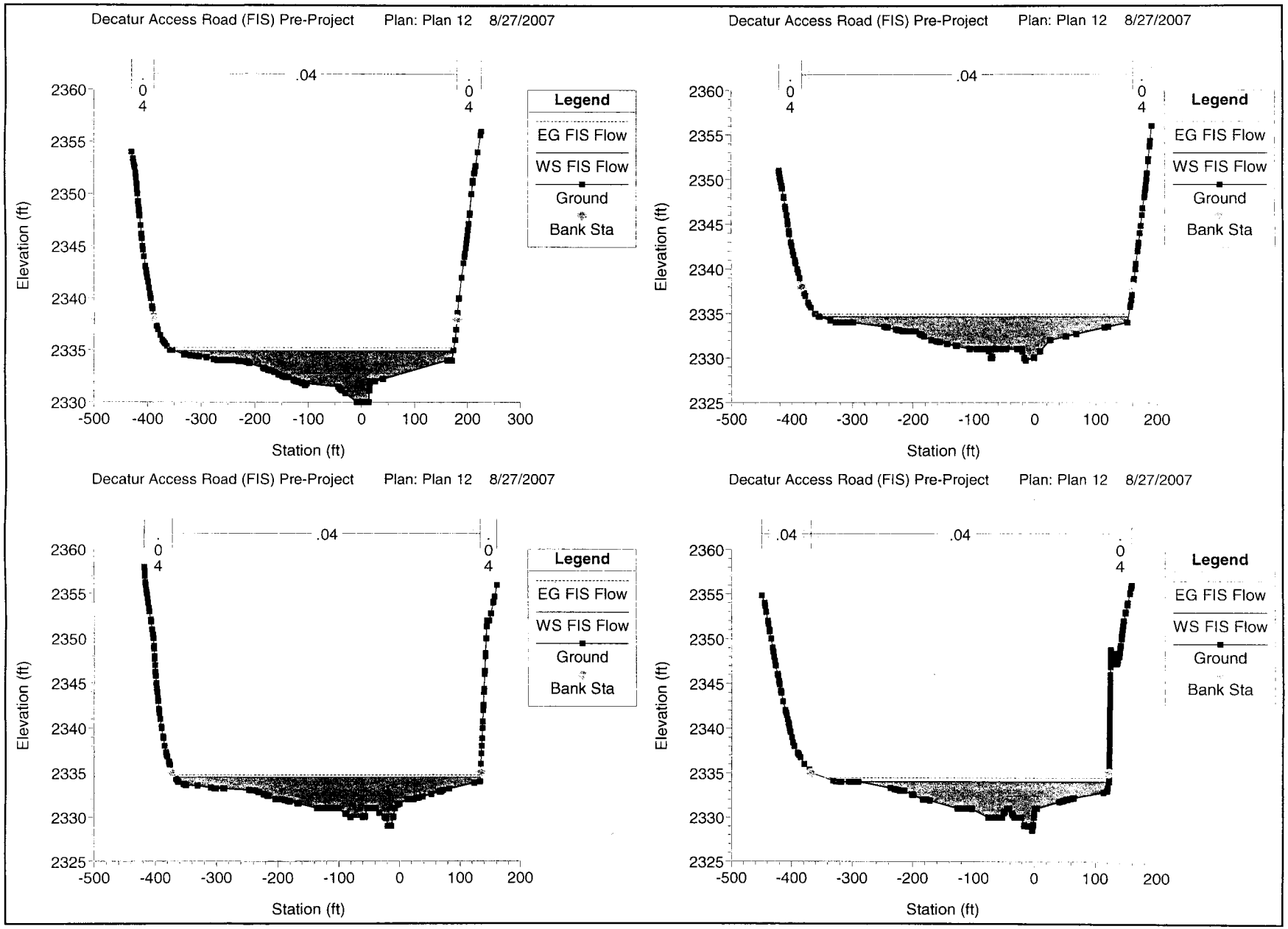
Upper	-2700	FIS Flow	5019	2323.5	2327.82		2328.3	0.005619	5.52	909.43	325.54	0.58
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Upper	-2800	FIS Flow	5019	2322.5	2327.65		2327.94	0.002386	4.27	1175.31	324.3	0.4
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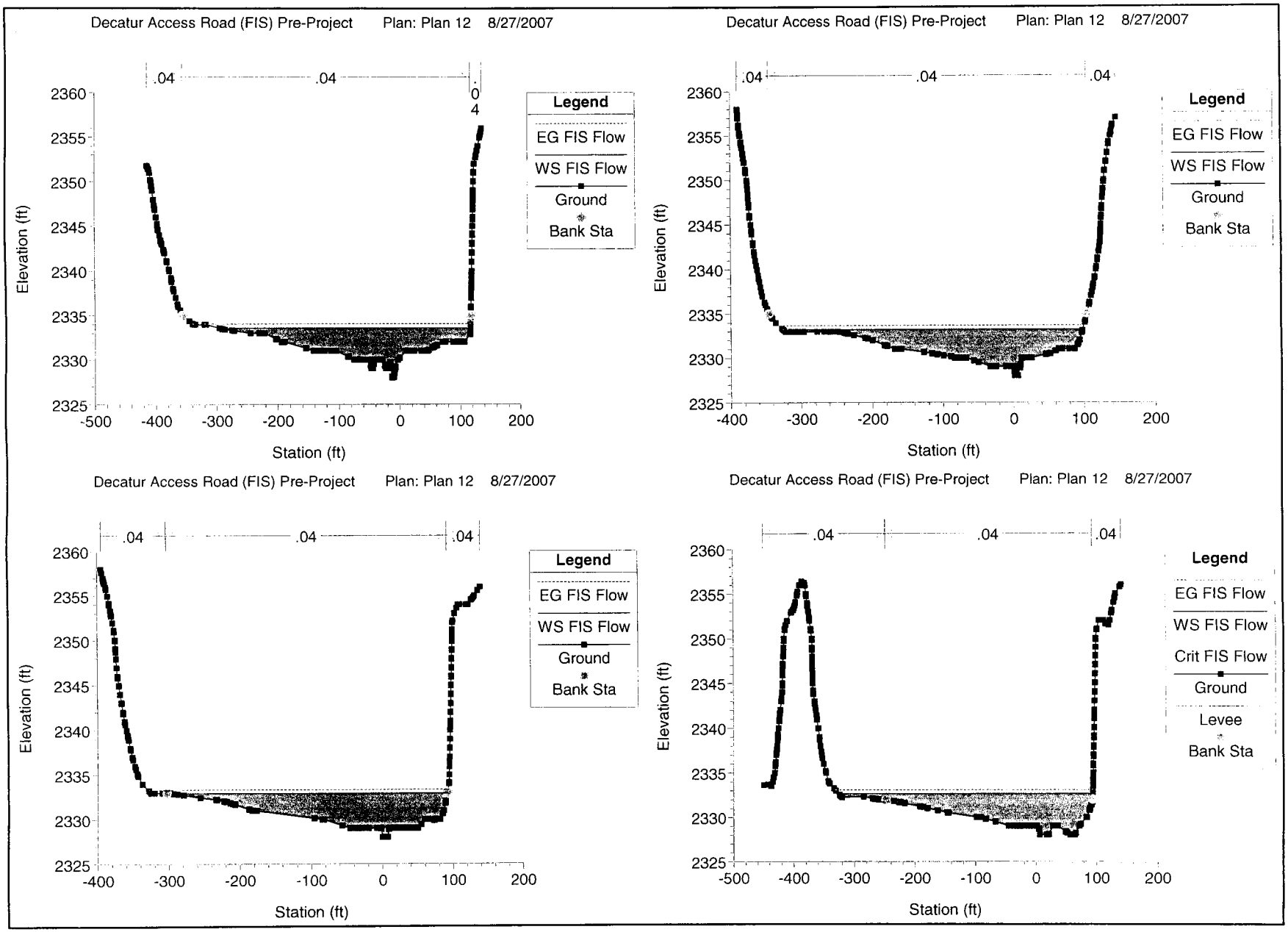

Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
Las Vegas Wash Upper
Legend
EG FIS Flow
Crit FIS Flow
WS FIS Flow
Ground
Elevation (ft)
2340
2335
2330
2325
2320
-3000
-2500
-2000
-1500
-1000
-500
Main Channel Distance (ft)

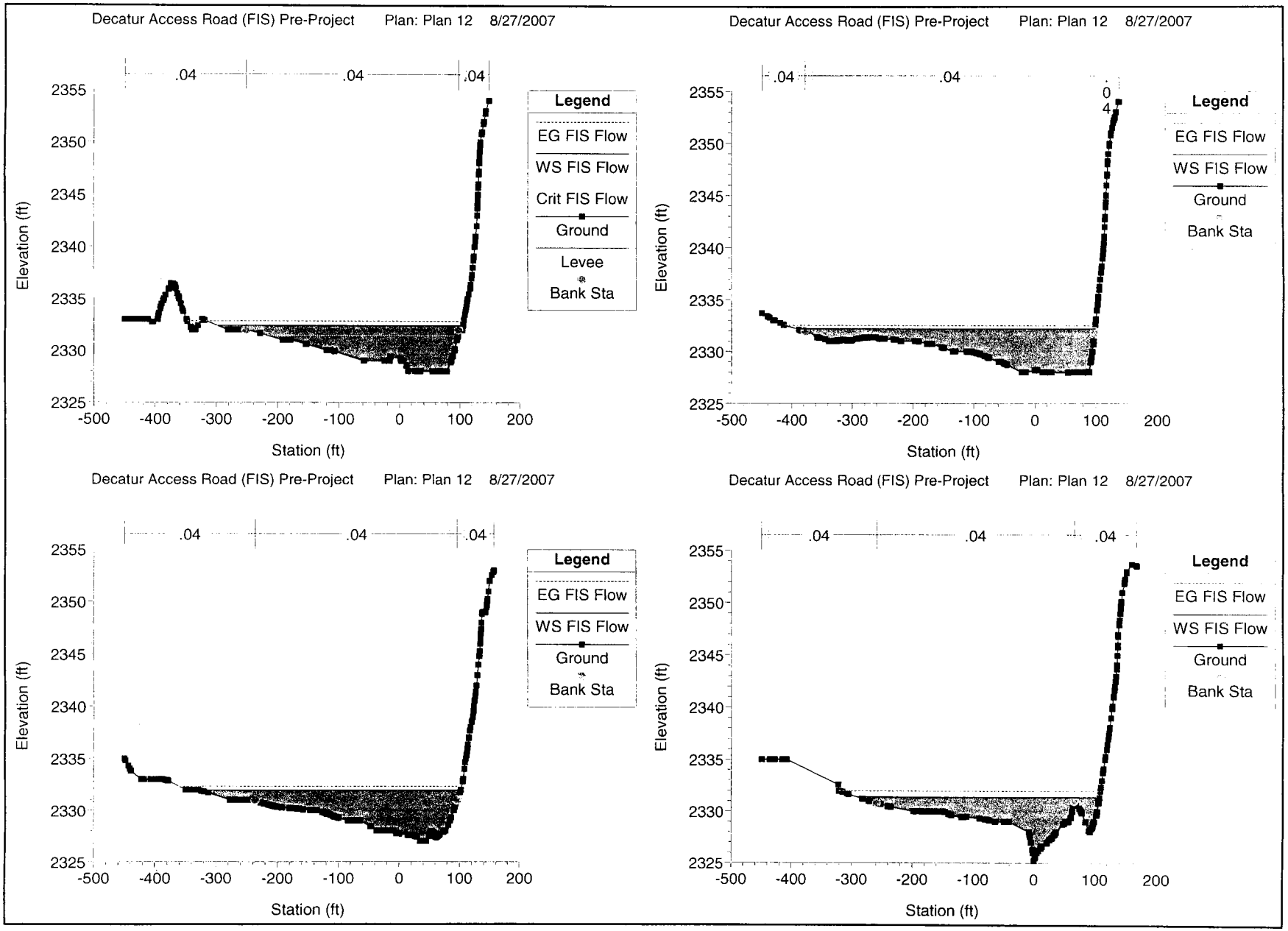

Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
EG FIS Flow
WS FIS Flow
Ground
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Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
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WS FIS Flow
Ground
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Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

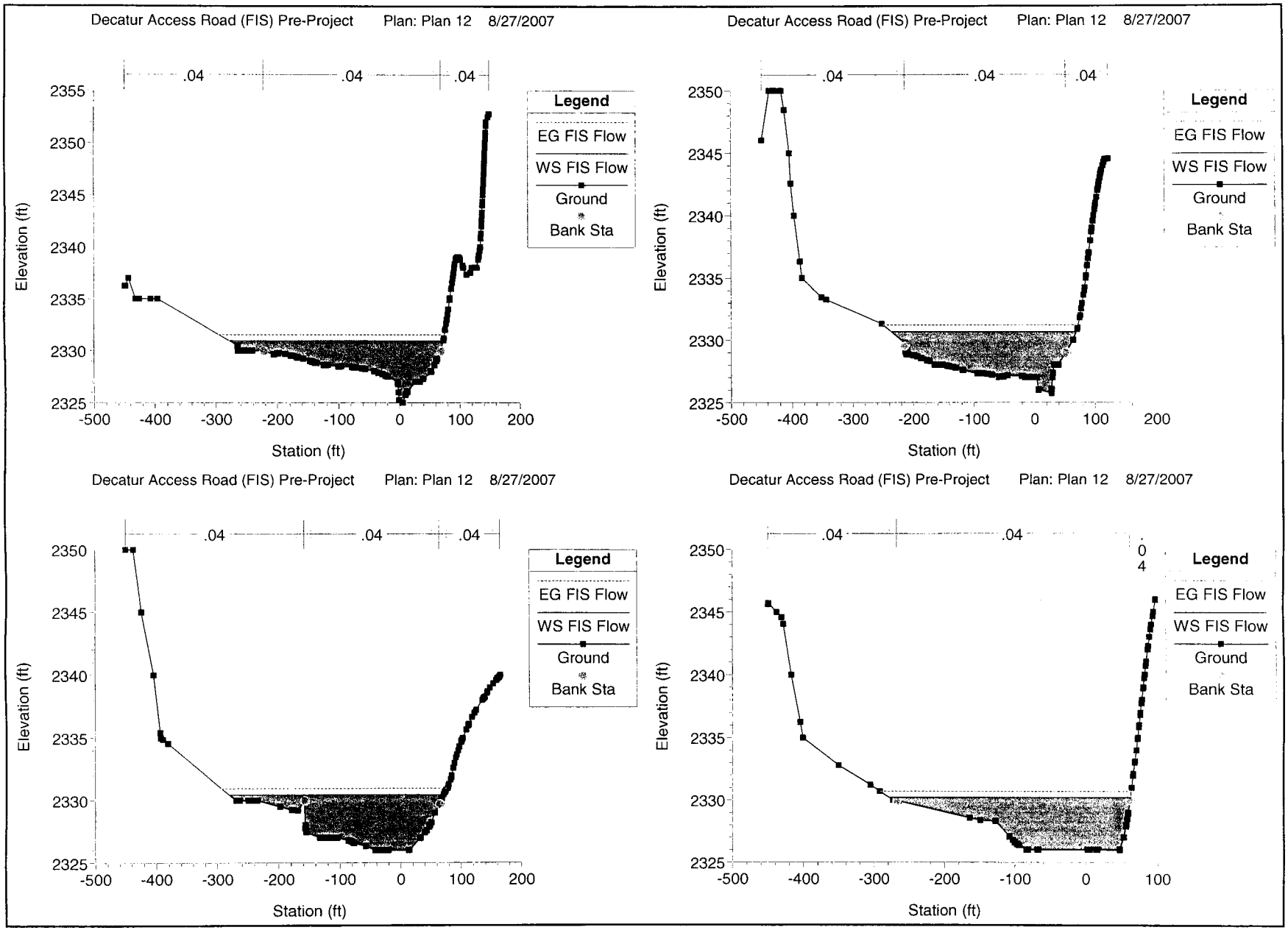

Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2365
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2335
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Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
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Ground
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Elevation (ft)
Station (ft)
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Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-400
-200
0
200
400
600
Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
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Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-600
-400
-200
0
200
400
600

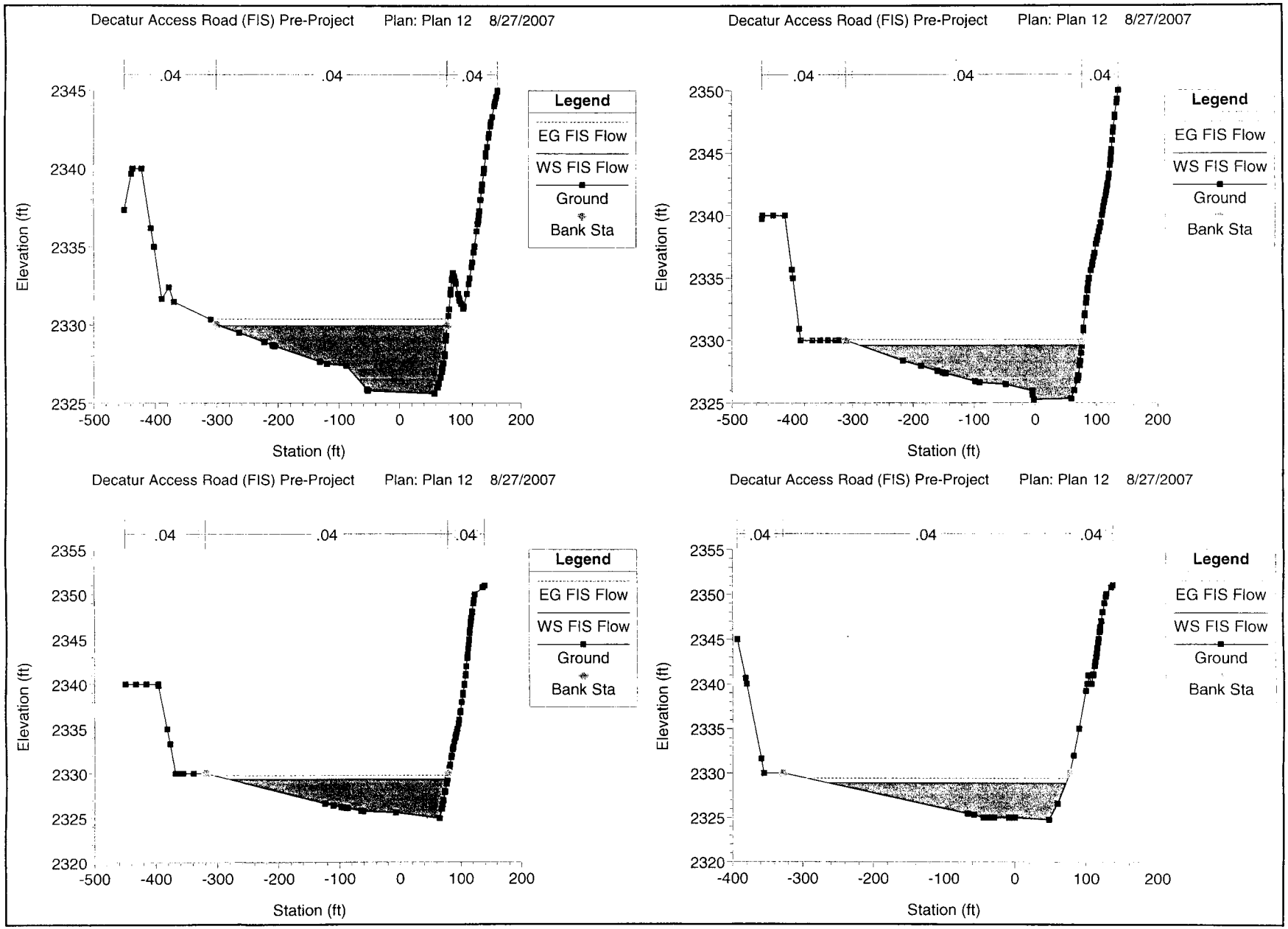

Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
Elevation (ft)
Station (ft)
.04
.04
0
4
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
2360
2355
2350
2345
2340
2335
2330
-400
-200
0
200
400
600
Decatur Access Road (FIS) Pre-Project Plan: Plan 12 8/27/2007
Elevation (ft)
Station (ft)
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.04
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4
Legend
EG FIS Flow
WS FIS Flow
Ground
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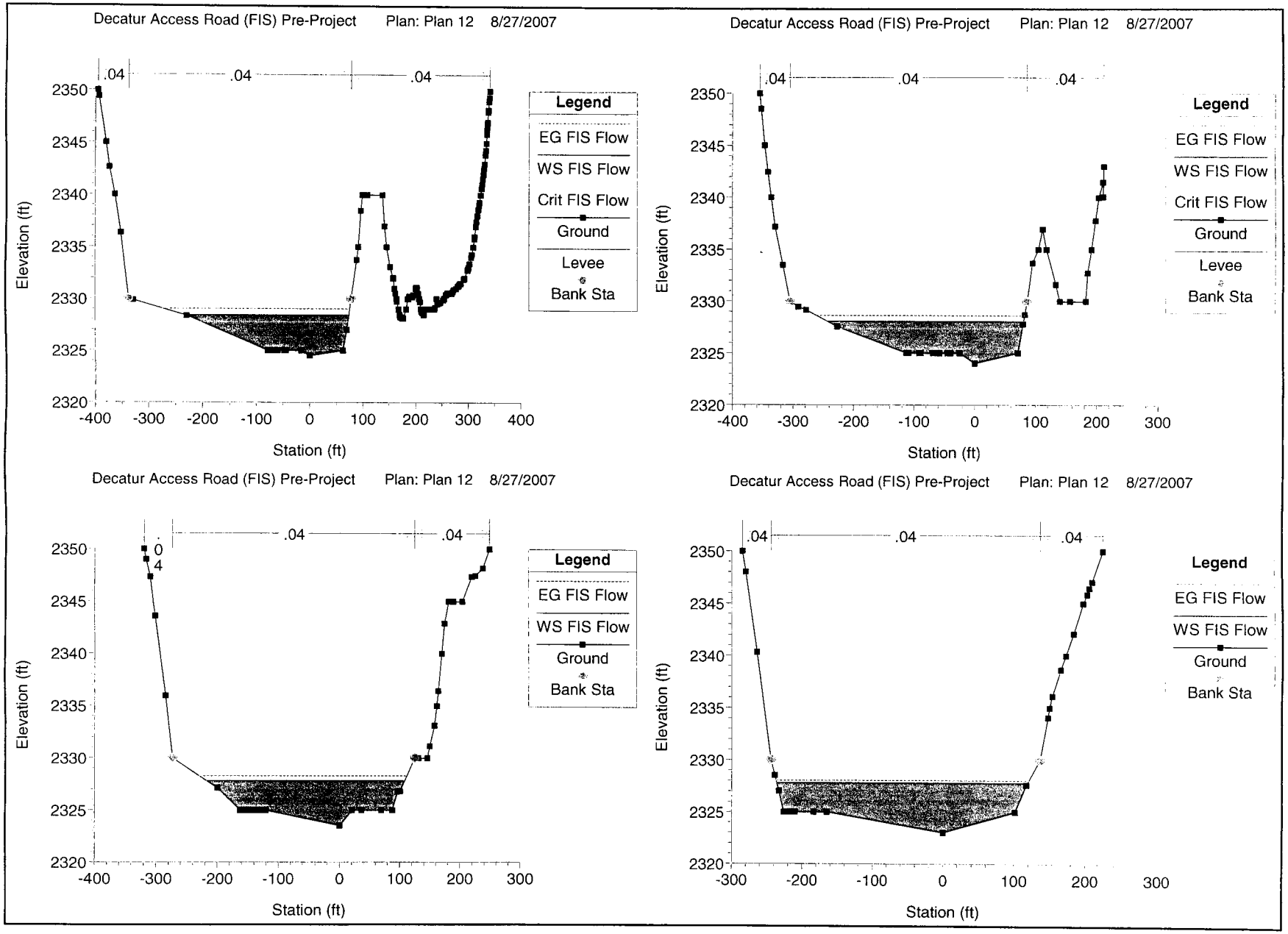

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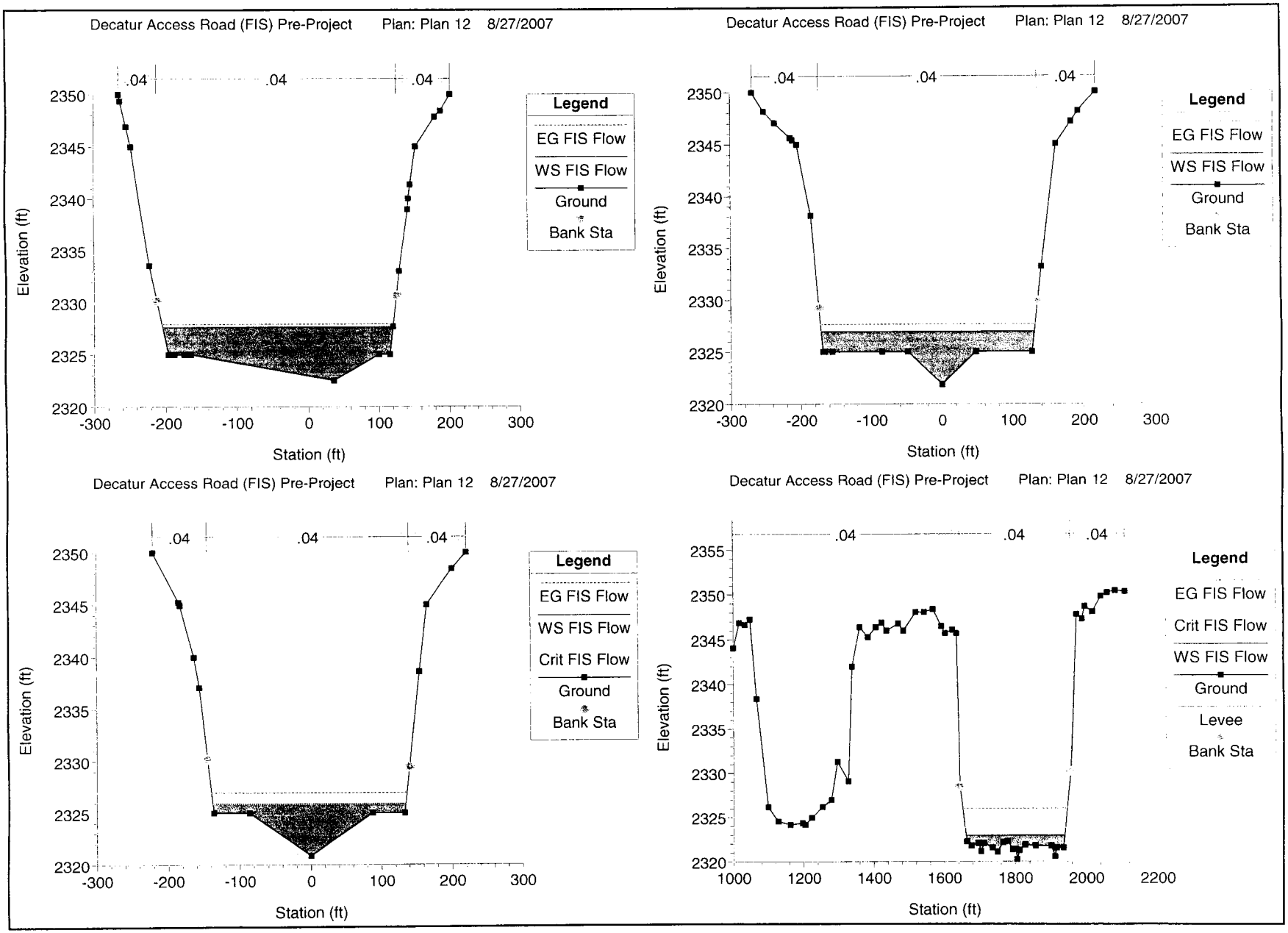

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HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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PROJECT DATA
Project Title: Decatur Access Road (FIS) Pre-Project
Project File : DAR_pre.prj
Run Date and Time: 8/27/2007 8:50:19 AM

Project in English units

Project Description:

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PLAN DATA

Plan Title: Plan 12
Plan File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_pre.p12

Geometry Title: Existing Conditions (Final)
Geometry File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_pre.g01

Flow Title : FIS Flow
Flow File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_pre.f02

Plan Summary Information:

Number of:	Cross Sections	= 40	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 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: Mixed Flow

****

FLOW DATA

Flow Title: FIS Flow
Flow File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_pre.f02

Flow Data (cfs)

River	Reach	RS	FIS Flow
Las Vegas Wash	Upper	-1000	5019

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Las Vegas Wash	Upper	FIS Flow	Normal S = 0.013	Normal S = 0.013

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GEOMETRY DATA

Geometry Title: Existing Conditions (Final)
Geometry File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAP_pre.g01

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1000

INPUT
Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-318.25	2359.31	-316.32	2359.29	-315.07	2359.28	-311.82	2359.16	-307.93	2359.02
-305.8	2358.89	-304.34	2358.8	-298.76	2358	-297.59	2357.83	-296.33	2357.43
-293.3	2356.47	-292.27	2356	-291.76	2355.77	-287.84	2354	-285.84	2353.08
-282.77	2352	-280.52	2350.92	-278.63	2350	-276.2	2348.83	-274.5	2348
-271.82	2346.72	-270.36	2346	-267.37	2344.57	-266.21	2344	-262.8	2342.37
-262.05	2342	-258.02	2340.08	-257.86	2340	-257.7	2339.92	-253.6	2338
-247.93	2338	-246.08	2338	-232.55	2338	-228.32	2338	-223.57	2338
-219.89	2338	-173.22	2337.42	-165.83	2337.44	-162.85	2337.45	-161.49	2337.45
-159.6	2337.45	-156.02	2337.46	-148.09	2337.45	-145.59	2337.45	-137	2337.45
-130.28	2337.47	-103.3	2337.47	-98.95	2337.48	-87.12	2337.48	-77.68	2337.49
-64.69	2337.49	-61.09	2337.49	-51.74	2337.49	-48.32	2337.5	-47.52	2337.5
-46.16	2337.5	-11.14	2337.51	-5.99	2337.51	-3.23	2337.52	0	2337.47
48.36	2336.7	55.58	2336.71	58.37	2336.62	63.31	2336.62	66.78	2336.66
68.13	2336.61	76.27	2336.72	79.11	2336.69	83.97	2336.74	85.73	2336.74
91.16	2336.72	96.61	2336.7	101.4	2336.72	110.68	2336.69	112.13	2336.66
122.67	2336.75	131.82	2336.75	135.02	2336.83	137.18	2336.84	138.09	2336.85
140.9	2336.9	145.43	2336.93	147.94	2336.91	155.85	2337.26	168.21	2337.24
176.4	2337.24	178.78	2337.31	198.03	2337.34	224.84	2337.59	234.7	2337.61
251.14	2337.66	251.88	2337.66	261.24	2337.69	261.56	2337.69	261.92	2337.69
287.12	2337.74	287.3	2337.74	302	2337.82	316.14	2338	334.72	2338.69
347.47	2340	349.34	2340.88	351.73	2342	353.72	2342.93	355.99	2344
358.12	2345	360.26	2346	362.56	2347.08	364.52	2348	367.04	2349.18
368.79	2350	371.61	2351.32	373.05	2352	376.3	2353.53	377.31	2354
381.22	2355.83	381.58	2356	381.87	2356.14	383.18	2356.76	385.83	2358
386.52	2358.33	390.04	2360	392.73	2361.17	394.44	2362	400.47	2363.45
400.71	2363.49	402.36	2363.56	405.9	2363.84	406.67	2363.89	409.61	2364
416.33	2364.29	417.61	2364.4	419.35	2364.62	425.4	2365.04	426.54	2365.31
426.79	2365.36	428.93	2366	430.46	2366.13	431.52	2366.19	434.61	2366.48
439.1	2366.97	441.59	2366.97	450	2367.2				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-318.25	.04	-266.21	.04	355.99	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-266.21 355.99 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2339.39	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.57	Wt. n-Val.		0.040		
W.S. Elev (ft)	2338.83	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)	2338.71	Flow Area (sq ft)		831.88		
E.G. Slope (ft/ft)	0.016746	Area (sq ft)		831.88		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	591.40	Top Width (ft)		591.40		
Vel Total (ft/s)	6.03	Avg. Vel. (ft/s)		6.03		
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)		1.41		
Conv. Total (cfs)	38785.0	Conv. (cfs)		38785.0		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		591.64		
Min Ch El (ft)	2336.61	Shear (lb/sq ft)		1.47		
Alpha	1.00	Stream Power (lb/ft s)		8.87		
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	0.32	44.39	0.12	
C & E Loss (ft)	0.05	Cum SA (acres)	0.57	19.27	0.10	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1050

INPUT
Description:
Station Elevation Data num= 135

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-404.47	2358.32	-404.2	2358.32	-396.75	2358.17	-395.94	2358.19	-388.24	2358
-384.09	2357.78	-382.37	2357.68	-378.54	2357.27	-376.64	2357.1	-374.52	2356.84
-366.75	2356	-364.91	2355.83	-362.03	2355.69	-357.52	2355.58	-354.83	2355.54
-352.91	2355.45	-351.73	2355.4	-348.95	2355.18	-345.58	2354.92	-343.23	2354.68
-342.4	2354.6	-337.47	2354	-334.35	2354	-333.98	2354	-322.64	2354
-305.2	2354	-304.67	2354	-290.98	2352.33	-286.49	2352	-284.68	2351.22
-281.88	2350	-279.68	2349.05	-277.27	2348	-274.58	2346.84	-272.66	2346
-269.05	2344.44	-268.03	2344	-265.31	2342.82	-263.42	2342	-261.18	2341.03
-258.8	2340	-258.43	2339.84	-254.16	2338	-243.83	2337.67	-235.21	2337.4
-233.16	2337.4	-179.75	2336.74	-175.9	2336.75	-169.25	2336.77	-166.21	2336.78
-165.2	2336.78	-157.24	2336.8	-152.91	2336.79	-147.44	2336.81	-142.67	2336.8
-128.11	2336.85	-112.54	2336.85	-103.13	2336.86	-96.19	2336.87	-75.68	2336.88
-67.97	2336.88	-60.11	2336.89	-54.54	2336.89	-47.02	2336.89	-45.28	2336.89
-42.28	2336.89	-21.4	2336.9	-9.82	2336.91	-3.59	2336.91	0	2336.86
54.26	2336	71.86	2336	74.28	2336	76.1	2336	76.38	2336
81.39	2336	83.52	2336	85.1	2336	85.48	2336	85.65	2336
86.17	2336	93.69	2336	96.82	2336	106.36	2336	135.81	2336
140.02	2336	145.75	2336	146.44	2336	146.9	2336	168.64	2336
173.44	2336	181.13	2336	183.05	2336	237.24	2336.51	240.4	2336.51
245.66	2336.53	248.86	2336.53	251.86	2336.54	253.32	2336.55	255.02	2336.56
263.44	2336.58	264.43	2336.59	269.43	2336.62	281.69	2336.77	338.39	2338
341.01	2338	343.42	2339.07	345.54	2340	348.27	2341.22	350.05	2342
353.19	2343.4	354.56	2344	358.22	2345.64	359.04	2346	359.85	2346.35
363.4	2348	366.72	2349.47	367.85	2350	368.42	2350.27	372.16	2352
376.01	2352.55	387.11	2353.46	393.2	2354	395.62	2354.41	402.18	2356
406.88	2357.17	410.29	2358	417	2359.62	418.48	2360	422.92	2361.13
426.36	2362	429.82	2362.87	434.23	2364	440.64	2364	450	2364.18

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-404.47	.04	-268.03	.04	354.56	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-268.03	354.56	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2338.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.		0.040	
W.S. Elev (ft)	2338.31	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		984.11	
E.G. Slope (ft/ft)	0.009674	Area (sq ft)		984.11	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	596.61	Top Width (ft)		596.61	
Vel Total (ft/s)	5.10	Avg. Vel. (ft/s)		5.10	
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)		1.65	
Conv. Total (cfs)	51027.4	Conv. (cfs)		51027.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		596.78	
Min Ch El (ft)	2336.00	Shear (lb/sq ft)		1.00	
Alpha	1.00	Stream Power (lb/ft s)		5.08	
Frctn Loss (ft)	0.53	Cum Volume (acre-ft)	0.32	43.35	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	18.59	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1100

INPUT
Description:
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-408.99	2362	-396.28	2361.33	-392.88	2361.12	-383.01	2360.6	-373.44	2360
-372.43	2359.93	-370.06	2359.68	-354.56	2358	-354.25	2358	-353.79	2357.92
-349.4	2357.08	-343.83	2356	-336.6	2354.88	-331.61	2354.13	-330.86	2354
-312.14	2354	-302.96	2354	-301.23	2354	-299.94	2354	-298.35	2353.44
-294.94	2352.36	-293.78	2352	-293.14	2351.75	-288.73	2350	-286.6	2349.16
-283.66	2348	-280.39	2346.72	-278.58	2346	-274.37	2344.35	-273.48	2344

-268.48	2342.04	-268.37	2342	-267.58	2341.69	-263.24	2340	-261.95	2339.5
-258.11	2338	-249.06	2337.47	-241.19	2337	-229.04	2336.71	-226.62	2336.6
-222.28	2336.39	-220.06	2336.29	-198.92	2336.16	-198.57	2336.15	-197.62	2336.12
-197.02	2336.1	-190.56	2336.11	-186.28	2336.06	-185.97	2336.06	-175.65	2336.09
-170.93	2336.1	-170.8	2336.1	-158.46	2336.14	-157.72	2336.13	-149.29	2336.16
-148.34	2336.16	-125.94	2336.23	-121.78	2336.23	-107.3	2336.25	-105.27	2336.25
-73.69	2336.28	-71.25	2336.28	-59.12	2336.28	-57.35	2336.28	-45.73	2336.29
-43.04	2336.29	-38.39	2336.29	-31.65	2336.29	-13.64	2336.3	-3.95	2336.31
0	2336.25	15.58	2336	43.3	2336	48.51	2336	52.91	2336
59.48	2336	72.43	2335.66	79.32	2335.48	90.8	2335.18	135.56	2335.43
142.31	2335.68	149.69	2336	152.32	2336	154.44	2336	160.49	2336
181.24	2336	218.77	2336	221	2336	233.53	2336	237.52	2336
246.39	2336	253.03	2336	262.15	2336	265.54	2336	316.32	2337.11
342.23	2338	346.44	2339.99	346.46	2340	346.78	2340.15	350.7	2342
351.6	2342.43	354.93	2344	357.05	2345	359.16	2346	362.89	2347.76
363.4	2348	364.52	2348.53	367.65	2350	368.14	2350.23	371.9	2352
375.16	2353.04	378.63	2354	382.33	2354	384.05	2354	390.07	2354
398.46	2354	406.14	2355.98	406.24	2356	406.58	2356.09	413.84	2358
418.82	2359.34	421.29	2360	424.89	2360.98	428.57	2362	428.99	2362.12
435.75	2364	443.52	2364	450	2364				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-408.99	.04	-273.48	.04	354.93	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-273.48	354.93	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2338.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.72	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		919.66	
E.G. Slope (ft/ft)	0.011868	Area (sq ft)		919.66	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	587.18	Top Width (ft)		587.18	
Vel Total (ft/s)	5.46	Avg. Vel. (ft/s)		5.46	
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)		1.57	
Conv. Total (cfs)	46071.0	Conv. (cfs)		46071.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		587.26	
Min Ch El (ft)	2335.18	Shear (lb/sq ft)		1.16	
Alpha	1.00	Stream Power (lb/ft s)		6.33	
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	0.32	42.26	0.12
C & E Loss (ft)	0.02	Cum SA (acres)	0.57	17.91	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1150

INPUT
Description:
Station Elevation Data num= 132

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-389.28	2360	-384.2	2358.52	-383.71	2358.39	-381.25	2358	-369.8	2356.31
-368.9	2356.17	-367.79	2356	-358.19	2354.69	-353.07	2354	-350.49	2353.66
-346.45	2353.13	-338.43	2352	-325.31	2352	-318.85	2352	-313.88	2352
-312.89	2352	-311.17	2352	-310.16	2352	-309.44	2352.33	-305.72	2354
-305.43	2354	-302.92	2352.78	-301.35	2352	-296.93	2350.07	-296.77	2350
-292.15	2348.17	-291.71	2348	-291.38	2347.87	-286.66	2346	-286.04	2345.75
-281.63	2344	-280.72	2343.63	-276.6	2342	-275.42	2341.52	-271.59	2340
-270.13	2339.41	-266.58	2338	-264.18	2337.36	-259.44	2336	-256.66	2336
-253.09	2336	-244.72	2336	-243.47	2336	-231.05	2336	-224.81	2336
-218.4	2336	-162.84	2335.52	-155.75	2335.54	-150.28	2335.54	-130.59	2335.6
-128.65	2335.6	-115.34	2335.62	-113.2	2335.63	-111.23	2335.64	-80.98	2335.66
-76.94	2335.68	-69.01	2335.68	-57.17	2335.69	-47.04	2335.7	-45.35	2335.69
-36.78	2335.69	-18.94	2335.7	-15.27	2335.7	-5.53	2335.71	0	2335.72
9.48	2335.73	16.23	2335.74	17.98	2335.74	32.16	2335.76	35.51	2335.76
56.79	2335.56	57.47	2335.55	64.52	2335.51	118.6	2334.5	119.22	2334.5
120.19	2334.5	120.97	2334.5	171.48	2335.34	173.34	2335.36	174.61	2335.38
176.67	2335.42	184.67	2335.39	221.31	2335.43	244.03	2335.54	246.2	2335.57
261.11	2335.72	263.01	2335.73	294.34	2336	310.86	2336	312.13	2336
315.86	2336	316.59	2336	319.14	2336	328.99	2336	330.29	2336
330.95	2336	334.14	2336	334.31	2336.01	349.97	2338	353.82	2339.82
354.19	2340	356.29	2341	358.4	2342	359.91	2342.72	362.61	2344

```
  365.64 2345.45  366.78    2346  367.19  2346.2  370.89    2348  372.63 2348.85
  374.99    2350  377.77 2351.34  379.17    2352  382.31  2353.3  384.06    2354
  384.39    2354  385.13    2354  400.25    2354  402.43 2353.89  402.91    2354
  409.29  2355.9  409.61    2356  416.23 2357.97  416.32    2358  420.14 2359.14
  423.04    2360  423.18 2360.04  429.75    2362  430.24 2362.14  436.47    2364
   440.4    2364     450    2364

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
 -389.28     .04 -281.63     .04  362.61     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -281.63  362.61               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*************************************************************************************************
* E.G. Elev (ft)         * 2337.62  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.40  * Wt. n-Val.            *          *    0.040 *          *
* W.S. Elev (ft)         * 2337.22  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  984.93  *          *
* E.G. Slope (ft/ft)     *0.009885  * Area (sq ft)          *          *  984.93  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)            *          * 5019.00  *          *
* Top Width (ft)         *  607.47  * Top Width (ft)        *          *  607.47  *          *
* Vel Total (ft/s)       *    5.10  * Avg. Vel. (ft/s)      *          *    5.10  *          *
* Max Chl Dpth (ft)      *    2.72  * Hydr. Depth (ft)      *          *    1.62  *          *
* Conv. Total (cfs)      * 50480.9  * Conv. (cfs)           *          * 50480.9  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *          *  607.74  *          *
* Min Ch El (ft)         * 2334.50  * Shear (lb/sq ft)      *          *    1.00  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    5.10  *          *
* Frctn Loss (ft)        *    0.45  * Cum Volume (acre-ft)  *    0.32  *   41.16  *    0.12  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *    0.57  *   17.22  *    0.10  *
*************************************************************************************************

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -1200

INPUT
Description:
Station Elevation Data    num=     155
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 -423.21    2358 -421.04 2356.89 -419.21    2356 -415.96 2354.39 -415.12    2354
 -413.66  2353.4 -413.01 2353.23 -409.95 2352.68 -407.08 2352.43 -406.61 2352.56
 -405.38 2352.46 -403.01 2352.91 -400.77 2353.25 -399.54 2353.69 -399.29 2353.77
 -398.61 2353.98  -398.6 2353.99 -397.65    2354 -394.26 2354.03 -394.19 2354.03
 -393.03    2354 -389.38 2353.91 -388.95  2353.9 -379.54 2353.61 -378.33 2353.53
 -377.67 2353.44 -374.54 2353.31 -372.97 2352.84 -372.88 2352.82 -371.27  2352.2
 -371.23 2352.19 -371.21 2352.18 -371.18 2352.17 -370.81    2352 -368.94 2351.15
  -366.4    2350 -362.77 2348.79 -361.58 2348.27 -360.91    2348 -359.74    2348
 -357.94    2348 -353.42 2347.37 -351.22 2347.37 -350.63 2347.38 -348.76 2347.46
 -337.36 2347.77 -336.86 2347.79 -333.45 2347.89  -331.2 2347.98 -331.13 2347.98
 -330.97    2348 -324.73 2348.56 -308.55    2350 -308.29  2350.1 -308.05 2350.18
 -302.32 2351.17 -300.11    2350  -297.4 2348.82 -295.65    2348 -291.09 2346.13
 -290.81    2346  -290.4 2345.83 -286.15    2344 -283.55  2342.9 -281.45    2342
 -277.33 2340.26 -276.72    2340 -274.21 2338.94 -271.98    2338 -269.29 2336.86
 -267.18    2336 -263.53 2335.93 -247.65 2335.61 -168.04 2334.93 -163.73 2334.94
 -150.99 2334.93 -139.15 2334.96 -134.17 2334.97  -126.1 2334.98 -120.31 2334.99
 -114.97 2335.02   -96.2 2335.03  -84.66 2335.08  -62.06 2335.09  -54.37  2335.1
  -47.79  2335.1  -42.77  2335.1  -37.23 2335.09  -25.69  2335.1  -14.74 2335.11
   -8.39 2335.11       0 2335.13    1.41 2335.13    5.81 2335.14   11.65 2335.15
   20.99 2335.16   32.61 2335.18  106.37 2334.48  108.73 2334.43  110.71 2334.42
  125.86    2334  126.04    2334  126.31    2334  126.53    2334  140.68 2334.38
  145.26 2334.44  148.38 2334.49  153.43 2334.58  156.71 2334.57   171.7 2334.58
  180.99 2334.63  187.51 2334.71  232.27 2335.15     238 2335.19  332.04    2336
  337.95    2336   343.7    2336  344.54    2336  348.88    2336  352.24    2336
  353.46 2336.63  356.07    2338  357.37 2338.67   359.9    2340   361.3 2340.73
  363.73    2342  365.27  2342.8  367.56    2344  369.32 2344.91   371.4    2346
  373.09 2346.89  375.29    2348  377.55 2349.15  379.13    2350   382.9 2351.88
  383.12    2352  384.81    2352  387.52    2352  389.56    2352  400.16    2352
  402.44 2352.72  406.48    2354  409.79 2355.05  412.77    2356  416.94 2357.33
  419.05    2358   420.5 2358.46  425.32    2360  425.97 2360.21  431.46    2362
  434.94 2363.05  438.71    2364  440.11    2364  449.24    2364     450 2363.74

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
```

```
 -423.21     .04 -281.45     .04  363.73     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -281.45  363.73               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #FIS Flow
```

E.G. Elev (ft)	2337.16	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.35	Wt. n-Val.		0.040		
W.S. Elev (ft)	2336.81	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		1055.48		
E.G. Slope (ft/ft)	0.008119	Area (sq ft)		1055.48		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	622.95	Top Width (ft)		622.95		
Vel Total (ft/s)	4.76	Avg. Vel. (ft/s)		4.76		
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)		1.69		
Conv. Total (cfs)	55701.8	Conv. (cfs)		55701.8		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		623.33		
Min Ch El (ft)	2334.00	Shear (lb/sq ft)		0.86		
Alpha	1.00	Stream Power (lb/ft s)		4.08		
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	0.32	39.99	0.12	
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	16.52	0.10	

```
CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -1250

INPUT
Description:
Station Elevation Data    num=     124
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -385.9 2359.88  -382.6    2358 -381.53 2357.38 -379.05    2356 -376.95 2354.77
 -375.57    2354  -373.9    2353 -372.09    2352 -368.96 2350.18 -368.64    2350
 -365.38  2348.1  -365.2    2348 -361.81 2346.02 -361.78    2346 -361.02 2345.55
  -358.3    2344  -357.7 2343.91 -356.85 2343.82 -344.81 2342.38  -338.4 2342.02
 -338.35 2342.01 -338.25 2342.01 -338.22 2342.01 -337.83    2342 -334.86    2342
 -334.34    2342 -334.29    2342  -334.2    2342 -321.65 2342.32 -320.83 2342.34
 -315.65 2342.37 -313.89 2342.38 -302.83  2342.3 -301.39  2342.3 -294.33 2342.23
 -293.84 2342.22 -290.59    2342 -290.38 2341.99 -282.58    2340 -282.55 2339.99
 -277.07    2338 -274.91 2337.19 -271.65    2336 -264.27 2335.83 -232.66  2335.1
 -222.89    2335 -214.79 2334.84 -207.13 2334.68  -201.5 2334.57 -173.24 2334.33
 -171.71 2334.33 -151.71 2334.31 -147.71 2334.32 -139.68 2334.34 -136.87 2334.34
 -127.42 2334.36 -118.71 2334.39 -111.42  2334.4  -92.39 2334.48   -55.1  2334.5
  -51.56  2334.5  -48.53 2334.51   -40.2  2334.5  -37.68  2334.5  -32.44  2334.5
  -14.21 2334.52  -11.24 2334.52   -6.67 2334.53   -4.61 2334.53       0 2334.54
    5.33 2334.55    9.82 2334.56   29.71  2334.6   92.47    2334   97.28    2334
  103.25    2334  112.74    2334  114.13    2334  122.24    2334  129.52    2334
   135.7    2334  141.17    2334  143.95    2334  203.44 2334.58  212.98 2334.64
  306.87 2335.46  312.45 2335.49  334.08 2335.77  352.45    2336  355.23 2337.46
  356.22    2338  359.02 2339.47  359.99    2340  361.41 2340.78  363.82    2342
  365.23 2342.74  367.58    2344  369.92 2345.27  371.28    2346  373.81 2347.33
  375.07    2348  377.65 2349.39  378.82    2350  380.93    2350  381.05    2350
  384.03 2349.07  384.34 2349.08  394.21    2350  396.35    2350  399.74 2351.57
  400.66    2352     401 2352.11  407.03    2354  410.33 2355.04  413.42    2356
  418.78 2357.69  419.76    2358  425.08 2359.68  426.08    2360  427.37 2360.41
  432.41    2362  434.47    2362  448.26    2362     450    2362

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  -385.9     .04 -290.59     .04  363.82     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -290.59  363.82               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #FIS Flow
```

E.G. Elev (ft)	2336.78	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.30	Wt. n-Val.		0.040		
W.S. Elev (ft)	2336.48	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		1136.03		
E.G. Slope (ft/ft)	0.006398	Area (sq ft)		1136.03		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	626.33	Top Width (ft)		626.33		
Vel Total (ft/s)	4.42	Avg. Vel. (ft/s)		4.42		
Max Chl Dpth (ft)	2.48	Hydr. Depth (ft)		1.81		

* Conv. Total (cfs)	* 62749.4	* Conv. (cfs)	*	* 62749.4	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 626.56	*	*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*	* 0.72	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.20	*	*
* Frctn Loss (ft)	* 0.29	* Cum Volume (acre-ft)	* 0.32	* 38.74	* 0.12	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.57	* 15.80	* 0.10	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1300

INPUT
Description:
Station Elevation Data num= 126

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-386.9	2360	-386.53	2359.85	-381.96	2358	-380.27	2357.3	-377.73	2356
-374.1	2354.32	-373.47	2354	-370.54	2352.47	-369.55	2352	-366.11	2350.34
-365.37	2350	-363.55	2349.1	-361.3	2348	-360.7	2347.71	-357.8	2346
-356.82	2345.43	-354.38	2344	-351.75	2342.45	-350.93	2342	-348.79	2341.53
-341.83	2340	-334.47	2338.85	-328.55	2338	-326.57	2337.8	-318.25	2337.05
-315.69	2336.89	-313.37	2336.77	-309.62	2336.63	-300.34	2336.27	-298.93	2336.23
-297.55	2336.22	-291.72	2336	-284.67	2335.84	-280.98	2335.68	-277.09	2335.53
-267.34	2335.01	-264.32	2334.81	-257.54	2334.73	-253.49	2334.51	-235.86	2334.38
-233.21	2334.28	-208.98	2334	-206.56	2334	-199.57	2334	-131.68	2334
-119.76	2333.79	-119.3	2333.79	-98.87	2333.88	-88	2333.92	-86.18	2333.91
-73.14	2333.95	-72.77	2333.95	-66.65	2333.94	-49.08	2333.89	-38.62	2333.88
-38.16	2333.88	-14.91	2333.91	-1.59	2333.95	-.72	2333.95	0	2333.95
18.55	2334	26.81	2334.02	28.71	2334	42.11	2334	58.75	2334
59.32	2334	65.34	2334	65.87	2334	68.05	2334	83.2	2334
87.2	2334	96.94	2334	127.41	2334	128.64	2334	129.12	2334
139.13	2334	172.17	2334	172.44	2334	172.77	2334	174.61	2334.02
187.96	2334.1	202.42	2334.22	220.62	2334.35	225.72	2334.42	231.92	2334.5
238.72	2334.58	272.48	2335	281.41	2335.11	319.03	2335.58	351.05	2336
351.89	2336	354.6	2337.32	356	2338	359.47	2339.68	360.11	2340
360.99	2340.41	364.12	2342	366.01	2342.93	368.16	2344	370.5	2345.16
372.29	2346	374.88	2347.28	376.33	2348	378.99	2348	381.07	2348
387.55	2348	393.93	2348	396.49	2349.64	397.09	2350	398.04	2350.34
402.59	2352	405.88	2352.92	409.85	2354	416.41	2355.86	416.93	2356
421.18	2357	425.14	2358	427.11	2358	430.56	2358.33	432.55	2358.3
433.49	2358.36	436.57	2358.35	438.27	2358.25	438.4	2358.25	440.1	2358
444.63	2357.35								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-386.9	.04	-350.93	.04	364.12	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-350.93	364.12	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	* 2336.48	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.26	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2336.21	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1215.42	*	*
* E.G. Slope (ft/ft)	*0.005362	* Area (sq ft)	*	* 1215.42	*	*
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	*	*
* Top Width (ft)	* 649.71	* Top Width (ft)	*	* 649.71	*	*
* Vel Total (ft/s)	* 4.13	* Avg. Vel. (ft/s)	*	* 4.13	*	*
* Max Chl Dpth (ft)	* 2.42	* Hydr. Depth (ft)	*	* 1.87	*	*
* Conv. Total (cfs)	* 68540.8	* Conv. (cfs)	*	* 68540.8	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 649.82	*	*
* Min Ch El (ft)	* 2333.79	* Shear (lb/sq ft)	*	* 0.63	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.59	*	*
* Frctn Loss (ft)	* 0.23	* Cum Volume (acre-ft)	* 0.32	* 37.39	* 0.12	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.57	* 15.07	* 0.10	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1350

INPUT

Description:
Station Elevation Data num= 116

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-425.74	2359.65	-418.22	2358	-417.26	2359	-412.53	2356.9	-407.87	2356
-407.63	2355.96	-403.4	2355.33	-396.38	2354.29	-395.84	2354.22	-395.12	2354.13
-394.07	2354	-389.81	2353.47	-388.56	2353.3	-386.77	2353.03	-385.16	2352.79
-384.34	2352.65	-384.04	2352.6	-381.9	2352	-377.14	2350.7	-374.5	2350
-373.12	2349.68	-366.77	2348	-364.86	2347.34	-360.94	2346	-360.08	2345.71
-355.08	2344	-352.03	2342.97	-349.19	2342	-344.04	2340.78	-341.04	2340
-337.39	2339.29	-329.98	2338	-325.5	2337.24	-318.34	2336	-283.7	2334.75
-261.06	2334	-258.44	2334	-257.79	2334	-246.47	2334	-246.31	2334
-213.69	2334	-212.44	2334	-209.98	2334	-160.72	2334	-116.14	2333.22
-114.39	2333.21	-100.53	2333.27	-93.16	2333.3	-77.45	2333.22	-69.09	2333.25
-63.13	2333.21	-59.34	2333.2	-48.46	2333.17	-41.98	2333.16	-38.81	2333.17
-24.34	2333.19	-16.04	2333.21	-3.28	2333.27	0	2333.28	14.79	2333.31
17.51	2333.32	22.97	2333.33	31.13	2333.35	35.69	2333.37	66.3	2333.45
188	2334	198.74	2334	200.86	2334	206.72	2334	209.19	2334
291.45	2335.12	299.46	2335.26	311.34	2335.42	336.72	2335.87	344.2	2336
344.44	2336	347.89	2336.75	354.2	2338	356.46	2339.15	358.17	2340
359.41	2340.63	362.1	2342	363.74	2342.82	366.1	2344	368.42	2345.16
370.07	2346	372.49	2347.21	374.05	2348	377.72	2348	379.4	2348
386.52	2348	387.66	2348	388.79	2348	390.62	2348	391.79	2348.34
392.21	2348.44	399.39	2350	400.62	2350.22	406.88	2350.54	412.48	2350.3
412.74	2350.29	413.8	2350.28	415.29	2350.22	415.76	2350.22	415.9	2350.22
416.2	2350.21	428.67	2350.49	431.58	2350.57	434.52	2350.71	436.13	2350.78
436.52	2351.3	438.39	2350.81	443.03	2351.73	444.59	2351.72	446.31	2352
450	2352.84								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-425.74	.04	-341.04	.04	358.17	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-341.04	358.17	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.01	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1333.62	
E.G. Slope (ft/ft)	0.004042	Area (sq ft)		1333.62	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	662.92	Top Width (ft)		662.92	
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)		3.76	
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)		2.01	
Conv. Total (cfs)	78944.0	Conv. (cfs)		78944.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		662.98	
Min Ch El (ft)	2333.16	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		1.91	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	0.32	35.92	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	14.31	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1400

INPUT
Description:
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-392.78	2358	-390.87	2357.07	-388.84	2356	-386.6	2355.01	-383.82	2354
-382.6	2353.54	-378	2352	-375.8	2350.62	-375.04	2350	-372.37	2348.21
-372.07	2348	-371.86	2347.86	-369.31	2346	-367.71	2344.9	-366.59	2344.46
-366.23	2344.29	-365.88	2344.2	-364.62	2344	-362.8	2343.67	-361.31	2343.5
-359.61	2343.3	-357.56	2342.93	-354.35	2342.36	-353.89	2342.23	-353.06	2342
-350.85	2341.39	-348.75	2340.81	-346.93	2340.18	-346.32	2340	-341.93	2338.57
-339.93	2338	-331.93	2336.52	-328.33	2336	-322.4	2335.79	-309.79	2335.36
-303.96	2335.16	-288.87	2334.66	-276.55	2334.23	-270.11	2334	-259.71	2334
-253.18	2334	-250.42	2334	-245.03	2334	-240.06	2334	-214.87	2334
-212.22	2334	-211.15	2334	-189.76	2334	-112.51	2332.65	-109.48	2332.64
-102.19	2332.67	-98.31	2332.69	-68.72	2332.54	-65.03	2332.55	-53.5	2332.47
-52.04	2332.46	-47.84	2332.45	-45.34	2332.45	-39.46	2332.46	-33.76	2332.47
-30.5	2332.48	-5.84	2332.58	0	2332.6	2.48	2332.6	8.01	2332.62

```
   19.11 2332.65   23.06 2332.65   32.48 2332.69   47.92 2332.73  230.83    2334
  232.01    2334  257.55 2334.61  277.55 2335.03  315.63 2335.81  318.66 2335.88
  324.92    2336   337.6 2337.03  347.55    2338  349.48 2338.66   355.6 2339.85
  356.29    2340  358.39 2340.86  364.38    2342  366.69 2342.76  370.19 2343.52
  373.33    2344  374.25 2344.17  374.49 2344.14  379.11 2344.24  389.52  2344.4
  391.94 2344.53  395.42 2344.64  406.96    2346  413.61 2347.18  418.91    2348
  424.09 2348.77  431.81    2350  440.36 2351.27  444.63 2351.91  445.41    2352
  447.26  2352.3     450 2352.79

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
 -392.78     .04 -346.32     .04  356.29     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -346.32  356.29               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************************
* E.G. Elev (ft)         * 2336.05  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.18  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (ft)         * 2335.87  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1463.56  *          *
* E.G. Slope (ft/ft)     *0.002847  * Area (sq ft)          *          * 1463.56  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  642.99  * Top Width (ft)       *          *  642.99  *          *
* Vel Total (ft/s)       *    3.43  * Avg. Vel. (ft/s)     *          *    3.43  *          *
* Max Chl Dpth (ft)      *    3.42  * Hydr. Depth (ft)     *          *    2.28  *          *
* Conv. Total (cfs)      * 94070.8  * Conv. (cfs)          *          * 94070.8  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  643.06  *          *
* Min Ch El (ft)         * 2332.45  * Shear (lb/sq ft)     *          *    0.40  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    1.39  *          *
* Frctn Loss (ft)        *    0.11  * Cum Volume (acre-ft)  *    0.32  *   34.32  *    0.12  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.57  *   13.57  *    0.10  *
*****************************************************************************************************

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper               RS: -1450

INPUT
Description:
Station Elevation Data    num=     140
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
 -428.91    2359 -424.92 2358.36 -423.22 2358.09 -422.59    2358 -422.54 2357.98
 -420.39    2357 -420.38    2357 -420.34 2356.98 -418.24 2356.04 -418.15    2356
  -416.3 2355.17 -415.88    2355 -415.49 2354.79 -414.08    2354 -413.33 2353.59
  -412.3    2353 -411.31 2352.43 -410.47    2352 -410.02 2351.75 -409.54 2351.52
  -409.2 2351.36 -408.23    2351 -407.87 2350.73 -406.94    2350  -406.7 2349.47
 -406.51    2349 -406.32 2348.59 -406.09    2348 -405.77 2347.39 -405.62    2347
 -405.35 2346.42  -405.2    2346 -404.92 2345.42 -404.79    2345 -403.31 2344.34
  -402.6    2344 -400.25 2343.36 -400.01 2343.32 -399.34 2343.24 -398.69    2343
 -398.04 2342.66 -396.19    2342 -393.16 2341.17 -392.36    2341 -392.01 2340.92
  -390.1 2340.52 -389.93  2340.5 -389.16 2340.29 -388.19 2340.09 -387.92    2340
 -383.67 2339.17 -383.49 2339.16 -382.43 2339.07 -381.93 2339.02  -381.8    2339
 -377.94 2338.65  -374.6    2338 -373.38  2337.9 -373.04 2337.88 -372.87 2337.74
 -372.03  2337.7 -332.12    2336 -315.04 2335.39 -313.03 2335.32 -308.18 2335.14
 -307.07 2335.13 -260.93    2334 -249.87    2334  -246.5    2334  -228.1    2334
 -222.39    2334 -216.53    2334 -214.96    2334 -211.87    2334 -209.83    2334
 -161.23 2333.04 -148.88 2332.78 -108.89 2332.08 -104.57 2332.06 -103.85 2332.07
 -103.46 2332.07  -89.61    2332  -81.02    2332  -80.37    2332  -80.14    2332
   25.97    2332   29.27 2332.01   29.54 2332.01  272.51    2334  275.15 2334.12
  275.48 2334.13   276.1 2334.17  276.33 2334.17  321.35    2336  348.44    2338
  348.94 2338.09  349.34 2338.16  354.56 2339.19  359.18    2340  361.54 2341.56
  362.17    2342  363.23 2342.71  365.42    2344  366.74 2344.56  369.46    2346
  374.04 2347.75  374.58    2348  375.55 2348.33  379.37 2349.01  384.12 2349.62
  385.69  2349.8  389.34    2350   398.4 2350.65  399.67 2350.65  402.03 2350.76
  403.64 2350.54   405.1 2350.52  409.67  2351.5  409.96 2351.59  411.42    2352
  414.38 2353.43  415.61    2354  415.87 2354.15   416.2 2354.35  420.12    2356
  421.41 2356.54   421.6 2356.59   422.8 2356.92  423.73 2356.99  425.28 2357.27
  426.27 2357.26  429.26 2357.42  430.49  2357.5  432.85 2357.97  432.87 2357.97
  432.95    2358  438.61    2358   439.3    2358  440.99    2358     450 2359.11

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
 -428.91     .04 -387.92     .04  359.18     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
       -387.92  359.18               50      50      50             .1        .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*********************************************************************************************
* E.G. Elev (ft)         * 2335.93  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.14  * Wt. n-Val.            *          *    0.040  *          *
* W.S. Elev (ft)         * 2335.79  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1673.43  *          *
* E.G. Slope (ft/ft)     *0.001819  * Area (sq ft)          *          * 1673.43  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  642.38  * Top Width (ft)       *          *  642.38  *          *
* Vel Total (ft/s)       *    3.00  * Avg. Vel. (ft/s)     *          *    3.00  *          *
* Max Chl Dpth (ft)      *    3.79  * Hydr. Depth (ft)     *          *    2.61  *          *
* Conv. Total (cfs)      *117683.3  * Conv. (cfs)          *          *117683.3  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  642.47  *          *
* Min Ch El (ft)         * 2332.00  * Shear (lb/sq ft)     *          *    0.30  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    0.89  *          *
* Frctn Loss (ft)        *    0.12  * Cum Volume (acre-ft)  *    0.32  *   32.52  *    0.12  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.57  *   12.83  *    0.10  *
*********************************************************************************************

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -1500

INPUT
Description:
Station Elevation Data    num=     187
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
    -450     2359  -444.18     2359  -441.73     2359  -437.98     2359  -436.48     2359
  -431.51     2359   -429.9 2358.17  -429.54     2358  -429.02 2357.75  -427.74     2357
  -427.67  2356.98  -426.33     2356  -425.42  2355.29  -425.05     2355  -424.69  2354.72
  -423.77     2354  -423.46 2353.76  -422.48     2353  -422.08 2352.73  -421.87  2352.46
  -421.19     2352  -420.36 2351.47  -419.63     2351  -419.14 2350.65  -418.12     2350
  -417.66  2349.67   -416.6     2349  -415.46  2348.28  -415.08     2348  -414.85  2347.78
  -413.74     2347  -413.46  2346.7  -412.56     2346  -411.83 2345.59  -410.73     2345
  -408.18  2344.03   -408.1     2344  -406.04  2343.18  -405.56     2343  -403.24   2342.1
  -402.99     2342  -400.51 2341.05  -400.39     2341  -400.22 2340.93   -397.8     2340
  -395.73  2339.24  -395.11     2339  -393.33  2338.36   -392.4     2338  -386.93  2337.12
  -386.21     2337  -386.06     2337  -385.87     2337  -385.14     2337  -376.37  2336.64
  -365.99  2336.36  -364.31  2336.31  -356.56     2336  -356.26     2336  -355.86     2336
  -355.72     2336  -353.48     2336  -352.08     2336  -349.52     2336     -347     2336
  -346.87     2336  -346.39     2336  -345.65     2336  -343.52     2336  -343.35     2336
  -343.01     2336   -342.4     2336  -342.24     2336  -333.44     2336  -332.45     2336
  -332.33     2336  -332.16     2336  -328.96     2336   -324.1     2336   -308.9  2335.42
  -308.76  2335.41  -304.04  2335.22  -302.86   2335.2  -297.32     2335  -297.27     2335
  -294.93     2335  -291.94     2335  -286.33     2335  -285.79     2335  -284.05     2335
  -283.25     2335  -281.37     2335  -280.26  2334.98  -276.04  2334.79  -243.69     2334
  -240.62     2334  -230.75     2334  -222.76     2334  -217.32     2334  -213.55     2334
  -212.25     2334  -102.78     2332   -98.76     2332   -97.68     2332   -93.41     2332
   -92.51     2332   -87.4      2332     1.14     2332     3.13     2332     3.54     2332
     4.53     2332    4.88      2332    13.65     2332    14.77     2332    21.89     2332
    23.49     2332   32.66      2332    37.73     2332    47.76     2332   187.43  2334.02
   187.48  2334.02   187.56     2334   200.73  2334.16   200.85  2334.17   201.83   2334.2
   210.12  2334.33   212.71  2334.41   228.17  2334.72   243.41   2335.3   247.37  2335.41
   259.15   2335.9   260.07  2335.92   260.12  2335.93   262.14     2336    265.6  2337.14
   268.31     2338   272.08  2339.59   273.09     2340   275.29  2340.85   277.76  2341.91
   277.98     2342   278.15  2342.08   282.54     2344   283.85  2344.62   285.29  2345.48
   285.97     2346   286.31  2346.32   288.15     2348   288.85  2348.68   290.02     2350
   291.42  2351.31   292.05     2352   293.71  2353.44   295.16     2354   296.93   2354.6
   300.09  2355.14   304.92  2355.85   305.36  2355.92   305.87     2356   311.62   2356.9
    318.7     2358   320.16  2358.02   320.26  2358.03   323.67     2358   326.48     2358
   327.23  2357.86    327.9  2357.82   335.07   2357.3   339.58   2357.7   340.32  2357.76
    341.2     2358   349.51  2358.42   350.37  2358.37   358.39  2358.63   362.43  2358.94
   365.83  2359.22   370.34   2359.5   375.14  2359.93   375.68  2359.97   375.76  2359.97
   375.82  2359.97   376.93  2359.98   376.97  2359.98      381  2359.95      384  2359.97
   384.18  2359.97   385.56     2360

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
    -450     .04   -397.8     .04   273.09     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
       -397.8  273.09               50      50      50             .1        .3
```

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2335.80	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.21	Wt. n-Val.		0.040		
W.S. Elev (ft)	2335.59	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		1352.99		
E.G. Slope (ft/ft)	0.003114	Area (sq ft)		1352.99		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	565.09	Top Width (ft)		565.09		
Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)		3.71		
Max Chl Dpth (ft)	3.59	Hydr. Depth (ft)		2.39		
Conv. Total (cfs)	89944.8	Conv. (cfs)		89944.8		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		565.17		
Min Ch El (ft)	2332.00	Shear (lb/sq ft)		0.47		
Alpha	1.00	Stream Power (lb/ft s)		1.73		
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	0.32	30.78	0.12	
C & E Loss (ft)	0.02	Cum SA (acres)	0.57	12.13	0.10	

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: Las Vegas Wash
REACH: Upper RS: -1550

INPUT
Description:
Station Elevation Data num= 191

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2358.7	-449	2358.09	-448.83	2358	-448.62	2357.9	-447.2	2357
-446.71	2356.7	-446.36	2356.47	-445.84	2356.12	-445.69	2356	-445.64	2355.96
-444.27	2355	-443.94	2354.77	-443.51	2354.55	-442.64	2354	-441.71	2353.41
-441.03	2353	-439.41	2352.05	-439.33	2352	-437.89	2351.12	-437.69	2351
-436.37	2350.19	-436.06	2350	-434.82	2349.24	-434.41	2349	-433.35	2348.35
-432.76	2348	-431.92	2347.56	-430.93	2347	-429.8	2346.4	-429.05	2346
-427.52	2345.19	-427.18	2345	-426.89	2344.85	-426.13	2344.38	-425.35	2344
-423.69	2343.18	-423.35	2343	-422.69	2342.75	-420.55	2342	-417.63	2341.03
-417.54	2341	-417.27	2340.93	-413.64	2340	-413.6	2340	-407.28	2339
-402.4	2338.43	-398.91	2338	-395.07	2337.59	-394.94	2337.58	-394.05	2337.5
-388.96	2337	-378.66	2336.28	-374.29	2336	-371.6	2335.86	-364.17	2335.78
-331.83	2335.24	-330.39	2335.22	-326.62	2335.23	-325.95	2335.24	-325.55	2335.24
-325.48	2335.24	-319.22	2335.17	-311.56	2335	-311.21	2335	-311.07	2335
-309.28	2335	-309.19	2335	-308.59	2335	-305.02	2335	-300.52	2335
-298.51	2335	-297.25	2335	-279.33	2334.73	-279.15	2334.73	-278.57	2334.73
-276.91	2334.71	-254.2	2334.53	-239.98	2334.33	-239.49	2334.33	-237.55	2334.3
-236.29	2334.29	-235.85	2334.28	-222.16	2334.12	-221.26	2334.11	-220.09	2334.1
-218.41	2334.07	-210.15	2334	-208.7	2334	-208.39	2334	-207.72	2334
-206.21	2334	-206.14	2334	-205.23	2334	-201.77	2333.95	-201.64	2333.95
-201.08	2333.94	-200.36	2333.94	-194.8	2333.86	-193.63	2333.85	-193.11	2333.85
-103.66	2332	-103.04	2332	-92.42	2332	-85.83	2332	-69.1	2332
-61.86	2332	-59.03	2332	-55.47	2332	-52.94	2332	-50.74	2332
-45.1	2332	-38.52	2332	-38.12	2332	-12.84	2332	-10.67	2332
-9.8	2332	-5.44	2332	0	2332	.94	2332	3.1	2331.73
4.21	2331.71	5.69	2331.56	14.28	2332	33.71	2332	44.88	2332.16
75.88	2332.65	127.83	2333.46	139.52	2333.64	161.37	2334	173.24	2334.56
200.57	2335.42	211.87	2335.81	218.83	2336	221.96	2337.37	223.55	2338
225.72	2339.01	226.62	2339.38	228.15	2340	229.49	2340.63	231.76	2341.75
232.41	2342	235.03	2343.1	237.15	2344	237.28	2344.06	237.37	2344.09
238.26	2344.3	239.21	2344.25	239.29	2344.27	240	2344	240.69	2343.81
241.21	2343.8	241.39	2343.84	242.05	2344	242.29	2344	242.63	2344
242.76	2344	243	2344.24	243.38	2344.29	243.94	2344.57	245.68	2345
248.59	2345.37	256.75	2345.55	257.24	2345.64	258.1	2345.59	259.06	2345.48
260.36	2345.49	262.28	2345.67	262.96	2345.76	266.56	2346	268.89	2346.32
269.91	2346.51	270.43	2346.64	271.44	2346.84	273.17	2347.51	273.54	2347.64
274.33	2348	274.68	2348.16	277.64	2350	278.26	2350.39	280.28	2352
282.29	2353.58	282.83	2354	283.08	2354.17	285.35	2356	288.15	2356.69
293.26	2357.19	295.46	2357.46	297.09	2357.62	300.11	2357.98	300.23	2357.98
300.38	2358								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-413.64	.04	228.15	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
       -413.64  228.15               50       50       50              .1        .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*********************************************************************************************
* E.G. Elev (ft)         * 2335.57  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.36  * Wt. n-Val.            *          *    0.040 *          *
* W.S. Elev (ft)         * 2335.20  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1035.39  *          *
* E.G. Slope (ft/ft)     *0.006728  * Area (sq ft)          *          * 1035.39  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)            *          * 5019.00  *          *
* Top Width (ft)         *  515.92  * Top Width (ft)        *          *  515.92  *          *
* Vel Total (ft/s)       *    4.85  * Avg. Vel. (ft/s)      *          *    4.85  *          *
* Max Chl Dpth (ft)      *    3.64  * Hydr. Depth (ft)      *          *    2.01  *          *
* Conv. Total (cfs)      * 61186.9  * Conv. (cfs)           *          * 61186.9  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *          *  516.03  *          *
* Min Ch El (ft)         * 2331.56  * Shear (lb/sq ft)      *          *    0.84  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    4.09  *          *
* Frctn Loss (ft)        *    0.31  * Cum Volume (acre-ft)  *    0.32  *   29.41  *    0.12  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.57  *   11.51  *    0.10  *
*********************************************************************************************

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -1600

INPUT
Description:
Station Elevation Data    num=     183
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 -430.03    2354 -427.53 2353.35  -426.2    2353 -425.17 2352.72 -424.59 2352.55
 -422.81    2352 -422.02 2351.57 -421.03    2351 -420.01 2350.43 -419.21    2350
 -417.84 2349.26 -417.38    2349 -416.63  2348.6 -416.04 2348.28 -415.55    2348
 -415.31 2347.89 -413.55    2347 -411.86 2346.17 -411.51    2346    -411 2345.75
 -409.66    2345 -408.67 2344.63 -407.23    2344 -404.63 2343.11 -404.33    2343
 -403.31 2342.69 -402.65 2342.49 -402.08 2342.32 -401.05    2342 -399.63 2341.56
 -397.93    2341 -396.13 2340.43 -394.82    2340  -392.4 2339.23 -391.69    2339
  -389.2 2338.26 -388.32    2338 -383.82 2337.33 -383.76 2337.32 -381.51    2337
 -376.96 2336.44 -373.11    2336 -370.65 2335.84 -368.74 2335.71  -367.2  2335.6
 -364.05 2335.39 -358.39    2335 -354.06    2335    -354    2335 -331.77 2334.55
 -330.27 2334.53 -319.84 2334.46 -319.35 2334.46 -318.12 2334.45 -310.36 2334.42
 -309.32 2334.41 -304.27 2334.36 -290.52 2334.27 -277.04 2334.09 -276.91 2334.09
  -270.3    2334 -265.24    2334 -263.94    2334 -263.48    2334 -263.46    2334
 -262.99    2334 -262.95    2334 -256.96    2334 -255.09    2334 -252.57    2334
 -245.65    2334 -241.14    2334 -239.49    2334 -235.89    2334 -230.12 2333.94
 -228.12 2333.91 -217.09 2333.88 -216.89 2333.87 -216.83 2333.87 -216.52 2333.87
  -214.2 2333.82 -212.92  2333.8 -210.52 2333.72 -210.17 2333.72 -185.05 2333.27
 -184.22 2333.25 -182.44 2333.21 -175.43 2333.07 -170.45    2333 -169.85    2333
 -169.71    2333 -169.29    2333 -164.56 2332.88 -164.46 2332.88 -157.08 2332.67
 -155.27 2332.62 -149.45  2332.5 -145.48 2332.42 -143.66 2332.39 -138.72 2332.38
 -138.53 2332.38 -137.97 2332.38 -127.95 2332.13 -126.75 2332.08 -126.74 2332.08
 -123.38 2332.02 -122.45    2332 -122.12    2332 -121.75    2332 -118.77 2331.93
 -112.03 2331.88 -111.42 2331.84  -110.9 2331.82  -110.6  2331.8 -110.51  2331.8
  -106.5 2331.65 -105.92 2331.62 -105.84 2331.62 -102.45 2331.79  -44.16 2331.47
  -41.46 2331.32  -39.65 2331.23  -37.75 2331.14  -30.89 2330.85   -9.34    2330
   -9.17    2330   -8.95    2330   -7.29    2330    -6.7    2330   -2.48    2330
       0    2330    3.95    2330    7.28    2330   11.46    2330   13.62    2330
   15.12 2331.14   15.47  2331.5   15.85 2331.83   16.08    2332   20.06    2332
   23.71    2332   24.01    2332   24.66    2332   25.21    2332   40.53 2332.22
  161.57    2334  164.49    2334  165.45    2334   168.8    2334  170.12    2334
   171.3    2334  173.49 2334.99  177.02    2336  178.66 2336.99  180.26    2338
  181.14 2338.59  183.63 2339.96  183.67 2339.98  183.74    2340  183.84 2340.04
   188.9    2342  192.91 2343.39  194.66    2344  195.63  2344.3   197.2 2344.83
  198.43 2345.29  199.19 2345.61  200.09    2346  201.42 2346.56  202.76 2347.16
  204.49    2348  204.81 2348.16  207.82    2350  210.17 2351.09   210.8 2351.26
  212.99    2352  213.37    2352  213.46    2352  214.21 2352.24  215.66 2352.69
  219.64    2354   225.1 2355.64  226.23    2356

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
 -430.03     .04 -388.32     .04  180.26     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -388.32  180.26               50      50      50              .1       .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*********************************************************************************************
```

E.G. Elev (ft)	2335.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.040	
W.S. Elev (ft)	2334.93	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1103.96	
E.G. Slope (ft/ft)	0.005558	Area (sq ft)		1103.96	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	523.86	Top Width (ft)		523.86	
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)		4.55	
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)		2.11	
Conv. Total (cfs)	67322.5	Conv. (cfs)		67322.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		524.86	
Min Ch El (ft)	2330.00	Shear (lb/sq ft)		0.73	
Alpha	1.00	Stream Power (lb/ft s)		3.32	
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	0.32	28.18	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	10.92	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1650

INPUT
Description:
Station Elevation Data num= 201

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-421.01	2351	-420.78	2350.88	-420.37	2350.69	-419.41	2350.27	-418.65	2350
-417.87	2349.69	-416.74	2349.34	-416.52	2349.26	-415.85	2349.04	-415.75	2349
-413.26	2348.07	-413.22	2348.06	-413.11	2348	-412.99	2347.94	-410.88	2347
-410.06	2346.7	-408.39	2346	-407.02	2345.36	-406.26	2345	-404.73	2344.27
-404.27	2344.1	-403.98	2344	-403.71	2343.91	-401.07	2343	-400.06	2342.64
-398.31	2342	-396.76	2341.59	-394.79	2341	-394.28	2340.87	-393.38	2340.65
-390.7	2340	-389.23	2339.62	-386.74	2339	-383.61	2338.19	-382.97	2338
-378.87	2337.3	-377.18	2337	-372.72	2336.27	-371.07	2336	-368.19	2335.7
-361.06	2335	-361.04	2335	-360.33	2334.97	-360.26	2334.96	-355.22	2334.72
-353.51	2334.63	-336.11	2334.25	-326.98	2334	-326.91	2334	-322.86	2334
-321.46	2334	-320.97	2334	-318.51	2334	-315.38	2334	-313.05	2334
-312.89	2334	-311.9	2334	-311.51	2334	-307.28	2334	-306.83	2334
-306.43	2334	-305.68	2334	-305	2334	-304.86	2334	-304.83	2334
-304.59	2334	-302.66	2334	-302.65	2334	-299.92	2334	-299.88	2334
-298.47	2334	-247.58	2333.52	-244.47	2333.46	-244.09	2333.45	-242.49	2333.43
-241.88	2333.42	-228.32	2333.2	-224.58	2333.13	-223.59	2333.12	-222.61	2333.11
-218.08	2333.04	-217.5	2333.04	-217.43	2333.03	-216.43	2333.02	-215.1	2333
-215.08	2333	-214.99	2333	-214.46	2333	-211.93	2333	-209.76	2333
-205.43	2333	-205.29	2333	-204.03	2333	-201.92	2333	-199.99	2333
-199.09	2333	-198.99	2333	-196.33	2333	-196.07	2333	-195.89	2333
-195.77	2333	-195.74	2333	-195.73	2333	-195.61	2332.99	-189.2	2332.72
-186.84	2332.63	-185.34	2332.57	-181.79	2332.41	-169.99	2332	-161.57	2331.86
-158.6	2331.81	-155.5	2331.75	-144.74	2331.59	-143.86	2331.57	-129.82	2331.36
-128.9	2331.35	-128.71	2331.35	-127.84	2331.33	-107.41	2331	-105.95	2331
-105.82	2331	-95.13	2331	-93.99	2331	-93.49	2331	-85.55	2331
-85.2	2331	-84.74	2331	-83.1	2331	-82.6	2331	-80.55	2331
-80.34	2331	-77.57	2331	-76.61	2331	-76.52	2331	-75.37	2330.76
-72.07	2330	-69.59	2330	-69.42	2330	-69.02	2330.15	-66.74	2331
-60.78	2331	-59.7	2331	-56.85	2331	-55.27	2331	-53.73	2331
-53.46	2331	-49.68	2331	-49.55	2331	-46.83	2331	-46.54	2331
-28.62	2331	-28.55	2331	-24.55	2331	-24.08	2331	-23.94	2331
-21.38	2331	-20.29	2330.74	-17.5	2330	-14.35	2329.72	-.48	2330
0	2330.04	9.31	2330.73	25.78	2332	25.87	2332	26.79	2332
50.54	2332.4	52.25	2332.43	68.69	2332.68	115.26	2333.42	120.99	2333.51
151.74	2334	156.02	2335.73	156.7	2336	157.98	2336.54	159.22	2337.08
161.07	2338	161.97	2338.67	162.59	2338.92	164.86	2340	165.75	2340.61
168.63	2342	169.6	2342.58	170.25	2342.95	172.42	2344	173.79	2344.83
175.98	2346	177.23	2346.78	179.86	2348	180.48	2348.27	181.09	2348.61
181.65	2348.93	182.32	2349.4	183.19	2350	184.2	2350.69	186.09	2352
186.48	2352.26	188.49	2353.66	188.93	2353.95	189.01	2354	189.38	2354.29
191.71	2356								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-421.01	.04	-382.97	.04	161.07	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.97	161.07	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2334.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.040	
W.S. Elev (ft)	2334.69	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1145.48	
E.G. Slope (ft/ft)	0.004715	Area (sq ft)		1145.48	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	508.09	Top Width (ft)		508.09	
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)		4.38	
Max Chl Dpth (ft)	4.97	Hydr. Depth (ft)		2.25	
Conv. Total (cfs)	73094.7	Conv. (cfs)		73094.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		508.80	
Min Ch El (ft)	2329.72	Shear (lb/sq ft)		0.66	
Alpha	1.00	Stream Power (lb/ft s)		2.90	
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	0.32	26.89	0.12
C & E Loss (ft)	0.00	Cum SA (acres)	0.57	10.32	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1700

INPUT
Description:
Station Elevation Data num= 215

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-418.21	2358	-417.64	2357.58	-417.06	2357	-416.24	2356.27	-415.94	2356
-414.73	2355.41	-414.11	2355	-413.02	2354.42	-412.11	2354	-410.78	2353.38
-410.05	2353	-407.91	2352.07	-407.78	2352	-407.53	2351.88	-405.7	2351
-404.5	2350.43	-403.74	2350	-402.85	2349.16	-402.59	2349	-402.41	2348.81
-401.74	2348	-401.45	2347.71	-400.9	2347	-400.26	2346.25	-400.05	2346
-399.75	2345.79	-398.84	2345	-397.97	2344.39	-397.32	2344	-396.35	2343.31
-395.8	2343	-394.54	2342.12	-394.35	2342	-393.75	2341.67	-392.41	2341
-390.18	2340.15	-389.81	2340	-387.46	2339.08	-387.26	2339	-386.95	2338.88
-384.83	2338	-382.5	2337.29	-381.63	2337	-380.7	2336.83	-377.97	2336.28
-377.44	2336.17	-376.64	2336	-376.35	2335.94	-371.88	2335	-366.04	2334.33
-364.79	2334.19	-363.12	2334	-362.39	2333.96	-353.63	2333.7	-353.56	2333.7
-351.79	2333.65	-350.15	2333.58	-349.93	2333.57	-331.04	2333.53	-309.49	2333.3
-303.33	2333.19	-302.81	2333.19	-302.6	2333.19	-301.47	2333.18	-289.06	2333.22
-288.46	2333.2	-288.02	2333.21	-287.47	2333.19	-247.25	2333.05	-242.8	2333
-242.7	2333	-242.33	2333	-242.05	2333	-241.46	2333	-241.45	2333
-239.27	2333	-237.07	2333	-231.99	2332.83	-231.48	2332.82	-230.77	2332.81
-223.46	2332.59	-222.27	2332.55	-218.22	2332.44	-216.17	2332.37	-204.43	2332
-198.86	2332	-198.59	2332	-198.14	2332	-196.39	2332	-189.36	2331.9
-188.82	2331.89	-183.64	2331.81	-181.2	2331.77	-180.69	2331.76	-168.49	2331.56
-167.71	2331.55	-167.36	2331.55	-166.76	2331.54	-166.09	2331.53	-135.81	2331
-135.67	2331	-135.34	2331	-135.25	2331	-134.78	2331	-125.71	2331
-124.12	2331	-123.35	2331	-123.25	2331	-122.56	2331	-122.18	2331
-121.17	2331	-120.44	2331	-118.79	2331	-118.15	2331	-117.32	2331
-117.15	2331	-116.37	2331	-115.53	2331	-114.75	2331	-114.53	2331
-113.84	2331	-112.93	2331	-112.78	2331	-112.06	2331	-105.17	2331
-104.3	2331	-102.67	2331	-102.58	2331	-102.43	2331	-102.4	2331
-102.27	2331	-89.35	2330.39	-88.86	2330.36	-81.74	2330	-81.68	2330
-81.51	2330	-80.37	2330	-80.35	2330	-60.68	2330	-59.56	2330
-58.9	2330	-57.57	2330	-57.36	2330	-56.71	2330.13	-52.71	2331
-51.49	2331	-50.9	2331	-50.34	2331	-49.11	2331	-46.89	2331
-45.3	2331	-41.76	2331	-41.26	2331	-39.57	2331	-39.56	2331
-33.75	2330.46	-24.83	2330	-24.77	2330	-23.16	2330	-22.63	2329.85
-19.96	2329	-18.62	2329	-13.7	2329	-10.76	2329.97	-10.68	2330
-10.52	2330.06	-7.49	2331	-2.42	2331.4	0	2331.49	13.57	2332
17.6	2332	18.99	2332	23.08	2332	28.75	2332.13	31.52	2332.17
37.75	2332.29	52.7	2332.58	66.37	2332.84	67.4	2332.85	67.64	2332.86
68.73	2332.88	69	2332.89	71.84	2333.03	81.97	2333.19	123.31	2333.84
132.97	2334	133.64	2335.02	134.29	2336	135	2337.17	135.55	2338
136.1	2338.85	136.83	2340	137.31	2340.73	138.1	2342	138.48	2342.57
139.36	2344	139.6	2344.36	140.6	2346	140.65	2346.07	140.83	2346.38
141.89	2348	142.13	2348.34	143.22	2350	143.94	2351.33	144.63	2352
145.38	2352	145.57	2352	145.64	2352	145.91	2352	148.01	2352
150.87	2352.8	154.58	2354	154.89	2354.09	156.74	2354.67	160.68	2356

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-418.21	.04	-371.88	.04	133.64	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-371.88	133.64	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2334.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.040	
W.S. Elev (ft)	2334.47	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1165.55	
E.G. Slope (ft/ft)	0.004365	Area (sq ft)		1165.55	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	500.54	Top Width (ft)		500.54	
Vel Total (ft/s)	4.31	Avg. Vel. (ft/s)		4.31	
Max Chl Dpth (ft)	5.47	Hydr. Depth (ft)		2.33	
Conv. Total (cfs)	75966.3	Conv. (cfs)		75966.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		501.54	
Min Ch El (ft)	2329.00	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		2.73	
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	0.32	25.56	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	9.75	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1750

INPUT
Description:
Station Elevation Data num= 268

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2354.86	-445.03	2354	-444.98	2354	-444.85	2353.95	-444.16	2353.67
-442.4	2353	-442.37	2352.99	-442.32	2352.97	-439.76	2352	-438.8	2351.65
-436.97	2351	-436.44	2350.81	-434.33	2350	-432.05	2349.01	-432.03	2349
-431.94	2348.96	-430.96	2348.54	-429.62	2348	-428.19	2347.49	-426.72	2347
-423.67	2346.05	-423.54	2346	-423.19	2345.87	-421.62	2345.27	-420.76	2345
-420.45	2344.88	-418.32	2344.16	-418.03	2344.05	-417.89	2344	-417.67	2343.94
-414.78	2343	-410.98	2342.04	-410.81	2342	-409.86	2341.77	-408.71	2341.46
-407.13	2341	-405.92	2340.65	-405.28	2340.46	-404.79	2340.31	-403.78	2340
-402.66	2339.65	-402.37	2339.56	-400.23	2339	-397.94	2338.41	-396.3	2338
-390.19	2337.27	-389.62	2337.21	-388.98	2337.14	-387.98	2337	-385.86	2336.76
-379.3	2336	-370.69	2335.36	-368.17	2335.06	-367.66	2335	-367.6	2335
-367.54	2335	-367.08	2335	-331.04	2334.13	-327.24	2334.04	-326.31	2334.02
-326.18	2334.02	-326.01	2334.01	-325.37	2334	-325.22	2334	-324.62	2334
-324.33	2334	-318.13	2334	-317.84	2334	-305.97	2334	-304.26	2334
-303.83	2334	-301.21	2334	-300.04	2334	-300.02	2334	-290.85	2334
-290.76	2334	-290.06	2334	-237.27	2333.3	-230.11	2333.16	-229.17	2333.14
-224.97	2333.07	-224.82	2333.07	-221.15	2333	-220.95	2333	-220.86	2333
-220.44	2333	-220.37	2333	-220.24	2333	-220.22	2333	-216.72	2333
-214.28	2333	-201.78	2332.57	-200.81	2332.55	-200.72	2332.54	-200.51	2332.54
-199.61	2332.5	-199.58	2332.5	-183.64	2332	-182.34	2332	-179.12	2332
-178.08	2332	-177.67	2332	-172.14	2331.9	-126.96	2331	-126.84	2331
-126.52	2331	-126.43	2331	-126.05	2331	-119.77	2331	-116.03	2331
-113.54	2331	-113.15	2331	-112.84	2331	-110.85	2331	-110.53	2331
-110.31	2331	-109.86	2331	-105.7	2331	-105.25	2331	-105.19	2331
-104.53	2330.98	-102.88	2330.95	-76.07	2330	-76.01	2330	-73.88	2330
-69.12	2330	-65.94	2330	-60.5	2330	-57.56	2330	-54.56	2330
-53.7	2330	-52.88	2330	-52.84	2330	-50.38	2330.49	-49.49	2330.63
-49.35	2330.63	-48.51	2330.62	-48.35	2330.65	-45.12	2331	-41.8	2331
-37.63	2330.45	-35.74	2330.24	-33.48	2330	-33.45	2330	-33.4	2330
-29.84	2330	-21.65	2330	-17.53	2329.13	-17.12	2329.04	-17	2329
-16.75	2329	-16.39	2329	-12.21	2329	-10.81	2329	-8.04	2329
-4.09	2328.5	-3.25	2328.5	-2.07	2329	-1.8	2329.18	-.73	2330
-.29	2330.3	0	2330.54	.55	2331	4.58	2331	41.1	2331.73
44.19	2331.81	46.86	2331.87	47.49	2331.88	52.7	2332	52.75	2332
53.09	2332	53.46	2332	53.54	2332	53.63	2332	54	2332.01
58.24	2332.07	62.76	2332.14	64.47	2332.17	113.12	2332.8	118.6	2332.96
119.64	2333	120.45	2333.32	122.3	2334	122.4	2334.63	122.44	2335
122.56	2335.66	122.6	2336	122.73	2336.68	122.77	2337	122.82	2337.56
122.9	2338	122.97	2338.54	123.06	2339	123.13	2339.52	123.22	2340
123.29	2340.5	123.39	2341	123.45	2341.48	123.55	2342	123.61	2342.45
123.72	2343	123.78	2343.42	123.9	2344	123.95	2344.39	124.08	2345
124.13	2345.34	124.27	2346	124.39	2346.87	124.41	2347	124.45	2347.45
124.58	2348	124.63	2348.14	124.64	2348.14	125.01	2348.78	125.72	2348.57
125.82	2348.57	126.71	2348.24	127.1	2348.15	127.62	2348	128.18	2347.86
128.21	2347.84	128.46	2347.81	128.57	2347.76	128.6	2347.75	129.39	2347.79
129.49	2347.83	129.66	2347.92	129.79	2348	130.39	2348.3	130.58	2348.34
130.77	2348.31	131.9	2348.17	131.94	2348.16	132.39	2348	132.43	2347.99
132.44	2347.98	132.5	2347.97	134.35	2347.31	134.43	2347.34	134.81	2347.18
135.47	2347.23	135.89	2347.34	136.63	2347.55	138.3	2348	138.98	2348
139.82	2348.45	140.67	2349	141.16	2349.27	142.36	2350	142.47	2350.06

142.55	2350.11	142.62	2350.15	143.24	2350.53	143.95	2351	144.83	2351.46
145.94	2352	148.56	2352.85	149.04	2353	151.38	2353.76	152.01	2353.96
152.14	2354	152.22	2354.02	155.49	2355	156.14	2355.17	157.64	2355.65
157.8	2355.7	158.47	2355.89	158.86	2356				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-367.66	.04	122.44	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-367.66	122.44	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2334.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.		0.040	
W.S. Elev (ft)	2334.05	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		964.55	
E.G. Slope (ft/ft)	0.007127	Area (sq ft)		964.55	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	449.95	Top Width (ft)		449.95	
Vel Total (ft/s)	5.20	Avg. Vel. (ft/s)		5.20	
Max Chl Dpth (ft)	5.55	Hydr. Depth (ft)		2.14	
Conv. Total (cfs)	59451.5	Conv. (cfs)		59451.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		451.31	
Min Ch El (ft)	2328.50	Shear (lb/sq ft)		0.95	
Alpha	1.00	Stream Power (lb/ft s)		4.95	
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.32	24.34	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	9.20	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1800

INPUT
Description:
Station Elevation Data num= 229

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-414.21	2351.78	-413.16	2351.68	-412.26	2351.51	-411.92	2351.5	-410.89	2351.36
-409.87	2351	-408.1	2350.22	-407.61	2350	-406.55	2349.53	-405.61	2349.06
-405.54	2349.03	-405.48	2349	-405.46	2348.99	-403.65	2348	-402.5	2347.35
-401.68	2347	-401.17	2346.82	-399.14	2346	-397.48	2345.27	-396.9	2345
-396.1	2344.64	-395.93	2344.58	-393.77	2344	-391.89	2343.47	-391.32	2343.33
-390.46	2343.11	-389.9	2343	-387.24	2342.4	-387.13	2342.38	-386.6	2342.26
-386.15	2342.17	-386.08	2342.15	-385.79	2342	-382.05	2341.14	-381.57	2341
-378.36	2340.2	-377.66	2340	-374.93	2339.23	-374.77	2339.19	-374.39	2339.06
-374.25	2339	-373.61	2338.77	-371.42	2338	-369.99	2337.71	-367.17	2337
-364.33	2336.28	-363.02	2336	-359.77	2335.6	-355.86	2335	-355.57	2335
-345	2334.4	-339.82	2334.1	-339.43	2334.08	-338.85	2334.04	-338.02	2334
-334.99	2334	-319.9	2334	-319.5	2334	-318.07	2334	-295.62	2333.61
-291.24	2333.5	-290.84	2333.49	-290.15	2333.48	-286.74	2333.43	-274.71	2333.35
-273.4	2333.32	-272.89	2333.31	-271.78	2333.28	-244.52	2333	-244.51	2333
-229.94	2333	-229.72	2333	-229.45	2333	-229.37	2333	-227.38	2333
-227.21	2333	-226.66	2333	-225.81	2333	-225.68	2333	-221.67	2333
-203.28	2332.35	-202.36	2332.32	-201.17	2332.28	-193.68	2332	-193.66	2332
-192.44	2332	-192.21	2332	-192.17	2332	-192.01	2332	-191.53	2332
-189.88	2332	-189.48	2332	-189.27	2332	-189.22	2332	-154.1	2331.27
-141.69	2331	-141.05	2331	-140.94	2331	-139.79	2331	-133.62	2331
-128.71	2331	-123.77	2331	-113.23	2331	-107.27	2331	-104.52	2331
-85.44	2330.34	-84.39	2330.3	-75.15	2330	-66.25	2330	-63.66	2330
-63.65	2330	-62.79	2330	-62.41	2330	-61.58	2330	-54.48	2330
-49.91	2330	-48.37	2329.31	-47.46	2329	-45.14	2329	-44.63	2329
-42.93	2329.48	-41.37	2330	-33.69	2330	-33.63	2330	-29.03	2330
-25	2329.32	-24.85	2329.3	-23.75	2329.16	-23.11	2329	-21.96	2329
-20.67	2329	-18.85	2329.42	-16.04	2329.7	-15.35	2329.31	-14.91	2329
-13.33	2328.1	-13.13	2328	-12.56	2328	-9.81	2328	-9.58	2328.11
-8.75	2328.5	-7.8	2328.93	-7.66	2329	-6.71	2329.21	-2.85	2330
0	2330.19	.12	2330.2	11.18	2331	17.3	2331	21.77	2331
23.54	2331	35.62	2331	37.27	2331	40.73	2331	45.51	2331
47.15	2331.07	47.44	2331.08	53.83	2331.34	54.16	2331.35	56.91	2331.45
60.19	2331.58	61.64	2331.63	70.74	2332	72.03	2332	72.23	2332
72.5	2332	74.76	2332	88.18	2332	88.33	2332	88.35	2332
88.39	2332	88.89	2332	94.45	2332	94.71	2332	98.53	2332
101.61	2332	102.8	2332	106.92	2332	116.31	2332.87	117.03	2333
117.25	2333.66	117.34	2334	117.57	2334.77	117.64	2335	117.91	2335.87

117.94	2336	118.24	2336.97	118.25	2337	118.37	2337.37	118.6	2338
118.78	2338.5	118.96	2339	119.04	2339.23	119.26	2339.87	119.31	2340
119.67	2341	119.69	2341.04	120.03	2342	120.06	2342.08	120.39	2343
120.44	2343.13	120.75	2344	120.81	2344.19	121.1	2345	121.36	2345.74
121.42	2346	121.72	2346.85	121.77	2347	121.81	2347.12	122.01	2347.74
122.09	2348	122.24	2348.42	122.4	2349	122.41	2349.02	122.68	2350
122.7	2350.06	122.96	2351	123.06	2351.09	124.14	2352	126.67	2352.71
127.32	2353	128.83	2353.51	130.24	2354	133.28	2354.94	133.47	2355
134.47	2355.31	134.69	2355.38	135.35	2355.6	136.3	2356		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-414.21	.04	-355.86	.04	117.64	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-355.86	117.64	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2334.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.040	
W.S. Elev (ft)	2333.62	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		907.42	
E.G. Slope (ft/ft)	0.007814	Area (sq ft)		907.42	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	413.22	Top Width (ft)		413.22	
Vel Total (ft/s)	5.53	Avg. Vel. (ft/s)		5.53	
Max Chl Dpth (ft)	5.62	Hydr. Depth (ft)		2.20	
Conv. Total (cfs)	56777.0	Conv. (cfs)		56777.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		415.11	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		5.90	
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	0.32	23.27	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	8.71	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1850

INPUT
Description:
Station Elevation Data num= 235

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-390.31	2358	-389.79	2357.58	-389.24	2357	-388.41	2356.21	-388.2	2356
-386.87	2355.32	-386.42	2355	-385.15	2354.29	-384.56	2354	-383.8	2353.63
-382.67	2353	-381.5	2352.45	-380.68	2352	-379.16	2351.25	-378.94	2351.16
-378.7	2351	-378.48	2350.85	-376.89	2350	-376.41	2349.49	-375.91	2349
-375.37	2348.42	-375.06	2348	-374.42	2347.3	-374.19	2347	-373.38	2346.03
-373.35	2346	-373.19	2345.88	-373.12	2345.83	-371.8	2345	-370.79	2344.32
-370.28	2344	-370.23	2343.96	-368.59	2343	-368.23	2342.74	-367.11	2342
-366.41	2341.6	-365.22	2341	-363.96	2340.48	-362.68	2340	-361.04	2339.32
-360.24	2339	-359.37	2338.65	-357.78	2338	-356.27	2337.48	-355.08	2337
-352.07	2336.29	-350.41	2336	-348.46	2335.55	-347.87	2335.43	-345.7	2335
-342.54	2334.69	-340.84	2334.5	-336.24	2334	-327.67	2333.36	-326.01	2333.24
-324.71	2333.14	-322.75	2333	-319.85	2333	-318.72	2333	-314.67	2333
-314.09	2333	-307.49	2333	-307.28	2333	-306.24	2333	-305.91	2333
-305.13	2333	-304.5	2333	-303.18	2333	-302	2333	-301.81	2333
-301.24	2333	-299.85	2333	-299.15	2333	-297.31	2333	-296.91	2333
-296.67	2333	-278.11	2333	-267.3	2333	-265.77	2333	-263.98	2333
-263.12	2333	-261.97	2333	-259.02	2333	-258.67	2333	-257.74	2333
-255.77	2333	-255.04	2333	-254.84	2333	-254.11	2333	-253.58	2333
-253.49	2333	-249.63	2333	-249.15	2333	-249.1	2333	-249.01	2333
-248.15	2333	-245.15	2332.96	-244.57	2332.94	-238.85	2332.85	-238.84	2332.85
-235.58	2332.79	-235.5	2332.79	-234.72	2332.77	-234.69	2332.77	-225.89	2332.58
-210.19	2332.26	-206.23	2332.19	-199.54	2332	-182.93	2331.45	-181.81	2331.41
-179.37	2331.34	-168.23	2331	-167.98	2331	-167.66	2331	-167.54	2331
-166.17	2331	-158.85	2331	-127.39	2330.66	-115.89	2330.5	-108.77	2330.38
-99.65	2330.24	-88.91	2330.14	-88.79	2330.14	-84.1	2330	-82.08	2330
-81.77	2330	-80.35	2330	-78.71	2330	-78.12	2330	-73.77	2330
-69.37	2330	-68.99	2330	-67.66	2330	-67.6	2330	-56.3	2329.66
-50.1	2329.48	-33.27	2329	-28.8	2329	-26.97	2329	-26.91	2329
-26.54	2329	-24.95	2329	-10.64	2329	-10.18	2329	-8.34	2329
0	2329	.11	2329	.98	2328.47	1.75	2328	4.7	2328
5.74	2328	8.18	2328.85	8.58	2329	9.22	2329.23	11.25	2329.92
11.48	2329.99	11.53	2330	11.79	2330	16.44	2330	21.99	2330

22.14	2330	22.7	2330	22.94	2330	24.03	2330	24.07	2330
25.49	2330	45.6	2330.37	46.24	2330.39	47.4	2330.41	52.28	2330.46
59.58	2330.76	64.31	2331	64.32	2331	68.96	2331	79.04	2331
84.62	2331	87.07	2331	90.84	2331.48	92.22	2331.63	94.06	2332
96.98	2332.86	97.49	2333	97.83	2333.1	100.91	2334	101.66	2334.22
103.99	2335	104.56	2335.17	106.92	2336	107.66	2336.24	109.69	2337
110.85	2337.43	112.04	2337.85	112.41	2338	113.12	2338.34	114.69	2339
115.03	2339.14	116.67	2340	117.24	2340.28	118.61	2341	119.15	2341.26
120.59	2342	121.5	2342.5	122.53	2343	123	2343.64	123.31	2344
123.4	2344.27	123.6	2344.46	123.85	2345	124.4	2345.72	124.55	2346
124.97	2346.72	125.18	2347	125.23	2347.07	126.06	2348	126.59	2348.47
127.09	2349	128	2349.79	128.21	2350	129.37	2350.99	129.38	2351
129.5	2351.06	131.3	2352	131.37	2352.02	131.45	2352.07	133.02	2353
133.16	2353.07	135.02	2354	135.49	2354.26	137.8	2355	138.56	2355.28
138.9	2355.44	139.04	2355.5	139.92	2356	140.59	2356.22	145.4	2357

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-390.31	.04	-345.7	.04	103.99	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-345.7	103.99	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2333.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.		0.040	
W.S. Elev (ft)	2333.26	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		937.11	
E.G. Slope (ft/ft)	0.007257	Area (sq ft)		937.11	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	424.69	Top Width (ft)		424.69	
Vel Total (ft/s)	5.36	Avg. Vel. (ft/s)		5.36	
Max Chl Dpth (ft)	5.26	Hydr. Depth (ft)		2.21	
Conv. Total (cfs)	58915.1	Conv. (cfs)		58915.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		425.63	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		1.00	
Alpha	1.00	Stream Power (lb/ft s)		5.34	
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	0.32	22.21	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.57	8.22	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1900

INPUT
Description:
Station Elevation Data num= 212

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-394.67	2358	-393.52	2357.62	-391.7	2357	-391.49	2356.87	-391.09	2356.73
-390.55	2356.57	-389.97	2356.4	-388.34	2356	-387.64	2355.73	-385.63	2355
-383.7	2354.2	-383.19	2354	-381.57	2353.33	-380.87	2353	-380.37	2352.76
-378.78	2352	-377.13	2351.19	-376.74	2351	-375.37	2350.11	-375.16	2350
-374.54	2349.16	-374.44	2349	-374.25	2348.72	-373.77	2348	-373.75	2347.96
-373.09	2347	-371.97	2346	-371.65	2345.84	-370.12	2345	-370.05	2344.96
-368.3	2344	-366.66	2343.09	-366.5	2343	-364.75	2342.03	-364.7	2342
-364.39	2341.86	-362.46	2341	-361.52	2340.66	-359.66	2340	-358.16	2339.46
-357.53	2339.23	-356.95	2339	-356.71	2338.9	-354.2	2338	-353.74	2337.82
-351.54	2337	-350.61	2336.75	-347.96	2336	-346.81	2335.72	-346.66	2335.68
-344.78	2335.19	-343.87	2335	-343.25	2334.87	-337.43	2334	-328.44	2333.26
-325.58	2333	-324.66	2333	-324.63	2333	-324.51	2333	-323.37	2333
-320.93	2333	-320.59	2333	-309.75	2333	-306.02	2333	-305.68	2333
-302.52	2333	-302.23	2333	-302.09	2333	-301.64	2333	-301.62	2333
-297.72	2332.96	-296.92	2332.95	-293.46	2332.92	-293.44	2332.92	-293.38	2332.92
-287.83	2332.86	-278.89	2332.75	-255.68	2332.44	-233.81	2332.23	-233.62	2332.23
-232.31	2332.2	-222.21	2332.04	-219.88	2332	-219.63	2332	-219.57	2332
-219.13	2332	-219.12	2332	-213.61	2331.84	-209.52	2331.73	-207.15	2331.67
-186.91	2331.15	-186.61	2331.15	-182.51	2331	-181.62	2331	-180.67	2331
-176.37	2331	-95.62	2330.13	-84.27	2330	-84.16	2330	-83.29	2330
-82.41	2330	-56.77	2329.3	-45.58	2329	-42.67	2329	-41.42	2329
-36.9	2329	-35.57	2329	-28.14	2329	-24.92	2329	-19.73	2329
-8.13	2329	-7.92	2329	-2.94	2329	-2.5	2329	-2.4	2328.96
0	2328	7.47	2328	9.15	2328.91	9.33	2329	10.86	2329
17.18	2329	18.77	2329	26.26	2329	31.27	2329	33.06	2329
33.12	2329	33.2	2329	33.44	2329	33.84	2329	33.94	2329

34.43	2329	34.55	2329	36.2	2329	41.34	2329	41.47	2329
45.68	2329	50.01	2329	54.87	2329.43	60.16	2330	61.27	2330
62.15	2330	62.48	2330	64.78	2330	72.18	2329.85	73.15	2329.87
73.18	2329.87	74.71	2330	75.27	2330	81.29	2330	81.39	2330
81.43	2330	84.99	2330.63	86.72	2331	88.9	2331.78	89.42	2331.99
89.46	2332	89.47	2332.01	91.94	2333	93.9	2333.99	93.91	2334
93.91	2334.01	93.96	2334.16	94.28	2335	94.56	2335.91	94.6	2336
94.74	2336.54	94.9	2337	95.19	2337.97	95.2	2338	95.49	2338.98
95.5	2339	95.8	2339.99	95.8	2340	95.96	2340.55	96.1	2340.99
96.11	2341	96.41	2341.98	96.42	2342	96.71	2342.96	96.73	2343
97.02	2343.94	97.03	2344	97.32	2344.93	97.34	2345	97.62	2345.91
97.65	2346	97.92	2346.9	97.95	2347	98.22	2347.88	98.25	2348
98.52	2348.87	98.57	2349	98.84	2349.89	98.87	2350	99.06	2350.67
99.19	2351	99.28	2351.22	99.7	2352	100.23	2352.18	102.73	2353
105.94	2353.61	107.86	2354	110.33	2354	119.64	2354	121.46	2354
122.13	2354	126.69	2354.54	127.88	2354.64	129.87	2354.83	131.4	2355
136.07	2355.58	139.62	2356						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-394.67	.04	-302.52	.04	91.94	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-302.52	91.94	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2333.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.		0.040	
W.S. Elev (ft)	2332.95	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		963.67	
E.G. Slope (ft/ft)	0.005883	Area (sq ft)		963.67	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	388.94	Top Width (ft)		388.94	
Vel Total (ft/s)	5.21	Avg. Vel. (ft/s)		5.21	
Max Chl Dpth (ft)	4.95	Hydr. Depth (ft)		2.48	
Conv. Total (cfs)	65436.6	Conv. (cfs)		65436.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		389.93	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.91	
Alpha	1.00	Stream Power (lb/ft s)		4.73	
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	0.32	21.12	0.12
C & E Loss (ft)	0.00	Cum SA (acres)	0.57	7.76	0.10

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1950

INPUT
Description:
Station Elevation Data num= 265

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2333.64	-442.98	2333.7	-437.46	2333.52	-434.5	2334	-433.65	2334.49
-431.68	2335	-430.63	2335.78	-430.32	2336	-429.98	2336.24	-429.04	2337
-428.71	2337.26	-428.17	2337.67	-427.8	2338	-427.06	2338.67	-426.69	2339
-426.35	2339.31	-425.5	2340	-424.22	2340.78	-423.85	2341	-422.84	2341.66
-422.26	2342	-422.21	2342.03	-420.49	2343	-420.3	2343.32	-419.3	2344
-418.91	2344.75	-418.82	2345	-418.44	2345.9	-418.4	2346	-418.3	2346.28
-418.18	2346.52	-417.89	2347	-417.78	2347.16	-417.25	2348	-416.96	2348.44
-416.58	2349	-416.12	2349.72	-415.95	2350	-414.61	2350.97	-414.57	2351
-414.51	2351.03	-414.44	2351.06	-414.38	2351.08	-412.83	2351.53	-410.74	2351.95
-410.41	2352	-404.12	2352.91	-403.08	2353	-400.38	2353.2	-400.2	2353.22
-399.07	2353.44	-397.65	2353.71	-396.69	2354	-396.47	2354.06	-396.39	2354.08
-394.07	2354.82	-393.45	2355	-392.67	2355.24	-390.08	2356	-385.98	2356.42
-382.03	2356.24	-380.87	2356.02	-380.83	2356	-380.76	2355.97	-379	2355
-378.57	2354.77	-377.16	2354	-376.53	2353.66	-375.31	2353	-374.08	2352.35
-373.42	2352	-371.72	2351.08	-371.56	2351	-371.38	2350.9	-369.9	2350
-369.84	2349.84	-369.59	2349	-369.57	2348.74	-369.43	2348	-369.37	2347.68
-369.25	2347	-369.19	2346.56	-369.08	2346	-369.01	2345.53	-368.98	2345
-368.12	2344.18	-368.01	2344	-367.73	2343.82	-365.97	2343	-365.57	2342.75
-364.6	2342.33	-363.9	2342	-362.75	2341.45	-361.89	2341	-361.8	2340.96
-359.82	2340	-359.75	2339.96	-357.81	2339	-357.27	2338.7	-355.96	2338
-354.75	2337.37	-353.96	2337	-352.74	2336.64	-350.72	2336	-347.48	2335.22
-346.55	2335	-342.79	2334.09	-342.4	2334	-340.52	2333.82	-333.58	2333.27
-330.28	2333	-324.28	2332.53	-322.93	2332.41	-322.17	2332.36	-320.17	2332.23
-284.9	2332.3	-270.02	2332.11	-266.25	2332.06	-266.2	2332.06	-264.87	2332.05

-260.38	2332	-259.86	2332	-258.53	2332	-258.27	2332	-248.22	2332
-247.92	2332	-246.06	2332	-235.33	2331.8	-226.6	2331.7	-226.12	2331.69
-224.05	2331.67	-217.15	2331.56	-191.93	2331.21	-187.03	2331.16	-180	2331
-179.72	2331	-179.39	2331	-162.87	2330.76	-146.73	2330.51	-145.92	2330.51
-145.1	2330.49	-98.35	2330	-91.48	2330	-91.44	2330	-83.13	2329.78
-66.78	2329.49	-45.02	2329	-39.9	2329	-38.51	2329	-37.03	2329
-36.65	2329	-36.1	2329	-34.75	2329	-27.47	2329	-21.43	2329
-18.94	2329	-15.89	2329	-12.38	2329	-9.73	2329	-9.52	2329
-9.38	2329	-9.33	2329	-4.03	2329	-1.13	2329	0	2329
.05	2329	.81	2329	1.02	2329	4.37	2328.63	5.05	2328.71
5.22	2328.71	5.54	2328.66	5.57	2328.65	6.41	2328	18.1	2328
18.4	2328	19.41	2328	21.33	2328.06	21.34	2328.06	21.35	2328.06
21.79	2328.08	28.49	2329	34.1	2329	34.36	2329	35.9	2329
49.1	2328.34	49.17	2328.34	49.47	2328.33	51.97	2328.22	57.02	2328
57.39	2328	58.24	2328	58.34	2328	59.7	2328	62.61	2328
63.04	2328	63.11	2328	63.22	2328	64.81	2328	66.21	2328.19
71.9	2329	74.15	2329.2	84.04	2330	88.22	2330.8	89.63	2331
91.45	2331.39	92.83	2331.71	92.94	2331.74	93.1	2332	93.18	2332.38
93.32	2332.57	93.46	2333	93.64	2333.58	93.76	2334	93.88	2334.41
94.06	2335	94.32	2335.77	94.39	2336	94.64	2336.81	94.7	2337
94.96	2337.84	95.01	2338	95.29	2338.88	95.32	2339	95.36	2339.11
95.64	2340	95.66	2340.07	95.96	2341	95.97	2341.03	96.18	2341.67
96.28	2342	96.28	2342.01	96.58	2343	96.86	2343.94	96.88	2344
96.89	2344.04	97.18	2345	97.19	2345.05	97.48	2346	97.5	2346.07
97.78	2347	97.8	2347.08	98.08	2348	98.11	2348.1	98.38	2349
98.64	2349.87	98.68	2350	100.18	2350.94	100.29	2351	100.48	2351.06
103.86	2352	107.29	2352	111.74	2352	114.67	2351.6	119.76	2351.48
122.1	2352	124.59	2352.81	125.19	2353	125.57	2353.11	128.43	2354
130.09	2354.49	130.43	2354.61	131.66	2355	138.52	2355.77	140.91	2356

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-248.22	.04	93.1	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-248.22	93.1	50	50	.1	.3

Left Levee Station= -380 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2333.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2332.69	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.74	Flow Area (sq ft)	38.35	957.98	0.07
E.G. Slope (ft/ft)	0.004916	Area (sq ft)	38.35	957.98	0.07
Q Total (cfs)	5019.00	Flow (cfs)	62.14	4956.82	0.04
Top Width (ft)	419.70	Top Width (ft)	78.12	341.32	0.26
Vel Total (ft/s)	5.04	Avg. Vel. (ft/s)	1.62	5.17	0.55
Max Chl Dpth (ft)	4.69	Hydr. Depth (ft)	0.49	2.81	0.28
Conv. Total (cfs)	71585.5	Conv. (cfs)	886.3	70698.6	0.6
Length Wtd. (ft)	50.00	Wetted Per. (ft)	78.14	342.11	0.75
Min Ch El (ft)	2328.00	Shear (lb/sq ft)	0.15	0.86	0.03
Alpha	1.04	Stream Power (lb/ft s)	0.24	4.45	0.02
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	0.30	20.01	0.12
C & E Loss (ft)	0.00	Cum SA (acres)	0.52	7.34	0.10

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2000

INPUT
Description:
Station Elevation Data num= 203

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2333	-446.55	2333	-445.48	2333	-444.84	2333	-442.86	2333
-442.47	2333	-441.01	2333	-432.9	2333	-431.62	2333	-425.68	2333
-418.07	2333	-411.79	2333	-405.3	2332.76	-404.74	2332.77	-403.06	2332.77
-402.69	2332.76	-395.55	2333	-394.58	2333.34	-393.59	2333.59	-391.21	2334
-390.62	2334.2	-389.3	2334.49	-386.54	2334.83	-385.45	2335	-382.88	2335.35
-377.71	2335.91	-377.21	2335.96	-376.96	2336	-374.19	2336.43	-373.85	2336.46
-371.92	2336.41	-370.42	2336.42	-368.52	2336.33	-368.15	2336.31	-367.64	2336.24
-367.61	2336.23	-367.14	2336.09	-366.65	2336	-363.87	2335.48	-361.99	2335.2

-361.17	2335.05	-360.93	2335	-358.57	2334.52	-356.26	2334	-354.75	2333.77
-349.16	2333	-347.77	2332.8	-342.37	2332.26	-342.31	2332.26	-342.1	2332.23
-342.02	2332.22	-340.03	2332	-338.96	2332	-334.17	2332	-330.54	2332.39
-323.61	2332.98	-323.34	2333	-322.41	2333	-321.88	2333	-320.36	2332.89
-320.32	2332.89	-319.34	2332.91	-319.28	2332.91	-280.97	2332	-271.18	2332
-270.86	2332	-270.28	2332	-267.94	2332	-259.45	2332	-254.57	2332
-251.73	2332	-251.39	2332	-251.33	2332	-251.12	2332	-250.73	2332
-228.9	2331.63	-192.52	2331	-189.88	2331	-188.74	2331	-188.42	2331
-185.59	2331	-182.33	2331	-181.56	2331	-179.82	2331	-179.76	2331
-179.16	2331	-154.76	2330.6	-154.03	2330.59	-153.29	2330.58	-120.15	2330
-119.85	2330	-115.95	2330	-115.27	2330	-113.36	2330	-113.11	2330
-112.91	2330	-112.89	2330	-112.87	2330	-107.09	2329.89	-58.83	2329
-57.75	2329	-57.7	2329	-25.24	2329	-20.35	2329	-20.14	2329
-18.44	2329	-16.24	2329	-15.01	2329.36	-14.83	2329.4	1.84	2329.23
2.29	2329.12	2.32	2329.11	2.71	2329	5.69	2329	6.14	2329
6.28	2329	11.23	2328.52	14.67	2328	25.39	2328	34.86	2328
54.26	2328	61.88	2328	62.02	2328	67.73	2328	73.36	2328
74.54	2328	75.13	2328	79.14	2328	85.31	2328.87	85.95	2328.98
86.07	2329	86.34	2329.05	86.97	2329.16	88.61	2329.46	91.57	2330
91.75	2330.04	92.13	2330.14	95.32	2331	96.29	2331.29	96.6	2331.35
97.23	2331.45	98.12	2332	102.99	2332	103.86	2332	103.95	2332
104.25	2332	104.31	2332.02	104.38	2332.04	104.72	2332.16	105.39	2332.45
105.83	2332.59	106.78	2333	106.86	2333	108.32	2333.49	109.49	2333.81
110.01	2334	110.75	2334.3	111.75	2334.65	112.14	2334.8	112.75	2335
114.74	2335.45	117.1	2336	117.3	2336.07	117.39	2336.11	118.09	2336.38
119.31	2337	120.1	2337.34	121.52	2338	122.71	2338.72	123.06	2338.93
123.17	2339	123.31	2339.1	124.73	2340	125.59	2340.56	126.3	2341
128.03	2341.98	128.07	2342	128.09	2342.02	128.73	2343	129.12	2343.68
129.31	2344	129.69	2344.5	130	2345	130.45	2345.65	130.66	2346
131.34	2346.92	131.39	2347	131.59	2347.25	132.11	2348	132.42	2348.45
132.81	2349	132.98	2349.25	133.35	2349.73	133.74	2350	135.87	2350.79
136.47	2351	139.02	2351.78	139.62	2352	142.1	2352.79	142.61	2352.99
142.62	2353	142.63	2353	147.99	2354				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-251.73	.04	98.12	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-251.73	98.12	50	50	.1	.3

Left Levee Station= -373.75 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2332.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2332.42	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.48	Flow Area (sq ft)	20.14	949.20	2.82
E.G. Slope (ft/ft)	0.005304	Area (sq ft)	20.14	949.20	2.82
Q Total (cfs)	5019.00	Flow (cfs)	26.13	4988.82	4.05
Top Width (ft)	417.82	Top Width (ft)	60.76	349.85	7.20
Vel Total (ft/s)	5.16	Avg. Vel. (ft/s)	1.30	5.26	1.44
Max Chl Dpth (ft)	4.42	Hydr. Depth (ft)	0.33	2.71	0.39
Conv. Total (cfs)	68917.8	Conv. (cfs)	358.8	68503.4	55.6
Length Wtd. (ft)	50.00	Wetted Per. (ft)	60.81	350.53	7.28
Min Ch El (ft)	2328.00	Shear (lb/sq ft)	0.11	0.90	0.13
Alpha	1.03	Stream Power (lb/ft s)	0.14	4.71	0.18
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.27	18.92	0.12
C & E Loss (ft)	0.03	Cum SA (acres)	0.44	6.94	0.09

Warning: Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2050

INPUT
Description:
Station Elevation Data num= 233

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2333.72	-440.57	2333.41	-439.69	2333.38	-437.08	2333.28	-431.17	2333
-428.29	2333	-419.24	2332.75	-413.2	2332.6	-412.82	2332.59	-388.18	2332.12
-385.94	2332.08	-385.75	2332.07	-383.5	2332	-381.12	2332	-380.71	2332

-380.07	2332	-377.93	2332	-377.35	2332	-376.02	2332	-373.03	2332
-358.18	2331.37	-357.39	2331.35	-357.11	2331.34	-356.37	2331.33	-353.79	2331.3
-352.87	2331.29	-344.44	2331.18	-338.52	2331	-337.41	2331	-336.89	2331
-336.65	2331	-335.14	2331	-334.94	2331	-334.84	2331	-332.47	2331
-331.19	2331	-331.18	2331	-331.12	2331	-331.04	2331	-330.53	2331
-328.5	2331	-325.56	2331	-325.44	2331	-323.77	2331.06	-320.62	2331.03
-320.61	2331.03	-314.31	2331.12	-314.23	2331.11	-313.45	2331.11	-310.22	2331.07
-310.2	2331.06	-307.8	2331.05	-306.97	2331.02	-304.93	2331.01	-304.9	2331.01
-304.7	2331.02	-304.02	2331.02	-303.99	2331.02	-300.57	2331.07	-300.53	2331.07
-293.64	2331.21	-292.6	2331.21	-292.48	2331.21	-290.23	2331.25	-289.77	2331.25
-288.76	2331.26	-288.41	2331.27	-282.15	2331.31	-282.11	2331.31	-281.75	2331.32
-279.95	2331.34	-279.58	2331.33	-275.87	2331.36	-275.48	2331.36	-271.64	2331.37
-271.43	2331.36	-270.59	2331.33	-262.17	2331.36	-256.37	2331.24	-253.11	2331.21
-249.02	2331.22	-246.58	2331.22	-231.88	2331.15	-231.74	2331.15	-229.19	2331.13
-229.18	2331.13	-228.22	2331.13	-220.47	2331	-219.13	2331	-196.82	2331
-195.07	2331	-194.12	2331	-194.08	2331	-193.21	2331	-192.96	2331
-192.12	2331	-191.26	2330.98	-190.9	2330.98	-177	2330.73	-172.01	2330.73
-172	2330.73	-168.36	2330.73	-152.9	2330.41	-150.24	2330.35	-150.23	2330.35
-149.1	2330.33	-134.38	2330	-131.73	2330	-130.81	2330	-130.2	2330
-130.15	2330	-111.66	2330	-111.55	2330	-110.92	2330	-109.73	2329.96
-109.69	2329.96	-107.15	2329.97	-106.99	2329.98	-106.36	2329.98	-106.32	2329.98
-104.54	2329.97	-104.29	2329.97	-103.67	2329.97	-103.54	2329.97	-103.46	2329.97
-99.94	2329.92	-99.5	2329.92	-99.45	2329.92	-96.1	2329.87	-95.8	2329.87
-94.02	2329.83	-90.18	2329.75	-89.5	2329.73	-82.31	2329.57	-77.77	2329.46
-76.63	2329.43	-75.3	2329.4	-59.4	2329	-58.93	2329	-58.43	2329
-58.1	2329	-57.48	2329	-56.55	2329	-56.13	2329	-56.01	2329
-50.96	2328.87	-48.26	2328.8	-45.84	2328.73	-21.42	2328	-19.91	2328
-18.56	2328	-18.52	2328	-18.22	2328	-14.99	2328	-14.97	2328
-14.68	2328	0	2328.19	3.15	2328.23	4.08	2328.23	12.52	2328
20.02	2328	20.19	2328	27.44	2328	27.47	2328	54.36	2327.96
55.28	2328	55.68	2328	55.92	2328	57.53	2328	62.24	2328
72.3	2328	82.51	2328	88.95	2328	88.98	2328	89.6	2328
89.78	2328.07	92.28	2329	92.68	2329.14	93.82	2329.46	95.04	2330
96.38	2330.7	96.82	2331	98.35	2331.95	98.43	2332	98.52	2332.06
99.44	2332.61	100.12	2333	100.44	2333.17	101.9	2334	103.05	2334.56
103.84	2335	104.46	2335.33	105.7	2336	106.27	2336.3	107.6	2337
108.84	2337.64	109.52	2338	109.98	2338.26	111.38	2339	112.08	2339.39
112.78	2339.87	112.91	2340	113.56	2340.51	114.01	2341	114.05	2341.09
114.75	2342	115.32	2342.77	115.45	2343	116.25	2343.92	116.29	2344
116.36	2344.11	116.69	2344.4	117.21	2345	117.26	2345.05	118.01	2346
118.78	2346.91	118.85	2347	118.92	2347.08	119.6	2348	120.06	2348.33
120.8	2349	122.7	2349.79	123.14	2350	124.81	2350.78	125.31	2351
127.15	2351.5	128.78	2352	130.09	2352.25	131.04	2352.43	131.58	2352.54
133.61	2353	137.91	2353.98	138.01	2354				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-377.35	.04	98.35	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-377.35	98.35	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2332.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2332.25	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	2.75	1109.69	0.07
E.G. Slope (ft/ft)	0.004801	Area (sq ft)	2.75	1109.69	0.07
Q Total (cfs)	5019.00	Flow (cfs)	2.07	5016.89	0.04
Top Width (ft)	493.58	Top Width (ft)	17.40	475.70	0.48
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	0.75	4.52	0.64
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)	0.16	2.33	0.15
Conv. Total (cfs)	72439.3	Conv. (cfs)	29.9	72408.7	0.6
Length Wtd. (ft)	50.00	Wetted Per. (ft)	17.40	476.67	0.56
Min Ch El (ft)	2327.96	Shear (lb/sq ft)	0.05	0.70	0.04
Alpha	1.00	Stream Power (lb/ft s)	0.04	3.15	0.02
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	0.25	17.74	0.12
C & E Loss (ft)	0.01	Cum SA (acres)	0.40	6.47	0.09

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2100

INPUT
Description:

Station Elevation Data num= 274

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2335	-448.34	2334.79	-443.77	2334.29	-443.72	2334.29	-441.34	2334
-441.32	2334	-439.72	2333.82	-439.48	2333.79	-422.49	2333	-421.89	2333
-420.25	2333	-418.04	2333	-417.5	2333	-407.11	2333	-406.37	2333
-406.1	2333	-405.95	2333	-405	2333	-404.38	2333	-399.83	2333
-398.25	2333	-389.61	2333	-389.53	2333	-389.35	2333	-389.27	2333
-388.46	2333	-387.5	2333	-383.61	2332.97	-382.97	2332.95	-381.47	2332.93
-381.01	2332.92	-380.09	2332.91	-379.88	2332.9	-379.29	2332.89	-377.71	2332.84
-350.34	2332	-344.4	2332	-344.08	2332	-341.98	2332	-341.45	2332
-331.68	2332	-330.65	2332	-329.5	2332	-329.44	2332	-329.37	2332
-324.44	2331.86	-323.71	2331.86	-320	2331.82	-312.8	2331.69	-277.6	2331
-276.06	2331	-275.48	2331	-273.86	2331	-271.64	2331	-271.47	2331
-266.45	2331	-262.29	2331	-257.8	2331	-248.02	2331	-247.72	2331
-238.93	2331	-237.37	2331	-236.26	2331	-236.24	2331	-227.88	2330.74
-222.33	2330.65	-221.79	2330.64	-215.52	2330.54	-213.16	2330.51	-210.58	2330.48
-208.42	2330.44	-207.59	2330.43	-205.26	2330.39	-204.95	2330.39	-201.42	2330.33
-198.7	2330.31	-194.86	2330.3	-192.59	2330.25	-192.33	2330.25	-180.4	2330.2
-179.6	2330.19	-179.55	2330.19	-179.36	2330.18	-170.09	2330.15	-170.01	2330.15
-164.75	2330.14	-158.66	2330.07	-146.43	2330.03	-141.58	2330.02	-140.12	2330.01
-138.38	2330	-136.12	2330	-136	2330	-126.83	2329.84	-126.11	2329.83
-123.63	2329.79	-123.6	2329.78	-122.9	2329.77	-121.99	2329.76	-119.16	2329.66
-117.2	2329.64	-116.58	2329.63	-112.98	2329.54	-108.9	2329.43	-106.79	2329.38
-104.42	2329.35	-100.58	2329.28	-100.42	2329.28	-99.8	2329.26	-84.13	2329
-83.95	2329	-83.92	2329	-83.9	2329	-83.79	2329	-82.78	2329
-82.35	2329	-77.57	2329	-75.47	2329	-74.38	2329	-72.07	2329
-66.08	2329	-64.48	2329	-63.9	2329	-47.22	2328.44	-47	2328.44
-46.29	2328.43	-36.96	2328	-36.83	2328	-36.74	2328	-30.24	2328
-29.17	2328	-28.79	2328	-26.58	2328	-17.37	2328	-16.66	2328
-16.36	2328	-13.36	2328	-11.61	2328	-9.61	2328	-9.21	2328
-4.81	2327.77	-4.46	2327.76	-4.25	2327.75	-4.17	2327.75	-4.12	2327.75
0	2327.72	14.66	2327.59	14.95	2327.6	15.03	2327.6	19.31	2327.6
20.83	2327.59	26.15	2327.46	28.68	2327.44	29.25	2327.42	34.5	2327
36.3	2327	39.68	2327	42.08	2327	42.82	2327	44.07	2327
44.61	2327	44.9	2327	49.37	2327.5	49.71	2327.55	50.27	2327.61
52.22	2327.89	52.75	2327.94	53.02	2327.97	53.05	2327.97	53.13	2327.97
54.91	2327.9	55.43	2327.85	55.72	2327.82	55.76	2327.82	55.96	2327.79
59.5	2327.45	59.57	2327.44	60.07	2327.4	60.72	2327.37	61.49	2327.36
63.9	2327.44	64.18	2327.48	64.62	2327.55	66.7	2327.59	67.14	2327.65
67.53	2327.66	67.87	2327.7	73.6	2327.88	74.48	2327.95	75.17	2328
75.2	2328	75.21	2328	75.24	2328	77.44	2328	81.68	2328.58
84.34	2329	86.43	2329.3	90.78	2330	90.87	2330.01	91.12	2330.06
92.22	2330.33	92.37	2330.37	92.57	2330.44	93.28	2330.64	93.46	2330.67
94.33	2330.79	95.81	2331	100.98	2331.76	101.93	2332	105.1	2332.8
105.66	2333	105.84	2333.06	107.71	2334	109.09	2334.63	110.13	2335
111.33	2335.31	111.39	2335.33	111.8	2335.49	112.4	2335.73	112.97	2336
113.69	2336.33	115.1	2336.97	115.17	2337	115.26	2337.04	116.85	2337.69
117.89	2338	119.88	2338.52	120.2	2338.61	121.69	2339	122.66	2339.48
122.88	2339.62	123.5	2340	124.62	2340.54	125.6	2341	126.4	2341.4
127.48	2342	129.28	2342.99	129.28	2343	129.29	2343	130.9	2344
132.49	2344.82	132.75	2345	133.16	2345.29	133.97	2346	134.42	2346.58
134.82	2347	135.36	2347.4	135.86	2348	136.79	2348.86	137.54	2349
137.65	2349	137.88	2349	139.26	2349	139.84	2349.04	142.37	2349
142.81	2349.05	142.91	2349.08	144.26	2349.5	144.42	2349.57	144.8	2349.75
145.32	2350	145.58	2350.11	145.89	2350.28	147.44	2351	149.61	2351.99
149.64	2352	149.74	2352.02	149.75	2352.02	152.82	2352.58	155.49	2352.9
155.7	2352.93	156.03	2352.96	156.07	2352.97	156.41	2353		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-236.26	.04	95.81	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-236.26	95.81	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2332.33		
Vel Head (ft)	0.38	0.040	0.040	0.040
W.S. Elev (ft)	2331.96		
Crit W.S. (ft)			
E.G. Slope (ft/ft)	0.004213		
Q Total (cfs)	5019.00		
Top Width (ft)	429.59		
Vel Total (ft/s)	4.78		
Max Chl Dpth (ft)	4.96		
Conv. Total (cfs)	77325.1		
Length Wtd. (ft)	50.00		
Wt. n-Val.		0.040	0.040	0.040
Reach Len. (ft)		50.00	50.00	50.00
Flow Area (sq ft)		63.17	984.59	3.06
Area (sq ft)		63.17	984.59	3.06
Flow (cfs)		118.90	4895.42	4.68
Top Width (ft)		91.57	332.07	5.95
Avg. Vel. (ft/s)		1.88	4.97	1.53
Hydr. Depth (ft)		0.69	2.96	0.51
Conv. (cfs)		1831.8	75421.1	72.2
Wetted Per. (ft)		91.58	332.50	6.03

* Min Ch El (ft)	* 2327.00	* Shear (lb/sq ft)	* 0.18	* 0.78	* 0.13	*
* Alpha	* 1.06	* Stream Power (lb/ft s)	* 0.34	* 3.87	* 0.20	*
* Frctn Loss (ft)	* 0.31	* Cum Volume (acre-ft)	* 0.21	* 16.54	* 0.12	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.34	* 6.00	* 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.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2150

INPUT
Description:
Station Elevation Data num= 225

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2335.01	-449.12	2335.01	-436.34	2335.01	-427.79	2335.01	-415.52	2335.01
-407.8	2335.01	-321.72	2332.58	-320.98	2331.97	-320.97	2331.97	-320.97	2331.96
-320.93	2331.96	-320.84	2331.95	-320.83	2331.95	-320.77	2331.95	-318.89	2331.95
-318.31	2331.94	-318.29	2331.94	-315.21	2331.87	-307.76	2331.71	-305.24	2331.65
-283.65	2331.22	-283.61	2331.22	-282.96	2331.21	-282.67	2331.21	-281.51	2331.19
-272.35	2331	-271.56	2331	-271.51	2331	-269.67	2330.96	-258.74	2330.8
-258.45	2330.79	-255.93	2330.75	-255.33	2330.74	-254.34	2330.73	-252.18	2330.68
-240.67	2330.47	-238.46	2330.45	-238.13	2330.45	-237.22	2330.45	-235.98	2330.43
-235.8	2330.43	-235.7	2330.43	-198.24	2330	-196.76	2330	-192.83	2330
-192.41	2330	-182.65	2330	-181.31	2330	-180.21	2330	-171.4	2330
-170.79	2330	-168.44	2330	-163.29	2330	-162.95	2330	-162.25	2330
-159.82	2330	-157.97	2330	-157.26	2330	-152.46	2330	-150.05	2330
-150.04	2330	-146.91	2329.94	-146.83	2329.94	-140.82	2329.78	-139.77	2329.76
-136.08	2329.65	-135.77	2329.64	-119.22	2329.43	-117.97	2329.43	-117.63	2329.43
-116.22	2329.45	-111.17	2329.48	-111.13	2329.48	-110.9	2329.48	-89.5	2329.33
-80.24	2329.23	-78.06	2329.2	-73.98	2329.15	-73.96	2329.15	-64	2329
-63.77	2329	-63.46	2329	-49.83	2329	-49.38	2329	-49.03	2329
-48.56	2329	-46.23	2329	-45.4	2329	-44.57	2329	-44.22	2329
-41.69	2329	-41.17	2329	-8.01	2328	-6.91	2327.69	-6.41	2327.55
-4.38	2327	-2.4	2326.32	-1.67	2326	0	2325.26	.15	2325.2
1.73	2325.47	2.37	2325.59	3.77	2326	4.04	2326	4.4	2326
4.48	2326	4.79	2326	7.53	2326.21	11.34	2326.42	13.91	2326.58
20.96	2326.91	20.99	2326.91	21.9	2327	25.58	2327.23	25.71	2327.24
28.59	2327.36	28.97	2327.38	29.69	2327.43	30.01	2327.45	33.29	2327.71
34.41	2327.79	35.97	2327.96	36.01	2327.96	36.33	2328	36.46	2328
47.6	2328.78	48.7	2328.83	49.68	2328.85	51.31	2329	55.42	2329
55.92	2329.02	55.93	2329.02	55.95	2329.02	55.97	2329.02	55.99	2329.02
56.07	2329.02	56.44	2329.06	60.17	2329.39	60.49	2329.43	62.37	2330
64.03	2330.59	65.47	2331	67.13	2331	67.16	2331	67.61	2330.87
67.85	2330.85	68.67	2330.74	73.98	2330.29	76.24	2330.12	77.18	2330
78.13	2329.86	84.33	2329	89.9	2328.14	91.8	2328.02	91.83	2328.02
92.21	2328.02	92.28	2328.03	94.07	2328.31	94.44	2328.41	94.67	2328.41
95.59	2328.44	96.03	2328.51	97.5	2328.77	98.61	2329	102.24	2329.64
102.64	2329.74	102.74	2329.76	103.02	2329.84	103.52	2330	105.65	2330.83
106.06	2331	106.87	2331.36	108.41	2332	109.31	2332.37	110.78	2333
112.51	2333.75	113.18	2334	113.59	2334.15	116	2335	116.9	2335.33
118.77	2336	120.04	2336.46	121.4	2337	122.04	2337.26	122.72	2337.54
123.7	2338	123.9	2338.11	125.74	2339	127.63	2339.91	127.78	2340
128.07	2340.15	129.79	2341	129.93	2341.08	131.11	2341.65	131.75	2341.96
131.84	2342	131.94	2342.04	133.15	2342.52	134.03	2343	134.87	2343.71
135.1	2343.87	135.32	2344	135.39	2344.1	135.99	2345	136.44	2345.8
136.57	2346	137.02	2346.8	137.18	2347	138.77	2347.89	138.91	2348
139.56	2348.38	140.73	2349	141.52	2349.51	141.72	2349.66	142.06	2350
142.33	2350.14	144.09	2351	146.97	2351.86	147.45	2352	148.37	2352.29
150.42	2352.87	150.88	2353	159.1	2353.68	166.3	2353.59	167.28	2353.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-258.74	.04	65.47	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-258.74	65.47	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	* 2332.00	• Element	• Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.60	* Wt. n-Val.	* 0.040	• 0.040	* 0.040 *
* W.S. Elev (ft)	* 2331.40	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
• Crit W.S. (ft)	*	* Flow Area (sq ft)	* 10.86	* 726.12	* 78.06 *

* E.G. Slope (ft/ft)	*0.009822	* Area (sq ft)	*	10.86	*	726.12	*	78.06	*
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	18.68	*	4567.02	*	433.30	*
* Top Width (ft)	* 399.73	* Top Width (ft)	*	34.02	*	324.21	*	41.50	*
* Vel Total (ft/s)	* 6.16	* Avg. Vel. (ft/s)	*	1.72	*	6.29	*	5.55	*
* Max Chl Dpth (ft)	* 6.20	* Hydr. Depth (ft)	*	0.32	*	2.24	*	1.88	*
* Conv. Total (cfs)	* 50642.1	* Conv. (cfs)	*	188.5	*	46081.6	*	4372.0	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	34.02	*	325.18	*	42.17	*
* Min Ch El (ft)	* 2325.20	* Shear (lb/sq ft)	*	0.20	*	1.37	*	1.14	*
* Alpha	* 1.02	* Stream Power (lb/ft s)	*	0.34	*	8.61	*	6.30	*
* Frctn Loss (ft)	* 0.43	* Cum Volume (acre-ft)	*	0.17	*	15.56	*	0.07	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	0.27	*	5.63	*	0.06	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2200

INPUT
Description:
Station Elevation Data num= 194

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2336.26	-448.05	2336.25	-443.33	2337.01	-431.39	2335.02	-426.14	2335.02
-425.64	2335.02	-407.23	2335.02	-395.66	2335.02	-266.06	2330.51	-266.02	2330.48
-265.99	2330.45	-265.98	2330.53	-265.32	2330.46	-265.08	2330	-264.09	2330
-264.04	2330	-263.93	2330	-263.37	2330	-262.23	2330	-255.98	2330
-254.6	2330	-252.08	2330	-251.86	2330	-251.37	2330	-250.6	2330
-249.33	2330	-248.99	2330	-248.78	2330	-248.01	2330	-246.26	2330
-246.13	2330	-245.7	2330	-245.04	2330	-244.13	2330	-241.2	2330
-241.18	2330	-222.75	2330	-222.54	2330	-222.13	2330	-206.38	2329.64
-206.25	2329.64	-204.52	2329.65	-200.66	2329.72	-200.51	2329.72	-199.78	2329.72
-199.22	2329.72	-199.06	2329.73	-198.83	2329.72	-198.16	2329.74	-187.35	2329.65
-178.93	2329.53	-177.71	2329.51	-174.36	2329.47	-169.04	2329.37	-168.65	2329.37
-167.91	2329.35	-166.85	2329.33	-158.3	2329.2	-147.1	2329	-144.19	2328.93
-143.85	2328.92	-143.79	2328.92	-139.69	2328.84	-138.82	2328.82	-136.73	2328.8
-124.99	2328.61	-124.21	2328.6	-122.88	2328.58	-118.15	2328.63	-100.7	2328.46
-99.02	2328.47	-96.22	2328.48	-95.76	2328.48	-78.3	2328.41	-77.08	2328.39
-74.88	2328.37	-72.06	2328.36	-62.34	2328.28	-61.49	2328.27	-57.09	2328.22
-42.31	2328	-35.33	2327.86	-28.56	2327.74	-23.6	2327.59	-21.64	2327.53
-19.43	2327.48	-3.54	2327	-3.27	2327	-2.98	2326.78	-2.13	2326
-1.18	2325.24	5.19	2325	9.99	2325.74	12.16	2326	12.18	2326
12.24	2326	13.16	2326.06	13.46	2326.08	26.23	2327	26.91	2327
26.99	2327	27.14	2327	28.92	2327	31.15	2327	33.75	2327
38.76	2327.26	39.47	2327.27	39.69	2327.28	52.28	2327.95	52.36	2327.96
53.06	2328	57.88	2328.6	61.03	2329	62.31	2329.21	68.44	2330
68.93	2330.1	72.63	2331	73.19	2331.21	75.31	2332	75.54	2332.09
77	2332.62	78.22	2333	79.44	2333.5	80.75	2334	82.84	2334.92
83.04	2335	83.24	2335.08	85.61	2336	87.09	2336.56	88.36	2337
89.15	2337.27	89.3	2337.33	89.35	2337.35	89.82	2337.54	90.8	2338
91.64	2338.36	92.94	2338.74	93.61	2338.86	93.64	2338.87	93.78	2338.91
94.35	2338.92	95.35	2339	96	2339.05	96.04	2339.06	96.07	2339.06
98.16	2339.02	98.21	2339.02	98.53	2339	99.87	2338.93	100.98	2338.77
104.91	2338.22	105.77	2338	111.47	2337.36	117.73	2337.53	119.54	2338
119.84	2338	121.03	2338	121.56	2338	127.98	2338	130.41	2338.79
130.56	2338.87	131.08	2339	131.67	2339.2	133.13	2339.68	133.9	2340
134.71	2340.85	134.83	2341	135.05	2341.28	135.68	2342	136.08	2342.5
136.6	2343	136.88	2343.3	137.42	2344	137.7	2344.37	138.17	2345
138.55	2345.49	138.99	2346	139.39	2346.46	139.79	2347	140.18	2347.44
140.59	2348	140.99	2348.46	141.38	2349	141.78	2349.56	142.13	2350
142.51	2350.44	142.92	2351	143.31	2351.65	143.59	2352	146.82	2352.48
147.81	2352.74	147.89	2352.75	148.42	2352.79	148.61	2352.79		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-222.75	.04	68.44	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-222.75	68.44	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	* 2331.57	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.60	* Wt. n-Val.	* 0.040	* 0.040	* 0.040	*
* W.S. Elev (ft)	* 2330.97	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 44.61	* 779.91	* 2.01	*
* E.G. Slope (ft/ft)	*0.007696	* Area (sq ft)	* 44.61	* 779.91	* 2.01	*
* Q Total (cfs)	* 5019.00	* Flow (cfs)	* 123.63	* 4891.37	* 4.01	*

* Top Width (ft)	*	351.78	* Top Width (ft)	*	56.52	*	291.19	*	4.07	*
* Vel Total (ft/s)	*	6.07	* Avg. Vel. (ft/s)	*	2.77	*	6.27	*	2.00	*
* Max Chl Dpth (ft)	*	5.97	* Hydr. Depth (ft)	*	0.79	*	2.68	*	0.49	*
* Conv. Total (cfs)	*	57210.5	* Conv. (cfs)	*	1409.2	*	55785.7	*	45.7	*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*	56.90	*	292.14	*	4.18	*
* Min Ch El (ft)	*	2325.00	* Shear (lb/sq ft)	*	0.38	*	1.28	*	0.23	*
* Alpha	*	1.04	* Stream Power (lb/ft s)	*	1.04	*	8.04	*	0.46	*
* Frctn Loss (ft)	*	0.32	• Cum Volume (acre-ft)	*	0.14	*	14.69	*	0.02	*
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	0.21	*	5.27	*	0.03	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2250

INPUT
Description:
Station Elevation Data num= 164

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2346.04	-436.86	2350	-428.24	2350	-417.99	2350	-413.02	2348.48
-404.45	2345	-401.95	2342.57	-396.72	2339.99	-386.95	2336.33	-383.71	2335.02
-351.66	2333.45	-344.28	2333.28	-252.4	2331.32	-214.04	2329.73	-213.88	2329.63
-213.67	2329.5	-213.63	2329.11	-213.56	2329.06	-212.62	2329.06	-212.49	2328.95
-212.35	2328.84	-212.32	2329.13	-211.34	2329.03	-211.12	2329.08	-210.86	2329.18
-209.92	2328.9	-209.88	2328.88	-209.86	2328.87	-209.72	2328.84	-209.04	2328.83
-200.39	2328.78	-199.51	2328.78	-199.28	2328.77	-198.51	2328.75	-194.14	2328.68
-193.37	2328.66	-188.27	2328.55	-186.95	2328.52	-178.5	2328.37	-177.13	2328.34
-173.79	2328.32	-165.42	2328	-164.11	2328	-160.61	2328	-158.75	2328
-156.66	2328	-153.53	2328	-151.86	2328	-144.03	2327.92	-143.9	2327.92
-143.38	2327.92	-143.34	2327.92	-140.93	2327.89	-140.71	2327.89	-135.05	2327.83
-134.03	2327.82	-133.88	2327.82	-130	2327.76	-119.46	2327.58	-118.11	2327.56
-94.89	2327.3	-93.44	2327.31	-91.04	2327.33	-89.19	2327.3	-87.85	2327.3
-86.61	2327.31	-86.36	2327.31	-77.48	2327.27	-71.02	2327.2	-70.26	2327.19
-70.09	2327.19	-59.41	2327.03	-59.3	2327.02	-59.26	2327.02	-58.61	2327.02
-58.34	2327.01	-56.78	2327.02	-56.7	2327.02	-54.09	2327.04	-54.05	2327.04
-51.57	2327.06	-51.06	2327.07	-50.8	2327.07	-50.63	2327.06	-43.93	2327.15
-20.68	2327.09	-20.11	2327.09	-19.98	2327.09	-15.75	2327	-14.5	2327
-12.03	2327	-10.45	2327	-8.75	2327	-3.79	2327	0	2327
.97	2327	3.48	2327	6.31	2326.02	6.32	2326.02	6.37	2326
6.54	2325.99	6.61	2325.99	6.63	2325.99	28.07	2325.74	28.45	2326
28.56	2326.07	29.94	2327	30.9	2327.37	32.74	2328	33.41	2328
33.53	2328	33.82	2328	35.28	2328	35.75	2328	35.82	2328
36.5	2328	37.68	2328	39.89	2328	49.85	2328.86	52.05	2329
63.92	2329.97	64.26	2330	70.35	2330.87	71.27	2331	74.83	2331.8
75.84	2332	77.56	2332.54	79.16	2333	81.28	2333.63	82.52	2334
83.19	2334.24	85.28	2335	85.81	2335.21	87.67	2336	87.8	2336.05
88.98	2336.55	90.03	2336.97	90.12	2337	90.3	2337.07	92.7	2338
94.45	2338.7	95.26	2339	96.81	2339.55	98.12	2340	99.5	2340.49
100.38	2340.76	101.17	2341	102.68	2341.48	104.52	2342	105.04	2342.16
105.74	2342.38	106.4	2342.57	106.96	2342.73	108.03	2343	109.34	2343.33
109.9	2343.46	111.08	2343.67	112.95	2344	114.56	2344.28	115.96	2344.49
116	2344.49	116.19	2344.51	118.85	2344.53	121.33	2344.57		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-213.67	.04	52.05	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-213.67	52.05	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	*	2331.23	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	•	0.53	* Wt. n-Val.	*	0.040	*	0.040	•	0.040	*
* W.S. Elev (ft)	*	2330.70	* Reach Len. (ft)	*	50.00	*	50.00	•	50.00	*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*	11.78	*	845.16	*	16.40	*
• E.G. Slope (ft/ft)	*	0.005369	* Area (sq ft)	*	11.78	*	845.16	•	16.40	*
* Q Total (cfs)	*	5019.00	• Flow (cfs)	*	20.01	*	4955.76	•	43.23	•
* Top Width (ft)	*	306.64	• Top Width (ft)	*	23.80	*	265.72	•	17.12	*
* Vel Total (ft/s)	*	5.75	* Avg. Vel. (ft/s)	*	1.70	*	5.86	*	2.64	*
* Max Chl Dpth (ft)	•	4.96	* Hydr. Depth (ft)	*	0.49	•	3.18	•	0.96	*
* Conv. Total (cfs)	*	68497.4	* Conv. (cfs)	*	273.1	*	67634.3	*	590.0	*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*	23.89	*	267.30	*	17.21	*
* Min Ch El (ft)	*	2325.74	* Shear (lb/sq ft)	*	0.17	*	1.06	•	0.32	*
* Alpha	*	1.03	• Stream Power (lb/ft s)	*	0.28	*	6.21	*	0.84	*
* Frctn Loss (ft)	*	0.25	* Cum Volume (acre-ft)	*	0.11	*	13.76	•	0.01	*

* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.17	* 4.95	* 0.02	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2300

INPUT
Description:
Station Elevation Data num= 134

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2350	-436.88	2350	-423.83	2345.02	-423.8	2345	-423.79	2345
-423.75	2344.99	-404.44	2340	-393.91	2335.43	-392.97	2335	-389.4	2334.87
-381.32	2334.55	-269.9	2330	-263.84	2330	-249.89	2330	-243.14	2330
-235.28	2330	-198.01	2329.5	-178.61	2329.24	-168.92	2329.21	-158.32	2330
-157.48	2327.78	-156.86	2328.03	-156.42	2327.89	-155.9	2327.61	-155.71	2327.51
-155.32	2327.44	-133.3	2327	-132.32	2327	-129.49	2327	-129.3	2327
-129	2327	-125.71	2327	-125.04	2327	-124.21	2327	-122.31	2327
-119.55	2327	-118.77	2327	-118.66	2327	-118.18	2327	-116.29	2327
-113.25	2327	-112.86	2327	-112.8	2327	-112.63	2327	-112.42	2327
-104.41	2327	-86.42	2326.77	-86.33	2326.77	-85.88	2326.77	-85.47	2326.76
-83.62	2326.73	-81.83	2326.69	-81.69	2326.69	-78.83	2326.61	-77.42	2326.57
-58.31	2326.32	-42.62	2326	-42.27	2326	-41.53	2326	-40.99	2326
-40.68	2326	-36.08	2326	-32.53	2326	-24.32	2326	-23.51	2326
-22.01	2326	-20.1	2326	12.54	2326	14.15	2326	14.2	2326
31.75	2326.95	33.15	2327	39.95	2327.41	42.92	2327.59	47.05	2327.86
48.87	2328	50.53	2328.21	56.36	2329	64.13	2329.74	66.47	2330
67.63	2330.18	68.15	2330.24	70.37	2330.46	72.1	2330.63	72.45	2330.67
73.5	2330.75	74.41	2330.85	77.2	2331	78.4	2331.14	79.07	2331.29
81.91	2331.66	82.09	2331.69	83.18	2331.86	83.91	2332	86.43	2332.6
88.31	2333	90.75	2333.45	92.14	2333.67	94.61	2334	96.61	2334.31
99.52	2334.68	99.67	2334.7	100.14	2334.76	100.91	2334.85	101.6	2334.92
102.25	2335	108.25	2335.67	111.23	2336	111.81	2336.07	112.35	2336.13
117.49	2336.65	121.44	2337	124.31	2337.23	134.34	2338	136.32	2338.11
136.38	2338.12	136.96	2338.16	137.32	2338.17	137.55	2338.19	138.76	2338.26
139	2338.28	142.37	2338.59	143.7	2338.71	147.03	2339	152.78	2339.32
158.12	2339.59	159.55	2339.7	159.84	2339.72	160.4	2339.75	161.8	2339.82
162.49	2339.83	163.68	2339.91	163.75	2339.92	164.82	2340		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-158.32	.04	64.13	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-158.32	64.13	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2330.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2330.45	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	86.01	817.09	2.13
E.G. Slope (ft/ft)	0.004549	Area (sq ft)	86.01	817.09	2.13
Q Total (cfs)	5019.00	Flow (cfs)	170.09	4846.30	2.61
Top Width (ft)	351.21	Top Width (ft)	122.62	222.45	6.15
Vel Total (ft/s)	5.54	Avg. Vel. (ft/s)	1.98	5.93	1.23
Max Chl Dpth (ft)	4.45	Hydr. Depth (ft)	0.70	3.67	0.35
Conv. Total (cfs)	74416.6	Conv. (cfs)	2521.9	71855.9	38.8
Length Wtd. (ft)	50.00	Wetted Per. (ft)	122.66	224.33	6.19
Min Ch El (ft)	2326.00	Shear (lb/sq ft)	0.20	1.03	0.10
Alpha	1.11	Stream Power (lb/ft s)	0.39	6.13	0.12
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	0.05	12.80	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	0.08	4.67	0.00

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2350

INPUT
Description:
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

-450	2345.6	-449.35	2345.71	-438.12	2345	-430.96	2344.59	-428.55	2344.07
-417.33	2340	-404.7	2336.24	-401.07	2335	-350.67	2332.79	-305.39	2331.23
-291.89	2330.72	-273.18	2330	-270.74	2330	-267.78	2329.95	-267.72	2329.95
-265.29	2329.92	-265.27	2329.92	-164.78	2328.57	-149.39	2328.37	-128.5	2328.3
-108.06	2327.08	-107.99	2327.03	-103.12	2326.77	-100.31	2326.61	-99.94	2326.59
-97.35	2326.47	-96.67	2326.45	-95.12	2326.37	-84.48	2326	-84.38	2326
-81.94	2326	-69	2326	-68.55	2326	-67.29	2326	2.21	2326
5.28	2326	14.37	2326	16.03	2326	46.8	2326	46.82	2326
46.96	2326.03	52.19	2327	55.21	2327.88	55.68	2328	56.88	2328.47
57.97	2328.88	58.24	2329	60.65	2329.98	60.69	2330	60.72	2330.01
63.01	2331	65.09	2331.94	65.22	2332	65.41	2332.1	67.37	2333
67.58	2333.1	69.57	2334	71.26	2334.87	71.51	2335	73.09	2335.82
73.45	2336	74.96	2336.78	75.39	2337	76.8	2337.73	77.32	2338
79.09	2338.91	79.27	2339	80.66	2339.72	81.22	2340	82.65	2340.71
83.27	2341	83.36	2341.04	85.42	2342	86.07	2342.29	87.57	2343
89.17	2343.6	90.21	2344	92.25	2344.66	93.42	2345	96.33	2345.97
96.43	2346								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-267.78	.04	60.65	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-267.78	60.65	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2330.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2330.22	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	1.89	894.99	0.07
E.G. Slope (ft/ft)	0.006000	Area (sq ft)	1.89	894.99	0.07
Q Total (cfs)	5019.00	Flow (cfs)	1.67	5017.29	0.04
Top Width (ft)	340.10	Top Width (ft)	11.12	328.43	0.56
Vel Total (ft/s)	5.60	Avg. Vel. (ft/s)	0.88	5.61	0.66
Max Chl Dpth (ft)	4.22	Hydr. Depth (ft)	0.17	2.73	0.12
Conv. Total (cfs)	64794.3	Conv. (cfs)	21.6	64772.2	0.6
Length Wtd. (ft)	50.00	Wetted Per. (ft)	11.12	329.13	0.61
Min Ch El (ft)	2326.00	Shear (lb/sq ft)	0.06	1.02	0.04
Alpha	1.00	Stream Power (lb/ft s)	0.06	5.71	0.03
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	0.00	11.82	0.00
C & E Loss (ft)	0.02	Cum SA (acres)	0.01	4.36	0.00

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2400

INPUT
Description:
Station Elevation Data num= 103

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2337.36	-438.41	2339.67	-436.72	2340	-436.17	2340	-421.97	2340
-406.84	2336.19	-401.47	2335	-389.38	2331.66	-377.93	2332.42	-369.76	2331.48
-309.71	2330.35	-300.4	2330	-264.52	2329.5	-223.06	2328.89	-209.61	2328.68
-208.11	2328.67	-206.31	2328.64	-205.91	2328.64	-131.55	2327.64	-120.16	2327.49
-88.08	2327.38	-54.43	2325.86	-52.71	2325.79	57.46	2325.6	62.74	2326
64.42	2326.23	67.38	2326.61	69.67	2327	70.65	2327.23	72.16	2327.53
74.25	2328	74.57	2328.13	76.12	2329	76.81	2329.32	78.35	2330
80.09	2330.58	81.37	2331	83.83	2331.97	83.88	2332	83.9	2332.01
84.18	2332.14	84.5	2332.27	85.93	2332.89	86.45	2333	87.54	2333.33
87.85	2333.34	87.89	2333.34	88.04	2333.32	89.6	2333.13	90.38	2333
91.79	2332.79	92.68	2332.64	96.4	2332	97.97	2331.72	98.67	2331.62
98.99	2331.58	99.31	2331.54	101.12	2331.35	104.63	2331.07	104.66	2331.07
104.92	2331.04	105.27	2331.08	105.39	2331.1	105.7	2331.15	106.01	2331.2
106.06	2331.2	111.14	2332	114.01	2332.61	116.08	2333	118.98	2333.71
120.22	2334	122.8	2334.64	124.16	2335	124.26	2335.03	127.72	2336
129.38	2336.45	129.95	2336.6	130.24	2336.69	131.36	2337	132.18	2337.3
134.05	2338	135.75	2338.61	136.79	2339	138.8	2339.72	139.37	2339.91
139.64	2340	141.94	2340.79	142.63	2341	144.27	2341.4	146.63	2342
147.52	2342.24	149.76	2342.73	150.41	2342.85	150.95	2342.97	151.18	2343
152.89	2343.31	156.42	2344	157.26	2344.15	158.25	2344.29	159.68	2344.53
160.24	2344.63	161.93	2344.93	162.43	2345				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

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    -450     .04  -300.4     .04   78.35     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -300.4   78.35               50      50      50             .1       .3
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CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2330.40	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.43	Wt. n-Val.		0.040		
W.S. Elev (ft)	2329.97	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		957.58		
E.G. Slope (ft/ft)	0.005748	Area (sq ft)		957.58		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	376.47	Top Width (ft)		376.47		
Vel Total (ft/s)	5.24	Avg. Vel. (ft/s)		5.24		
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		2.54		
Conv. Total (cfs)	66199.7	Conv. (cfs)		66199.7		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		377.18		
Min Ch El (ft)	2325.60	Shear (lb/sq ft)		0.91		
Alpha	1.00	Stream Power (lb/ft s)		4.78		
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)		10.76		
C & E Loss (ft)	0.00	Cum SA (acres)		3.95		

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2450

INPUT
Description:
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2339.73	-448.6	2340	-430.56	2340	-410.98	2340	-400.15	2335.68
-398.37	2335	-388.33	2330.93	-385.95	2330	-366.66	2330	-353.75	2330
-340.76	2330	-328.45	2330	-320.31	2330	-310.66	2330	-216.78	2328.36
-187.43	2327.95	-160.26	2327.55	-151.45	2327.41	-148.49	2327.39	-147.33	2327.37
-146.56	2327.36	-98.32	2326.71	-90.93	2326.62	-47.66	2326.47	-4	2325.96
-3.99	2325.9	-3.99	2325.84	-3.73	2325.7	-3.72	2325.64	-1.67	2325.27
59.69	2325.33	64.82	2326	69.49	2326.8	70.93	2327	71.37	2327.17
73.43	2328	74.26	2328.35	75.9	2329	77.2	2329.54	78.26	2330
79.65	2330.78	80.01	2331	81.77	2331.97	81.82	2332	82.01	2332.11
82.12	2332.16	83.98	2333	84.84	2333.39	86.39	2334	86.51	2334.05
86.77	2334.15	87.78	2334.58	88.97	2334.91	89	2334.92	89.1	2334.95
89.13	2334.96	89.33	2335	92.14	2335.62	93.68	2336	94.76	2336.26
96.42	2336.67	97.57	2337	100.11	2337.7	101.5	2338	102.89	2338.31
104.63	2338.68	105.96	2339	107.75	2339.42	109.82	2340	110.93	2340.37
111.99	2340.7	113.23	2341	114.09	2341.24	115.52	2341.56	116.38	2341.82
117.08	2342	118.16	2342.3	118.83	2342.46	119.16	2342.55	120.57	2343
121.46	2343.33	123.07	2344	123.78	2344.32	124.03	2344.45	124.64	2344.77
125.03	2345	125.48	2345.27	126.77	2346	127.9	2346.64	128.59	2347
130.81	2347.84	131.25	2348	131.36	2348.04	133.97	2349	134.8	2349.3
136.71	2350								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-310.66	.04	78.26	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-310.66 78.26 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2330.09	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.46	Wt. n-Val.		0.040		
W.S. Elev (ft)	2329.64	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		926.55		
E.G. Slope (ft/ft)	0.006214	Area (sq ft)		926.55		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	367.40	Top Width (ft)		367.40		
Vel Total (ft/s)	5.42	Avg. Vel. (ft/s)		5.42		
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		2.52		
Conv. Total (cfs)	63667.5	Conv. (cfs)		63667.5		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		368.30		
Min Ch El (ft)	2325.27	Shear (lb/sq ft)		0.98		
Alpha	1.00	Stream Power (lb/ft s)		5.29		

* Frctn Loss (ft)	*	0.30	* Cum Volume (acre-ft)	*	*	9.68	*	*	
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	*	3.53	*	*	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2500

INPUT
Description:
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2340	-432.84	2340	-416.19	2340	-396.63	2340	-396.07	2339.81
-382.16	2335	-377.28	2333.33	-368.71	2330	-358.79	2330	-356.09	2330
-339.2	2330	-319.15	2330	-124.26	2326.59	-110.35	2326.4	-97.47	2326.21
-93.29	2326.14	-88.88	2326.1	-88.34	2326.09	-87.2	2326.08	-65.09	2325.79
-61.71	2325.74	-7.23	2325.56	64.81	2324.93	68.2	2326	69.49	2326.5
70.78	2327	73.28	2327.9	73.53	2328	75.79	2328.84	76.2	2329
77.15	2329.28	78.86	2330	80.39	2330.59	81.34	2331	83.46	2331.8
83.92	2332	85.78	2332.71	86.38	2332.91	86.68	2333	88.56	2333.57
89.99	2334	90.33	2334.1	91.14	2334.34	92.24	2334.64	93.62	2335
95.38	2335.56	96.51	2336	98.41	2336.84	98.87	2337	100.91	2337.97
100.93	2337.98	100.96	2338	100.97	2338	102.77	2338.8	103.25	2339
105.13	2339.88	105.39	2340	107.37	2340.94	107.46	2341	107.64	2341.11
108.79	2342	110.3	2342.9	110.48	2343	110.99	2343.31	112.02	2344
112.7	2344.47	113.49	2345	114.56	2345.7	114.99	2346	115.93	2346.66
116.41	2347	117.36	2347.42	118.64	2348	118.89	2348.12	120.61	2349
121.53	2349.39	122.81	2350	135.9	2350.81	138.88	2351		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-319.15	.04	78.86	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-319.15	78.86	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	* 2329.79	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.44	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2329.35	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 943.98	*	*
* E.G. Slope (ft/ft)	*0.005672	* Area (sq ft)	*	* 943.98	*	*
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	*	*
* Top Width (ft)	* 359.54	* Top Width (ft)	*	* 359.54	*	*
* Vel Total (ft/s)	* 5.32	* Avg. Vel. (ft/s)	*	* 5.32	*	*
* Max Chl Dpth (ft)	* 4.42	* Hydr. Depth (ft)	*	* 2.63	*	*
* Conv. Total (cfs)	* 66640.0	* Conv. (cfs)	*	* 66640.0	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 360.34	*	*
* Min Ch El (ft)	* 2324.93	* Shear (lb/sq ft)	*	* 0.93	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 4.93	*	*
* Frctn Loss (ft)	* 0.32	* Cum Volume (acre-ft)	*	* 8.60	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 3.11	*	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2550

INPUT
Description:
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-393.29	2345	-381.73	2340.66	-380.03	2340	-359.41	2331.65	-355.65	2330
-355.25	2330	-327.65	2330	-66.78	2325.44	-57.87	2325.3	-44.26	2325
-41.09	2325	-35.61	2325	-31.02	2325	-29.27	2325	-8.17	2325
0	2325	48.16	2324.75	60.41	2326.56	76.93	2330	82.35	2331.99
89.67	2335	99.46	2339.21	101.32	2340	102.69	2340	102.78	2340.92
102.86	2340.96	107	2340	108.94	2340.93	109.09	2341	109.23	2341.06
111.17	2342	111.25	2342.04	112.26	2342.46	113.44	2343	114.11	2343.39
115.09	2344	116.21	2344.65	116.78	2345	118.16	2345.79	118.52	2346
119.13	2346.35	120.23	2347	122.1	2347.97	122.15	2348	122.17	2348.01
124.78	2349	126.69	2349.72	127.42	2350	134.18	2350.74	136.54	2351

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-393.29	.04	-327.65	.04	76.93	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-327.65	76.93		50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2329.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.92	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		851.91	
E.G. Slope (ft/ft)	0.007338	Area (sq ft)		851.91	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	337.77	Top Width (ft)		337.77	
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)		5.89	
Max Chl Dpth (ft)	4.17	Hydr. Depth (ft)		2.52	
Conv. Total (cfs)	58590.1	Conv. (cfs)		58590.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		338.18	
Min Ch El (ft)	2324.75	Shear (lb/sq ft)		1.15	
Alpha	1.00	Stream Power (lb/ft s)		6.80	
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)		7.57	
C & E Loss (ft)	0.01	Cum SA (acres)		2.71	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2600

INPUT
Description:
Station Elevation Data num= 178

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-395.21	2350	-393.36	2349.41	-379.9	2345	-373.85	2342.65	-363.3	2340
-352.17	2336.33	-337.18	2330	-336.91	2330	-336.14	2330	-328.89	2329.87
-229.8	2328.37	-78.49	2325	-67.17	2325	-60.53	2325	-47.79	2325
-46.39	2325	-44.98	2325	-15.34	2325	0	2324.5	62.24	2325
69.42	2327.01	77.52	2330	87.85	2333.73	91.11	2335	96.1	2338.48
98.94	2340	108.35	2340	137.22	2340	141.52	2336.99	145.16	2335
151.92	2333.08	158	2331.96	158	2332.04	158.09	2332	158.18	2331.96
160.22	2331	161.88	2330.55	163.8	2330	164.66	2329.77	167.79	2329
169.96	2328.46	170.87	2328.28	171.16	2328.24	172.27	2328.22	173.79	2328.17
174.06	2328.19	175.58	2328.1	175.6	2328.1	175.83	2328.11	175.9	2328.1
176.98	2328.15	182.41	2329	185.53	2329.98	185.61	2330	185.62	2330
186.06	2330	186.62	2330	186.8	2330	187.93	2330.23	188.4	2330.24
192.63	2330.16	192.72	2330.16	193.07	2330.19	193.82	2330.21	195.88	2330.38
200.07	2331	200.76	2331.1	200.93	2331.1	201.91	2331.12	202.64	2331
205.08	2330.49	206.8	2330	207.92	2329.71	210.38	2329	211.03	2328.83
211.53	2328.74	212.81	2328.67	214.9	2328.47	215.04	2328.48	215.37	2328.44
219.1	2329	221.26	2329	221.62	2329	222.95	2329	227.4	2329
234.08	2329	234.12	2329	235.04	2329	235.28	2329	236.68	2329.16
236.94	2329.17	236.99	2329.16	237.04	2329.15	239.39	2330	241.38	2329.5
245.09	2329.59	247.05	2329.64	252.66	2329.88	252.82	2329.89	253.94	2330
254.23	2330	254.41	2330	254.63	2330.03	254.74	2330.04	257.39	2330.39
258.86	2330.41	259.76	2330.47	259.95	2330.49	260.52	2330.55	261.76	2330.55
261.85	2330.56	262.42	2330.58	263.5	2330.55	263.63	2330.55	264.04	2330.54
264.59	2330.51	265.47	2330.58	266.66	2330.58	268.23	2330.51	268.72	2330.58
270.64	2330.67	271.11	2330.7	272.53	2330.88	276.72	2331	279.92	2331.2
281.69	2331.27	282.38	2331.31	284.07	2331.45	284.41	2331.46	284.58	2331.48
286.21	2331.49	291.68	2331.9	292.78	2332	292.92	2332	298.61	2332.75
300.12	2332.92	300.6	2333	302.41	2333.37	305.42	2334	306.69	2334.27
309.5	2335	311.59	2335.8	312.2	2336	314.25	2336.97	314.32	2337
315.49	2337.42	317.16	2338	317.24	2338	319.19	2338.6	320.42	2339
321.32	2339.29	323.64	2340	325.21	2340.63	326.35	2341	327.61	2341.57
328.8	2342	329.44	2342.41	329.53	2342.43	330.15	2342.63	330.93	2343
332.53	2343.88	332.72	2344	333.23	2344.33	334.02	2345	335.02	2345.86
335.15	2346	335.27	2346.11	335.56	2346.39	335.83	2346.63	336.01	2346.79
336.26	2346.97	336.32	2347	336.37	2347.03	337.78	2348	338.07	2348.19
339.25	2349	339.79	2349.37	340.72	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-395.21	.04	-337.18	.04	77.52	.04

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -337.18   77.52              50      50      50            .1        .3
Right Levee     Station=   98.94      Elevation=

CROSS SECTION OUTPUT  Profile #FIS Flow
*********************************************************************************************
* E.G. Elev (ft)         * 2329.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.64  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (ft)         * 2328.42  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         * 2327.78  * Flow Area (sq ft)     *          *  782.10  *          *
* E.G. Slope (ft/ft)     *0.008564  * Area (sq ft)          *          *  782.10  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  306.06  * Top Width (ft)       *          *  306.06  *          *
* Vel Total (ft/s)       *    6.42  * Avg. Vel. (ft/s)     *          *    6.42  *          *
* Max Chl Dpth (ft)      *    3.92  * Hydr. Depth (ft)     *          *    2.56  *          *
* Conv. Total (cfs)      * 54236.3  * Conv. (cfs)          *          * 54236.3  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  306.64  *          *
* Min Ch El (ft)         * 2324.50  * Shear (lb/sq ft)     *          *    1.36  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    8.75  *          *
* Frctn Loss (ft)        *    0.39  * Cum Volume (acre-ft)  *          *    6.63  *          *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *          *    2.34  *          *
*********************************************************************************************

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

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper             RS: -2650

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 -354.85    2350 -352.44 2348.52 -346.61    2345 -341.43 2342.47    -336    2340
 -329.44 2337.18  -316.7 2333.48 -304.95    2330 -291.22 2329.46 -278.39 2329.17
 -227.44 2327.56 -112.72    2325 -108.99    2325  -91.33    2325  -88.94    2325
  -69.25    2325  -67.05    2325  -57.64    2325  -44.58    2325   -42.8    2325
  -39.39    2325   -24.7    2325       0    2324   71.86    2325   79.82  2327.8
   82.55  2328.7   86.51    2330   95.29 2333.69  105.18    2335  112.26 2336.94
  118.54    2335  133.71 2331.63  140.32    2330  156.73    2330  182.64    2330
  185.85 2332.73  192.14    2335  198.84 2337.78  204.17    2340  210.88 2341.49
  211.15 2340.07  211.18 2340.06  212.52    2343

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
 -354.85     .04 -304.95     .04   86.51     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -304.95   86.51              50      50      50            .1        .3
Right Levee     Station=  112.26      Elevation=

CROSS SECTION OUTPUT  Profile #FIS Flow
*********************************************************************************************
* E.G. Elev (ft)         * 2328.64  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.55  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (ft)         * 2328.09  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         * 2327.37  * Flow Area (sq ft)     *          *  842.82  *          *
* E.G. Slope (ft/ft)     *0.007223  * Area (sq ft)          *          *  842.82  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  324.75  * Top Width (ft)       *          *  324.75  *          *
* Vel Total (ft/s)       *    5.96  * Avg. Vel. (ft/s)     *          *    5.96  *          *
* Max Chl Dpth (ft)      *    4.09  * Hydr. Depth (ft)     *          *    2.60  *          *
* Conv. Total (cfs)      * 59056.1  * Conv. (cfs)          *          * 59056.1  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  325.34  *          *
* Min Ch El (ft)         * 2324.00  * Shear (lb/sq ft)     *          *    1.17  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    6.96  *          *
* Frctn Loss (ft)        *    0.32  * Cum Volume (acre-ft)  *          *    5.70  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    1.98  *          *
*********************************************************************************************

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

CROSS SECTION
```

RIVER: Las Vegas Wash
REACH: Upper RS: -2700

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-318.98	2350	-315.62	2349.01	-309.14	2347.34	-301.22	2343.59	-284.89	2335.98
-273.22	2330	-199.6	2327.12	-162.97	2325	-153	2325	-144.74	2325
-135.68	2325	-130.39	2325	-120.76	2325	0	2323.5	20.43	2325
36.17	2325	69.15	2325	87.78	2325	96.59	2326.78	100.42	2326.8
124.08	2330	130.52	2330	145.2	2330	149.69	2331.16	157.3	2333.13
161.36	2335	163.55	2336.42	169.48	2340	174.15	2342.89	180.96	2345
188.97	2345	203.41	2345	219.15	2347.38	224.84	2347.47	237.46	2348.2
248.66	2350								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-318.98	.04	-273.22	.04	124.08	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-273.22	124.08	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2328.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.82	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		909.43	
E.G. Slope (ft/ft)	0.005619	Area (sq ft)		909.43	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	325.54	Top Width (ft)		325.54	
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)		5.52	
Max Chl Dpth (ft)	4.32	Hydr. Depth (ft)		2.79	
Conv. Total (cfs)	66957.2	Conv. (cfs)		66957.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		325.93	
Min Ch El (ft)	2323.50	Shear (lb/sq ft)		0.98	
Alpha	1.00	Stream Power (lb/ft s)		5.40	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)		4.70	
C & E Loss (ft)	0.06	Cum SA (acres)		1.60	

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: Las Vegas Wash
REACH: Upper RS: -2750

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-284.9	2350	-280.27	2348.02	-264.22	2340.34	-244.47	2330	-239	2328.54
-233.24	2327.01	-226.32	2325	-217.75	2325	-210.5	2325	-183.5	2325
-164.86	2325	0	2323	101.74	2325	117.14	2327.61	136.46	2330
147.29	2334.08	149.43	2335	153.48	2336.12	165.75	2338.67	172.78	2340
183.36	2342.11	196.83	2345	202.2	2345.85	205.3	2346.44	209.19	2347.06
224.27	2350								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-284.9	.04	-244.47	.04	136.46	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-244.47	136.46	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2328.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.80	Reach Len. (ft)	50.00	50.00	50.00

Crit W.S. (ft)		Flow Area (sq ft)		1220.04	
E.G. Slope (ft/ft)	0.002369	Area (sq ft)		1220.04	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	354.83	Top Width (ft)		354.83	
Vel Total (ft/s)	4.11	Avg. Vel. (ft/s)		4.11	
Max Chl Dpth (ft)	4.79	Hydr. Depth (ft)		3.44	
Conv. Total (cfs)	103122.3	Conv. (cfs)		103122.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		355.48	
Min Ch El (ft)	2323.00	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		2.09	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)		3.47	
C & E Loss (ft)	0.00	Cum SA (acres)		1.21	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2800

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-264.93	2350	-263.11	2349.36	-254.3	2346.92	-247.82	2345	-222.02	2333.58
-212	2330.218	-196.45	2325	-189.78	2325	-188.08	2325	-174.24	2325
-168.46	2325	-164.6	2325	36.03	2322.5	100.44	2325	115.5	2325
120	2327.687	125	2330.672	128.95	2333.03	141.76	2338.95	142.6	2340
145.23	2341.36	152.59	2345	179.71	2347.84	188.32	2348.42	201.78	2350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-264.93	.04	-212	.04	125	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-212	125	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2327.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.65	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1175.31	
E.G. Slope (ft/ft)	0.002386	Area (sq ft)		1175.31	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	324.30	Top Width (ft)		324.30	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)		4.27	
Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)		3.62	
Conv. Total (cfs)	102753.3	Conv. (cfs)		102753.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		325.53	
Min Ch El (ft)	2322.50	Shear (lb/sq ft)		0.54	
Alpha	1.00	Stream Power (lb/ft s)		2.30	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)		2.10	
C & E Loss (ft)	0.04	Cum SA (acres)		0.82	

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: Las Vegas Wash
REACH: Upper RS: -2850

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-269.2	2350	-252.55	2348.17	-236.64	2347.05	-214.73	2345.63	-211.59	2345.4
-205.25	2345	-185.7	2338.13	-174.52	2329.266	-169.14	2325	-165.82	2325
-155.77	2325	-85.16	2325	-49.07	2325	0	2321.85	48.02	2325
126.92	2325	135	2329.874	140.48	2333.18	161.73	2345	183.46	2347.14
193.27	2348.14	217	2350						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
**********************************************
  -269.2      .04 -174.52      .04      135      .04

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       -174.52     135               50      50      50              .1       .3
```

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2327.68	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.72	Wt. n-Val.		0.040		
W.S. Elev (ft)	2326.96	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		738.71		
E.G. Slope (ft/ft)	*0.010204	Area (sq ft)		738.71		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	301.78	Top Width (ft)		301.78		
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)		6.79		
Max Chl Dpth (ft)	5.11	Hydr. Depth (ft)		2.45		
Conv. Total (cfs)	49685.3	Conv. (cfs)		49685.3		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		303.21		
Min Ch El (ft)	2321.85	Shear (lb/sq ft)		1.55		
Alpha	1.00	Stream Power (lb/ft s)		10.54		
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)		1.00		
C & E Loss (ft)	0.04	Cum SA (acres)		0.47		

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2900

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-220.76	2350	-185.09	2345.25	-183.3	2345	-183.18	2344.96	-164.14	2340
-156.5	2337.11	-145	2330.199	-136.35	2325	-86.27	2325	0	2320.85
87.19	2325	133.49	2325	140	2329.434	153.5	2338.63	164.6	2345
200.31	2348.45	220.2	2350						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-220.76	.04	-145	.04	140	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-145 140 21.44 21.44 21.44 .1 .3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2326.97	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.10	Wt. n-Val.		0.040		
W.S. Elev (ft)	2325.87	Reach Len. (ft)	21.44	21.44	21.44	
Crit W.S. (ft)	2325.87	Flow Area (sq ft)		596.23		
E.G. Slope (ft/ft)	*0.018146	Area (sq ft)		596.23		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	272.57	Top Width (ft)		272.57		
Vel Total (ft/s)	8.42	Avg. Vel. (ft/s)		8.42		
Max Chl Dpth (ft)	5.02	Hydr. Depth (ft)		2.19		
Conv. Total (cfs)	37258.4	Conv. (cfs)		37258.4		
Length Wtd. (ft)	21.44	Wetted Per. (ft)		273.28		
Min Ch El (ft)	2320.85	Shear (lb/sq ft)		2.47		
Alpha	1.00	Stream Power (lb/ft s)		20.81		
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)		0.24		
C & E Loss (ft)	0.07	Cum SA (acres)		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.

CROSS SECTION

RIVER: Las Vegas Wash

REACH: Upper RS: -2921.44

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	2344.07	1017.65	2346.87	1033.32	2346.67	1047.14	2347.27	1065.57	2338.37
1098.95	2326.17	1127.07	2324.57	1162.12	2324.17	1197	2324.37	1204.3	2324.17
1222.77	2324.97	1253.57	2326.17	1278.58	2326.97	1296.06	2331.27	1326.39	2329.07
1338.01	2341.97	1360.82	2346.37	1384.17	2345.27	1406.09	2346.37	1422.52	2346.87
1436.76	2345.97	1470.2	2346.77	1484.06	2345.97	1519.4	2348.07	1543.04	2348.07
1568.82	2348.37	1591.74	2346.47	1602.9	2345.67	1623.39	2346.07	1634.57	2345.67
1644.21	2328.47	1663.17	2322.27	1676.21	2321.77	1696.04	2322.07	1703.14	2321.17
1711.21	2322.07	1735.5	2321.57	1749.97	2321.07	1765.72	2322.17	1779.36	2322.27
1792.44	2321.37	1801.18	2321.37	1805.49	2320.27	1812.55	2321.27	1828.22	2321.87
1856.87	2321.77	1901.62	2321.77	1911.73	2320.57	1916.64	2321.57	1935.72	2321.57
1956.94	2330.17	1973.64	2347.77	1989.31	2347.27	1996.61	2348.67	2017.16	2348.07
2040.91	2349.77	2058.42	2350.17	2081.27	2350.37	2107.8	2350.27		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.04	1644.21	.04	1956.94	.04

Bank Sta: Left Right Coeff Contr. Expan.
1644.21 1956.94 .1 .3
Left Levee Station= 1600 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2326.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	2322.98	Reach Len. (ft)			
Crit W.S. (ft)	2323.86	Flow Area (sq ft)		358.89	
E.G. Slope (ft/ft)	0.101385	Area (sq ft)		358.89	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	278.19	Top Width (ft)		278.19	
Vel Total (ft/s)	13.98	Avg. Vel. (ft/s)		13.98	
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)		1.29	
Conv. Total (cfs)	15762.7	Conv. (cfs)		15762.7	
Length Wtd. (ft)		Wetted Per. (ft)		279.17	
Min Ch El (ft)	2320.27	Shear (lb/sq ft)		8.14	
Alpha	1.00	Stream Power (lb/ft s)		113.79	
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)			
C & E Loss (ft)	0.19	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 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.
Note: Program found supercritical flow starting at this cross section.

SUMMARY OF MANNING'S N VALUES

River:Las Vegas Wash

Reach	River Sta.	n1	n2	n3
Upper	-1000	.04	.04	.04
Upper	-1050	.04	.04	.04
Upper	-1100	.04	.04	.04
Upper	-1150	.04	.04	.04
Upper	-1200	.04	.04	.04
Upper	-1250	.04	.04	.04
Upper	-1300	.04	.04	.04
Upper	-1350	.04	.04	.04
Upper	-1400	.04	.04	.04
Upper	-1450	.04	.04	.04
Upper	-1500	.04	.04	.04
Upper	-1550	.04	.04	.04
Upper	-1600	.04	.04	.04
Upper	-1650	.04	.04	.04
Upper	-1700	.04	.04	.04
Upper	-1750	.04	.04	.04

*Upper	*	-1800	*	.04*	.04*	.04*
*Upper	*	-1850	*	.04*	.04*	.04*
*Upper	*	-1900	*	.04*	.04*	.04*
*Upper	*	-1950	*	.04*	.04*	.04*
*Upper	*	-2000	*	.04*	.04*	.04*
*Upper	*	-2050	*	.04*	.04*	.04*
*Upper	*	-2100	*	.04*	.04*	.04*
*Upper	*	-2150	*	.04*	.04*	.04*
*Upper	*	-2200	*	.04*	.04*	.04*
*Upper	*	-2250	*	.04*	.04*	.04*
*Upper	*	-2300	*	.04*	.04*	.04*
*Upper	*	-2350	*	.04*	.04*	.04*
*Upper	*	-2400	*	.04*	.04*	.04*
*Upper	*	-2450	*	.04*	.04*	.04*
*Upper	*	-2500	*	.04*	.04*	.04*
*Upper	*	-2550	*	.04*	.04*	.04*
*Upper	*	-2600	*	.04*	.04*	.04*
*Upper	*	-2650	*	.04*	.04*	.04*
*Upper	*	-2700	*	.04*	.04*	.04*
*Upper	*	-2750	*	.04*	.04*	.04*
*Upper	*	-2800	*	.04*	.04*	.04*
*Upper	*	-2850	*	.04*	.04*	.04*
*Upper	*	-2900	*	.04*	.04*	.04*
*Upper	*	-2921.44	*	.04*	.04*	.04*

SUMMARY OF REACH LENGTHS

River: Las Vegas Wash

Reach	River Sta.	Left	Channel	Right
*Upper	-1000	50*	50*	50*
*Upper	-1050	50*	50*	50*
*Upper	-1100	50*	50*	50*
*Upper	-1150	50*	50*	50*
*Upper	-1200	50*	50*	50*
*Upper	-1250	50*	50*	50*
*Upper	-1300	50*	50*	50*
*Upper	-1350	50*	50*	50*
*Upper	-1400	50*	50*	50*
*Upper	-1450	50*	50*	50*
*Upper	-1500	50*	50*	50*
*Upper	-1550	50*	50*	50*
*Upper	-1600	50*	50*	50*
*Upper	-1650	50*	50*	50*
*Upper	-1700	50*	50*	50*
*Upper	-1750	50*	50*	50*
*Upper	-1800	50*	50*	50*
*Upper	-1850	50*	50*	50*
*Upper	-1900	50*	50*	50*
*Upper	-1950	50*	50*	50*
*Upper	-2000	50*	50*	50*
*Upper	-2050	50*	50*	50*
*Upper	-2100	50*	50*	50*
*Upper	-2150	50*	50*	50*
*Upper	-2200	50*	50*	50*
*Upper	-2250	50*	50*	50*
*Upper	-2300	50*	50*	50*
*Upper	-2350	50*	50*	50*
*Upper	-2400	50*	50*	50*
*Upper	-2450	50*	50*	50*
*Upper	-2500	50*	50*	50*
*Upper	-2550	50*	50*	50*
*Upper	-2600	50*	50*	50*
*Upper	-2650	50*	50*	50*
*Upper	-2700	50*	50*	50*
*Upper	-2750	50*	50*	50*
*Upper	-2800	50*	50*	50*
*Upper	-2850	50*	50*	50*
*Upper	-2900	21.44*	21.44*	21.44*
*Upper	-2921.44			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Las Vegas Wash

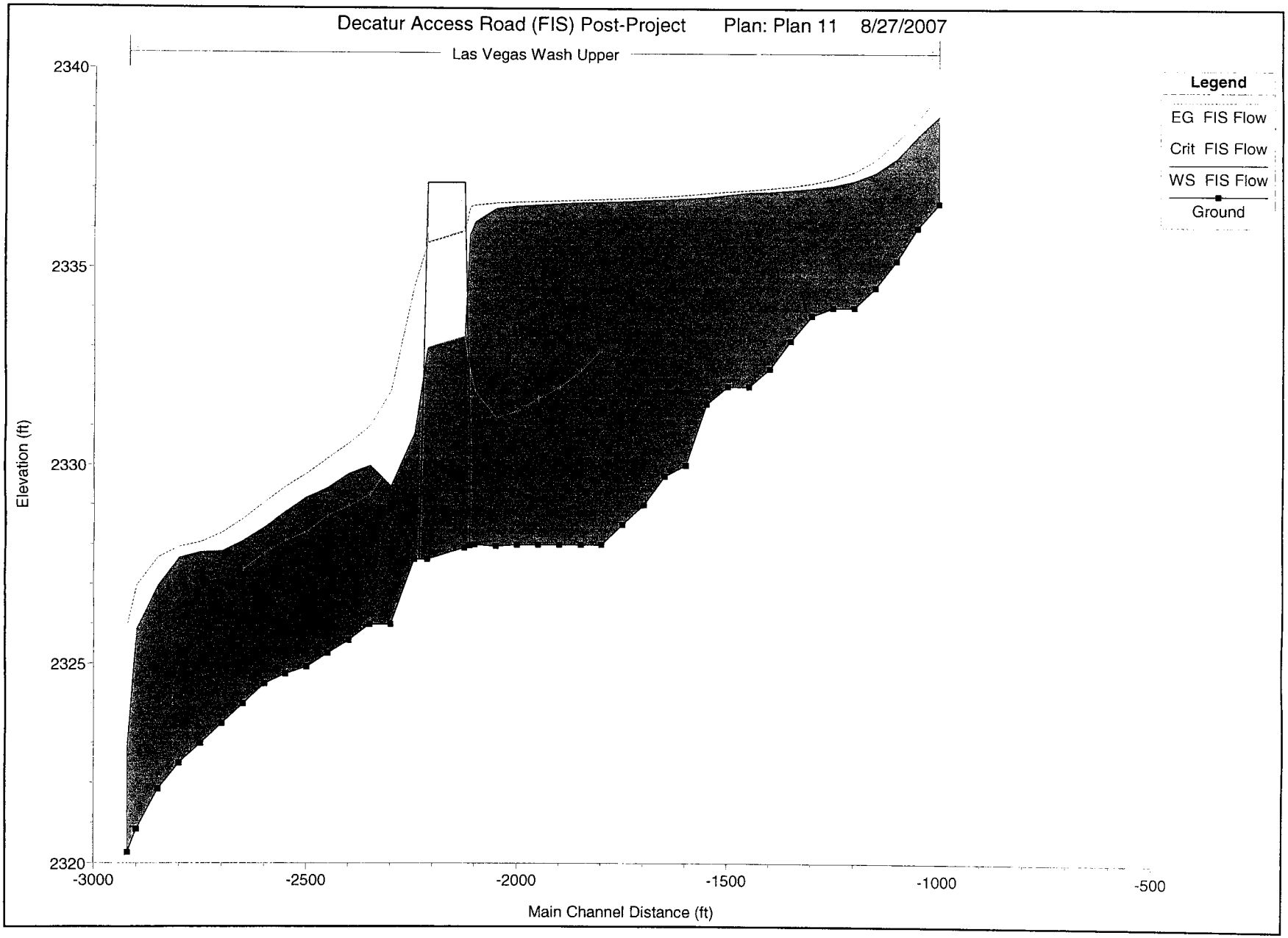
Reach	River Sta.	Contr.	Expan.
Upper	-1000	.1	.3
Upper	-1050	.1	.3
Upper	-1100	.1	.3
Upper	-1150	.1	.3
Upper	-1200	.1	.3
Upper	-1250	.1	.3
Upper	-1300	.1	.3
Upper	-1350	.1	.3
Upper	-1400	.1	.3
Upper	-1450	.1	.3
Upper	-1500	.1	.3
Upper	-1550	.1	.3
Upper	-1600	.1	.3
Upper	-1650	.1	.3
Upper	-1700	.1	.3
Upper	-1750	.1	.3
Upper	-1800	.1	.3
Upper	-1850	.1	.3
Upper	-1900	.1	.3
Upper	-1950	.1	.3
Upper	-2000	.1	.3
Upper	-2050	.1	.3
Upper	-2100	.1	.3
Upper	-2150	.1	.3
Upper	-2200	.1	.3
Upper	-2250	.1	.3
Upper	-2300	.1	.3
Upper	-2350	.1	.3
Upper	-2400	.1	.3
Upper	-2450	.1	.3
Upper	-2500	.1	.3
Upper	-2550	.1	.3
Upper	-2600	.1	.3
Upper	-2650	.1	.3
Upper	-2700	.1	.3
Upper	-2750	.1	.3
Upper	-2800	.1	.3
Upper	-2850	.1	.3
Upper	-2900	.1	.3
Upper	-2921.44	.1	.3

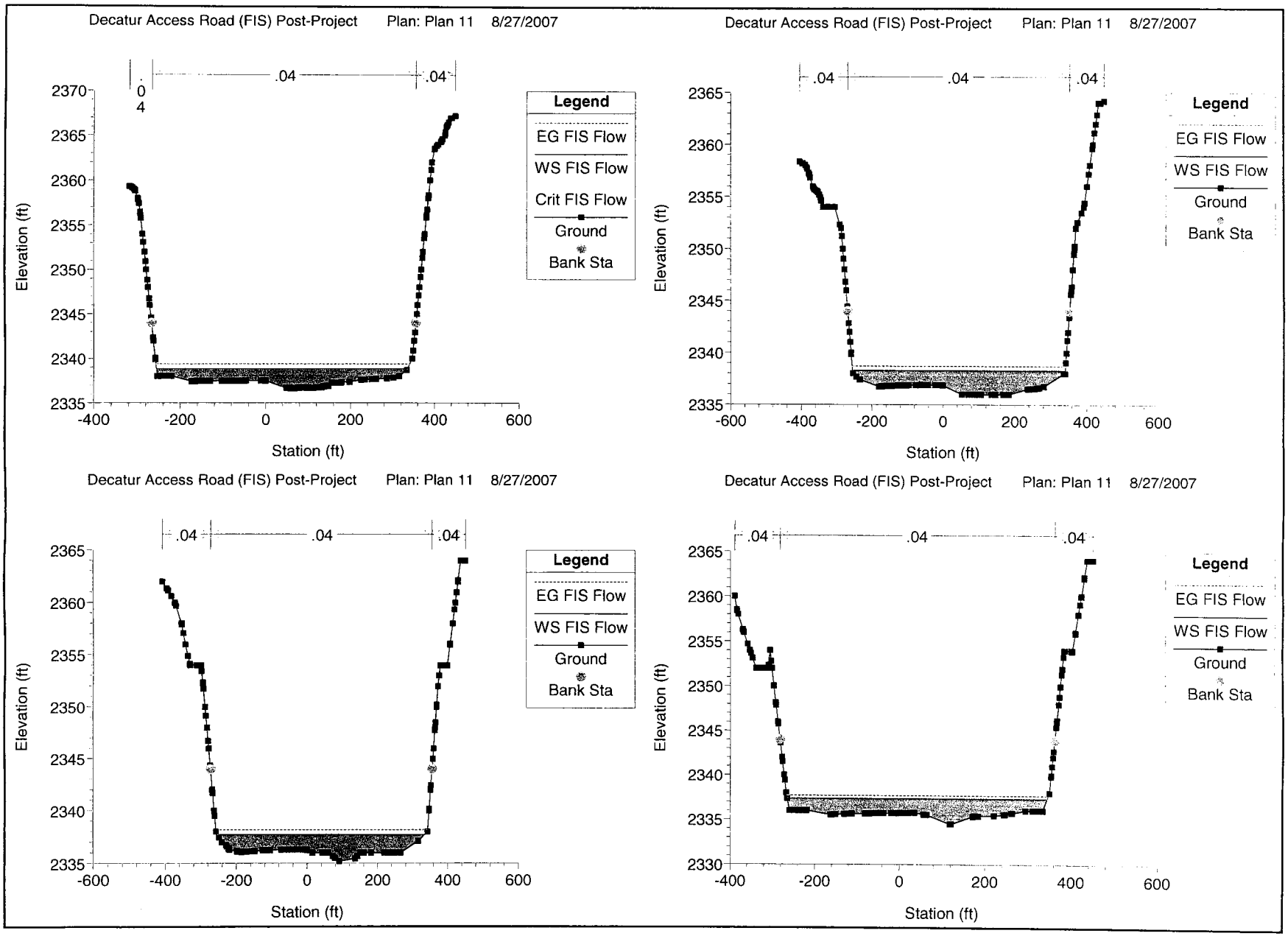
Post-Project HEC-RAS Output

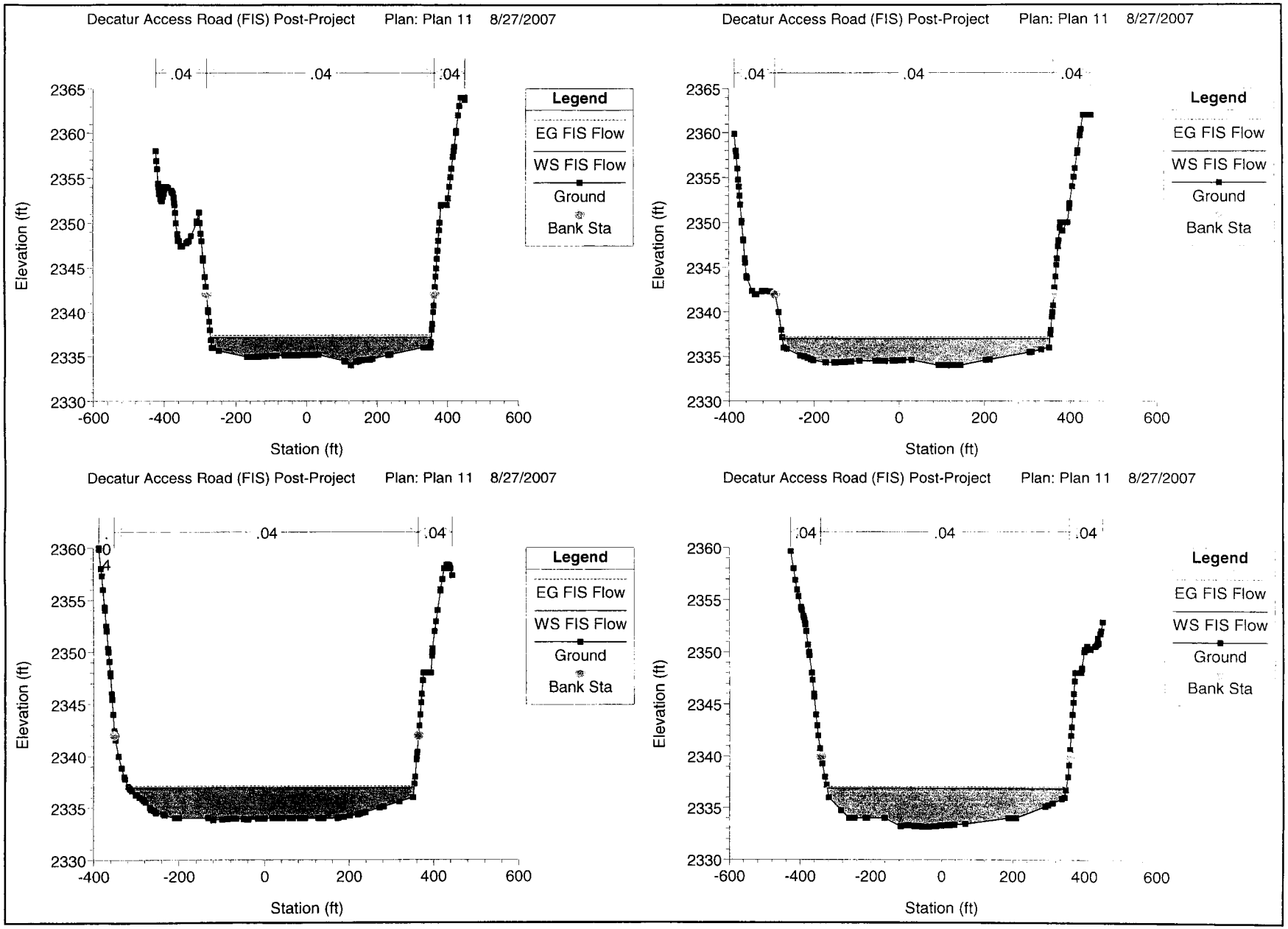
HEC-RAS Plan: Post River: Las Vegas Wash Reach: Upper Profile: FIS Flow

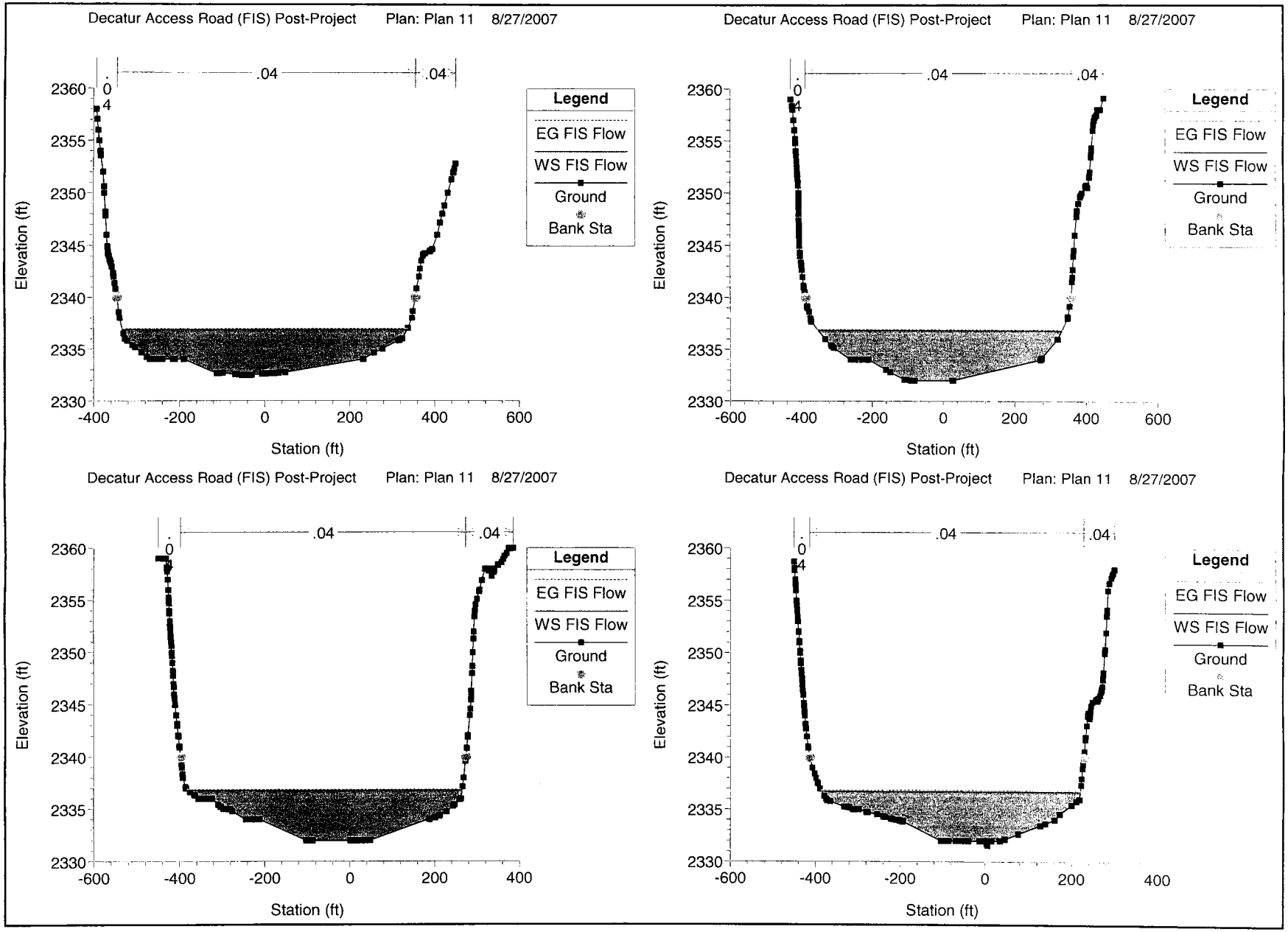
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Upper	-1000	FIS Flow	5019	2336.61	2338.83	2338.72	2339.39	0.016736	6.03	832.02	591.41	0.9
Upper	-1050	FIS Flow	5019	2336	2338.31		2338.72	0.009756	5.11	981.64	596.59	0.7
Upper	-1100	FIS Flow	5019	2335.18	2337.75		2338.19	0.011174	5.35	937.32	588.57	0.75
Upper	-1150	FIS Flow	5019	2334.5	2337.39		2337.72	0.007128	4.61	1087.87	609.4	0.61
Upper	-1200	FIS Flow	5019	2334	2337.19		2337.42	0.004148	3.88	1292.59	624.58	0.48
Upper	-1250	FIS Flow	5019	2334	2337.07		2337.24	0.002512	3.33	1506.73	629.07	0.38
Upper	-1300	FIS Flow	5019	2333.79	2337		2337.13	0.001715	2.9	1733.65	671.33	0.32
Upper	-1350	FIS Flow	5019	2333.16	2336.95		2337.05	0.001148	2.56	1956.88	672.69	0.27
Upper	-1400	FIS Flow	5019	2332.45	2336.91		2337	0.000836	2.33	2149.52	670.17	0.23
Upper	-1450	FIS Flow	5019	2332	2336.89		2336.96	0.000593	2.09	2404.6	686.33	0.2
Upper	-1500	FIS Flow	5019	2332	2336.83		2336.92	0.000841	2.37	2113.46	645.67	0.23
Upper	-1550	FIS Flow	5019	2331.56	2336.77		2336.87	0.001029	2.59	1940.3	606.19	0.25
Upper	-1600	FIS Flow	5019	2330	2336.73		2336.82	0.000722	2.4	2088.24	557.58	0.22
Upper	-1650	FIS Flow	5019	2329.72	2336.71		2336.79	0.000571	2.28	2201.36	533.76	0.2
Upper	-1700	FIS Flow	5019	2329	2336.69		2336.76	0.000469	2.19	2292.18	514.69	0.18
Upper	-1750	FIS Flow	5019	2328.5	2336.66		2336.74	0.000492	2.25	2238.49	507.7	0.19
Upper	-1800	FIS Flow	5019	2328	2336.64	2332.94	2336.71	0.000415	2.17	2319.86	483.88	0.17
Upper	-1850	FIS Flow	5019	2328	2336.62	2332.4	2336.69	0.000343	2.17	2315.88	462.15	0.16
Upper	-1900	FIS Flow	5019	2328	2336.6	2331.97	2336.68	0.000311	2.25	2237.95	444.83	0.16
Upper	-1950	FIS Flow	5019	2328	2336.57	2331.7	2336.66	0.000318	2.4	2090.1	447.09	0.16
Upper	-2000	FIS Flow	5019	2328	2336.54	2331.37	2336.64	0.000341	2.6	1955.44	568.4	0.17
Upper	-2050	FIS Flow	5019	2327.96	2336.47	2331.2	2336.62	0.000432	3.06	1651.69	556.6	0.19
Upper	-2100	FIS Flow	5019	2328	2336.14	2331.86	2336.56	0.001205	5.19	967.74	563.28	0.32
Upper	-2112	FIS Flow	5019	2327.98	2335.82	2332.41	2336.51	0.001628	6.69	750.66	585.44	0.42
Upper	-2165		Bridge									
Upper	-2243.97	FIS Flow	5019	2327.63	2330.8	2331.86	2334.54	0.04802	15.52	323.46	338.37	1.54
Upper	-2300	FIS Flow	5019	2326	2329.45	2330.03	2331.88	0.02755	12.49	401.7	247.82	1.3
Upper	-2350	FIS Flow	5019	2326	2329.98	2329.25	2330.99	0.008019	8.08	621.47	329.91	0.73
Upper	-2400	FIS Flow	5019	2325.6	2329.77	2328.96	2330.54	0.006927	7.05	711.57	361.78	0.67
Upper	-2450	FIS Flow	5019	2325.27	2329.41	2328.73	2330.17	0.007821	7	717.27	353.91	0.7
Upper	-2500	FIS Flow	5019	2324.93	2329.18	2328.31	2329.78	0.006142	6.25	803.35	348.78	0.62
Upper	-2550	FIS Flow	5019	2324.75	2328.82	2328.09	2329.45	0.007205	6.37	788.2	331.22	0.66
Upper	-2600	FIS Flow	5019	2324.5	2328.42	2327.79	2329.06	0.008564	6.42	782.1	306.06	0.71
Upper	-2650	FIS Flow	5019	2324	2328.09	2327.37	2328.64	0.007223	5.96	842.82	324.75	0.65

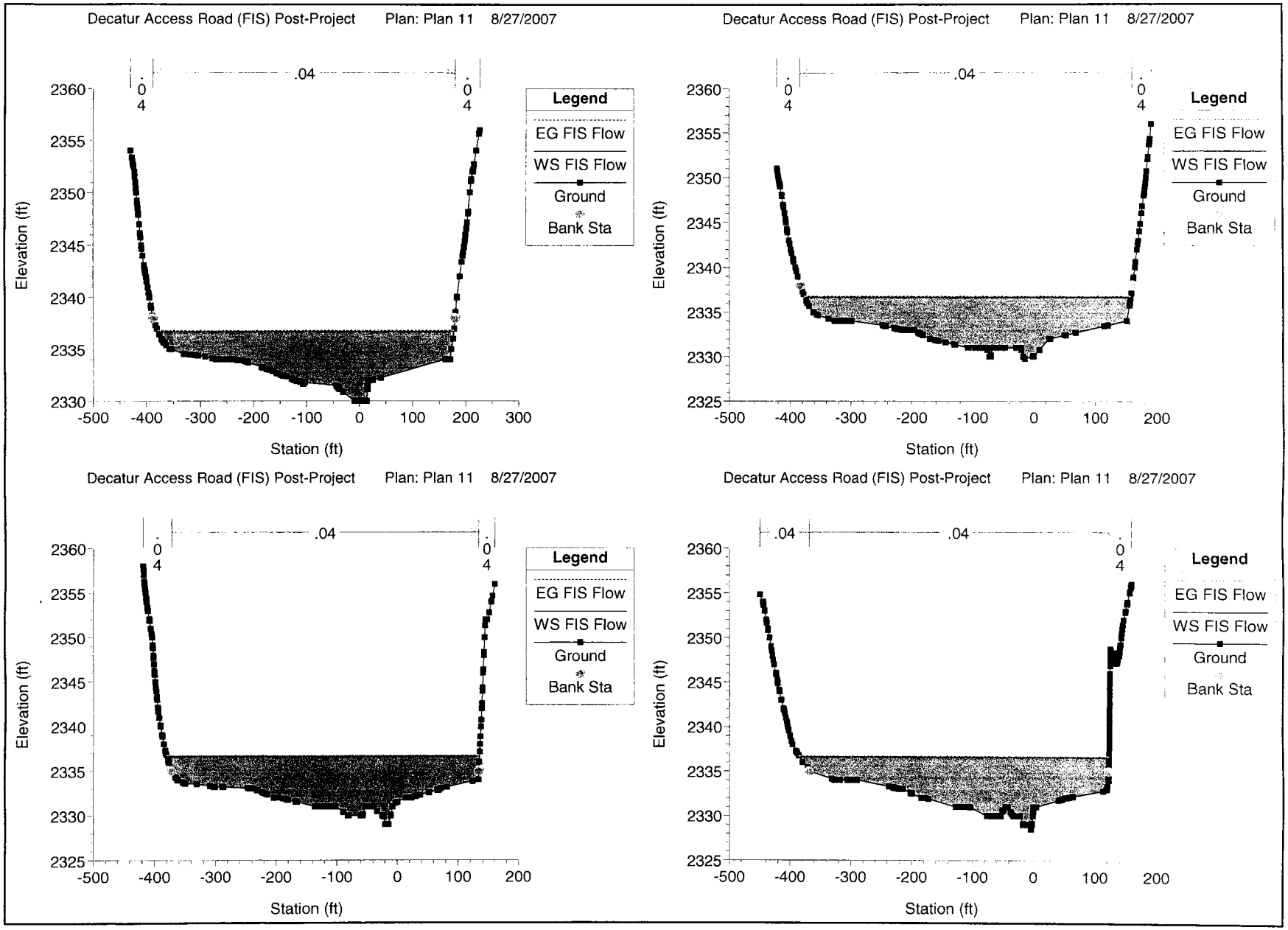
Upper	-2700	FIS Flow	5019	2323.5	2327.82		2328.3	0.005619	5.52	909.43	325.54	0.58
Upper	-2750	FIS Flow	5019	2323	2327.8		2328.06	0.002369	4.11	1220.04	354.83	0.39
Upper	-2800	FIS Flow	5019	2322.5	2327.65		2327.94	0.002386	4.27	1175.31	324.3	0.4
Upper	-2850	FIS Flow	5019	2321.85	2326.96		2327.68	0.010204	6.79	738.71	301.78	0.77
Upper	-2900	FIS Flow	5019	2320.85	2325.87	2325.87	2326.97	0.018146	8.42	596.23	272.57	1
Upper	-2921.44	FIS Flow	5019	2320.27	2322.98	2323.86	2326.01	0.101385	13.98	358.89	278.19	2.17

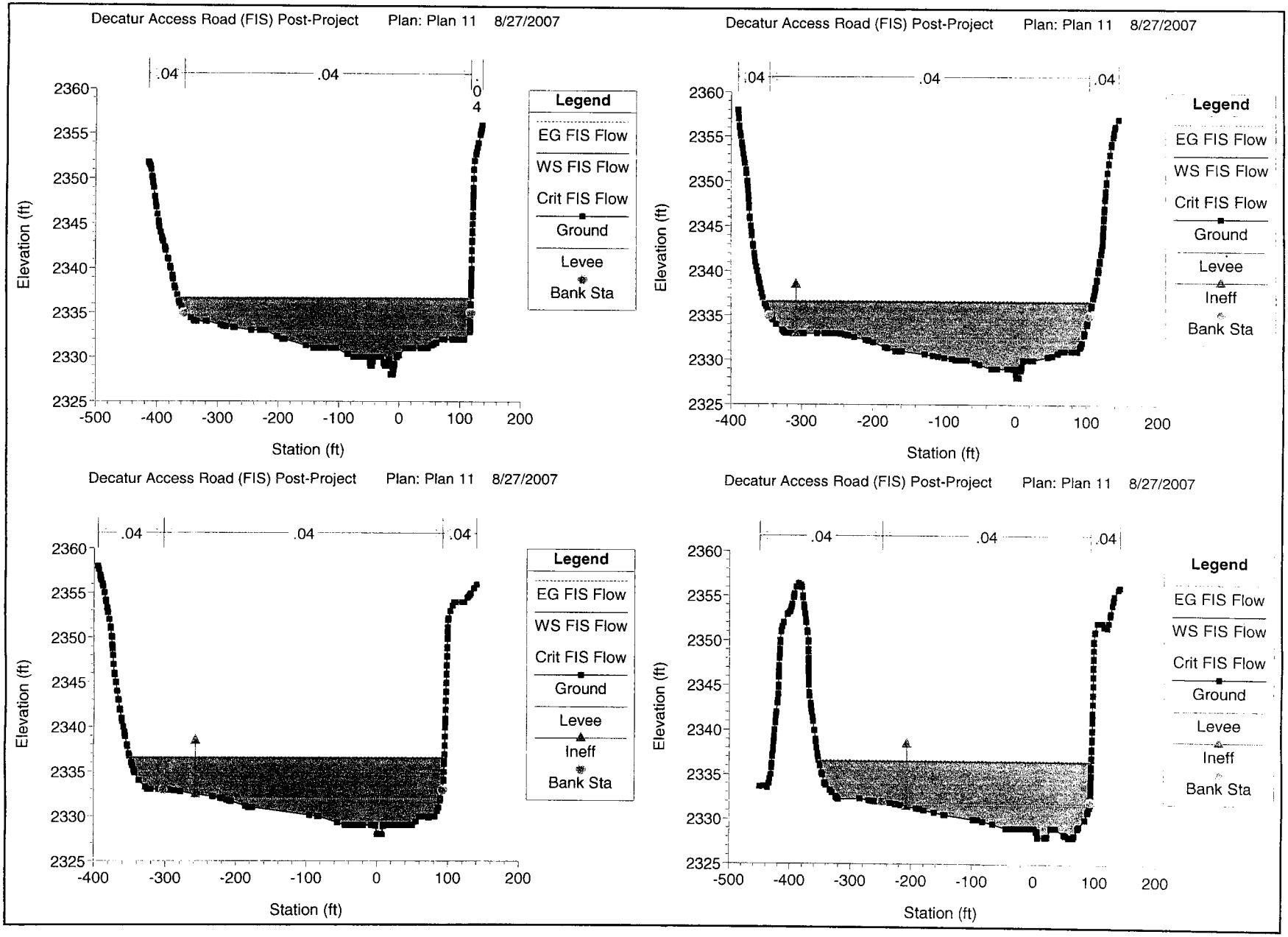

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
Las Vegas Wash Upper
Legend
EG FIS Flow
Crit FIS Flow
WS FIS Flow
Ground
Elevation (ft)
2340
2335
2330
2325
2320
-3000
-2500
-2000
-1500
-1000
-500
Main Channel Distance (ft)

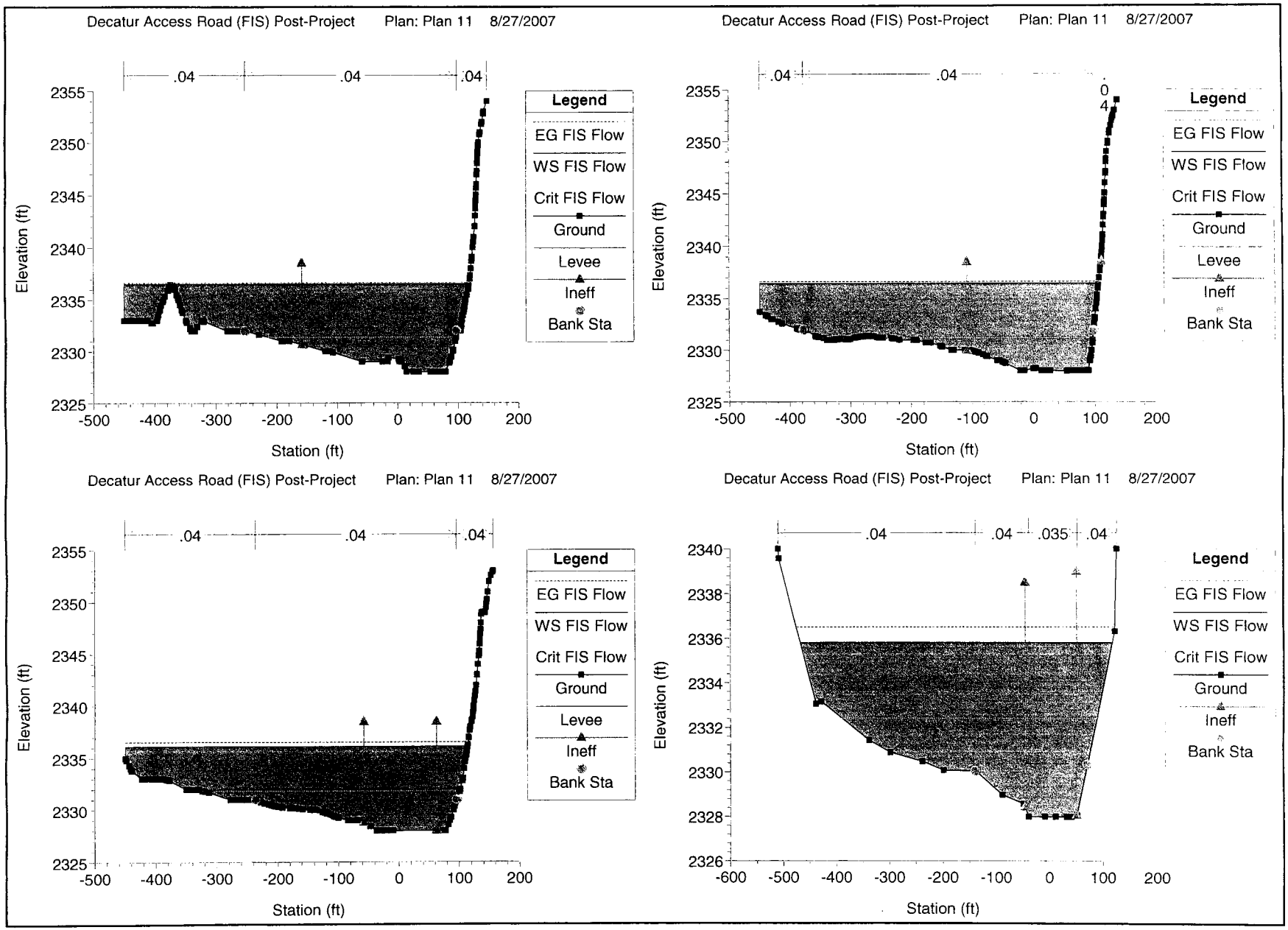

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

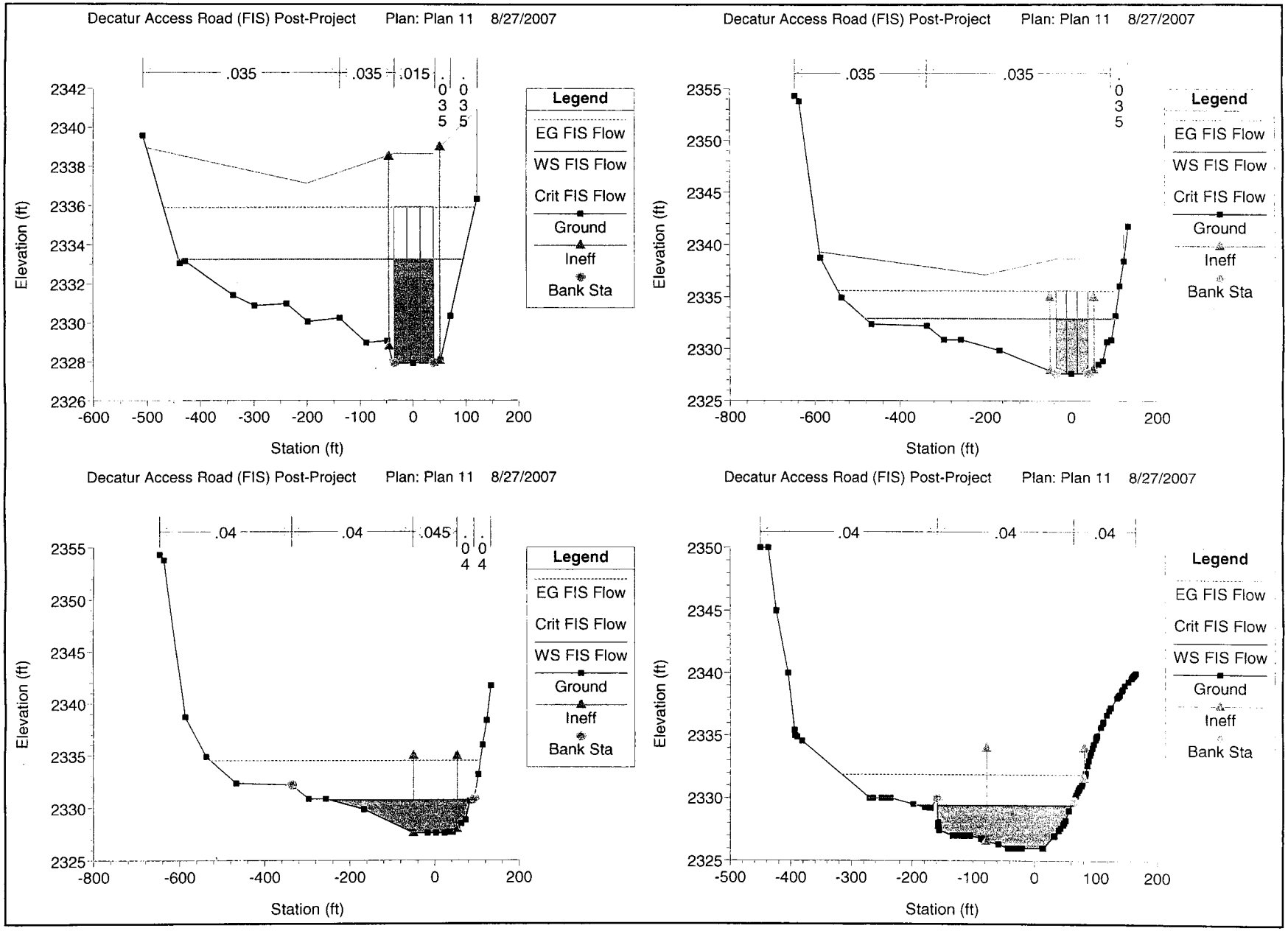

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2365
2360
2355
2350
2345
2340
2335
2330
-600
-400
-200
0
200
400
600
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2365
2360
2355
2350
2345
2340
2335
2330
-400
-200
0
200
400
600
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-400
-200
0
200
400
600
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-600
-400
-200
0
200
400
600

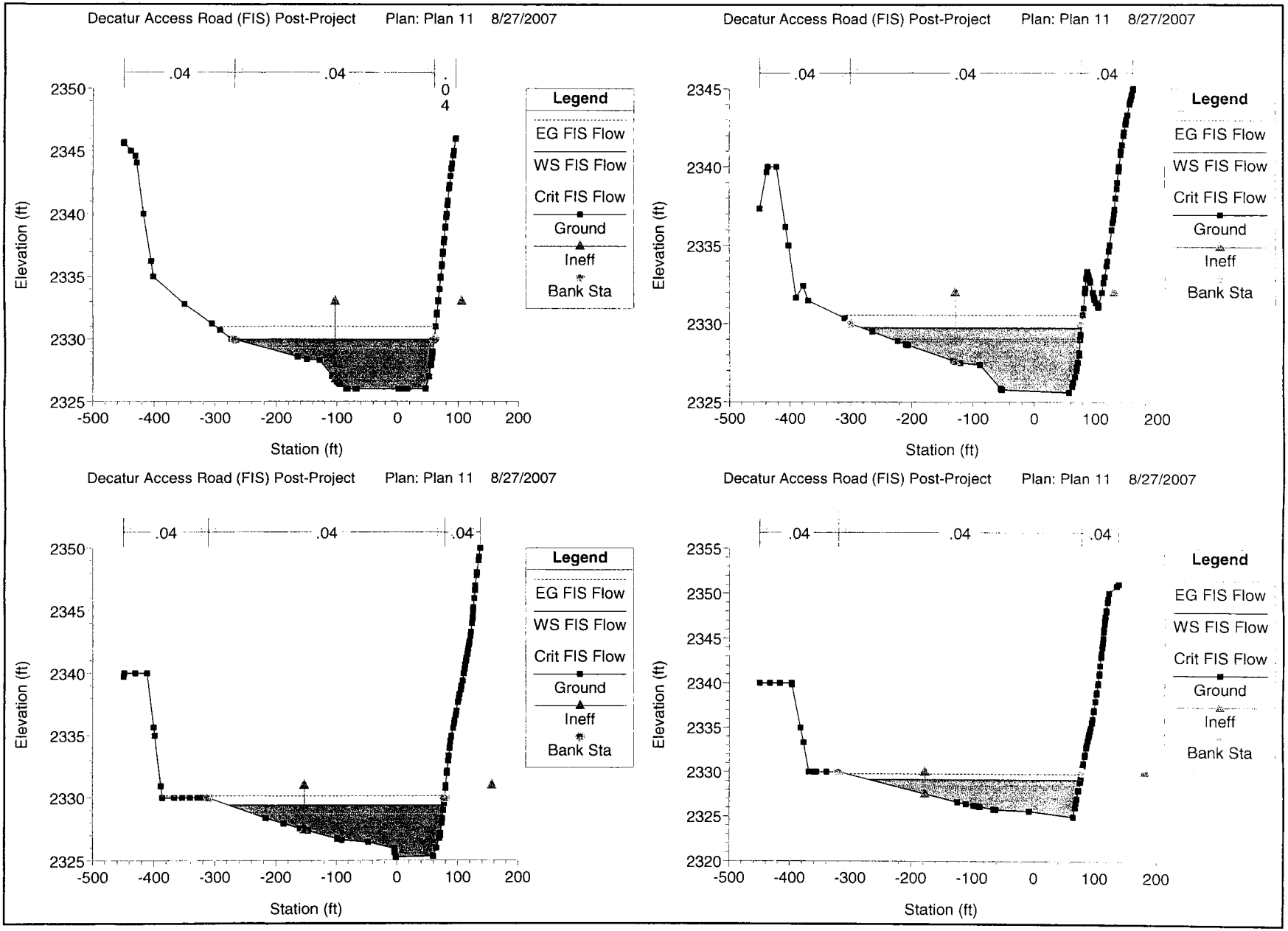

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-400
-200
0
200
400
600
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-600
-400
-200
0
200
400
600
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-600
-400
-200
0
200
400
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2360
2355
2350
2345
2340
2335
2330
-600
-400
-200
0
200
400

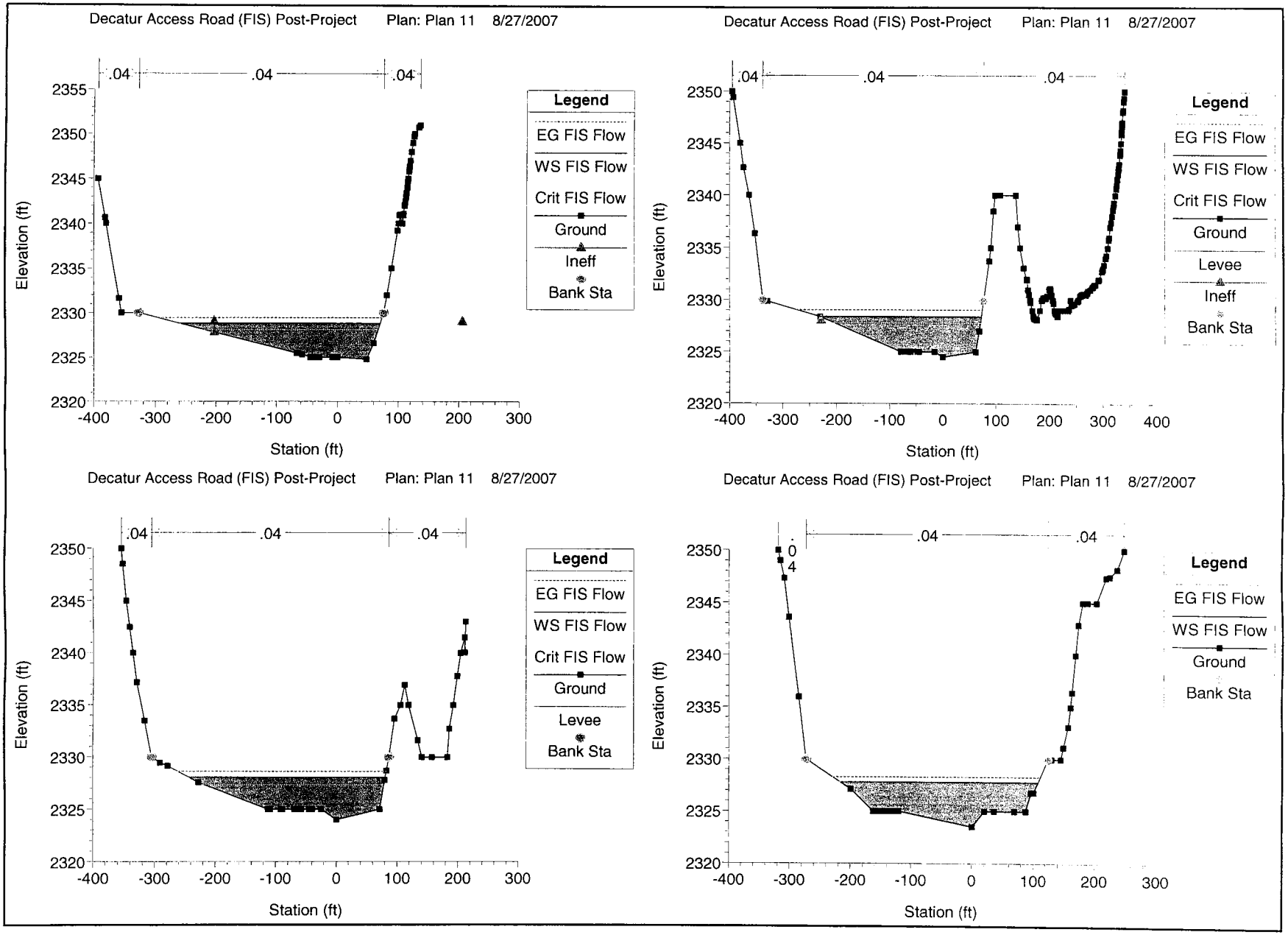

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
Elevation (ft)
Station (ft)
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
Elevation (ft)
Station (ft)
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
Elevation (ft)
Station (ft)
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
Elevation (ft)
Station (ft)
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Ground
Bank Sta

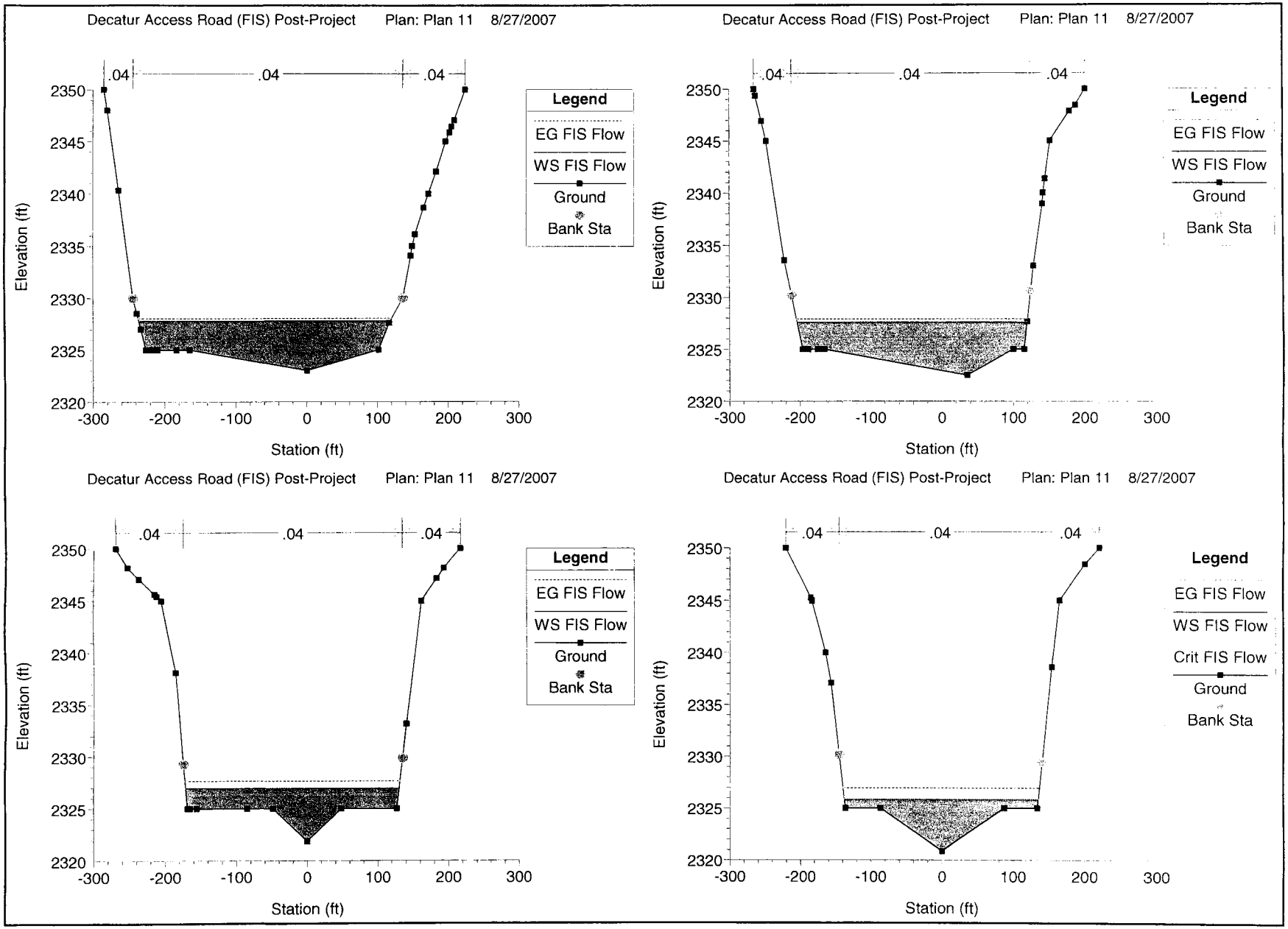

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Elevation (ft)
2360
2355
2350
2345
2340
2335
2330
2325
-500 -400 -300 -200 -100 0 100 200
Station (ft)
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Elevation (ft)
2360
2355
2350
2345
2340
2335
2330
2325
-400 -300 -200 -100 0 100 200
Station (ft)
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Ineff
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Elevation (ft)
2360
2355
2350
2345
2340
2335
2330
2325
-400 -300 -200 -100 0 100 200
Station (ft)
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Ineff
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Elevation (ft)
2360
2355
2350
2345
2340
2335
2330
2325
-500 -400 -300 -200 -100 0 100 200
Station (ft)
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Ineff
Bank Sta


Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2355
2350
2345
2340
2335
2330
2325
-500
-400
-300
-200
-100
0
100
200
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
0
4
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2355
2350
2345
2340
2335
2330
2325
-500
-400
-300
-200
-100
0
100
200
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.04
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2355
2350
2345
2340
2335
2330
2325
-500
-400
-300
-200
-100
0
100
200
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
.04
.04
.035
.04
Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
2340
2338
2336
2334
2332
2330
2328
2326
-600
-500
-400
-300
-200
-100
0
100
200

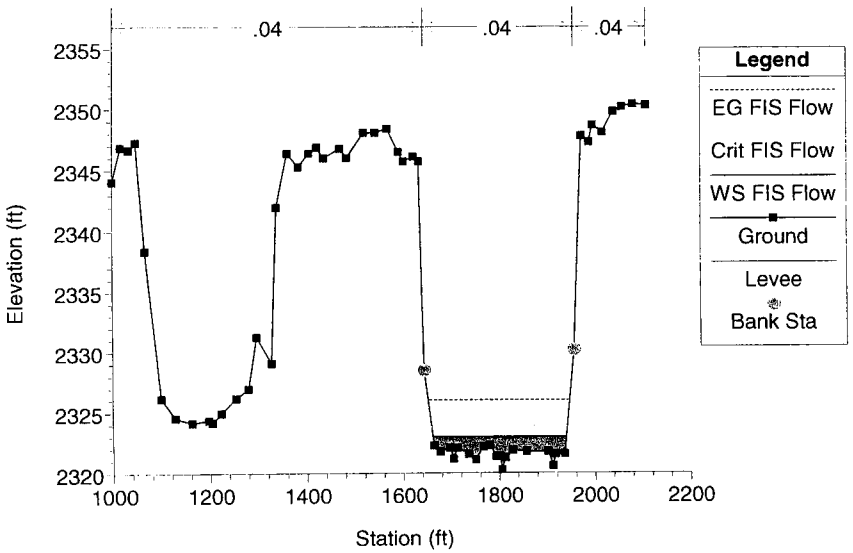

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Legend
EG FIS Flow
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Elevation (ft)
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Elevation (ft)
Station (ft)
Legend
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WS FIS Flow
Crit FIS Flow
Ground
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Elevation (ft)
Station (ft)
Legend
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Crit FIS Flow
Ground
Levee
Ineff
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Elevation (ft)
Station (ft)
Legend
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Crit FIS Flow
Ground
Levee
Bank Sta
Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Elevation (ft)
Station (ft)
Legend
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WS FIS Flow
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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EG FIS Flow
WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Legend
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WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Legend
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WS FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007
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Legend
EG FIS Flow
WS FIS Flow
Crit FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
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2320
-300
-200
-100
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100
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300

Decatur Access Road (FIS) Post-Project Plan: Plan 11 8/27/2007



HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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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
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****

PROJECT DATA
Project Title: Decatur Access Road (FIS) Post-Project
Project File : DAR_post.prj
Run Date and Time: 8/27/2007 9:18:14 AM

Project in English units

Project Description:

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PLAN DATA

Plan Title: Plan 11
Plan File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_post.p11

Geometry Title: Proposed Conditions (Final)
Geometry File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_post.g02

Flow Title : FIS Flow
Flow File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_post.f02

Plan Summary Information:

Number of:	Cross Sections	= 39	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 1	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 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: Mixed Flow

****

FLOW DATA

Flow Title: FIS Flow
Flow File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_post.f02

Flow Data (cfs)

River	Reach	RS	FIS Flow
Las Vegas Wash	Upper	-1000	5019

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Las Vegas Wash	Upper	FIS Flow	Normal S = 0.013	Normal S = 0.013

****

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GEOMETRY DATA

Geometry Title: Proposed Conditions (Final)
Geometry File : J:\JOBS\6722\Hydraulics\HEC-RAS\CLOMR\DAR_post.g02

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1000

INPUT
Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-318.25	2359.31	-316.32	2359.29	-315.07	2359.28	-311.82	2359.16	-307.93	2359.02
-305.8	2358.89	-304.34	2358.8	-298.76	2358	-297.59	2357.83	-296.33	2357.43
-293.3	2356.47	-292.27	2356	-291.76	2355.77	-287.84	2354	-285.84	2353.08
-282.77	2352	-280.52	2350.92	-278.63	2350	-276.2	2348.83	-274.5	2348
-271.82	2346.72	-270.36	2346	-267.37	2344.57	-266.21	2344	-262.8	2342.37
-262.05	2342	-258.02	2340.08	-257.86	2340	-257.7	2339.92	-253.6	2338
-247.93	2338	-246.08	2338	-232.55	2338	-228.32	2338	-223.57	2338
-219.89	2338	-173.22	2337.42	-165.83	2337.44	-162.85	2337.45	-161.49	2337.45
-159.6	2337.45	-156.02	2337.46	-148.09	2337.45	-145.59	2337.45	-137	2337.45
-130.28	2337.47	-103.3	2337.47	-98.95	2337.48	-87.12	2337.48	-77.68	2337.49
-64.69	2337.49	-61.09	2337.49	-51.74	2337.49	-48.32	2337.5	-47.52	2337.5
-46.16	2337.5	-11.14	2337.51	-5.99	2337.51	-3.23	2337.52	0	2337.47
48.36	2336.7	55.58	2336.71	58.37	2336.62	63.31	2336.62	66.78	2336.66
68.13	2336.61	76.27	2336.72	79.11	2336.69	83.97	2336.74	85.73	2336.74
91.16	2336.72	96.61	2336.7	101.4	2336.72	110.68	2336.69	112.13	2336.66
122.67	2336.75	131.82	2336.75	135.02	2336.83	137.18	2336.84	138.09	2336.85
140.9	2336.9	145.43	2336.93	147.94	2336.91	155.85	2337.26	168.21	2337.24
176.4	2337.24	178.78	2337.31	198.03	2337.34	224.84	2337.59	234.7	2337.61
251.14	2337.66	251.88	2337.66	261.24	2337.69	261.56	2337.69	261.92	2337.69
287.12	2337.74	287.3	2337.74	302	2337.82	316.14	2338	334.72	2338.69
347.47	2340	349.34	2340.88	351.73	2342	353.72	2342.93	355.99	2344
358.12	2345	360.26	2346	362.56	2347.08	364.52	2348	367.04	2349.18
368.79	2350	371.61	2351.32	373.05	2352	376.3	2353.53	377.31	2354
381.22	2355.83	381.58	2356	381.87	2356.14	383.18	2356.76	385.83	2358
386.52	2358.33	390.04	2360	392.73	2361.17	394.44	2362	400.47	2363.45
400.71	2363.49	402.36	2363.56	405.9	2363.84	406.67	2363.89	409.61	2364
416.33	2364.29	417.61	2364.4	419.35	2364.62	425.4	2365.04	426.54	2365.31
426.79	2365.36	428.93	2366	430.46	2366.13	431.52	2366.19	434.61	2366.48
439.1	2366.97	441.59	2366.97	450	2367.2				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-318.25	.04	-266.21	.04	355.99	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-266.21	355.99	50	50	50 .1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2339.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.		0.040	
W.S. Elev (ft)	2338.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2338.72	Flow Area (sq ft)		832.02	
E.G. Slope (ft/ft)	0.016736	Area (sq ft)		832.02	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	591.41	Top Width (ft)		591.41	
Vel Total (ft/s)	6.03	Avg. Vel. (ft/s)		6.03	
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)		1.41	
Conv. Total (cfs)	38796.1	Conv. (cfs)		38796.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		591.64	
Min Ch El (ft)	2336.61	Shear (lb/sq ft)		1.47	
Alpha	1.00	Stream Power (lb/ft s)		8.86	
Frctn Loss (ft)	0.63	Cum Volume (acre-ft)	2.79	64.90	0.18
C & E Loss (ft)	0.05	Cum SA (acres)	0.82	19.20	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1050

INPUT
Description:
Station Elevation Data num= 135

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-404.47	2358.32	-404.2	2358.32	-396.75	2358.17	-395.94	2358.19	-388.24	2358
-384.09	2357.78	-382.37	2357.68	-378.54	2357.27	-376.64	2357.1	-374.52	2356.84
-366.75	2356	-364.91	2355.83	-362.03	2355.69	-357.52	2355.58	-354.83	2355.54
-352.91	2355.45	-351.73	2355.4	-348.95	2355.18	-345.58	2354.92	-343.23	2354.68
-342.4	2354.6	-337.47	2354	-334.35	2354	-333.98	2354	-322.64	2354
-305.2	2354	-304.67	2354	-290.98	2352.33	-286.49	2352	-284.68	2351.22
-281.88	2350	-279.68	2349.05	-277.27	2348	-274.58	2346.84	-272.66	2346
-269.05	2344.44	-268.03	2344	-265.31	2342.82	-263.42	2342	-261.18	2341.03
-258.8	2340	-258.43	2339.84	-254.16	2338	-243.83	2337.67	-235.21	2337.4
-233.16	2337.4	-179.75	2336.74	-175.9	2336.75	-169.25	2336.77	-166.21	2336.78
-165.2	2336.78	-157.24	2336.8	-152.91	2336.79	-147.44	2336.81	-142.67	2336.8
-128.11	2336.85	-112.54	2336.85	-103.13	2336.86	-96.19	2336.87	-75.68	2336.88
-67.97	2336.88	-60.11	2336.89	-54.54	2336.89	-47.02	2336.89	-45.28	2336.89
-42.28	2336.89	-21.4	2336.9	-9.82	2336.91	-3.59	2336.91	0	2336.86
54.26	2336	71.86	2336	74.28	2336	76.1	2336	76.38	2336
81.39	2336	83.52	2336	85.1	2336	85.48	2336	85.65	2336
86.17	2336	93.69	2336	96.82	2336	106.36	2336	135.81	2336
140.02	2336	145.75	2336	146.44	2336	146.9	2336	168.64	2336
173.44	2336	181.13	2336	183.05	2336	237.24	2336.51	240.4	2336.51
245.66	2336.53	248.86	2336.53	251.86	2336.54	253.32	2336.55	255.02	2336.56
263.44	2336.58	264.43	2336.59	269.43	2336.62	281.69	2336.77	338.39	2338
341.01	2338	343.42	2339.07	345.54	2340	348.27	2341.22	350.05	2342
353.19	2343.4	354.56	2344	358.22	2345.64	359.04	2346	359.85	2346.35
363.4	2348	366.72	2349.47	367.85	2350	368.42	2350.27	372.16	2352
376.01	2352.55	387.11	2353.46	393.2	2354	395.62	2354.41	402.18	2356
406.88	2357.17	410.29	2358	417	2359.62	418.48	2360	422.92	2361.13
426.36	2362	429.82	2362.87	434.23	2364	440.64	2364	450	2364.18

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-404.47	.04	-268.03	.04	354.56	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-268.03	354.56	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2338.72	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.41	Wt. n-Val.		0.040		
W.S. Elev (ft)	2338.31	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		981.64		
E.G. Slope (ft/ft)	0.009756	Area (sq ft)		981.64		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	596.59	Top Width (ft)		596.59		
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)		5.11		
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)		1.65		
Conv. Total (cfs)	50814.8	Conv. (cfs)		50814.8		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		596.75		
Min Ch El (ft)	2336.00	Shear (lb/sq ft)		1.00		
Alpha	1.00	Stream Power (lb/ft s)		5.12		
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	2.79	63.86	0.18	
C & E Loss (ft)	0.00	Cum SA (acres)	0.82	18.52	0.07	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1100

INPUT
Description:
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-408.99	2362	-396.28	2361.33	-392.88	2361.12	-383.01	2360.6	-373.44	2360
-372.43	2359.93	-370.06	2359.68	-354.56	2358	-354.25	2358	-353.79	2357.92
-349.4	2357.08	-343.83	2356	-336.6	2354.88	-331.61	2354.13	-330.86	2354
-312.14	2354	-302.96	2354	-301.23	2354	-299.94	2354	-298.35	2353.44
-294.94	2352.36	-293.78	2352	-293.14	2351.75	-288.73	2350	-286.6	2349.16
-283.66	2348	-280.39	2346.72	-278.58	2346	-274.37	2344.35	-273.48	2344

-268.48	2342.04	-268.37	2342	-267.58	2341.69	-263.24	2340	-261.96	2339.5
-258.11	2338	-249.06	2337.47	-241.19	2337	-229.04	2336.71	-226.62	2336.6
-222.28	2336.39	-220.06	2336.29	-198.92	2336.16	-198.57	2336.15	-197.62	2336.12
-197.02	2336.1	-190.56	2336.11	-186.28	2336.06	-185.97	2336.06	-175.65	2336.09
-170.93	2336.1	-170.8	2336.1	-158.46	2336.14	-157.72	2336.13	-149.29	2336.16
-148.34	2336.16	-125.94	2336.23	-121.78	2336.23	-107.3	2336.25	-105.27	2336.25
-73.69	2336.28	-71.25	2336.28	-59.12	2336.28	-57.35	2336.28	-45.73	2336.29
-43.04	2336.29	-38.39	2336.29	-31.65	2336.29	-13.64	2336.3	-3.95	2336.31
0	2336.25	15.58	2336	43.3	2336	48.51	2336	52.91	2336
59.48	2336	72.43	2335.66	79.32	2335.48	90.8	2335.18	135.56	2335.43
142.31	2335.68	149.69	2336	152.32	2336	154.44	2336	160.49	2336
181.24	2336	218.77	2336	221	2336	233.53	2336	237.52	2336
246.39	2336	253.03	2336	262.15	2336	265.54	2336	316.32	2337.11
342.23	2338	346.44	2339.99	346.46	2340	346.78	2340.15	350.7	2342
351.6	2342.43	354.93	2344	357.05	2345	359.16	2346	362.89	2347.76
363.4	2348	364.52	2348.53	367.65	2350	368.14	2350.23	371.9	2352
375.16	2353.04	378.63	2354	382.33	2354	384.05	2354	390.07	2354
398.46	2354	406.14	2355.98	406.24	2356	406.58	2356.09	413.84	2358
418.82	2359.34	421.29	2360	424.89	2360.98	428.57	2362	428.99	2362.12
435.75	2364	443.52	2364	450	2364				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-408.99	.04	-273.48	.04	354.93	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-273.48	354.93	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2338.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.75	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		937.32	
E.G. Slope (ft/ft)	0.011174	Area (sq ft)		937.32	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	588.57	Top Width (ft)		588.57	
Vel Total (ft/s)	5.35	Avg. Vel. (ft/s)		5.35	
Max Chl Dpth (ft)	2.57	Hydr. Depth (ft)		1.59	
Conv. Total (cfs)	47479.5	Conv. (cfs)		47479.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		588.65	
Min Ch El (ft)	2335.18	Shear (lb/sq ft)		1.11	
Alpha	1.00	Stream Power (lb/ft s)		5.95	
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	2.79	62.76	0.18
C & E Loss (ft)	0.03	Cum SA (acres)	0.82	17.84	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1150

INPUT
Description:
Station Elevation Data num= 132

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-389.28	2360	-384.2	2358.52	-383.71	2358.39	-381.25	2358	-369.8	2356.31
-368.9	2356.17	-367.79	2356	-358.19	2354.69	-353.07	2354	-350.49	2353.66
-346.45	2353.13	-338.43	2352	-325.31	2352	-318.85	2352	-313.88	2352
-312.89	2352	-311.17	2352	-310.16	2352	-309.44	2352.33	-305.72	2354
-305.43	2354	-302.92	2352.78	-301.35	2352	-296.93	2350.07	-296.77	2350
-292.15	2348.17	-291.71	2348	-291.38	2347.87	-286.66	2346	-286.04	2345.75
-281.63	2344	-280.72	2343.63	-276.6	2342	-275.42	2341.52	-271.59	2340
-270.13	2339.41	-266.58	2338	-264.18	2337.36	-259.44	2336	-256.66	2336
-253.09	2336	-244.72	2336	-243.47	2336	-231.05	2336	-224.81	2336
-218.4	2336	-162.84	2335.52	-155.75	2335.54	-150.28	2335.54	-130.59	2335.6
-128.65	2335.6	-115.34	2335.62	-113.2	2335.63	-111.23	2335.64	-80.98	2335.66
-76.94	2335.68	-69.01	2335.68	-57.17	2335.69	-47.04	2335.7	-45.35	2335.69
-36.78	2335.69	-18.94	2335.7	-15.27	2335.7	-5.53	2335.71	0	2335.72
9.48	2335.73	16.23	2335.74	17.98	2335.74	32.16	2335.76	35.51	2335.76
56.79	2335.56	57.47	2335.55	64.52	2335.51	118.6	2334.5	119.22	2334.5
120.19	2334.5	120.97	2334.5	171.48	2335.34	173.34	2335.36	174.61	2335.38
176.67	2335.42	184.67	2335.39	221.31	2335.43	244.03	2335.54	246.2	2335.57
261.11	2335.72	263.01	2335.73	294.34	2336	310.86	2336	312.13	2336
315.86	2336	316.59	2336	319.14	2336	328.99	2336	330.29	2336
330.95	2336	334.14	2336	334.31	2336.01	349.97	2338	353.82	2339.82
354.19	2340	356.29	2341	358.4	2342	359.91	2342.72	362.61	2344

365.64	2345.45	366.78	2346	367.19	2346.2	370.89	2348	372.63	2348.85
374.99	2350	377.77	2351.34	379.17	2352	382.31	2353.3	384.06	2354
384.39	2354	385.13	2354	400.25	2354	402.43	2353.89	402.91	2354
409.29	2355.9	409.61	2356	416.23	2357.97	416.32	2358	420.14	2359.14
423.04	2360	423.18	2360.04	429.75	2362	430.24	2362.14	436.47	2364
440.4	2364	450	2364						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-389.28	.04	-281.63	.04	362.61	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-281.63	362.61	50	50	50 .1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2337.72	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.33	Wt. n-Val.		0.040
W.S. Elev (ft)	2337.39	Reach Len. (ft)	50.00	50.00 / 50.00
Crit W.S. (ft)		Flow Area (sq ft)		1087.87
E.G. Slope (ft/ft)	0.007128	Area (sq ft)		1087.87
Q Total (cfs)	5019.00	Flow (cfs)		5019.00
Top Width (ft)	609.40	Top Width (ft)		609.40
Vel Total (ft/s)	4.61	Avg. Vel. (ft/s)		4.61
Max Chl Dpth (ft)	2.88	Hydr. Depth (ft)		1.79
Conv. Total (cfs)	59449.4	Conv. (cfs)		59449.4
Length Wtd. (ft)	50.00	Wetted Per. (ft)		609.71
Min Ch El (ft)	2334.50	Shear (lb/sq ft)		0.79
Alpha	1.00	Stream Power (lb/ft s)		3.66
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	2.79	61.59 / 0.18
C & E Loss (ft)	0.03	Cum SA (acres)	0.82	17.15 / 0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1200

INPUT
Description:
Station Elevation Data num= 155

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-423.21	2358	-421.04	2356.89	-419.21	2356	-415.96	2354.39	-415.12	2354
-413.66	2353.4	-413.01	2353.23	-409.95	2352.68	-407.08	2352.43	-406.61	2352.56
-405.38	2352.46	-403.01	2352.91	-400.77	2353.25	-399.54	2353.69	-399.29	2353.77
-398.61	2353.98	-398.6	2353.99	-397.65	2354	-394.26	2354.03	-394.19	2354.03
-393.03	2354	-389.38	2353.91	-388.95	2353.9	-379.54	2353.61	-378.33	2353.53
-377.67	2353.44	-374.54	2353.31	-372.97	2352.84	-372.88	2352.82	-371.27	2352.2
-371.23	2352.19	-371.21	2352.18	-371.18	2352.17	-370.81	2352	-368.94	2351.15
-366.4	2350	-362.77	2348.79	-361.58	2348.27	-360.91	2348	-359.74	2348
-357.94	2348	-353.42	2347.37	-351.22	2347.37	-350.63	2347.38	-348.76	2347.46
-337.36	2347.77	-336.86	2347.79	-333.45	2347.89	-331.2	2347.98	-331.13	2347.98
-330.97	2348	-324.73	2348.56	-308.55	2350	-308.29	2350.1	-308.05	2350.18
-302.32	2351.17	-300.11	2350	-297.4	2348.82	-295.65	2348	-291.09	2346.13
-290.81	2346	-290.4	2345.83	-286.15	2344	-283.55	2342.9	-281.45	2342
-277.33	2340.26	-276.72	2340	-274.21	2338.94	-271.98	2338	-269.29	2336.86
-267.18	2336	-263.53	2335.93	-247.65	2335.61	-168.04	2334.93	-163.73	2334.94
-150.99	2334.93	-139.15	2334.96	-134.17	2334.97	-126.1	2334.98	-120.31	2334.99
-114.97	2335.02	-96.2	2335.03	-84.66	2335.08	-62.06	2335.09	-54.37	2335.1
-47.79	2335.1	-42.77	2335.1	-37.23	2335.09	-25.69	2335.1	-14.74	2335.11
-8.39	2335.11	0	2335.13	1.41	2335.13	5.81	2335.14	11.65	2335.15
20.99	2335.16	32.61	2335.18	106.37	2334.48	108.73	2334.43	110.71	2334.42
125.86	2334	126.04	2334	126.31	2334	126.53	2334	140.68	2334.38
145.26	2334.44	148.38	2334.49	153.43	2334.58	156.71	2334.57	171.7	2334.58
180.99	2334.63	187.51	2334.71	232.27	2335.15	238	2335.19	332.04	2336
337.95	2336	343.7	2336	344.54	2336	348.88	2336	352.24	2336
353.46	2336.63	356.07	2338	357.37	2338.67	359.9	2340	361.3	2340.73
363.73	2342	365.27	2342.8	367.56	2344	369.32	2344.91	371.4	2346
373.09	2346.89	375.29	2348	377.55	2349.15	379.13	2350	382.9	2351.88
383.12	2352	384.81	2352	387.52	2352	389.56	2352	400.16	2352
402.44	2352.72	406.48	2354	409.79	2355.05	412.77	2356	416.94	2357.33
419.05	2358	420.5	2358.46	425.32	2360	425.97	2360.21	431.46	2362
434.94	2363.05	438.71	2364	440.11	2364	449.24	2364	450	2363.74

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
 -423.21      .04 -281.45      .04  363.73      .04

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
       -281.45  363.73               50      50      50              .1        .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************************
* E.G. Elev (ft)         * 2337.42  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.23  * Wt. n-Val.            *          *    0.040 *          *
* W.S. Elev (ft)         * 2337.19  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1292.59  *          *
* E.G. Slope (ft/ft)     *0.004148  * Area (sq ft)          *          * 1292.59  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  624.58  * Top Width (ft)       *          *  624.58  *          *
* Vel Total (ft/s)       *    3.88  * Avg. Vel. (ft/s)     *          *    3.88  *          *
* Max Chl Dpth (ft)      *    3.19  * Hydr. Depth (ft)     *          *    2.07  *          *
* Conv. Total (cfs)      * 77932.8  * Conv. (cfs)          *          * 77932.8  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  625.13  *          *
* Min Ch El (ft)         * 2334.00  * Shear (lb/sq ft)     *          *    0.54  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.08  *          *
* Frctn Loss (ft)        *    0.16  * Cum Volume (acre-ft)  *    2.79  *   60.23  *    0.18  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *    0.82  *   16.44  *    0.07  *
*****************************************************************************************************

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -1250

INPUT
Description:
Station Elevation Data    num=     124
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -385.9 2359.88  -382.6    2358 -381.53 2357.38 -379.05    2356 -376.95 2354.77
 -375.57    2354  -373.9    2353 -372.09    2352 -368.96 2350.18 -368.64    2350
 -365.38  2348.1  -365.2    2348 -361.81 2346.02 -361.78    2346 -361.02 2345.55
  -358.3    2344  -357.7 2343.91 -356.85 2343.82 -344.81 2342.38  -338.4 2342.02
 -338.35 2342.01 -338.25 2342.01 -338.22 2342.01 -337.83    2342 -334.86    2342
 -334.34    2342 -334.29    2342  -334.2    2342 -321.65 2342.32 -320.83 2342.34
 -315.65 2342.37 -313.89 2342.38 -302.83  2342.3 -301.39  2342.3 -294.33 2342.23
 -293.84 2342.22 -290.59    2342 -290.38 2341.99 -282.58    2340 -282.55 2339.99
 -277.07    2338 -274.91 2337.19 -271.65    2336 -264.27 2335.83 -232.66  2335.1
 -222.89    2335 -214.79 2334.84 -207.13 2334.68  -201.5 2334.57 -173.24 2334.33
 -171.71 2334.33 -151.71 2334.31 -147.71 2334.32 -139.68 2334.34 -136.87 2334.34
 -127.42 2334.36 -118.71 2334.39 -111.42  2334.4  -92.39 2334.48   -55.1  2334.5
  -51.56  2334.5  -48.53 2334.51   -40.2  2334.5  -37.68  2334.5  -32.44  2334.5
  -14.21 2334.52  -11.24 2334.52   -6.67 2334.53   -4.61 2334.53       0 2334.54
    5.33 2334.55    9.82 2334.56   29.71  2334.6   92.47    2334   97.28    2334
  103.25    2334  112.74    2334  114.13    2334  122.24    2334  129.52    2334
   135.7    2334  141.17    2334  143.95    2334  203.44 2334.58  212.98 2334.64
  306.87 2335.46  312.45 2335.49  334.08 2335.77  352.45    2336  355.23 2337.46
  356.22    2338  359.02 2339.47  359.99    2340  361.41 2340.78  363.82    2342
  365.23 2342.74  367.58    2344  369.92 2345.27  371.28    2346  373.81 2347.33
  375.07    2348  377.65 2349.39  378.82    2350  380.93    2350  381.05    2350
  384.03 2349.07  384.34 2349.08  394.21    2350  396.35    2350  399.74 2351.57
  400.66    2352     401 2352.11  407.03    2354  410.33 2355.04  413.42    2356
  418.78 2357.69  419.76    2358  425.08 2359.68  426.08    2360  427.37 2360.41
  432.41    2362  434.47    2362  448.26    2362     450    2362

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  -385.9     .04 -290.59     .04  363.82     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
       -290.59  363.82               50      50      50              .1        .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************************
* E.G. Elev (ft)         * 2337.24  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.17  * Wt. n-Val.            *          *    0.040 *          *
* W.S. Elev (ft)         * 2337.07  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1506.73  *          *
* E.G. Slope (ft/ft)     *0.002512  * Area (sq ft)          *          * 1506.73  *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  629.07  * Top Width (ft)       *          *  629.07  *          *
* Vel Total (ft/s)       *    3.33  * Avg. Vel. (ft/s)     *          *    3.33  *          *
* Max Chl Dpth (ft)      *    3.07  * Hydr. Depth (ft)     *          *    2.40  *          *
```

* Conv. Total (cfs)	*100147.6	* Conv. (cfs)	*	*100147.6	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 629.55	*	*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*	* 0.38	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.25	*	*
• Frctn Loss (ft)	* 0.10	* Cum Volume (acre-ft)	* 2.79	• 58.62	* 0.18	*
• C & E Loss (ft)	* 0.01	* Cum SA (acres)	• 0.82	• 15.72	* 0.07	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1300

INPUT
Description:
Station Elevation Data num= 126

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-386.9	2360	-386.53	2359.85	-381.96	2358	-380.27	2357.3	-377.73	2356
-374.1	2354.32	-373.47	2354	-370.54	2352.47	-369.55	2352	-366.11	2350.34
-365.37	2350	-363.55	2349.1	-361.3	2348	-360.7	2347.71	-357.8	2346
-356.82	2345.43	-354.38	2344	-351.75	2342.45	-350.93	2342	-348.79	2341.53
-341.83	2340	-334.47	2338.85	-328.55	2338	-326.57	2337.8	-318.25	2337.05
-315.69	2336.89	-313.37	2336.77	-309.62	2336.63	-300.34	2336.27	-298.93	2336.23
-297.55	2336.22	-291.72	2336	-284.67	2335.84	-280.98	2335.68	-277.09	2335.53
-267.34	2335.01	-264.32	2334.81	-257.54	2334.73	-253.49	2334.51	-235.86	2334.38
-233.21	2334.28	-208.98	2334	-206.56	2334	-199.57	2334	-131.68	2334
-119.76	2333.79	-119.3	2333.79	-98.87	2333.88	-88	2333.92	-86.18	2333.91
-73.14	2333.95	-72.77	2333.95	-66.65	2333.94	-49.08	2333.89	-38.62	2333.88
-38.16	2333.88	-14.91	2333.91	-1.59	2333.95	-.72	2333.95	0	2333.95
18.55	2334	26.81	2334.02	28.71	2334	42.11	2334	58.75	2334
59.32	2334	65.34	2334	65.87	2334	68.05	2334	83.2	2334
87.2	2334	96.94	2334	127.41	2334	128.64	2334	129.12	2334
139.13	2334	172.17	2334	172.44	2334	172.77	2334	174.61	2334.02
187.96	2334.1	202.42	2334.22	220.62	2334.35	225.72	2334.42	231.92	2334.5
238.72	2334.58	272.48	2335	281.41	2335.11	319.03	2335.58	351.05	2336
351.89	2336	354.6	2337.32	356	2338	359.47	2339.68	360.11	2340
360.99	2340.41	364.12	2342	366.01	2342.93	368.16	2344	370.5	2345.16
372.29	2346	374.88	2347.28	376.33	2348	378.99	2348	381.07	2348
387.55	2348	393.93	2348	396.49	2349.64	397.09	2350	398.04	2350.34
402.59	2352	405.88	2352.92	409.85	2354	416.41	2355.86	416.93	2356
421.18	2357	425.14	2358	427.11	2358	430.56	2358.33	432.55	2358.3
433.49	2358.36	436.57	2358.35	438.27	2358.25	438.4	2358.25	440.1	2358
444.63	2357.35								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-386.9	.04	-350.93	.04	364.12	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-350.93	364.12	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	* 2337.13	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.13	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2337.00	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1733.65	*	*
• E.G. Slope (ft/ft)	*0.001715	* Area (sq ft)	*	* 1733.65	*	*
* Q Total (cfs)	• 5019.00	• Flow (cfs)	*	• 5019.00	•	*
* Top Width (ft)	* 671.33	* Top Width (ft)	*	* 671.33	*	*
• Vel Total (ft/s)	* 2.90	* Avg. Vel. (ft/s)	*	* 2.90	*	*
* Max Chl Dpth (ft)	* 3.21	* Hydr. Depth (ft)	*	* 2.58	*	*
* Conv. Total (cfs)	*121185.3	* Conv. (cfs)	*	*121185.3	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 671.64	*	*
* Min Ch El (ft)	* 2333.79	• Shear (lb/sq ft)	*	* 0.28	*	*
• Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.80	*	*
* Frctn Loss (ft)	• 0.07	* Cum Volume (acre-ft)	• 2.79	• 56.76	* 0.18	*
• C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.82	* 14.98	* 0.07	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1350

INPUT

Description:
Station Elevation Data num= 116

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-425.74	2359.65	-418.22	2358	-417.26	2358	-412.53	2356.9	-407.87	2356
-407.63	2355.96	-403.4	2355.33	-396.38	2354.29	-395.84	2354.22	-395.12	2354.13
-394.07	2354	-389.81	2353.47	-388.56	2353.3	-386.77	2353.03	-385.16	2352.79
-384.34	2352.65	-384.04	2352.6	-381.9	2352	-377.14	2350.7	-374.5	2350
-373.12	2349.68	-366.77	2348	-364.86	2347.34	-360.94	2346	-360.08	2345.71
-355.08	2344	-352.03	2342.97	-349.19	2342	-344.04	2340.78	-341.04	2340
-337.39	2339.29	-329.98	2338	-325.5	2337.24	-318.34	2336	-283.7	2334.75
-261.06	2334	-258.44	2334	-257.79	2334	-246.47	2334	-246.31	2334
-213.69	2334	-212.44	2334	-209.98	2334	-160.72	2334	-116.14	2333.22
-114.39	2333.21	-100.53	2333.27	-93.16	2333.3	-77.45	2333.22	-69.09	2333.25
-63.13	2333.21	-59.34	2333.2	-48.46	2333.17	-41.98	2333.16	-38.81	2333.17
-24.34	2333.19	-16.04	2333.21	-3.28	2333.27	0	2333.28	14.79	2333.31
17.51	2333.32	22.97	2333.33	31.13	2333.35	35.69	2333.37	66.3	2333.45
188	2334	198.74	2334	200.86	2334	206.72	2334	209.19	2334
291.45	2335.12	299.46	2335.26	311.34	2335.42	336.72	2335.87	344.2	2336
344.44	2336	347.89	2336.75	354.2	2338	356.46	2339.15	358.17	2340
359.41	2340.63	362.1	2342	363.74	2342.82	366.1	2344	368.42	2345.16
370.07	2346	372.49	2347.21	374.05	2348	377.72	2348	379.4	2348
386.52	2348	387.66	2348	388.79	2348	390.62	2348	391.79	2348.34
392.21	2348.44	399.39	2350	400.62	2350.22	406.88	2350.54	412.48	2350.3
412.74	2350.29	413.8	2350.28	415.29	2350.22	415.76	2350.22	415.9	2350.22
416.2	2350.21	428.67	2350.49	431.58	2350.57	434.52	2350.71	436.13	2350.78
436.52	2351.3	438.39	2350.81	443.03	2351.73	444.59	2351.72	446.31	2352
450	2352.84								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-425.74	.04	-341.04	.04	358.17	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-341.04	358.17	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2337.05	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.10	Wt. n-Val.		0.040		
W.S. Elev (ft)	2336.95	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		1956.88		
E.G. Slope (ft/ft)	0.001148	Area (sq ft)		1956.88		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	672.69	Top Width (ft)		672.69		
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)		2.56		
Max Chl Dpth (ft)	3.79	Hydr. Depth (ft)		2.91		
Conv. Total (cfs)	148102.3	Conv. (cfs)		148102.3		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		672.93		
Min Ch El (ft)	2333.16	Shear (lb/sq ft)		0.21		
Alpha	1.00	Stream Power (lb/ft s)		0.53		
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	2.79	54.64	0.18	
C & E Loss (ft)	0.01	Cum SA (acres)	0.82	14.20	0.07	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1400

INPUT
Description:
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-392.78	2358	-390.87	2357.07	-388.84	2356	-386.6	2355.01	-383.82	2354
-382.6	2353.54	-378	2352	-375.8	2350.62	-375.04	2350	-372.37	2348.21
-372.07	2348	-371.86	2347.86	-369.31	2346	-367.71	2344.9	-366.59	2344.46
-366.23	2344.29	-365.88	2344.2	-364.62	2344	-362.8	2343.67	-361.31	2343.5
-359.61	2343.3	-357.56	2342.93	-354.35	2342.36	-353.89	2342.23	-353.06	2342
-350.85	2341.39	-348.75	2340.81	-346.93	2340.18	-346.32	2340	-341.93	2338.57
-339.93	2338	-331.93	2336.52	-328.33	2336	-322.4	2335.79	-309.79	2335.36
-303.96	2335.16	-288.87	2334.66	-276.55	2334.23	-270.11	2334	-259.71	2334
-253.18	2334	-250.42	2334	-245.03	2334	-240.06	2334	-214.87	2334
-212.22	2334	-211.15	2334	-189.76	2334	-112.51	2332.65	-109.48	2332.64
-102.19	2332.67	-98.31	2332.69	-68.72	2332.54	-65.03	2332.55	-53.5	2332.47
-52.04	2332.46	-47.84	2332.45	-45.34	2332.45	-39.46	2332.46	-33.76	2332.47
-30.5	2332.48	-5.84	2332.58	0	2332.6	2.48	2332.6	8.01	2332.62

19.11	2332.65	23.06	2332.65	32.48	2332.69	47.92	2332.73	230.83	2334
232.01	2334	257.55	2334.61	277.55	2335.03	315.63	2335.81	318.66	2335.88
324.92	2336	337.6	2337.03	347.55	2338	349.48	2338.66	355.6	2339.85
356.29	2340	358.39	2340.86	364.38	2342	366.69	2342.76	370.19	2343.52
373.33	2344	374.25	2344.17	374.49	2344.14	379.11	2344.24	389.52	2344.4
391.94	2344.53	395.42	2344.64	406.96	2346	413.61	2347.18	418.91	2348
424.09	2348.77	431.81	2350	440.36	2351.27	444.63	2351.91	445.41	2352
447.26	2352.3	450	2352.79						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-392.78	.04	-346.32	.04	356.29	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-346.32	356.29	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2337.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.91	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2149.52	
E.G. Slope (ft/ft)	0.000836	Area (sq ft)		2149.52	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	670.17	Top Width (ft)		670.17	
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)		2.33	
Max Chl Dpth (ft)	4.46	Hydr. Depth (ft)		3.21	
Conv. Total (cfs)	173634.5	Conv. (cfs)		173634.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		670.35	
Min Ch El (ft)	2332.45	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.39	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	2.79	52.29	0.18
C & E Loss (ft)	0.01	Cum SA (acres)	0.82	13.43	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1450

INPUT
Description:
Station Elevation Data num= 140

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-428.91	2359	-424.92	2358.36	-423.22	2358.09	-422.59	2358	-422.54	2357.98
-420.39	2357	-420.38	2357	-420.34	2356.98	-418.24	2356.04	-418.15	2356
-416.3	2355.17	-415.88	2355	-415.49	2354.79	-414.08	2354	-413.33	2353.59
-412.3	2353	-411.31	2352.43	-410.47	2352	-410.02	2351.75	-409.54	2351.52
-409.2	2351.36	-408.23	2351	-407.87	2350.73	-406.94	2350	-406.7	2349.47
-406.51	2349	-406.32	2348.59	-406.09	2348	-405.77	2347.39	-405.62	2347
-405.35	2346.42	-405.2	2346	-404.92	2345.42	-404.79	2345	-403.31	2344.34
-402.6	2344	-400.25	2343.36	-400.01	2343.32	-399.34	2343.24	-398.69	2343
-398.04	2342.66	-396.19	2342	-393.16	2341.17	-392.36	2341	-392.01	2340.92
-390.1	2340.52	-389.93	2340.5	-389.16	2340.29	-388.19	2340.09	-387.92	2340
-383.67	2339.17	-383.49	2339.16	-382.43	2339.07	-381.93	2339.02	-381.8	2339
-377.94	2338.65	-374.6	2338	-373.38	2337.9	-373.04	2337.88	-372.87	2337.74
-372.03	2337.7	-332.12	2336	-315.04	2335.39	-313.03	2335.32	-308.18	2335.14
-307.07	2335.13	-260.93	2334	-249.87	2334	-246.5	2334	-228.1	2334
-222.39	2334	-216.53	2334	-214.96	2334	-211.87	2334	-209.83	2334
-161.23	2333.04	-148.88	2332.78	-108.89	2332.08	-104.57	2332.06	-103.85	2332.07
-103.46	2332.07	-89.61	2332	-81.02	2332	-80.37	2332	-80.14	2332
25.97	2332	29.27	2332.01	29.54	2332.01	272.51	2334	275.15	2334.12
275.48	2334.13	276.1	2334.17	276.33	2334.17	321.35	2336	348.44	2338
348.94	2338.09	349.34	2338.16	354.56	2339.19	359.18	2340	361.54	2341.56
362.17	2342	363.23	2342.71	365.42	2344	366.74	2344.56	369.46	2346
374.04	2347.75	374.58	2348	375.55	2348.33	379.37	2349.01	384.12	2349.62
385.69	2349.8	389.34	2350	398.4	2350.65	399.67	2350.65	402.03	2350.76
403.64	2350.54	405.1	2350.52	409.67	2351.5	409.96	2351.59	411.42	2352
414.38	2353.43	415.61	2354	415.87	2354.15	416.2	2354.35	420.12	2356
421.41	2356.54	421.6	2356.59	422.8	2356.92	423.73	2356.99	425.28	2357.27
426.27	2357.26	429.26	2357.42	430.49	2357.5	432.85	2357.97	432.87	2357.97
432.95	2358	438.61	2358	439.3	2358	440.99	2358	450	2359.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-428.91	.04	-387.92	.04	359.18	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-387.92	359.18	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.89	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2404.60	
E.G. Slope (ft/ft)	0.000593	Area (sq ft)		2404.60	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	686.33	Top Width (ft)		686.33	
Vel Total (ft/s)	2.09	Avg. Vel. (ft/s)		2.09	
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.50	
Conv. Total (cfs)	206027.2	Conv. (cfs)		206027.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		686.47	
Min Ch El (ft)	2332.00	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.27	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2.79	49.67	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.82	12.66	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1500

INPUT
Description:
Station Elevation Data num= 187

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2359	-444.18	2359	-441.73	2359	-437.98	2359	-436.48	2359
-431.51	2359	-429.9	2358.17	-429.54	2358	-429.02	2357.75	-427.74	2357
-427.67	2356.98	-426.33	2356	-425.42	2355.29	-425.05	2355	-424.69	2354.72
-423.77	2354	-423.46	2353.76	-422.48	2353	-422.08	2352.73	-421.87	2352.46
-421.19	2352	-420.36	2351.47	-419.63	2351	-419.14	2350.65	-418.12	2350
-417.66	2349.67	-416.6	2349	-415.46	2348.28	-415.08	2348	-414.85	2347.78
-413.74	2347	-413.46	2346.7	-412.56	2346	-411.83	2345.59	-410.73	2345
-408.18	2344.03	-408.1	2344	-406.04	2343.18	-405.56	2343	-403.24	2342.1
-402.99	2342	-400.51	2341.05	-400.39	2341	-400.22	2340.93	-397.8	2340
-395.73	2339.24	-395.11	2339	-393.33	2338.36	-392.4	2338	-386.93	2337.12
-386.21	2337	-386.06	2337	-385.87	2337	-385.14	2337	-376.37	2336.64
-365.99	2336.36	-364.31	2336.31	-356.56	2336	-356.26	2336	-355.86	2336
-355.72	2336	-353.48	2336	-352.08	2336	-349.52	2336	-347	2336
-346.87	2336	-346.39	2336	-345.65	2336	-343.52	2336	-343.35	2336
-343.01	2336	-342.4	2336	-342.24	2336	-333.44	2336	-332.45	2336
-332.33	2336	-332.16	2336	-328.96	2336	-324.1	2336	-308.9	2335.42
-308.76	2335.41	-304.04	2335.22	-302.86	2335.2	-297.32	2335	-297.27	2335
-294.93	2335	-291.94	2335	-286.33	2335	-285.79	2335	-284.05	2335
-283.25	2335	-281.37	2335	-280.26	2334.98	-276.04	2334.79	-243.69	2334
-240.62	2334	-230.75	2334	-222.76	2334	-217.32	2334	-213.55	2334
-212.25	2334	-102.78	2332	-98.76	2332	-97.68	2332	-93.41	2332
-92.51	2332	-87.4	2332	1.14	2332	3.13	2332	3.54	2332
4.53	2332	4.88	2332	13.65	2332	14.77	2332	21.89	2332
23.49	2332	32.66	2332	37.73	2332	47.76	2332	187.43	2334.02
187.48	2334.02	187.56	2334	200.73	2334.16	200.85	2334.17	201.83	2334.2
210.12	2334.33	212.71	2334.41	228.17	2334.72	243.41	2335.3	247.37	2335.41
259.15	2335.9	260.07	2335.92	260.12	2335.93	262.14	2336	265.6	2337.14
268.31	2338	272.08	2339.59	273.09	2340	275.29	2340.85	277.76	2341.91
277.98	2342	278.15	2342.08	282.54	2344	283.85	2344.62	285.29	2345.48
285.97	2346	286.31	2346.32	288.15	2348	288.85	2348.68	290.02	2350
291.42	2351.31	292.05	2352	293.71	2353.44	295.16	2354	296.93	2354.6
300.09	2355.14	304.92	2355.85	305.36	2355.92	305.87	2356	311.62	2356.9
318.7	2358	320.16	2358.02	320.26	2358.03	323.67	2358	326.48	2358
327.23	2357.86	327.9	2357.82	335.07	2357.3	339.58	2357.7	340.32	2357.76
341.2	2358	349.51	2358.42	350.37	2358.37	358.39	2358.63	362.43	2358.94
365.83	2359.22	370.34	2359.5	375.14	2359.93	375.68	2359.97	375.76	2359.97
375.82	2359.97	376.93	2359.98	376.97	2359.98	381	2359.95	384	2359.97
384.18	2359.97	385.56	2360						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-397.8	.04	273.09	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-397.8	273.09	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2113.46	
E.G. Slope (ft/ft)	0.000841	Area (sq ft)		2113.46	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	645.67	Top Width (ft)		645.67	
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)		2.37	
Max Chl Dpth (ft)	4.83	Hydr. Depth (ft)		3.27	
Conv. Total (cfs)	173036.7	Conv. (cfs)		173036.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		645.92	
Min Ch El (ft)	2332.00	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.41	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	2.79	47.08	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.82	11.89	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1550

INPUT
Description:
Station Elevation Data num= 191

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2358.7	-449	2358.09	-448.83	2358	-448.62	2357.9	-447.2	2357
-446.71	2356.7	-446.36	2356.47	-445.84	2356.12	-445.69	2356	-445.64	2355.96
-444.27	2355	-443.94	2354.77	-443.51	2354.55	-442.64	2354	-441.71	2353.41
-441.03	2353	-439.41	2352.05	-439.33	2352	-437.89	2351.12	-437.69	2351
-436.37	2350.19	-436.06	2350	-434.82	2349.24	-434.41	2349	-433.35	2348.35
-432.76	2348	-431.92	2347.56	-430.93	2347	-429.8	2346.4	-429.05	2346
-427.52	2345.19	-427.18	2345	-426.89	2344.85	-426.13	2344.38	-425.35	2344
-423.69	2343.18	-423.35	2343	-422.69	2342.75	-420.55	2342	-417.63	2341.03
-417.54	2341	-417.27	2340.93	-413.64	2340	-413.6	2340	-407.28	2339
-402.4	2338.43	-398.91	2338	-395.07	2337.59	-394.94	2337.58	-394.05	2337.5
-388.96	2337	-378.66	2336.28	-374.29	2336	-371.6	2335.86	-364.17	2335.78
-331.83	2335.24	-330.39	2335.22	-326.62	2335.23	-325.95	2335.24	-325.55	2335.24
-325.48	2335.24	-319.22	2335.17	-311.56	2335	-311.21	2335	-311.07	2335
-309.28	2335	-309.19	2335	-308.59	2335	-305.02	2335	-300.52	2335
-298.51	2335	-297.25	2335	-279.33	2334.73	-279.15	2334.73	-278.57	2334.73
-276.91	2334.71	-254.2	2334.53	-239.98	2334.33	-239.49	2334.33	-237.55	2334.3
-236.29	2334.29	-235.85	2334.28	-222.16	2334.12	-221.26	2334.11	-220.09	2334.1
-218.41	2334.07	-210.15	2334	-208.7	2334	-208.39	2334	-207.72	2334
-206.21	2334	-206.14	2334	-205.23	2334	-201.77	2333.95	-201.64	2333.95
-201.08	2333.94	-200.36	2333.94	-194.8	2333.86	-193.63	2333.85	-193.11	2333.85
-103.66	2332	-103.04	2332	-92.42	2332	-85.83	2332	-69.1	2332
-61.86	2332	-59.03	2332	-55.47	2332	-52.94	2332	-50.74	2332
-45.1	2332	-38.52	2332	-38.12	2332	-12.84	2332	-10.67	2332
-9.8	2332	-5.44	2332	0	2332	.94	2332	3.1	2331.73
4.21	2331.71	5.69	2331.56	14.28	2332	33.71	2332	44.88	2332.16
75.88	2332.65	127.83	2333.46	139.52	2333.64	161.37	2334	173.24	2334.56
200.57	2335.42	211.87	2335.81	218.83	2336	221.96	2337.37	223.55	2338
225.72	2339.01	226.62	2339.38	228.15	2340	229.49	2340.63	231.76	2341.75
232.41	2342	235.03	2343.1	237.15	2344	237.28	2344.06	237.37	2344.09
238.26	2344.3	239.21	2344.25	239.29	2344.27	240	2344	240.69	2343.81
241.21	2343.8	241.39	2343.84	242.05	2344	242.29	2344	242.63	2344
242.76	2344	243	2344.24	243.38	2344.29	243.94	2344.57	245.68	2345
248.59	2345.37	256.75	2345.55	257.24	2345.64	258.1	2345.59	259.06	2345.48
260.36	2345.49	262.28	2345.67	262.96	2345.76	266.56	2346	268.89	2346.32
269.91	2346.51	270.43	2346.64	271.44	2346.84	273.17	2347.51	273.54	2347.64
274.33	2348	274.68	2348.16	277.64	2350	278.26	2350.39	280.28	2352
282.29	2353.58	282.83	2354	283.08	2354.17	285.35	2356	288.15	2356.69
293.26	2357.19	295.46	2357.46	297.09	2357.62	300.11	2357.98	300.23	2357.98
300.38	2358								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-413.64	.04	228.15	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-413.64	228.15	50	50	.1	.3

E.G. Elev (ft)	2336.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.77	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1940.30	
E.G. Slope (ft/ft)	0.001029	Area (sq ft)		1940.30	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	606.19	Top Width (ft)		606.19	
Vel Total (ft/s)	2.59	Avg. Vel. (ft/s)		2.59	
Max Chl Dpth (ft)	5.21	Hydr. Depth (ft)		3.20	
Conv. Total (cfs)	156492.8	Conv. (cfs)		156492.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		606.51	
Min Ch El (ft)	2331.56	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.53	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2.79	44.75	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.82	11.17	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1600

INPUT
Description:
Station Elevation Data num= 183

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-430.03	2354	-427.53	2353.35	-426.2	2353	-425.17	2352.72	-424.59	2352.55
-422.81	2352	-422.02	2351.57	-421.03	2351	-420.01	2350.43	-419.21	2350
-417.84	2349.26	-417.38	2349	-416.63	2348.6	-416.04	2348.28	-415.55	2348
-415.31	2347.89	-413.55	2347	-411.86	2346.17	-411.51	2346	-411	2345.75
-409.66	2345	-408.67	2344.63	-407.23	2344	-404.63	2343.11	-404.33	2343
-403.31	2342.69	-402.65	2342.49	-402.08	2342.32	-401.05	2342	-399.63	2341.56
-397.93	2341	-396.13	2340.43	-394.82	2340	-392.4	2339.23	-391.69	2339
-389.2	2338.26	-388.32	2338	-383.82	2337.33	-383.76	2337.32	-381.51	2337
-376.96	2336.44	-373.11	2336	-370.65	2335.84	-368.74	2335.71	-367.2	2335.6
-364.05	2335.39	-358.39	2335	-354.06	2335	-354	2335	-331.77	2334.55
-330.27	2334.53	-319.84	2334.46	-319.35	2334.46	-318.12	2334.45	-310.36	2334.42
-309.32	2334.41	-304.27	2334.36	-290.52	2334.27	-277.04	2334.09	-276.91	2334.09
-270.3	2334	-265.24	2334	-263.94	2334	-263.48	2334	-263.46	2334
-262.99	2334	-262.95	2334	-256.96	2334	-255.09	2334	-252.57	2334
-245.65	2334	-241.14	2334	-239.49	2334	-235.89	2334	-230.12	2333.94
-228.12	2333.91	-217.09	2333.88	-216.89	2333.87	-216.83	2333.87	-216.52	2333.87
-214.2	2333.82	-212.92	2333.8	-210.52	2333.72	-210.17	2333.72	-185.05	2333.27
-184.22	2333.25	-182.44	2333.21	-175.43	2333.07	-170.45	2333	-169.85	2333
-169.71	2333	-169.29	2333	-164.56	2332.88	-164.46	2332.88	-157.08	2332.67
-155.27	2332.62	-149.45	2332.5	-145.48	2332.42	-143.66	2332.39	-138.72	2332.38
-138.53	2332.38	-137.97	2332.38	-127.95	2332.13	-126.75	2332.08	-126.74	2332.08
-123.38	2332.02	-122.45	2332	-122.12	2332	-121.75	2332	-118.77	2331.93
-112.03	2331.88	-111.42	2331.84	-110.9	2331.82	-110.6	2331.8	-110.51	2331.8
-106.5	2331.65	-105.92	2331.62	-105.84	2331.62	-102.45	2331.79	-44.16	2331.47
-41.46	2331.32	-39.65	2331.23	-37.75	2331.14	-30.89	2330.85	-9.34	2330
-9.17	2330	-8.95	2330	-7.29	2330	-6.7	2330	-2.48	2330
0	2330	3.95	2330	7.28	2330	11.46	2330	13.62	2330
15.12	2331.14	15.47	2331.5	15.85	2331.83	16.08	2332	20.06	2332
23.71	2332	24.01	2332	24.66	2332	25.21	2332	40.53	2332.22
161.57	2334	164.49	2334	165.45	2334	168.8	2334	170.12	2334
171.3	2334	173.49	2334.99	177.02	2336	178.66	2336.99	180.26	2338
181.14	2338.59	183.63	2339.96	183.67	2339.98	183.74	2340	183.84	2340.04
188.9	2342	192.91	2343.39	194.66	2344	195.63	2344.3	197.2	2344.83
198.43	2345.29	199.19	2345.61	200.09	2346	201.42	2346.56	202.76	2347.16
204.49	2348	204.81	2348.16	207.82	2350	210.17	2351.09	210.8	2351.26
212.99	2352	213.37	2352	213.46	2352	214.21	2352.24	215.66	2352.69
219.64	2354	225.1	2355.64	226.23	2356				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-430.03	.04	-388.32	.04	180.26	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-388.32	180.26	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.73	Reach Len. (ft)	50.00	50.00	50.00

Crit W.S. (ft)		Flow Area (sq ft)		2088.24					
E.G. Slope (ft/ft)	0.000722	Area (sq ft)		2088.24					
Q Total (cfs)	5019.00	Flow (cfs)		5019.00					
Top Width (ft)	557.58	Top Width (ft)		557.58					
Vel Total (ft/s)	2.40	Avg. Vel. (ft/s)		2.40					
Max Chl Dpth (ft)	6.73	Hydr. Depth (ft)		3.75					
Conv. Total (cfs)	186761.8	Conv. (cfs)		186761.8					
Length Wtd. (ft)	50.00	Wetted Per. (ft)		559.02					
Min Ch El (ft)	2330.00	Shear (lb/sq ft)		0.17					
Alpha	1.00	Stream Power (lb/ft s)		0.40					
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	2.79	42.44	0.18				
C & E Loss (ft)	0.00	Cum SA (acres)	0.82	10.50	0.07				

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1650

INPUT
Description:
Station Elevation Data num= 201

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-421.01	2351	-420.78	2350.88	-420.37	2350.69	-419.41	2350.27	-418.65	2350
-417.87	2349.69	-416.74	2349.34	-416.52	2349.26	-415.85	2349.04	-415.75	2349
-413.26	2348.07	-413.22	2348.06	-413.11	2348	-412.99	2347.94	-410.88	2347
-410.06	2346.7	-408.39	2346	-407.02	2345.36	-406.26	2345	-404.73	2344.27
-404.27	2344.1	-403.98	2344	-403.71	2343.91	-401.07	2343	-400.06	2342.64
-398.31	2342	-396.76	2341.59	-394.79	2341	-394.28	2340.87	-393.38	2340.65
-390.7	2340	-389.23	2339.62	-386.74	2339	-383.61	2338.19	-382.97	2338
-378.87	2337.3	-377.18	2337	-372.72	2336.27	-371.07	2336	-368.19	2335.7
-361.06	2335	-361.04	2335	-360.33	2334.97	-360.26	2334.96	-355.22	2334.72
-353.51	2334.63	-336.11	2334.25	-326.98	2334	-326.91	2334	-322.86	2334
-321.46	2334	-320.97	2334	-318.51	2334	-315.38	2334	-313.05	2334
-312.89	2334	-311.9	2334	-311.51	2334	-307.28	2334	-306.83	2334
-306.43	2334	-305.68	2334	-305	2334	-304.86	2334	-304.83	2334
-304.59	2334	-302.66	2334	-302.65	2334	-299.92	2334	-299.88	2334
-298.47	2334	-247.58	2333.52	-244.47	2333.46	-244.09	2333.45	-242.49	2333.43
-241.88	2333.42	-228.32	2333.2	-224.58	2333.13	-223.59	2333.12	-222.61	2333.11
-218.08	2333.04	-217.5	2333.04	-217.43	2333.03	-216.43	2333.02	-215.1	2333
-215.08	2333	-214.99	2333	-214.46	2333	-211.93	2333	-209.76	2333
-205.43	2333	-205.29	2333	-204.03	2333	-201.92	2333	-199.99	2333
-199.09	2333	-198.99	2333	-196.33	2333	-196.07	2333	-195.89	2333
-195.77	2333	-195.74	2333	-195.73	2333	-195.61	2332.99	-189.2	2332.72
-186.84	2332.63	-185.34	2332.57	-181.79	2332.41	-169.99	2332	-161.57	2331.86
-158.6	2331.81	-155.5	2331.75	-144.74	2331.59	-143.86	2331.57	-129.82	2331.36
-128.9	2331.35	-128.71	2331.35	-127.84	2331.33	-107.41	2331	-105.95	2331
-105.82	2331	-95.13	2331	-93.99	2331	-93.49	2331	-85.55	2331
-85.2	2331	-84.74	2331	-83.1	2331	-82.6	2331	-80.55	2331
-80.34	2331	-77.57	2331	-76.61	2331	-76.52	2331	-75.37	2330.76
-72.07	2330	-69.59	2330	-69.42	2330	-69.02	2330.15	-66.74	2331
-60.78	2331	-59.7	2331	-56.85	2331	-55.27	2331	-53.73	2331
-53.46	2331	-49.68	2331	-49.55	2331	-46.83	2331	-46.54	2331
-28.62	2331	-28.55	2331	-24.55	2331	-24.08	2331	-23.94	2331
-21.38	2331	-20.29	2330.74	-17.5	2330	-14.35	2329.72	-.48	2330
0	2330.04	9.31	2330.73	25.78	2332	25.87	2332	26.79	2332
50.54	2332.4	52.25	2332.43	68.69	2332.68	115.26	2333.42	120.99	2333.51
151.74	2334	156.02	2335.73	156.7	2336	157.98	2336.54	159.22	2337.08
161.07	2338	161.97	2338.67	162.59	2338.92	164.86	2340	165.75	2340.61
168.63	2342	169.6	2342.58	170.25	2342.95	172.42	2344	173.79	2344.83
175.98	2346	177.23	2346.78	179.86	2348	180.48	2348.27	181.09	2348.61
181.65	2348.93	182.32	2349.4	183.19	2350	184.2	2350.69	186.09	2352
186.48	2352.26	188.49	2353.66	188.93	2353.95	189.01	2354	189.38	2354.29
191.71	2356								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-421.01	.04	-382.97	.04	161.07	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.97	161.07	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.79	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.08	Wt. n-Val.		0.040		
W.S. Elev (ft)	2336.71	Reach Len. (ft)	50.00	50.00	50.00	

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2201.36	*	*
* E.G. Slope (ft/ft)	*0.000571	* Area (sq ft)	*	* 2201.36	*	*
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	*	*
* Top Width (ft)	* 533.76	* Top Width (ft)	*	* 533.76	*	*
* Vel Total (ft/s)	* 2.28	* Avg. Vel. (ft/s)	*	* 2.28	*	*
* Max Chl Dpth (ft)	* 6.99	* Hydr. Depth (ft)	*	* 4.12	*	*
* Conv. Total (cfs)	*209989.6	* Conv. (cfs)	*	*209989.6	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 534.98	*	*
* Min Ch El (ft)	* 2329.72	* Shear (lb/sq ft)	*	* 0.15	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.33	*	*
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	* 2.79	* 39.98	* 0.18	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.82	* 9.88	* 0.07	*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1700

INPUT
Description:
Station Elevation Data num= 215

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-418.21	2358	-417.64	2357.58	-417.06	2357	-416.24	2356.27	-415.94	2356
-414.73	2355.41	-414.11	2355	-413.02	2354.42	-412.11	2354	-410.78	2353.38
-410.05	2353	-407.91	2352.07	-407.78	2352	-407.53	2351.88	-405.7	2351
-404.5	2350.43	-403.74	2350	-402.85	2349.16	-402.59	2349	-402.41	2348.81
-401.74	2348	-401.45	2347.71	-400.9	2347	-400.26	2346.25	-400.05	2346
-399.75	2345.79	-398.84	2345	-397.97	2344.39	-397.32	2344	-396.35	2343.31
-395.8	2343	-394.54	2342.12	-394.35	2342	-393.75	2341.67	-392.41	2341
-390.18	2340.15	-389.81	2340	-387.46	2339.08	-387.26	2339	-386.95	2338.88
-384.83	2338	-382.5	2337.29	-381.63	2337	-380.7	2336.83	-377.97	2336.28
-377.44	2336.17	-376.64	2336	-376.35	2335.94	-371.88	2335	-366.04	2334.33
-364.79	2334.19	-363.12	2334	-362.39	2333.96	-353.63	2333.7	-353.56	2333.7
-351.79	2333.65	-350.15	2333.58	-349.93	2333.57	-331.04	2333.53	-309.49	2333.3
-303.33	2333.19	-302.81	2333.19	-302.6	2333.19	-301.47	2333.18	-289.06	2333.22
-288.46	2333.2	-288.02	2333.21	-287.47	2333.19	-247.25	2333.05	-242.8	2333
-242.7	2333	-242.33	2333	-242.05	2333	-241.46	2333	-241.45	2333
-239.27	2333	-237.07	2333	-231.99	2332.83	-231.48	2332.82	-230.77	2332.81
-223.46	2332.59	-222.27	2332.55	-218.22	2332.44	-216.17	2332.37	-204.43	2332
-198.86	2332	-198.59	2332	-198.14	2332	-196.39	2332	-189.36	2331.9
-188.82	2331.89	-183.64	2331.81	-181.2	2331.77	-180.69	2331.76	-168.49	2331.56
-167.71	2331.55	-167.36	2331.55	-166.76	2331.54	-166.09	2331.53	-135.81	2331
-135.67	2331	-135.34	2331	-135.25	2331	-134.78	2331	-125.71	2331
-124.12	2331	-123.35	2331	-123.25	2331	-122.56	2331	-122.18	2331
-121.17	2331	-120.44	2331	-118.79	2331	-118.15	2331	-117.32	2331
-117.15	2331	-116.37	2331	-115.53	2331	-114.75	2331	-114.53	2331
-113.84	2331	-112.93	2331	-112.78	2331	-112.06	2331	-105.17	2331
-104.3	2331	-102.67	2331	-102.58	2331	-102.43	2331	-102.4	2331
-102.27	2331	-89.35	2330.39	-88.86	2330.36	-81.74	2330	-81.68	2330
-81.51	2330	-80.37	2330	-80.35	2330	-60.68	2330	-59.56	2330
-58.9	2330	-57.57	2330	-57.36	2330	-56.71	2330.13	-52.71	2331
-51.49	2331	-50.9	2331	-50.34	2331	-49.11	2331	-46.89	2331
-45.3	2331	-41.76	2331	-41.26	2331	-39.57	2331	-39.56	2331
-33.75	2330.46	-24.83	2330	-24.77	2330	-23.16	2330	-22.63	2329.85
-19.96	2329	-18.62	2329	-13.7	2329	-10.76	2329.97	-10.68	2330
-10.52	2330.06	-7.49	2331	-2.42	2331.4	0	2331.49	13.57	2332
17.6	2332	18.99	2332	23.08	2332	28.75	2332.13	31.52	2332.17
37.75	2332.29	52.7	2332.58	66.37	2332.84	67.4	2332.85	67.64	2332.86
68.73	2332.88	69	2332.89	71.84	2333.03	81.97	2333.19	123.31	2333.84
132.97	2334	133.64	2335.02	134.29	2336	135	2337.17	135.55	2338
136.1	2338.85	136.83	2340	137.31	2340.73	138.1	2342	138.48	2342.57
139.36	2344	139.6	2344.36	140.6	2346	140.65	2346.07	140.83	2346.38
141.89	2348	142.13	2348.34	143.22	2350	143.94	2351.33	144.63	2352
145.38	2352	145.57	2352	145.64	2352	145.91	2352	148.01	2352
150.87	2352.8	154.58	2354	154.89	2354.09	156.74	2354.67	160.68	2356

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-418.21	.04	-371.88	.04	133.64	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-371.88	133.64	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

* E.G. Elev (ft)	* 2336.76	* Element	* Left OB	* Channel	* Right OB *

Vel Head (ft)	0.07	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2336.69	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	6.78	2284.50	0.91
E.G. Slope (ft/ft)	0.000469	Area (sq ft)	6.78	2284.50	0.91
Q Total (cfs)	5019.00	Flow (cfs)	4.77	5013.80	0.43
Top Width (ft)	514.69	Top Width (ft)	8.11	505.52	1.07
Vel Total (ft/s)	2.19	Avg. Vel. (ft/s)	0.70	2.19	0.48
Max Chl Dpth (ft)	7.69	Hydr. Depth (ft)	0.84	4.52	0.85
Conv. Total (cfs)	231803.3	Conv. (cfs)	220.3	231562.9	20.0
Length Wtd. (ft)	50.00	Wetted Per. (ft)	8.28	506.84	1.98
Min Ch El (ft)	2329.00	Shear (lb/sq ft)	0.02	0.13	0.01
Alpha	1.00	Stream Power (lb/ft s)	0.02	0.29	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.79	37.40	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.81	9.28	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1750

INPUT
Description:
Station Elevation Data num= 268

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2354.86	-445.03	2354	-444.98	2354	-444.85	2353.95	-444.16	2353.67
-442.4	2353	-442.37	2352.99	-442.32	2352.97	-439.76	2352	-438.8	2351.65
-436.97	2351	-436.44	2350.81	-434.33	2350	-432.05	2349.01	-432.03	2349
-431.94	2348.96	-430.96	2348.54	-429.62	2348	-428.19	2347.49	-426.72	2347
-423.67	2346.05	-423.54	2346	-423.19	2345.87	-421.62	2345.27	-420.76	2345
-420.45	2344.88	-418.32	2344.16	-418.03	2344.05	-417.89	2344	-417.67	2343.94
-414.78	2343	-410.98	2342.04	-410.81	2342	-409.86	2341.77	-408.71	2341.46
-407.13	2341	-405.92	2340.65	-405.28	2340.46	-404.79	2340.31	-403.78	2340
-402.66	2339.65	-402.37	2339.56	-400.23	2339	-397.94	2338.41	-396.3	2338
-390.19	2337.27	-389.62	2337.21	-388.98	2337.14	-387.98	2337	-385.86	2336.76
-379.3	2336	-370.69	2335.36	-368.17	2335.06	-367.66	2335	-367.6	2335
-367.54	2335	-367.08	2335	-331.04	2334.13	-327.24	2334.04	-326.31	2334.02
-326.18	2334.02	-326.01	2334.01	-325.37	2334	-325.22	2334	-324.62	2334
-324.33	2334	-318.13	2334	-317.84	2334	-305.97	2334	-304.26	2334
-303.83	2334	-301.21	2334	-300.04	2334	-300.02	2334	-290.85	2334
-290.76	2334	-290.06	2334	-237.27	2333.3	-230.11	2333.16	-229.17	2333.14
-224.97	2333.07	-224.82	2333.07	-221.15	2333	-220.95	2333	-220.86	2333
-220.44	2333	-220.37	2333	-220.24	2333	-220.22	2333	-216.72	2333
-214.28	2333	-201.78	2332.57	-200.81	2332.55	-200.72	2332.54	-200.51	2332.54
-199.61	2332.5	-199.58	2332.5	-183.64	2332	-182.34	2332	-179.12	2332
-178.08	2332	-177.67	2332	-172.14	2331.9	-126.96	2331	-126.84	2331
-126.52	2331	-126.43	2331	-126.05	2331	-119.77	2331	-116.03	2331
-113.54	2331	-113.15	2331	-112.84	2331	-110.85	2331	-110.53	2331
-110.31	2331	-109.86	2331	-105.7	2331	-105.25	2331	-105.19	2331
-104.53	2330.98	-102.88	2330.95	-76.07	2330	-76.01	2330	-73.88	2330
-69.12	2330	-65.94	2330	-60.5	2330	-57.56	2330	-54.56	2330
-53.7	2330	-52.88	2330	-52.84	2330	-50.38	2330.49	-49.49	2330.63
-49.35	2330.63	-48.51	2330.62	-48.35	2330.65	-45.12	2331	-41.8	2331
-37.63	2330.45	-35.74	2330.24	-33.48	2330	-33.45	2330	-33.4	2330
-29.84	2330	-21.65	2330	-17.53	2329.13	-17.12	2329.04	-17	2329
-16.75	2329	-16.39	2329	-12.21	2329	-10.81	2329	-8.04	2329
-4.09	2328.5	-3.25	2328.5	-2.07	2329	-1.8	2329.18	-.73	2330
-.29	2330.3	0	2330.54	.55	2331	4.58	2331	41.1	2331.73
44.19	2331.81	46.86	2331.87	47.49	2331.88	52.7	2332	52.75	2332
53.09	2332	53.46	2332	53.54	2332	53.63	2332	54	2332.01
58.24	2332.07	62.76	2332.14	64.47	2332.17	113.12	2332.8	118.6	2332.96
119.64	2333	120.45	2333.32	122.3	2334	122.4	2334.63	122.44	2335
122.56	2335.66	122.6	2336	122.73	2336.68	122.77	2337	122.82	2337.56
122.9	2338	122.97	2338.54	123.06	2339	123.13	2339.52	123.22	2340
123.29	2340.5	123.39	2341	123.45	2341.48	123.55	2342	123.61	2342.45
123.72	2343	123.78	2343.42	123.9	2344	123.95	2344.39	124.08	2345
124.13	2345.34	124.27	2346	124.39	2346.87	124.41	2347	124.45	2347.45
124.58	2348	124.63	2348.14	124.64	2348.14	125.01	2348.78	125.72	2348.57
125.82	2348.57	126.71	2348.24	127.1	2348.15	127.62	2348	128.18	2347.86
128.21	2347.84	128.46	2347.81	128.57	2347.76	128.6	2347.75	129.39	2347.79
129.49	2347.83	129.66	2347.92	129.79	2348	130.39	2348.3	130.58	2348.34
130.77	2348.31	131.9	2348.17	131.94	2348.16	132.39	2348	132.43	2347.99
132.44	2347.98	132.5	2347.97	134.35	2347.31	134.43	2347.34	134.81	2347.18
135.47	2347.23	135.89	2347.34	136.63	2347.55	138.3	2348	138.98	2348
139.82	2348.45	140.67	2349	141.16	2349.27	142.36	2350	142.47	2350.06
142.55	2350.11	142.62	2350.15	143.24	2350.53	143.95	2351	144.83	2351.46
145.94	2352	148.56	2352.85	149.04	2353	151.38	2353.76	152.01	2353.96
152.14	2354	152.22	2354.02	155.49	2355	156.14	2355.17	157.64	2355.65

157.8	2355.7	158.47	2355.89	158.86	2356

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-367.66	.04	122.44	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-367.66	122.44	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2336.66	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	14.76	2223.49	0.23
E.G. Slope (ft/ft)	0.000492	Area (sq ft)	14.76	2223.49	0.23
Q Total (cfs)	5019.00	Flow (cfs)	10.91	5008.04	0.05
Top Width (ft)	507.70	Top Width (ft)	17.32	490.10	0.29
Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)	0.74	2.25	0.22
Max Chl Dpth (ft)	8.16	Hydr. Depth (ft)	0.85	4.54	0.82
Conv. Total (cfs)	226182.4	Conv. (cfs)	491.5	225688.6	2.3
Length Wtd. (ft)	50.00	Wetted Per. (ft)	17.40	492.29	1.68
Min Ch El (ft)	2328.50	Shear (lb/sq ft)	0.03	0.14	0.00
Alpha	1.01	Stream Power (lb/ft s)	0.02	0.31	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.78	34.82	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.80	8.71	0.07

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1800

INPUT
Description:
Station Elevation Data num= 229

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-414.21	2351.78	-413.16	2351.68	-412.26	2351.51	-411.92	2351.5	-410.89	2351.36
-409.87	2351	-408.1	2350.22	-407.61	2350	-406.55	2349.53	-405.61	2349.06
-405.54	2349.03	-405.48	2349	-405.46	2348.99	-403.65	2348	-402.5	2347.35
-401.68	2347	-401.17	2346.82	-399.14	2346	-397.48	2345.27	-396.9	2345
-396.1	2344.64	-395.93	2344.58	-393.77	2344	-391.89	2343.47	-391.32	2343.33
-390.46	2343.11	-389.9	2343	-387.24	2342.4	-387.13	2342.38	-386.6	2342.26
-386.15	2342.17	-386.08	2342.15	-385.79	2342	-382.05	2341.14	-381.57	2341
-378.36	2340.2	-377.66	2340	-374.93	2339.23	-374.77	2339.19	-374.39	2339.06
-374.25	2339	-373.61	2338.77	-371.42	2338	-369.99	2337.71	-367.17	2337
-364.33	2336.28	-363.02	2336	-359.77	2335.6	-355.86	2335	-355.57	2335
-345	2334.4	-339.82	2334.1	-339.43	2334.08	-338.85	2334.04	-338.02	2334
-334.99	2334	-319.9	2334	-319.5	2334	-318.07	2334	-295.62	2333.61
-291.24	2333.5	-290.84	2333.49	-290.15	2333.48	-286.74	2333.43	-274.71	2333.35
-273.4	2333.32	-272.89	2333.31	-271.78	2333.28	-244.52	2333	-244.51	2333
-229.94	2333	-229.72	2333	-229.45	2333	-229.37	2333	-227.38	2333
-227.21	2333	-226.66	2333	-225.81	2333	-225.68	2333	-221.67	2333
-203.28	2332.35	-202.36	2332.32	-201.17	2332.28	-193.68	2332	-193.66	2332
-192.44	2332	-192.21	2332	-192.17	2332	-192.01	2332	-191.53	2332
-189.88	2332	-189.48	2332	-189.27	2332	-189.22	2332	-154.1	2331.27
-141.69	2331	-141.05	2331	-140.94	2331	-139.79	2331	-133.62	2331
-128.71	2331	-123.77	2331	-113.23	2331	-107.27	2331	-104.52	2331
-85.44	2330.34	-84.39	2330.3	-75.15	2330	-66.25	2330	-63.66	2330
-63.65	2330	-62.79	2330	-62.41	2330	-61.58	2330	-54.48	2330
-49.91	2330	-48.37	2329.31	-47.46	2329	-45.14	2329	-44.63	2329
-42.93	2329.48	-41.37	2330	-33.69	2330	-33.63	2330	-29.03	2330
-25	2329.32	-24.85	2329.3	-23.75	2329.16	-23.11	2329	-21.96	2329
-20.67	2329	-18.85	2329.42	-16.04	2329.7	-15.35	2329.31	-14.91	2329
-13.33	2328.1	-13.13	2328	-12.56	2328	-9.81	2328	-9.58	2328.11
-8.75	2328.5	-7.8	2328.93	-7.66	2329	-6.71	2329.21	-2.85	2330
0	2330.19	.12	2330.2	11.18	2331	17.3	2331	21.77	2331
23.54	2331	35.62	2331	37.27	2331	40.73	2331	45.51	2331
47.15	2331.07	47.44	2331.08	53.83	2331.34	54.16	2331.35	56.91	2331.45
60.19	2331.58	61.64	2331.63	70.74	2332	72.03	2332	72.23	2332
72.5	2332	74.76	2332	88.18	2332	88.33	2332	88.35	2332
88.39	2332	88.89	2332	94.45	2332	94.71	2332	98.53	2332
101.61	2332	102.8	2332	106.92	2332	116.31	2332.87	117.03	2333
117.25	2333.66	117.34	2334	117.57	2334.77	117.64	2335	117.91	2335.87
117.94	2336	118.24	2336.97	118.25	2337	118.37	2337.37	118.6	2338
118.78	2338.5	118.96	2339	119.04	2339.23	119.26	2339.87	119.31	2340
119.67	2341	119.69	2341.04	120.03	2342	120.06	2342.08	120.39	2343

120.44	2343.13	120.75	2344	120.81	2344.19	121.1	2345	121.36	2345.74
121.42	2346	121.72	2346.85	121.77	2347	121.81	2347.12	122.01	2347.74
122.09	2348	122.24	2348.42	122.4	2349	122.41	2349.02	122.68	2350
122.7	2350.06	122.96	2351	123.06	2351.09	124.14	2352	126.67	2352.71
127.32	2353	128.83	2353.51	130.24	2354	133.28	2354.94	133.47	2355
134.47	2355.31	134.69	2355.38	135.35	2355.6	136.3	2356		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-414.21	.04	-355.86	.04	117.64	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-355.86	117.64	50	50	.1	.3

Right Levee Station= 135.35 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2336.64	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2332.94	Flow Area (sq ft)	8.87	2310.58	0.41
E.G. Slope (ft/ft)	0.000415	Area (sq ft)	8.87	2310.58	0.41
Q Total (cfs)	5019.00	Flow (cfs)	6.19	5012.69	0.12
Top Width (ft)	483.88	Top Width (ft)	9.89	473.50	0.50
Vel Total (ft/s)	2.16	Avg. Vel. (ft/s)	0.70	2.17	0.29
Max Chl Dpth (ft)	8.64	Hydr. Depth (ft)	0.90	4.88	0.82
Conv. Total (cfs)	246226.8	Conv. (cfs)	303.6	245917.3	5.9
Length Wtd. (ft)	50.00	Wetted Per. (ft)	10.03	476.46	1.71
Min Ch El (ft)	2328.00	Shear (lb/sq ft)	0.02	0.13	0.01
Alpha	1.00	Stream Power (lb/ft s)	0.02	0.27	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.76	32.21	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.78	8.16	0.07

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1850

INPUT
Description:
Station Elevation Data num= 235

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-390.31	2358	-389.79	2357.58	-389.24	2357	-388.41	2356.21	-388.2	2356
-386.87	2355.32	-386.42	2355	-385.15	2354.29	-384.56	2354	-383.8	2353.63
-382.67	2353	-381.5	2352.45	-380.68	2352	-379.16	2351.25	-378.94	2351.16
-378.7	2351	-378.48	2350.85	-376.89	2350	-376.41	2349.49	-375.91	2349
-375.37	2348.42	-375.06	2348	-374.42	2347.3	-374.19	2347	-373.38	2346.03
-373.35	2346	-373.19	2345.88	-373.12	2345.83	-371.8	2345	-370.79	2344.32
-370.28	2344	-370.23	2343.96	-368.59	2343	-368.23	2342.74	-367.11	2342
-366.41	2341.6	-365.22	2341	-363.96	2340.48	-362.68	2340	-361.04	2339.32
-360.24	2339	-359.37	2338.65	-357.78	2338	-356.27	2337.48	-355.08	2337
-352.07	2336.29	-350.41	2336	-348.46	2335.55	-347.87	2335.43	-345.7	2335
-342.54	2334.69	-340.84	2334.5	-336.24	2334	-327.67	2333.36	-326.01	2333.24
-324.71	2333.14	-322.75	2333	-319.85	2333	-318.72	2333	-314.67	2333
-314.09	2333	-307.49	2333	-307.28	2333	-306.24	2333	-305.91	2333
-305.13	2333	-304.5	2333	-303.18	2333	-302	2333	-301.81	2333
-301.24	2333	-299.85	2333	-299.15	2333	-297.31	2333	-296.91	2333
-296.67	2333	-278.11	2333	-267.3	2333	-265.77	2333	-263.98	2333
-263.12	2333	-261.97	2333	-259.02	2333	-258.67	2333	-257.74	2333
-255.77	2333	-255.04	2333	-254.84	2333	-254.11	2333	-253.58	2333
-253.49	2333	-249.63	2333	-249.15	2333	-249.1	2333	-249.01	2333
-248.15	2333	-245.15	2332.96	-244.57	2332.94	-238.85	2332.85	-238.84	2332.85
-235.58	2332.79	-235.5	2332.79	-234.72	2332.77	-234.69	2332.77	-225.89	2332.58
-210.19	2332.26	-206.23	2332.19	-199.54	2332	-182.93	2331.45	-181.81	2331.41
-179.37	2331.34	-168.23	2331	-167.98	2331	-167.66	2331	-167.54	2331
-166.17	2331	-158.85	2331	-127.39	2330.66	-115.89	2330.5	-108.77	2330.38
-99.65	2330.24	-88.91	2330.14	-88.79	2330.14	-84.1	2330	-82.08	2330
-81.77	2330	-80.35	2330	-78.71	2330	-78.12	2330	-73.77	2330
-69.37	2330	-68.99	2330	-67.66	2330	-67.6	2330	-56.3	2329.66
-50.1	2329.48	-33.27	2329	-28.8	2329	-26.97	2329	-26.91	2329
-26.54	2329	-24.95	2329	-10.64	2329	-10.18	2329	-8.34	2329
0	2329	.11	2329	.98	2328.47	1.75	2328	4.7	2328
5.74	2328	8.18	2328.85	8.58	2329	9.22	2329.23	11.25	2329.92

11.48	2329.99	11.53	2330	11.79	2330	16.44	2330	21.99	2330
22.14	2330	22.7	2330	22.94	2330	24.03	2330	24.07	2330
25.49	2330	45.6	2330.37	46.24	2330.39	47.4	2330.41	52.28	2330.46
59.58	2330.76	64.31	2331	64.32	2331	68.96	2331	79.04	2331
84.62	2331	87.07	2331	90.84	2331.48	92.22	2331.63	94.06	2332
96.98	2332.86	97.49	2333	97.83	2333.1	100.91	2334	101.66	2334.22
103.99	2335	104.56	2335.17	106.92	2336	107.66	2336.24	109.69	2337
110.85	2337.43	112.04	2337.85	112.41	2338	113.12	2338.34	114.69	2339
115.03	2339.14	116.67	2340	117.24	2340.28	118.61	2341	119.15	2341.26
120.59	2342	121.5	2342.5	122.53	2343	123	2343.64	123.31	2344
123.4	2344.27	123.6	2344.46	123.85	2345	124.4	2345.72	124.55	2346
124.97	2346.72	125.18	2347	125.23	2347.07	126.06	2348	126.59	2348.47
127.09	2349	128	2349.79	128.21	2350	129.37	2350.99	129.38	2351
129.5	2351.06	131.3	2352	131.37	2352.02	131.45	2352.07	133.02	2353
133.16	2353.07	135.02	2354	135.49	2354.26	137.8	2355	138.56	2355.28
138.9	2355.44	139.04	2355.5	139.92	2356	140.59	2356.22	145.4	2357

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-390.31	.04	-345.7	.04	103.99	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-345.7	103.99	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-390.31	-308	2338.5	F

Right Levee Station= 145.4 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2336.62	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2332.40	Flow Area (sq ft)	6.39	2312.00	3.88
E.G. Slope (ft/ft)	0.000343	Area (sq ft)		2427.48	3.88
Q Total (cfs)	5019.00	Flow (cfs)		5016.73	2.27
Top Width (ft)	462.15	Top Width (ft)	7.77	449.69	4.69
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)		2.17	0.58
Max Chl Dpth (ft)	8.62	Hydr. Depth (ft)		5.61	0.83
Conv. Total (cfs)	270816.6	Conv. (cfs)		270694.1	122.5
Length Wtd. (ft)	50.00	Wetted Per. (ft)		413.19	4.96
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.12	0.02
Alpha	1.00	Stream Power (lb/ft s)		0.26	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.75	29.49	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.77	7.63	0.07

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1900

INPUT
Description:
Station Elevation Data num= 212

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-394.67	2358	-393.52	2357.62	-391.7	2357	-391.49	2356.87	-391.09	2356.73
-390.55	2356.57	-389.97	2356.4	-388.34	2356	-387.64	2355.73	-385.63	2355
-383.7	2354.2	-383.19	2354	-381.57	2353.33	-380.87	2353	-380.37	2352.76
-378.78	2352	-377.13	2351.19	-376.74	2351	-375.37	2350.11	-375.16	2350
-374.54	2349.16	-374.44	2349	-374.25	2348.72	-373.77	2348	-373.75	2347.96
-373.09	2347	-371.97	2346	-371.65	2345.84	-370.12	2345	-370.05	2344.96
-368.3	2344	-366.66	2343.09	-366.5	2343	-364.75	2342.03	-364.7	2342
-364.39	2341.86	-362.46	2341	-361.52	2340.66	-359.66	2340	-358.16	2339.46
-357.53	2339.23	-356.95	2339	-356.71	2338.9	-354.2	2338	-353.74	2337.82
-351.54	2337	-350.61	2336.75	-347.96	2336	-346.81	2335.72	-346.66	2335.68
-344.78	2335.19	-343.87	2335	-343.25	2334.87	-337.43	2334	-328.44	2333.26
-325.58	2333	-324.66	2333	-324.63	2333	-324.51	2333	-323.37	2333
-320.93	2333	-320.59	2333	-309.75	2333	-306.02	2333	-305.68	2333
-302.52	2333	-302.23	2333	-302.09	2333	-301.64	2333	-301.62	2333
-297.72	2332.96	-296.92	2332.95	-293.46	2332.92	-293.44	2332.92	-293.38	2332.92
-287.83	2332.86	-278.89	2332.75	-255.68	2332.44	-233.81	2332.23	-233.62	2332.23
-232.31	2332.2	-222.21	2332.04	-219.88	2332	-219.63	2332	-219.57	2332
-219.13	2332	-219.12	2332	-213.61	2331.84	-209.52	2331.73	-207.15	2331.67

-186.91	2331.15	-186.61	2331.15	-182.51	2331	-181.62	2331	-180.67	2331
-176.37	2331	-95.62	2330.13	-84.27	2330	-84.16	2330	-83.29	2330
-82.41	2330	-56.77	2329.3	-45.58	2329	-42.67	2329	-41.42	2329
-36.9	2329	-35.57	2329	-28.14	2329	-24.92	2329	-19.73	2329
-8.13	2329	-7.92	2329	-2.94	2329	-2.5	2329	-2.4	2328.96
0	2328	7.47	2328	9.15	2328.91	9.33	2329	10.86	2329
17.18	2329	18.77	2329	26.26	2329	31.27	2329	33.06	2329
33.12	2329	33.2	2329	33.44	2329	33.84	2329	33.94	2329
34.43	2329	34.55	2329	36.2	2329	41.34	2329	41.47	2329
45.68	2329	50.01	2329	54.87	2329.42	60.16	2330	61.27	2330
62.15	2330	62.48	2330	64.78	2330	72.18	2329.85	73.15	2329.87
73.18	2329.87	74.71	2330	75.27	2330	81.29	2330	81.39	2330
81.43	2330	84.99	2330.63	86.72	2331	88.9	2331.78	89.42	2331.99
89.46	2332	89.47	2332.01	91.94	2333	93.9	2333.99	93.91	2334
93.91	2334.01	93.96	2334.16	94.28	2335	94.56	2335.91	94.6	2336
94.74	2336.54	94.9	2337	95.19	2337.97	95.2	2338	95.49	2338.98
95.5	2339	95.8	2339.99	95.8	2340	95.96	2340.55	96.1	2340.99
96.11	2341	96.41	2341.98	96.42	2342	96.71	2342.96	96.73	2343
97.02	2343.94	97.03	2344	97.32	2344.93	97.34	2345	97.62	2345.91
97.65	2346	97.92	2346.9	97.95	2347	98.22	2347.88	98.25	2348
98.52	2348.87	98.57	2349	98.84	2349.89	98.87	2350	99.06	2350.67
99.19	2351	99.28	2351.22	99.7	2352	100.23	2352.18	102.73	2353
105.94	2353.61	107.86	2354	110.33	2354	119.64	2354	121.46	2354
122.13	2354	126.69	2354.54	127.88	2354.64	129.87	2354.83	131.4	2355
136.07	2355.58	139.62	2356						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-394.67	.04	-302.52	.04	91.94	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-302.52	91.94	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-394.67	-258	2338.5	F

Right Levee Station= 139.62 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2336.60	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.97	Flow Area (sq ft)		2230.68	7.27
E.G. Slope (ft/ft)	0.000311	Area (sq ft)	138.38	2401.71	7.27
Q Total (cfs)	5019.00	Flow (cfs)		5012.84	6.16
Top Width (ft)	444.83	Top Width (ft)	47.55	394.46	2.82
Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)		2.25	0.85
Max Chl Dpth (ft)	8.60	Hydr. Depth (ft)		6.37	2.58
Conv. Total (cfs)	284688.9	Conv. (cfs)		284339.6	349.3
Length Wtd. (ft)	50.00	Wetted Per. (ft)		350.94	4.95
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.12	0.03
Alpha	1.00	Stream Power (lb/ft s)		0.28	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.67	26.72	0.17
C & E Loss (ft)	0.00	Cum SA (acres)	0.74	7.14	0.06

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -1950

INPUT
Description:
Station Elevation Data num= 265

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2333.64	-442.98	2333.7	-437.46	2333.52	-434.5	2334	-433.65	2334.49
-431.68	2335	-430.63	2335.78	-430.32	2336	-429.98	2336.24	-429.04	2337
-428.71	2337.26	-428.17	2337.67	-427.8	2338	-427.06	2338.67	-426.69	2339
-426.35	2339.31	-425.5	2340	-424.22	2340.78	-423.85	2341	-422.84	2341.66
-422.26	2342	-422.21	2342.03	-420.49	2343	-420.3	2343.32	-419.3	2344
-418.91	2344.75	-418.82	2345	-418.44	2345.9	-418.4	2346	-418.3	2346.28
-418.18	2346.52	-417.89	2347	-417.78	2347.16	-417.25	2348	-416.96	2348.44
-416.58	2349	-416.12	2349.72	-415.95	2350	-414.61	2350.97	-414.57	2351
-414.51	2351.03	-414.44	2351.06	-414.38	2351.08	-412.83	2351.53	-410.74	2351.95

-410.41	2352	-404.12	2352.91	-403.08	2353	-400.38	2353.2	-400.2	2353.22
-399.07	2353.44	-397.65	2353.71	-396.69	2354	-396.47	2354.06	-396.39	2354.08
-394.07	2354.82	-393.45	2355	-392.67	2355.24	-390.08	2356	-385.98	2356.42
-382.03	2356.24	-380.87	2356.02	-380.83	2356	-380.76	2355.97	-379	2355
-378.57	2354.77	-377.16	2354	-376.53	2353.66	-375.31	2353	-374.08	2352.35
-373.42	2352	-371.72	2351.08	-371.56	2351	-371.38	2350.9	-369.9	2350
-369.84	2349.84	-369.59	2349	-369.57	2348.74	-369.43	2348	-369.37	2347.68
-369.25	2347	-369.19	2346.56	-369.08	2346	-369.01	2345.53	-368.98	2345
-368.12	2344.18	-368.01	2344	-367.73	2343.82	-365.97	2343	-365.57	2342.75
-364.6	2342.33	-363.9	2342	-362.75	2341.45	-361.89	2341	-361.8	2340.96
-359.82	2340	-359.75	2339.96	-357.81	2339	-357.27	2338.7	-355.96	2338
-354.75	2337.37	-353.96	2337	-352.74	2336.64	-350.72	2336	-347.48	2335.22
-346.55	2335	-342.79	2334.09	-342.4	2334	-340.52	2333.82	-333.58	2333.27
-330.28	2333	-324.28	2332.53	-322.93	2332.41	-322.17	2332.36	-320.17	2332.23
-284.9	2332.3	-270.02	2332.11	-266.25	2332.06	-266.2	2332.06	-264.87	2332.05
-260.38	2332	-259.86	2332	-258.53	2332	-258.27	2332	-248.22	2332
-247.92	2332	-246.06	2332	-235.33	2331.8	-226.6	2331.7	-226.12	2331.69
-224.05	2331.67	-217.15	2331.56	-191.93	2331.21	-187.03	2331.16	-180	2331
-179.72	2331	-179.39	2331	-162.87	2330.76	-146.73	2330.51	-145.92	2330.51
-145.1	2330.49	-98.35	2330	-91.48	2330	-91.44	2330	-83.13	2329.78
-66.78	2329.49	-45.02	2329	-39.9	2329	-38.51	2329	-37.03	2329
-36.65	2329	-36.1	2329	-34.75	2329	-27.47	2329	-21.43	2329
-18.94	2329	-15.89	2329	-12.38	2329	-9.73	2329	-9.52	2329
-9.38	2329	-9.33	2329	-4.03	2329	-1.13	2329	0	2329
.05	2329	.81	2329	1.02	2329	4.37	2328.63	5.05	2328.71
5.22	2328.71	5.54	2328.66	5.57	2328.65	6.41	2328	18.1	2328
18.4	2328	19.41	2328	21.33	2328.06	21.34	2328.06	21.35	2328.06
21.79	2328.08	28.49	2329	34.1	2329	34.36	2329	35.9	2329
49.1	2328.34	49.17	2328.34	49.47	2328.33	51.97	2328.22	57.02	2328
57.39	2328	58.24	2328	58.34	2328	59.7	2328	62.61	2328
63.04	2328	63.11	2328	63.22	2328	64.81	2328	66.21	2328.19
71.9	2329	74.15	2329.2	84.04	2330	88.22	2330.8	89.63	2331
91.45	2331.39	92.83	2331.71	92.94	2331.74	93.1	2332	93.18	2332.38
93.32	2332.57	93.46	2333	93.64	2333.58	93.76	2334	93.88	2334.41
94.06	2335	94.32	2335.77	94.39	2336	94.64	2336.81	94.7	2337
94.96	2337.84	95.01	2338	95.29	2338.88	95.32	2339	95.36	2339.11
95.64	2340	95.66	2340.07	95.96	2341	95.97	2341.03	96.18	2341.67
96.28	2342	96.28	2342.01	96.58	2343	96.86	2343.94	96.88	2344
96.89	2344.04	97.18	2345	97.19	2345.05	97.48	2346	97.5	2346.07
97.78	2347	97.8	2347.08	98.08	2348	98.11	2348.1	98.38	2349
98.64	2349.87	98.68	2350	100.18	2350.94	100.29	2351	100.48	2351.06
103.86	2352	107.29	2352	111.74	2352	114.67	2351.6	119.76	2351.48
122.1	2352	124.59	2352.81	125.19	2353	125.57	2353.11	128.43	2354
130.09	2354.49	130.43	2354.61	131.66	2355	138.52	2355.77	140.91	2356

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-248.22	.04	93.1	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-248.22	93.1	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-450	-208	2338.5	F

Left Levee Station= -380 Elevation=
Right Levee Station= 138.52 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2336.57	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.70	Flow Area (sq ft)		2086.69	3.40
E.G. Slope (ft/ft)	0.000318	Area (sq ft)	406.94	2281.84	3.40
Q Total (cfs)	5019.00	Flow (cfs)		5017.21	1.79
Top Width (ft)	447.09	Top Width (ft)	104.30	341.32	1.47
Vel Total (ft/s)	2.40	Avg. Vel. (ft/s)		2.40	0.53
Max Chl Dpth (ft)	8.57	Hydr. Depth (ft)		6.93	2.32
Conv. Total (cfs)	281376.9	Conv. (cfs)		281276.6	100.3
Length Wtd. (ft)	50.00	Wetted Per. (ft)		301.89	4.81
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.14	0.01
Alpha	1.00	Stream Power (lb/ft s)		0.33	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.36	24.04	0.17
C & E Loss (ft)	0.00	Cum SA (acres)	0.66	6.72	0.06

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2000

INPUT
Description:
Station Elevation Data num= 203

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2333	-446.55	2333	-445.48	2333	-444.84	2333	-442.86	2333
-442.47	2333	-441.01	2333	-432.9	2333	-431.62	2333	-425.68	2333
-418.07	2333	-411.79	2333	-405.3	2332.76	-404.74	2332.77	-403.06	2332.77
-402.69	2332.76	-395.55	2333	-394.58	2333.34	-393.59	2333.59	-391.21	2334
-390.62	2334.2	-389.3	2334.49	-386.54	2334.83	-385.45	2335	-382.88	2335.35
-377.71	2335.91	-377.21	2335.96	-376.96	2336	-374.19	2336.43	-373.85	2336.46
-371.92	2336.41	-370.42	2336.42	-368.52	2336.33	-368.15	2336.31	-367.64	2336.24
-367.61	2336.23	-367.14	2336.09	-366.65	2336	-363.87	2335.48	-361.99	2335.2
-361.17	2335.05	-360.93	2335	-358.57	2334.52	-356.26	2334	-354.75	2333.77
-349.16	2333	-347.77	2332.8	-342.37	2332.26	-342.31	2332.26	-342.1	2332.23
-342.02	2332.22	-340.03	2332	-338.96	2332	-334.17	2332	-330.54	2332.39
-323.61	2332.98	-323.34	2333	-322.41	2333	-321.88	2333	-320.36	2332.89
-320.32	2332.89	-319.34	2332.91	-319.28	2332.91	-280.97	2332	-271.18	2332
-270.86	2332	-270.28	2332	-267.94	2332	-259.45	2332	-254.57	2332
-251.73	2332	-251.39	2332	-251.33	2332	-251.12	2332	-250.73	2332
-228.9	2331.63	-192.52	2331	-189.88	2331	-188.74	2331	-188.42	2331
-185.59	2331	-182.33	2331	-181.56	2331	-179.82	2331	-179.76	2331
-179.16	2331	-154.76	2330.6	-154.03	2330.59	-153.29	2330.58	-120.15	2330
-119.85	2330	-115.95	2330	-115.27	2330	-113.36	2330	-113.11	2330
-112.91	2330	-112.89	2330	-112.87	2330	-107.09	2329.89	-58.83	2329
-57.75	2329	-57.7	2329	-25.24	2329	-20.35	2329	-20.14	2329
-18.44	2329	-16.24	2329	-15.01	2329.36	-14.83	2329.4	1.84	2329.23
2.29	2329.12	2.32	2329.11	2.71	2329	5.69	2329	6.14	2329
6.28	2329	11.23	2328.52	14.67	2328	25.39	2328	34.86	2328
54.26	2328	61.88	2328	62.02	2328	67.73	2328	73.36	2328
74.54	2328	75.13	2328	79.14	2328	85.31	2328.87	85.95	2328.98
86.07	2329	86.34	2329.05	86.97	2329.16	88.61	2329.46	91.57	2330
91.75	2330.04	92.13	2330.14	95.32	2331	96.29	2331.29	96.6	2331.35
97.23	2331.45	98.12	2332	102.99	2332	103.86	2332	103.95	2332
104.25	2332	104.31	2332.02	104.38	2332.04	104.72	2332.16	105.39	2332.45
105.83	2332.59	106.78	2333	106.86	2333	108.32	2333.49	109.49	2333.81
110.01	2334	110.75	2334.3	111.75	2334.65	112.14	2334.8	112.75	2335
114.74	2335.45	117.1	2336	117.3	2336.07	117.39	2336.11	118.09	2336.38
119.31	2337	120.1	2337.34	121.52	2338	122.71	2338.72	123.06	2338.93
123.17	2339	123.31	2339.1	124.73	2340	125.59	2340.56	126.3	2341
128.03	2341.98	128.07	2342	128.09	2342.02	128.73	2343	129.12	2343.68
129.31	2344	129.69	2344.5	130	2345	130.45	2345.65	130.66	2346
131.34	2346.92	131.39	2347	131.59	2347.25	132.11	2348	132.42	2348.45
132.81	2349	132.98	2349.25	133.35	2349.73	133.74	2350	135.87	2350.79
136.47	2351	139.02	2351.78	139.62	2352	142.1	2352.79	142.61	2352.99
142.62	2353	142.63	2353	147.99	2354				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-251.73	.04	98.12	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-251.73	98.12	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-450	-158	2338.5	F

Left Levee Station= -373.75 Elevation=
Right Levee Station= 147.99 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2336.54	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.37	Flow Area (sq ft)		1897.09	58.35
E.G. Slope (ft/ft)	0.000341	Area (sq ft)	677.71	2389.59	58.35
Q Total (cfs)	5019.00	Flow (cfs)		4939.90	79.10
Top Width (ft)	568.40	Top Width (ft)	198.27	349.85	20.28
Vel Total (ft/s)	2.57	Avg. Vel. (ft/s)		2.60	1.36
Max Chl Dpth (ft)	8.54	Hydr. Depth (ft)		7.41	2.88
Conv. Total (cfs)	271599.1	Conv. (cfs)		267318.8	4280.3
Length Wtd. (ft)	50.00	Wetted Per. (ft)		256.79	21.03
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.16	0.06

* Alpha	*	1.02	* Stream Power (lb/ft s)	*		*	0.41	*	0.08	*
* Frctn Loss (ft)	*	0.02	* Cum Volume (acre-ft)	*	1.74	*	21.35	*	0.13	*
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	0.48	*	6.32	*	0.05	*

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2050

INPUT
Description:
Station Elevation Data num= 233

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2333.72	-440.57	2333.41	-439.69	2333.38	-437.08	2333.28	-431.17	2333
-428.29	2333	-419.24	2332.75	-413.2	2332.6	-412.82	2332.59	-388.18	2332.12
-385.94	2332.08	-385.75	2332.07	-383.5	2332	-381.12	2332	-380.71	2332
-380.07	2332	-377.93	2332	-377.35	2332	-376.02	2332	-373.03	2332
-358.18	2331.37	-357.39	2331.35	-357.11	2331.34	-356.37	2331.33	-353.79	2331.3
-352.87	2331.29	-344.44	2331.18	-338.52	2331	-337.41	2331	-336.89	2331
-336.65	2331	-335.14	2331	-334.94	2331	-334.84	2331	-332.47	2331
-331.19	2331	-331.18	2331	-331.12	2331	-331.04	2331	-330.53	2331
-328.5	2331	-325.56	2331	-325.44	2331	-323.77	2331.06	-320.62	2331.03
-320.61	2331.03	-314.31	2331.12	-314.23	2331.11	-313.45	2331.11	-310.22	2331.07
-310.2	2331.06	-307.8	2331.05	-306.97	2331.02	-304.93	2331.01	-304.9	2331.01
-304.7	2331.02	-304.02	2331.02	-303.99	2331.02	-300.57	2331.07	-300.53	2331.07
-293.64	2331.21	-292.6	2331.21	-292.48	2331.21	-290.23	2331.25	-289.77	2331.25
-288.76	2331.26	-288.41	2331.27	-282.15	2331.31	-282.11	2331.31	-281.75	2331.32
-279.95	2331.34	-279.58	2331.33	-275.87	2331.36	-275.48	2331.36	-271.64	2331.37
-271.43	2331.36	-270.59	2331.33	-262.17	2331.36	-256.37	2331.24	-253.11	2331.21
-249.02	2331.22	-246.58	2331.22	-231.88	2331.15	-231.74	2331.15	-229.19	2331.13
-229.18	2331.13	-228.22	2331.13	-220.47	2331	-219.13	2331	-196.82	2331
-195.07	2331	-194.12	2331	-194.08	2331	-193.21	2331	-192.96	2331
-192.12	2331	-191.26	2330.98	-190.9	2330.98	-177	2330.73	-172.01	2330.73
-172	2330.73	-168.36	2330.73	-152.9	2330.41	-150.24	2330.35	-150.23	2330.35
-149.1	2330.33	-134.38	2330	-131.73	2330	-130.81	2330	-130.2	2330
-130.15	2330	-111.66	2330	-111.55	2330	-110.92	2330	-109.73	2329.96
-109.69	2329.96	-107.15	2329.97	-106.99	2329.98	-106.36	2329.98	-106.32	2329.98
-104.54	2329.97	-104.29	2329.97	-103.67	2329.97	-103.54	2329.97	-103.46	2329.97
-99.94	2329.92	-99.5	2329.92	-99.45	2329.92	-96.1	2329.87	-95.8	2329.87
-94.02	2329.83	-90.18	2329.75	-89.5	2329.73	-82.31	2329.57	-77.77	2329.46
-76.63	2329.43	-75.3	2329.4	-59.4	2329	-58.93	2329	-58.43	2329
-58.1	2329	-57.48	2329	-56.55	2329	-56.13	2329	-56.01	2329
-50.96	2328.87	-48.26	2328.8	-45.84	2328.73	-21.42	2328	-19.91	2328
-18.56	2328	-18.52	2328	-18.22	2328	-14.99	2328	-14.97	2328
-14.68	2328	0	2328.19	3.15	2328.23	4.08	2328.23	12.52	2328
20.02	2328	20.19	2328	27.44	2328	27.47	2328	54.36	2327.96
55.28	2328	55.68	2328	55.92	2328	57.53	2328	62.24	2328
72.3	2328	82.51	2328	88.95	2328	88.98	2328	89.6	2328
89.78	2328.07	92.28	2329	92.68	2329.14	93.82	2329.46	95.04	2330
96.38	2330.7	96.82	2331	98.35	2331.95	98.43	2332	98.52	2332.06
99.44	2332.61	100.12	2333	100.44	2333.17	101.9	2334	103.05	2334.56
103.84	2335	104.46	2335.33	105.7	2336	106.27	2336.3	107.6	2337
108.84	2337.64	109.52	2338	109.98	2338.26	111.38	2339	112.08	2339.39
112.78	2339.87	112.91	2340	113.56	2340.51	114.01	2341	114.05	2341.09
114.75	2342	115.32	2342.77	115.45	2343	116.25	2343.92	116.29	2344
116.36	2344.11	116.69	2344.4	117.21	2345	117.26	2345.05	118.01	2346
118.78	2346.91	118.85	2347	118.92	2347.08	119.6	2348	120.06	2348.33
120.8	2349	122.7	2349.79	123.14	2350	124.81	2350.78	125.31	2351
127.15	2351.5	128.78	2352	130.09	2352.25	131.04	2352.43	131.58	2352.54
133.61	2353	137.91	2353.98	138.01	2354				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-377.35	.04	98.35	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-377.35	98.35	50	50	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-450	-108	2338.5	F
112	138.01	2338.5	F

Right Levee Station= 138 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2336.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2336.47	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.20	Flow Area (sq ft)		1633.43	18.26
E.G. Slope (ft/ft)	0.000432	Area (sq ft)	274.70	3121.43	18.26
Q Total (cfs)	5019.00	Flow (cfs)		4997.06	21.94
Top Width (ft)	556.60	Top Width (ft)	72.65	475.70	8.25
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)		3.06	1.20
Max Chl Dpth (ft)	8.51	Hydr. Depth (ft)		7.92	2.21
Conv. Total (cfs)	241343.2	Conv. (cfs)		240288.4	1054.8
Length Wtd. (ft)	50.00	Wetted Per. (ft)		207.28	9.41
Min Ch El (ft)	2327.96	Shear (lb/sq ft)		0.21	0.05
Alpha	1.01	Stream Power (lb/ft s)		0.65	0.06
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	1.19	18.19	0.09
C & E Loss (ft)	0.03	Cum SA (acres)	0.33	5.85	0.03

Warning: The cross-section end points had to be extended vertically for the computed water surface.
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: Las Vegas Wash
REACH: Upper RS: -2100

INPUT
Description:
Station Elevation Data num= 225

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2335	-448.34	2334.79	-443.77	2334.29	-443.72	2334.29	-441.34	2334
-441.32	2334	-439.72	2333.82	-439.48	2333.79	-422.49	2333	-421.89	2333
-420.25	2333	-418.04	2333	-417.5	2333	-407.11	2333	-406.37	2333
-406.1	2333	-405.95	2333	-405	2333	-404.38	2333	-399.83	2333
-398.25	2333	-389.61	2333	-389.53	2333	-389.35	2333	-389.27	2333
-388.46	2333	-387.5	2333	-383.61	2332.97	-382.97	2332.95	-381.47	2332.93
-381.01	2332.92	-380.09	2332.91	-379.88	2332.9	-379.29	2332.89	-377.71	2332.84
-350.34	2332	-344.4	2332	-344.08	2332	-341.98	2332	-341.45	2332
-331.68	2332	-330.65	2332	-329.5	2332	-329.44	2332	-329.37	2332
-324.44	2331.86	-323.71	2331.86	-320	2331.82	-312.8	2331.69	-277.6	2331
-276.06	2331	-275.48	2331	-273.86	2331	-271.64	2331	-271.47	2331
-266.45	2331	-262.29	2331	-257.8	2331	-248.02	2331	-247.72	2331
-238.93	2331	-237.37	2331	-236.26	2331	-236.24	2331	-227.88	2330.74
-222.33	2330.65	-221.79	2330.64	-215.52	2330.54	-213.16	2330.51	-210.58	2330.48
-208.42	2330.44	-207.59	2330.43	-205.26	2330.39	-204.95	2330.39	-201.42	2330.33
-198.7	2330.31	-194.86	2330.3	-192.59	2330.25	-192.33	2330.25	-180.4	2330.2
-179.6	2330.19	-179.55	2330.19	-179.36	2330.18	-170.09	2330.15	-170.01	2330.15
-164.75	2330.14	-158.66	2330.07	-146.43	2330.03	-141.58	2330.02	-140.12	2330.01
-138.38	2330	-136.12	2330	-136	2330	-126.83	2329.84	-126.11	2329.83
-123.63	2329.79	-123.6	2329.78	-122.9	2329.77	-121.99	2329.76	-119.16	2329.66
-117.2	2329.64	-116.58	2329.63	-112.98	2329.54	-108.9	2329.43	-106.79	2329.38
-104.42	2329.35	-100.58	2329.28	-100.42	2329.28	-99.8	2329.26	-84.13	2329
-83.95	2329	-83.92	2329	-83.9	2329	-83.79	2329	-82.78	2329
-82.35	2329	-77.57	2329	-75.47	2329	-74.38	2329	-72.07	2329
-66.08	2329	-64.48	2329	-63.9	2329	-47.22	2328.44	-47	2328.44
-46.29	2328.43	-36.96	2328	-36.83	2328	-36.74	2328	-30.24	2328
-29.17	2328	-28.79	2328	-26.58	2328	-17.37	2328	-16.66	2328
-16.36	2328	-13.36	2328	-11.61	2328	-9.61	2328	-9.21	2328
75.17	2328	75.2	2328	75.21	2328	75.24	2328	77.44	2328
81.68	2328.58	84.34	2329	86.43	2329.3	90.78	2330	90.87	2330.01
91.12	2330.06	92.22	2330.33	92.37	2330.37	92.57	2330.44	93.28	2330.64
93.46	2330.67	94.33	2330.79	95.81	2331	100.98	2331.76	101.93	2332
105.1	2332.8	105.66	2333	105.84	2333.06	107.71	2334	109.09	2334.63
110.13	2335	111.33	2335.31	111.39	2335.33	111.8	2335.49	112.4	2335.73
112.97	2336	113.69	2336.33	115.1	2336.97	115.17	2337	115.26	2337.04
116.85	2337.69	117.89	2338	119.88	2338.52	120.2	2338.61	121.69	2339
122.66	2339.48	122.88	2339.62	123.5	2340	124.62	2340.54	125.6	2341
126.4	2341.4	127.48	2342	129.28	2342.99	129.28	2343	129.29	2343
130.9	2344	132.49	2344.82	132.75	2345	133.16	2345.29	133.97	2346
134.42	2346.58	134.82	2347	135.36	2347.4	135.86	2348	136.79	2348.86
137.54	2349	137.65	2349	137.88	2349	139.26	2349	139.84	2349.04
142.37	2349	142.81	2349.05	142.91	2349.08	144.26	2349.5	144.42	2349.57
144.8	2349.75	145.32	2350	145.58	2350.11	145.89	2350.28	147.44	2351

```
  149.61 2351.99  149.64    2352  149.74 2352.02  149.75 2352.02  152.82 2352.58
  155.49  2352.9   155.7 2352.93  156.03 2352.96  156.07 2352.97  156.41    2353

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -450     .04 -236.26     .04   95.81     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -236.26   95.81               12      12      12             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -450     -58  2338.5       F
      62  156.41  2338.5       F
Right Levee     Station=     155      Elevation=

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************************
* E.G. Elev (ft)         * 2336.56  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.42  * Wt. n-Val.            *          *    0.040 *          *
* W.S. Elev (ft)         * 2336.14  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)         * 2331.86  * Flow Area (sq ft)     *          *  967.74  *          *
* E.G. Slope (ft/ft)     *0.001205  * Area (sq ft)          *  847.61  * 2334.36  *   53.70  *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  563.28  * Top Width (ft)       *  213.74  *  332.07  *   17.47  *
* Vel Total (ft/s)       *    5.19  * Avg. Vel. (ft/s)     *          *    5.19  *          *
* Max Chl Dpth (ft)      *    8.14  * Hydr. Depth (ft)     *          *    8.06  *          *
* Conv. Total (cfs)      *144557.4  * Conv. (cfs)          *          *144557.4  *          *
* Length Wtd. (ft)       *   12.00  * Wetted Per. (ft)     *          *  120.02  *          *
* Min Ch El (ft)         * 2328.00  * Shear (lb/sq ft)     *          *    0.61  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.15  *          *
* Frctn Loss (ft)        *    0.02  * Cum Volume (acre-ft)  *    0.54  *   15.06  *    0.05  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *    0.16  *    5.39  *    0.02  *
*****************************************************************************************************

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -2112

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -510    2340 -508.61 2339.58 -438.61 2333.05 -428.61 2333.15 -338.61 2331.42
 -298.61 2330.88 -238.61 2330.47 -198.61 2330.06 -138.61 2330.04  -88.61 2328.97
  -48.61 2328.57  -38.61 2327.98   -8.61 2327.98   11.39 2327.98   31.39 2327.98
   41.39 2327.98   51.39 2328.07   70.682330.344  121.39 2336.32     125    2340

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************
    -510     .04 -138.61     .04  -38.61    .035   51.39     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -138.61   70.68           131.97  131.97  131.97             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -510     -46  2338.5       F
      50     125    2339       F

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************************
* E.G. Elev (ft)         * 2336.51  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.69  * Wt. n-Val.            *          *    0.035 *          *
* W.S. Elev (ft)         * 2335.82  * Reach Len. (ft)       *   13.17  *   13.17  *   13.17  *
* Crit W.S. (ft)         * 2332.41  * Flow Area (sq ft)     *          *  750.66  *          *
* E.G. Slope (ft/ft)     *0.001628  * Area (sq ft)          * 1450.25  * 1505.83  *  127.21  *
* Q Total (cfs)          * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  585.44  * Top Width (ft)       *  329.69  *  209.29  *   46.46  *
* Vel Total (ft/s)       *    6.69  * Avg. Vel. (ft/s)     *          *    6.69  *          *
* Max Chl Dpth (ft)      *    7.84  * Hydr. Depth (ft)     *          *    7.82  *          *
* Conv. Total (cfs)      *124385.9  * Conv. (cfs)          *          *124385.9  *          *
* Length Wtd. (ft)       *   13.17  * Wetted Per. (ft)     *          *   96.01  *          *
```

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• Min Ch El (ft)          * 2327.98  * Shear (lb/sq ft)       *          *    0.79  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.31  •          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)   *    0.23  *   14.53  *    0.02  *
* C & E Loss (ft)         •    0.59  * Cum SA (acres)         *    0.09  *    5.31  *    0.01  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  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.

BRIDGE


RIVER: Las Vegas Wash
REACH: Upper              RS: -2165

INPUT
Description:
Distance from Upstream XS =   13.17
Deck/Roadway Width        =   88.03
Weir Coefficient          =    2.5
Upstream  Deck/Roadway Coordinates
    num=       5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*****************************************************************************
    -508    2339            -200 2337.13          -34.89 2338.64 2335.92
  38.779 2338.64 2335.92 123.401    2341

Upstream Bridge Cross Section Data
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
 -508.61 2339.58-438.609 2333.05 -428.61 2333.15 -338.61 2331.42 -298.61 2330.88
 -238.61 2330.97 -198.61 2330.06 -138.61 2330.24 -88.611 2328.97 -48.609 2329.07
  -38.61 2327.98  -34.89 2327.92       0 2327.92  38.779 2327.92   41.39 2327.89
   51.39 2328.07   70.682330.344  121.39 2336.32

Manning's n Values        num=       5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************************************************
 -508.61    .035 -138.61    .035  -34.89    .015   41.39    .035   70.68    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        -34.89  38.779            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 -508.61     -46  2338.5       F
      50  121.39    2339       F

Downstream  Deck/Roadway Coordinates
    num=       5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*****************************************************************************
    -625  2339.5            -200 2337.13          -34.89 2338.64 2335.63
  38.779 2338.64 2335.63 123.401    2341

Downstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
-646.469 2354.31 -636.47 2353.81 -586.47 2338.74 -536.47  2334.9 -466.47 2332.38
 -336.47 2332.22-296.471 2330.88-256.471 2330.88 -166.47 2329.87  -34.89 2327.63
       0 2327.63  38.779 2327.63   43.53  2327.7   53.53 2328.03   63.53 2328.54
   73.53 2328.87   83.53 2330.71   93.53 2330.88  103.53 2333.22  113.53 2336.07
  123.53 2338.41  133.53 2341.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
-646.469    .035 -336.47    .035   93.53    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        -34.89  38.779            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
-646.469     -50    2335       F
      53  133.53    2335       F

Upstream Embankment side slope              =       2 horiz. to 1.0 vertical
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Downstream Embankment side slope           =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins        = 2337.15
Energy head used in spillway design        =
Spillway height used in design             =
Weir crest shape                           = Broad Crested

Number of Piers =  2

Pier Data
Pier Station     Upstream=  -10.48    Downstream=  -10.48
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
     .83    2200     .83    2400
Downstream     num=       2
    Width   Elev    Width   Elev
*********************************
     .83    2200     .83    2400

Pier Data
Pier Station     Upstream=   14.36    Downstream=   14.36
Upstream     num=       2
    Width   Elev    Width   Elev
*********************************
     .83    2200     .83    2400
Downstream     num=       2
    Width   Elev    Width   Elev
*********************************
     .83    2200     .83    2400

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.5
       Yarnell                KVal =      .9
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream water surface

BRIDGE OUTPUT  Profile #FIS Flow
*************************************************************************************
* E.G. US. (ft)          *    2336.51  * Element               *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    2335.82  * E.G. Elev (ft)        *    2335.90  *    2335.61  *
* Q Total (cfs)          *    5019.00  * W.S. Elev (ft)        *    2333.26  *    2332.97  *
* Q Bridge (cfs)         *    5019.00  * Crit W.S. (ft)        *    2333.26  *    2332.97  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)      *       5.34  *       5.34  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)       *      12.99  *      12.98  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)      *     386.47  *     386.61  *
* Weir Submerg           *             * Froude # Chl           *       0.99  *       0.99  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)   *    3066.11  *    3064.96  *
* Min El Weir Flow (ft)  *    2338.51  * Hydr Depth (ft)        *       5.35  *       5.35  *
* Min El Prs (ft)        *    2335.92  * W.P. Total (ft)        *     104.64  *     104.64  *
* Delta EG (ft)          *       1.97  * Conv. Total (cfs)      *    97839.5  *    41967.8  *
* Delta WS (ft)          *       5.02  * Top Width (ft)         *      72.21  *      72.21  *
* BR Open Area (sq ft)   *     578.47  * Frctn Loss (ft)        *             *             *
* BR Open Vel (ft/s)     *      12.99  * C & E Loss (ft)        *             *             *
* Coef of Q              *             * Shear Total (lb/sq ft) *       0.61  *       3.30  *
* Br Sel Method          *Energy only  * Power Total (lb/ft s)  *       7.88  *      42.83  *
*************************************************************************************

Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than
         the downstream energy.  This is not physically possible, the momentum answer has been
         disregarded.
Warning: The water surface upstream of the bridge computed by the Yarnell method was below critical
         depth.  The Yarnell solution has been disregarded.
Note:    Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow.
         The Yarnell answer has been disregarded.
```

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Warning: The energy equation could not be 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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2243.97

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-646.47	2354.31	-636.47	2353.81	-586.47	2338.74	-536.47	2334.9	-466.47	2332.38
-336.47	2332.22	-296.47	2330.88	-256.47	2330.88	-166.47	2329.87	-50.47	2327.63
-16.47	2327.63	3.53	2327.63	23.53	2327.63	33.53	2327.7	43.53	2327.7
53.53	2328.03	63.53	2328.54	73.53	2328.87	83.53	2330.71	93.53	2330.88
103.53	2333.22	113.53	2336.07	123.53	2338.41	133.53	2341.76		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-646.47	.04	-336.47	.04	-50.47	.045	53.53	.04	93.53	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-336.47	93.53	56.03	56.03	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-646.47	-50	2335	F
53	133.53	2335	F

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2334.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.74	Wt. n-Val.		0.045	
W.S. Elev (ft)	2330.80	Reach Len. (ft)	56.03	56.03	56.03
Crit W.S. (ft)	2331.86	Flow Area (sq ft)		323.46	
E.G. Slope (ft/ft)	0.048020	Area (sq ft)		659.49	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	338.37	Top Width (ft)		338.37	
Vel Total (ft/s)	15.52	Avg. Vel. (ft/s)		15.52	
Max Chl Dpth (ft)	3.17	Hydr. Depth (ft)		3.14	
Conv. Total (cfs)	22903.8	Conv. (cfs)		22903.8	
Length Wtd. (ft)	56.03	Wetted Per. (ft)		103.01	
Min Ch El (ft)	2327.63	Shear (lb/sq ft)		9.41	
Alpha	1.00	Stream Power (lb/ft s)		146.07	
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	0.01	13.10	
C & E Loss (ft)	0.33	Cum SA (acres)	0.04	4.98	

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.
Note: The energy method has computed a class B profile.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2300

INPUT
Description:
Station Elevation Data num= 134

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2350	-436.88	2350	-423.83	2345.02	-423.8	2345	-423.79	2345
-423.75	2344.99	-404.44	2340	-393.91	2335.43	-392.97	2335	-389.4	2334.87

```
 -381.32 2334.55  -269.9    2330 -263.84    2330 -249.89    2330 -243.14    2330
 -235.28    2330 -198.01  2329.5 -178.61 2329.24 -168.92 2329.21 -158.32    2330
 -157.48 2327.78 -156.86 2328.03 -156.42 2327.89  -155.9 2327.61 -155.71 2327.51
 -155.32 2327.44  -133.3    2327 -132.32    2327 -129.49    2327  -129.3    2327
    -129    2327 -125.71    2327 -125.04    2327 -124.21    2327 -122.31    2327
 -119.55    2327 -118.77    2327 -118.66    2327 -118.18    2327 -116.29    2327
 -113.25    2327 -112.86    2327  -112.8    2327 -112.63    2327 -112.42    2327
 -104.41    2327  -86.42 2326.77  -86.33 2326.77  -85.88 2326.77  -85.47 2326.76
  -83.62 2326.73  -81.83 2326.69  -81.69 2326.69  -78.83 2326.61  -77.42 2326.57
  -58.31 2326.32  -42.62    2326  -42.27    2326  -41.53    2326  -40.99    2326
  -40.68    2326  -36.08    2326  -32.53    2326  -24.32    2326  -23.51    2326
  -22.01    2326   -20.1    2326   12.54    2326   14.15    2326    14.2    2326
   31.75 2326.95   33.15    2327   39.95 2327.41   42.92 2327.59   47.05 2327.86
   48.87    2328   50.53 2328.21   56.36    2329   64.13 2329.74   66.47    2330
   67.63 2330.18   68.15 2330.24   70.37 2330.46    72.1 2330.63   72.45 2330.67
    73.5 2330.75   74.41 2330.85    77.2    2331    78.4 2331.14   79.07 2331.29
   81.91 2331.66   82.09 2331.69   83.18 2331.86   83.91    2332   86.43  2332.6
   88.31    2333   90.75 2333.45   92.14 2333.67   94.61    2334   96.61 2334.31
   99.52 2334.68   99.67  2334.7  100.14 2334.76  100.91 2334.85   101.6 2334.92
  102.25    2335  108.25 2335.67  111.23    2336  111.81 2336.07  112.35 2336.13
  117.49 2336.65  121.44    2337  124.31 2337.23  134.34    2338  136.32 2338.11
  136.38 2338.12  136.96 2338.16  137.32 2338.17  137.55 2338.19  138.76 2338.26
     139 2338.28  142.37 2338.59   143.7 2338.71  147.03    2339  152.78 2339.32
  158.12 2339.59  159.55  2339.7  159.84 2339.72   160.4 2339.75   161.8 2339.82
  162.49 2339.83  163.68 2339.91  163.75 2339.92  164.82    2340

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************
    -450     .04 -158.32     .04   64.13     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -158.32   64.13               50      50      50             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -450  -78.02    2334       F
   81.02  164.82    2334       F

CROSS SECTION OUTPUT  Profile #FIS Flow
*************************************************************************************************
* E.G. Elev (ft)          * 2331.88  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    2.42  * Wt. n-Val.             *          *    0.040 *          *
* W.S. Elev (ft)          * 2329.45  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 2330.03  * Flow Area (sq ft)      *          *  401.70  *          *
* E.G. Slope (ft/ft)      *0.027550  * Area (sq ft)           *    4.22  *  595.08  *          *
* Q Total (cfs)           * 5019.00  * Flow (cfs)             *          * 5019.00  *          *
* Top Width (ft)          *  247.82  * Top Width (ft)         *   28.62  *  219.20  *          *
* Vel Total (ft/s)        *   12.49  * Avg. Vel. (ft/s)       *          *   12.49  *          *
* Max Chl Dpth (ft)       *    3.45  * Hydr. Depth (ft)       *          *    2.89  *          *
* Conv. Total (cfs)       * 30238.3  * Conv. (cfs)            *          * 30238.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *  139.26  *          *
* Min Ch El (ft)          * 2326.00  * Shear (lb/sq ft)       *          *    4.96  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   61.99  *          *
* Frctn Loss (ft)         *    2.00  * Cum Volume (acre-ft)   *    0.00  *   12.29  *          *
* C & E Loss (ft)         *    0.66  * Cum SA (acres)         *    0.02  *    4.62  *          *
*************************************************************************************************

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

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -2350

INPUT
Description:
Station Elevation Data    num=      81
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************
    -450   2345.6 -449.35 2345.71 -438.12    2345 -430.96 2344.59 -428.55 2344.07
 -417.33    2340  -404.7 2336.24 -401.07    2335 -350.67 2332.79 -305.39 2331.23
 -291.89 2330.72 -273.18    2330 -270.74    2330 -267.78 2329.95 -267.72 2329.95
 -265.29 2329.92 -265.27 2329.92 -164.78 2328.57 -149.39 2328.37  -128.5  2328.3
```

-108.06	2327.08	-107.99	2327.03	-103.12	2326.77	-100.31	2326.61	-99.94	2326.59
-97.35	2326.47	-96.67	2326.45	-95.12	2326.37	-84.48	2326	-84.38	2326
-81.94	2326	-69	2326	-68.55	2326	-67.29	2326	2.21	2326
5.28	2326	14.37	2326	16.03	2326	46.8	2326	46.82	2326
46.96	2326.03	52.19	2327	55.21	2327.88	55.68	2328	56.88	2328.47
57.97	2328.88	58.24	2329	60.65	2329.98	60.69	2330	60.72	2330.01
63.01	2331	65.09	2331.94	65.22	2332	65.41	2332.1	67.37	2333
67.58	2333.1	69.57	2334	71.26	2334.87	71.51	2335	73.09	2335.82
73.45	2336	74.96	2336.78	75.39	2337	76.8	2337.73	77.32	2338
79.09	2338.91	79.27	2339	80.66	2339.72	81.22	2340	82.65	2340.71
83.27	2341	83.36	2341.04	85.42	2342	86.07	2342.29	87.57	2343
89.17	2343.6	90.21	2344	92.25	2344.66	93.42	2345	96.33	2345.97
96.43	2346								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-267.78	.04	60.65	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-267.78	60.65	50	50	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-450	-103.02	2333	F
106.02	96.43	2333	F

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2330.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.01	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.98	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2329.25	Flow Area (sq ft)		621.47	
E.G. Slope (ft/ft)	0.008019	Area (sq ft)	0.02	814.57	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	329.91	Top Width (ft)	1.49	328.42	
Vel Total (ft/s)	8.08	Avg. Vel. (ft/s)		8.08	
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)		3.80	
Conv. Total (cfs)	56049.0	Conv. (cfs)		56049.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		164.29	
Min Ch El (ft)	2326.00	Shear (lb/sq ft)		1.89	
Alpha	1.00	Stream Power (lb/ft s)		15.29	
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.00	11.48	
C & E Loss (ft)	0.07	Cum SA (acres)	0.00	4.31	

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

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2400

INPUT
Description:
Station Elevation Data num= 103

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2337.36	-438.41	2339.67	-436.72	2340	-436.17	2340	-421.97	2340
-406.84	2336.19	-401.47	2335	-389.38	2331.66	-377.93	2332.42	-369.76	2331.48
-309.71	2330.35	-300.4	2330	-264.52	2329.5	-223.06	2328.89	-209.61	2328.68
-208.11	2328.67	-206.31	2328.64	-205.91	2328.64	-131.55	2327.64	-120.16	2327.49
-88.08	2327.38	-54.43	2325.86	-52.71	2325.79	57.46	2325.6	62.74	2326
64.42	2326.23	67.38	2326.61	69.67	2327	70.65	2327.23	72.16	2327.53
74.25	2328	74.57	2328.13	76.12	2329	76.81	2329.32	78.35	2330
80.09	2330.58	81.37	2331	83.83	2331.97	83.88	2332	83.9	2332.01
84.18	2332.14	84.5	2332.27	85.93	2332.89	86.45	2333	87.54	2333.33
87.85	2333.34	87.89	2333.34	88.04	2333.32	89.6	2333.13	90.38	2333
91.79	2332.79	92.68	2332.64	96.4	2332	97.97	2331.72	98.67	2331.62
98.99	2331.58	99.31	2331.54	101.12	2331.35	104.63	2331.07	104.66	2331.07
104.92	2331.04	105.27	2331.08	105.39	2331.1	105.7	2331.15	106.01	2331.2
106.06	2331.2	111.14	2332	114.01	2332.61	116.08	2333	118.98	2333.71
120.22	2334	122.8	2334.64	124.16	2335	124.26	2335.03	127.72	2336
129.38	2336.45	129.95	2336.6	130.24	2336.69	131.36	2337	132.18	2337.3
134.05	2338	135.75	2338.61	136.79	2339	138.8	2339.72	139.37	2339.91
139.64	2340	141.94	2340.79	142.63	2341	144.27	2341.4	146.63	2342
147.52	2342.24	149.76	2342.73	150.41	2342.85	150.95	2342.97	151.18	2343
152.89	2343.31	156.42	2344	157.26	2344.15	158.25	2344.29	159.68	2344.53

```
  160.24 2344.63  161.93 2344.93  162.43    2345

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -450     .04  -300.4     .04   78.35     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -300.4   78.35               50      50      50             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
    -450 -128.02    2332        F
  131.02  162.43    2332        F

CROSS SECTION OUTPUT  Profile #FIS Flow
*************************************************************************************************
* E.G. Elev (ft)         * 2330.54  • Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.77  • Wt. n-Val.            *          *    0.040 *          *
* W.S. Elev (ft)         * 2329.77  * Reach Len. (ft)       *   50.00  *    50.00 *   50.00  *
• Crit W.S. (ft)         * 2328.96  * Flow Area (sq ft)     *          •  711.57  *          *
* E.G. Slope (ft/ft)     *0.006927  * Area (sq ft)          *          •  884.31  *          *
* Q Total (cfs)          • 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)         *  361.78  * Top Width (ft)       *          *  361.78  *          *
* Vel Total (ft/s)       •    7.05  * Avg. Vel. (ft/s)     *          *    7.05  *          *
* Max Chl Dpth (ft)      *    4.17  * Hydr. Depth (ft)     *          *    3.46  *          *
* Conv. Total (cfs)      * 60303.9  * Conv. (cfs)          *          * 60303.9  •          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  206.50  *          *
* Min Ch El (ft)         * 2325.60  * Shear (lb/sq ft)     *          *    1.49  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        •   10.51  *          *
* Frctn Loss (ft)        *    0.37  * Cum Volume (acre-ft)  •          *   10.51  *          *
• C & E Loss (ft)        •    0.00  * Cum SA (acres)        *          •    3.91  *          *
*************************************************************************************************

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

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -2450

INPUT
Description:
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -450 2339.73  -448.6    2340 -430.56    2340 -410.98    2340 -400.15 2335.68
 -398.37    2335 -388.33 2330.93 -385.95    2330 -366.66    2330 -353.75    2330
 -340.76    2330 -328.45    2330 -320.31    2330 -310.66    2330 -216.78 2328.36
 -187.43 2327.95 -160.26 2327.55 -151.45 2327.41 -148.49 2327.39 -147.33 2327.37
 -146.56 2327.36  -98.32 2326.71  -90.93 2326.62  -47.66 2326.47      -4 2325.96
   -3.99  2325.9   -3.99 2325.84   -3.73  2325.7   -3.72 2325.64   -1.67 2325.27
   59.69 2325.33   64.82    2326   69.49  2326.8   70.93    2327   71.37 2327.17
   73.43    2328   74.26 2328.35    75.9    2329    77.2 2329.54   78.26    2330
   79.65 2330.78   80.01    2331   81.77 2331.97   81.82    2332   82.01 2332.11
   82.12 2332.16   83.98    2333   84.84 2333.39   86.39    2334   86.51 2334.05
   86.77 2334.15   87.78 2334.58   88.97 2334.91      89 2334.92    89.1 2334.95
   89.13 2334.96   89.33    2335   92.14 2335.62   93.68    2336   94.76 2336.26
   96.42 2336.67   97.57    2337  100.11  2337.7   101.5    2338  102.89 2338.31
  104.63 2338.68  105.96    2339  107.75 2339.42  109.82    2340  110.93 2340.37
  111.99  2340.7  113.23    2341  114.09 2341.24  115.52 2341.56  116.38 2341.82
  117.08    2342  118.16  2342.3  118.83 2342.46  119.16 2342.55  120.57    2343
  121.46 2343.33  123.07    2344  123.78 2344.32  124.03 2344.45  124.64 2344.77
  125.03    2345  125.48 2345.27  126.77    2346   127.9 2346.64  128.59    2347
  130.81 2347.84  131.25    2348  131.36 2348.04  133.97    2349   134.8  2349.3
  136.71    2350

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -450     .04 -310.66     .04   78.26     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -310.66  78.26               50      50      50             .1       .3
Ineffective Flow      num=       2
   Sta L   Sta R    Elev  Permanent
    -450 -153.02    2331        F
  156.02  136.71    2331        F
```

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2330.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.41	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2328.73	Flow Area (sq ft)		717.27	
E.G. Slope (ft/ft)	0.007821	Area (sq ft)		844.93	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	353.91	Top Width (ft)		353.91	
Vel Total (ft/s)	7.00	Avg. Vel. (ft/s)		7.00	
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)		3.12	
Conv. Total (cfs)	56751.9	Conv. (cfs)		56751.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		230.75	
Min Ch El (ft)	2325.27	Shear (lb/sq ft)		1.52	
Alpha	1.00	Stream Power (lb/ft s)		10.62	
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)		9.52	
C & E Loss (ft)	0.05	Cum SA (acres)		3.50	

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2500

INPUT
Description:
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450	2340	-432.84	2340	-416.19	2340	-396.63	2340	-396.07	2339.81
-382.16	2335	-377.28	2333.33	-368.71	2330	-358.79	2330	-356.09	2330
-339.2	2330	-319.15	2330	-124.26	2326.59	-110.35	2326.4	-97.47	2326.21
-93.29	2326.14	-88.88	2326.1	-88.34	2326.09	-87.2	2326.08	-65.09	2325.79
-61.71	2325.74	-7.23	2325.56	64.81	2324.93	68.2	2326	69.49	2326.5
70.78	2327	73.28	2327.9	73.53	2328	75.79	2328.84	76.2	2329
77.15	2329.28	78.86	2330	80.39	2330.59	81.34	2331	83.46	2331.8
83.92	2332	85.78	2332.71	86.38	2332.91	86.68	2333	88.56	2333.57
89.99	2334	90.33	2334.1	91.14	2334.34	92.24	2334.64	93.62	2335
95.38	2335.56	96.51	2336	98.41	2336.84	98.87	2337	100.91	2337.97
100.93	2337.98	100.96	2338	100.97	2338	102.77	2338.8	103.25	2339
105.13	2339.88	105.39	2340	107.37	2340.94	107.46	2341	107.64	2341.11
108.79	2342	110.3	2342.9	110.48	2343	110.99	2343.31	112.02	2344
112.7	2344.47	113.49	2345	114.56	2345.7	114.99	2346	115.93	2346.66
116.41	2347	117.36	2347.42	118.64	2348	118.89	2348.12	120.61	2349
121.53	2349.39	122.81	2350	135.9	2350.81	138.88	2351		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450	.04	-319.15	.04	78.86	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-319.15	78.86	50	50	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-450	-178.02	2330	F
181.02	138.88	2330	F

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2329.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.61	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.18	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2328.31	Flow Area (sq ft)		803.35	
E.G. Slope (ft/ft)	0.006142	Area (sq ft)		880.60	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	348.78	Top Width (ft)		348.78	
Vel Total (ft/s)	6.25	Avg. Vel. (ft/s)		6.25	
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)		3.15	
Conv. Total (cfs)	64039.1	Conv. (cfs)		64039.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		255.56	
Min Ch El (ft)	2324.93	Shear (lb/sq ft)		1.21	
Alpha	1.00	Stream Power (lb/ft s)		7.53	
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)		8.53	
C & E Loss (ft)	0.00	Cum SA (acres)		3.10	

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2550

INPUT
Description:
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-393.29	2345	-381.73	2340.66	-380.03	2340	-359.41	2331.65	-355.65	2330
-355.25	2330	-327.65	2330	-66.78	2325.44	-57.87	2325.3	-44.26	2325
-41.09	2325	-35.61	2325	-31.02	2325	-29.27	2325	-8.17	2325
0	2325	48.16	2324.75	60.41	2326.56	76.93	2330	82.35	2331.99
89.67	2335	99.46	2339.21	101.32	2340	102.69	2340	102.78	2340.92
102.86	2340.96	107	2340	108.94	2340.93	109.09	2341	109.23	2341.06
111.17	2342	111.25	2342.04	112.26	2342.46	113.44	2343	114.11	2343.39
115.09	2344	116.21	2344.65	116.78	2345	118.16	2345.79	118.52	2346
119.13	2346.35	120.23	2347	122.1	2347.97	122.15	2348	122.17	2348.01
124.78	2349	126.69	2349.72	127.42	2350	134.18	2350.74	136.54	2351

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-393.29	.04	-327.65	.04	76.93	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-327.65	76.93	50	50	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-393.29	-203.02	2329	F
206.02	136.54	2329	F

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2329.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.82	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2328.09	Flow Area (sq ft)		788.20	
E.G. Slope (ft/ft)	0.007205	Area (sq ft)		816.54	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	331.22	Top Width (ft)		331.22	
Vel Total (ft/s)	6.37	Avg. Vel. (ft/s)		6.37	
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)		2.87	
Conv. Total (cfs)	59128.9	Conv. (cfs)		59128.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		274.66	
Min Ch El (ft)	2324.75	Shear (lb/sq ft)		1.29	
Alpha	1.00	Stream Power (lb/ft s)		8.22	
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)		7.55	
C & E Loss (ft)	0.00	Cum SA (acres)		2.71	

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2600

INPUT
Description:
Station Elevation Data num= 178

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-395.21	2350	-393.36	2349.41	-379.9	2345	-373.85	2342.65	-363.3	2340
-352.17	2336.33	-337.18	2330	-336.91	2330	-336.14	2330	-328.89	2329.87
-229.8	2328.37	-78.49	2325	-67.17	2325	-60.53	2325	-47.79	2325
-46.39	2325	-44.98	2325	-15.34	2325	0	2324.5	62.24	2325
69.42	2327.01	77.52	2330	87.85	2333.73	91.11	2335	96.1	2338.48
98.94	2340	108.35	2340	137.22	2340	141.52	2336.99	145.16	2335
151.92	2333.08	158	2331.96	158	2332.04	158.09	2332	158.18	2331.96
160.22	2331	161.88	2330.55	163.8	2330	164.66	2329.77	167.79	2329
169.96	2328.46	170.87	2328.28	171.16	2328.24	172.27	2328.22	173.79	2328.17

174.06	2328.19	175.58	2328.1	175.6	2328.1	175.83	2328.11	175.9	2328.1
176.98	2328.15	182.41	2329	185.53	2329.98	185.61	2330	185.62	2330
186.06	2330	186.62	2330	186.8	2330	187.93	2330.23	188.4	2330.24
192.63	2330.16	192.72	2330.16	193.07	2330.19	193.82	2330.21	195.88	2330.38
200.07	2331	200.76	2331.1	200.93	2331.1	201.91	2331.12	202.64	2331
205.08	2330.49	206.8	2330	207.92	2329.71	210.38	2329	211.03	2328.83
211.53	2328.74	212.81	2328.67	214.9	2328.47	215.04	2328.48	215.37	2328.44
219.1	2329	221.26	2329	221.62	2329	222.95	2329	227.4	2329
234.08	2329	234.12	2329	235.04	2329	235.28	2329	236.68	2329.16
236.94	2329.17	236.99	2329.16	237.04	2329.15	239.39	2330	241.38	2329.5
245.09	2329.59	247.05	2329.64	252.66	2329.88	252.82	2329.89	253.94	2330
254.23	2330	254.41	2330	254.63	2330.03	254.74	2330.04	257.39	2330.39
258.86	2330.41	259.76	2330.47	259.95	2330.49	260.52	2330.55	261.76	2330.55
261.85	2330.56	262.42	2330.58	263.5	2330.55	263.63	2330.55	264.04	2330.54
264.59	2330.51	265.47	2330.58	266.66	2330.58	268.23	2330.51	268.72	2330.58
270.64	2330.67	271.11	2330.7	272.53	2330.88	276.72	2331	279.92	2331.2
281.69	2331.27	282.38	2331.31	284.07	2331.45	284.41	2331.46	284.58	2331.48
286.21	2331.49	291.68	2331.9	292.78	2332	292.92	2332	298.61	2332.75
300.12	2332.92	300.6	2333	302.41	2333.37	305.42	2334	306.69	2334.27
309.5	2335	311.59	2335.8	312.2	2336	314.25	2336.97	314.32	2337
315.49	2337.42	317.16	2338	317.24	2338	319.19	2338.6	320.42	2339
321.32	2339.29	323.64	2340	325.21	2340.63	326.35	2341	327.61	2341.57
328.8	2342	329.44	2342.41	329.53	2342.43	330.15	2342.63	330.93	2343
332.53	2343.88	332.72	2344	333.23	2344.33	334.02	2345	335.02	2345.86
335.15	2346	335.27	2346.11	335.56	2346.39	335.83	2346.63	336.01	2346.79
336.26	2346.97	336.32	2347	336.37	2347.03	337.78	2348	338.07	2348.19
339.25	2349	339.79	2349.37	340.72	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-395.21	.04	-337.18	.04	77.52	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-337.18	77.52	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-395.21	-228.02	2328	F

Right Levee Station= 98.94 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2329.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.64	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.42	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2327.79	Flow Area (sq ft)		782.10	
E.G. Slope (ft/ft)	0.008564	Area (sq ft)		782.10	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	306.06	Top Width (ft)		306.06	
Vel Total (ft/s)	6.42	Avg. Vel. (ft/s)		6.42	
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)		2.56	
Conv. Total (cfs)	54236.3	Conv. (cfs)		54236.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		306.64	
Min Ch El (ft)	2324.50	Shear (lb/sq ft)		1.36	
Alpha	1.00	Stream Power (lb/ft s)		8.75	
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)		6.63	
C & E Loss (ft)	0.03	Cum SA (acres)		2.34	

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2650

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-354.85	2350	-352.44	2348.52	-346.61	2345	-341.43	2342.47	-336	2340
-329.44	2337.18	-316.7	2333.48	-304.95	2330	-291.22	2329.46	-278.39	2329.17
-227.44	2327.56	-112.72	2325	-108.99	2325	-91.33	2325	-88.94	2325
-69.25	2325	-67.05	2325	-57.64	2325	-44.58	2325	-42.8	2325
-39.39	2325	-24.7	2325	0	2324	71.86	2325	79.82	2327.8
82.55	2328.7	86.51	2330	95.29	2333.69	105.18	2335	112.26	2336.94
118.54	2335	133.71	2331.63	140.32	2330	156.73	2330	182.64	2330

185.85 2332.73 192.14 2335 198.84 2337.78 204.17 2340 210.88 2341.49
211.15 2340.07 211.18 2340.06 212.52 2343

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-354.85	.04	-304.95	.04	86.51	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-304.95	86.51	50	50	.1	.3

Right Levee Station= 112.26 Elevation=

CROSS SECTION OUTPUT Profile #FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2328.64	Element		0.040	
Vel Head (ft)	0.55	Wt. n-Val.			
W.S. Elev (ft)	2328.09	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2327.37	Flow Area (sq ft)		842.82	
E.G. Slope (ft/ft)	*0.007223	Area (sq ft)		842.82	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	324.75	Top Width (ft)		324.75	
Vel Total (ft/s)	5.96	Avg. Vel. (ft/s)		5.96	
Max Chl Dpth (ft)	4.09	Hydr. Depth (ft)		2.60	
Conv. Total (cfs)	59056.1	Conv. (cfs)		59056.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		325.34	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		6.96	
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)		5.70	
C & E Loss (ft)	0.02	Cum SA (acres)		1.98	

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2700

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-318.98	2350	-315.62	2349.01	-309.14	2347.34	-301.22	2343.59	-284.89	2335.98
-273.22	2330	-199.6	2327.12	-162.97	2325	-153	2325	-144.74	2325
-135.68	2325	-130.39	2325	-120.76	2325	0	2323.5	20.43	2325
36.17	2325	69.15	2325	87.78	2325	96.59	2326.78	100.42	2326.8
124.08	2330	130.52	2330	145.2	2330	149.69	2331.16	157.3	2333.13
161.36	2335	163.55	2336.42	169.48	2340	174.15	2342.89	180.96	2345
188.97	2345	203.41	2345	219.15	2347.38	224.84	2347.47	237.46	2348.2
248.66	2350								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-318.98	.04	-273.22	.04	124.08	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-273.22	124.08	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2328.30	Element		0.040	
Vel Head (ft)	0.47	Wt. n-Val.			
W.S. Elev (ft)	2327.82	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		909.43	
E.G. Slope (ft/ft)	*0.005619	Area (sq ft)		909.43	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	325.54	Top Width (ft)		325.54	
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)		5.52	
Max Chl Dpth (ft)	4.32	Hydr. Depth (ft)		2.79	
Conv. Total (cfs)	66957.2	Conv. (cfs)		66957.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		325.93	
Min Ch El (ft)	2323.50	Shear (lb/sq ft)		0.98	
Alpha	1.00	Stream Power (lb/ft s)		5.40	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)		4.70	
C & E Loss (ft)	0.06	Cum SA (acres)		1.60	

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: Las Vegas Wash
REACH: Upper RS: -2750

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-284.9	2350	-280.27	2348.02	-264.22	2340.34	-244.47	2330	-239	2328.54
-233.24	2327.01	-226.32	2325	-217.75	2325	-210.5	2325	-183.5	2325
-164.86	2325	0	2323	101.74	2325	117.14	2327.61	136.46	2330
147.29	2334.08	149.43	2335	153.48	2336.12	165.75	2338.67	172.78	2340
183.36	2342.11	196.83	2345	202.2	2345.85	205.3	2346.44	209.19	2347.06
224.27	2350								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-284.9	.04	-244.47	.04	136.46	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-244.47	136.46	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2328.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.80	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1220.04	
E.G. Slope (ft/ft)	0.002369	Area (sq ft)		1220.04	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	354.83	Top Width (ft)		354.83	
Vel Total (ft/s)	4.11	Avg. Vel. (ft/s)		4.11	
Max Chl Dpth (ft)	4.79	Hydr. Depth (ft)		3.44	
Conv. Total (cfs)	103122.3	Conv. (cfs)		103122.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		355.48	
Min Ch El (ft)	2323.00	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		2.09	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)		3.47	
C & E Loss (ft)	0.00	Cum SA (acres)		1.21	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2800

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-264.93	2350	-263.11	2349.36	-254.3	2346.92	-247.82	2345	-222.02	2333.58
-212	2330.218	-196.45	2325	-189.78	2325	-188.08	2325	-174.24	2325
-168.46	2325	-164.6	2325	36.03	2322.5	100.44	2325	115.5	2325
120	2327.687	125	2330.672	128.95	2333.03	141.76	2338.95	142.6	2340
145.23	2341.36	152.59	2345	179.71	2347.84	188.32	2348.42	201.78	2350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-264.93	.04	-212	.04	125	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-212	125	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2327.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.65	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1175.31	

E.G. Slope (ft/ft)	0.002386	Area (sq ft)		1175.31	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	324.30	Top Width (ft)		324.30	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)		4.27	
Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)		3.62	
Conv. Total (cfs)	102753.3	Conv. (cfs)		102753.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		325.53	
Min Ch El (ft)	2322.50	Shear (lb/sq ft)		0.54	
Alpha	1.00	Stream Power (lb/ft s)		2.30	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)		2.10	
C & E Loss (ft)	0.04	Cum SA (acres)		0.82	

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: Las Vegas Wash
REACH: Upper RS: -2850

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-269.2	2350	-252.55	2348.17	-236.64	2347.05	-214.73	2345.63	-211.59	2345.4
-205.25	2345	-185.7	2338.13	-174.52	2329.266	-169.14	2325	-165.82	2325
-155.77	2325	-85.16	2325	-49.07	2325	0	2321.85	48.02	2325
126.92	2325	135	2329.874	140.48	2333.18	161.73	2345	183.46	2347.14
193.27	2348.14	217	2350						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-269.2	.04	-174.52	.04	135	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-174.52	135	50	50	.1	.3

CROSS SECTION OUTPUT Profile #FIS Flow

E.G. Elev (ft)	2327.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.		0.040	
W.S. Elev (ft)	2326.96	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		738.71	
E.G. Slope (ft/ft)	0.010204	Area (sq ft)		738.71	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	301.78	Top Width (ft)		301.78	
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)		6.79	
Max Chl Dpth (ft)	5.11	Hydr. Depth (ft)		2.45	
Conv. Total (cfs)	49685.3	Conv. (cfs)		49685.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		303.21	
Min Ch El (ft)	2321.85	Shear (lb/sq ft)		1.55	
Alpha	1.00	Stream Power (lb/ft s)		10.54	
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)		1.00	
C & E Loss (ft)	0.04	Cum SA (acres)		0.47	

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2900

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-220.76	2350	-185.09	2345.25	-183.3	2345	-183.18	2344.96	-164.14	2340
-156.5	2337.11	-145	2330.199	-136.35	2325	-86.27	2325	0	2320.85
87.19	2325	133.49	2325	140	2329.434	153.5	2338.63	164.6	2345
200.31	2348.45	220.2	2350						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-220.76	.04	-145	.04	140	.04

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          -145     140             21.44   21.44   21.44             .1       .3

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************
* E.G. Elev (ft)        * 2326.97  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.10  * Wt. n-Val.           *          *    0.040  *          *
* W.S. Elev (ft)        * 2325.87  * Reach Len. (ft)      *   21.44  *    21.44  *   21.44  *
* Crit W.S. (ft)        * 2325.87  * Flow Area (sq ft)    *          *   596.23  *          *
* E.G. Slope (ft/ft)    *0.018146  * Area (sq ft)         *          *   596.23  *          *
* Q Total (cfs)         * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)        *  272.57  * Top Width (ft)       *          *  272.57  *          *
* Vel Total (ft/s)      *    8.42  * Avg. Vel. (ft/s)     *          *    8.42  *          *
* Max Chl Dpth (ft)     *    5.02  * Hydr. Depth (ft)     *          *    2.19  *          *
* Conv. Total (cfs)     * 37258.4  * Conv. (cfs)          *          * 37258.4  *          *
* Length Wtd. (ft)      *   21.44  * Wetted Per. (ft)     *          *  273.28  *          *
* Min Ch El (ft)        * 2320.85  * Shear (lb/sq ft)     *          *    2.47  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *        *   20.81  *          *
* Frctn Loss (ft)       *    0.33  * Cum Volume (acre-ft)  *          *    0.24  *          *
* C & E Loss (ft)       *    0.07  * Cum SA (acres)        *          *    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.

CROSS SECTION


RIVER: Las Vegas Wash
REACH: Upper              RS: -2921.44

INPUT
Description:
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    1000 2344.07 1017.65 2346.87 1033.32 2346.67 1047.14 2347.27 1065.57 2338.37
 1098.95 2326.17 1127.07 2324.57 1162.12 2324.17    1197 2324.37  1204.3 2324.17
 1222.77 2324.97 1253.57 2326.17 1278.58 2326.97 1296.06 2331.27 1326.39 2329.07
 1338.01 2341.97 1360.82 2346.37 1384.17 2345.27 1406.09 2346.37 1422.52 2346.87
 1436.76 2345.97  1470.2 2346.77 1484.06 2345.97  1519.4 2348.07 1543.04 2348.07
 1568.82 2348.37 1591.74 2346.47  1602.9 2345.67 1623.39 2346.07 1634.57 2345.67
 1644.21 2328.47 1663.17 2322.27 1676.21 2321.77 1696.04 2322.07 1703.14 2321.17
 1711.21 2322.07  1735.5 2321.57 1749.97 2321.07 1765.72 2322.17 1779.36 2322.27
 1792.44 2321.37 1801.18 2321.37 1805.49 2320.27 1812.55 2321.27 1828.22 2321.87
 1856.87 2321.77 1901.62 2321.77 1911.73 2320.57 1916.64 2321.57 1935.72 2321.57
 1956.94 2330.17 1973.64 2347.77 1989.31 2347.27 1996.61 2348.67 2017.16 2348.07
 2040.91 2349.77 2058.42 2350.17 2081.27 2350.37  2107.8 2350.27

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
    1000     .04 1644.21     .04 1956.94     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
       1644.21 1956.94             .1       .3
Left Levee      Station=    1600      Elevation=

CROSS SECTION OUTPUT  Profile #FIS Flow
*****************************************************************************************
* E.G. Elev (ft)        * 2326.01  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    3.04  * Wt. n-Val.           *          *    0.040  *          *
* W.S. Elev (ft)        * 2322.98  * Reach Len. (ft)      *          *          *          *
* Crit W.S. (ft)        * 2323.86  * Flow Area (sq ft)    *          *  358.89  *          *
* E.G. Slope (ft/ft)    *0.101385  * Area (sq ft)         *          *  358.89  *          *
* Q Total (cfs)         * 5019.00  * Flow (cfs)           *          * 5019.00  *          *
* Top Width (ft)        *  278.19  * Top Width (ft)       *          *  278.19  *          *
* Vel Total (ft/s)      *   13.98  * Avg. Vel. (ft/s)     *          *   13.98  *          *
* Max Chl Dpth (ft)     *    2.71  * Hydr. Depth (ft)     *          *    1.29  *          *
* Conv. Total (cfs)     * 15762.7  * Conv. (cfs)          *          * 15762.7  *          *
* Length Wtd. (ft)      *          * Wetted Per. (ft)     *          *  279.17  *          *
* Min Ch El (ft)        * 2320.27  * Shear (lb/sq ft)     *          *    8.14  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *        *  113.79  *          *
* Frctn Loss (ft)       *    0.77  * Cum Volume (acre-ft)  *          *          *          *
```

```
* C & E Loss (ft)        *    0.19  * 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 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.

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

SUMMARY OF MANNING'S N VALUES

River:Las Vegas Wash
*********************************************************************************
*     Reach      *   River Sta.   *   n1    *   n2    *   n3    *   n4    *   n5    *
*********************************************************************************
*Upper           *    -1000       *      .04*      .04*      .04*          *          *
*Upper           *    -1050       *      .04*      .04*      .04*          *          *
*Upper           *    -1100       *      .04*      .04*      .04*          *          *
*Upper           *    -1150       *      .04*      .04*      .04*          *          *
*Upper           *    -1200       *      .04*      .04*      .04*          *          *
*Upper           *    -1250       *      .04*      .04*      .04*          *          *
*Upper           *    -1300       *      .04*      .04*      .04*          *          *
*Upper           *    -1350       *      .04*      .04*      .04*          *          *
*Upper           *    -1400       *      .04*      .04*      .04*          *          *
*Upper           *    -1450       *      .04*      .04*      .04*          *          *
*Upper           *    -1500       *      .04*      .04*      .04*          *          *
*Upper           *    -1550       *      .04*      .04*      .04*          *          *
*Upper           *    -1600       *      .04*      .04*      .04*          *          *
*Upper           *    -1650       *      .04*      .04*      .04*          *          *
*Upper           *    -1700       *      .04*      .04*      .04*          *          *
*Upper           *    -1750       *      .04*      .04*      .04*          *          *
*Upper           *    -1800       *      .04*      .04*      .04*          *          *
*Upper           *    -1850       *      .04*      .04*      .04*          *          *
*Upper           *    -1900       *      .04*      .04*      .04*          *          *
*Upper           *    -1950       *      .04*      .04*      .04*          *          *
*Upper           *    -2000       *      .04*      .04*      .04*          *          *
*Upper           *    -2050       *      .04*      .04*      .04*          *          *
*Upper           *    -2100       *      .04*      .04*      .04*          *          *
*Upper           *    -2112       *      .04*      .04*     .035*       .04*          *
*Upper           *    -2165       *Bridge   *          *          *          *          *
*Upper           *    -2243.97    *      .04*      .04*     .045*       .04*       .04*
*Upper           *    -2300       *      .04*      .04*      .04*          *          *
*Upper           *    -2350       *      .04*      .04*      .04*          *          *
*Upper           *    -2400       *      .04*      .04*      .04*          *          *
*Upper           *    -2450       *      .04*      .04*      .04*          *          *
*Upper           *    -2500       *      .04*      .04*      .04*          *          *
*Upper           *    -2550       *      .04*      .04*      .04*          *          *
*Upper           *    -2600       *      .04*      .04*      .04*          *          *
*Upper           *    -2650       *      .04*      .04*      .04*          *          *
*Upper           *    -2700       *      .04*      .04*      .04*          *          *
*Upper           *    -2750       *      .04*      .04*      .04*          *          *
*Upper           *    -2800       *      .04*      .04*      .04*          *          *
*Upper           *    -2850       *      .04*      .04*      .04*          *          *
*Upper           *    -2900       *      .04*      .04*      .04*          *          *
*Upper           *    -2921.44    *      .04*      .04*      .04*          *          *
*********************************************************************************

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

SUMMARY OF REACH LENGTHS

River: Las Vegas Wash
*****************************************************************
*     Reach      *   River Sta.   *  Left   * Channel *  Right  *
*****************************************************************
*Upper           *    -1000       *       50*       50*       50*
*Upper           *    -1050       *       50*       50*       50*
*Upper           *    -1100       *       50*       50*       50*
*Upper           *    -1150       *       50*       50*       50*
*Upper           *    -1200       *       50*       50*       50*
*Upper           *    -1250       *       50*       50*       50*
*Upper           *    -1300       *       50*       50*       50*
*Upper           *    -1350       *       50*       50*       50*
*Upper           *    -1400       *       50*       50*       50*
*Upper           *    -1450       *       50*       50*       50*
*Upper           *    -1500       *       50*       50*       50*
*Upper           *    -1550       *       50*       50*       50*
```

*Upper	*	-1600	*	50*	50*	50*
*Upper	*	-1650	*	50*	50*	50*
*Upper	*	-1700	•	50*	50*	50*
*Upper	*	-1750	*	50*	50*	50*
*Upper	*	-1800	•	50*	50*	50*
*Upper	*	-1850	*	50*	50*	50*
*Upper	*	-1900	*	50*	50*	50*
*Upper	*	-1950	*	50*	50*	50*
*Upper	*	-2000	*	50*	50*	50*
*Upper	*	-2050	*	50*	50*	50*
*Upper	•	-2100	*	12*	12*	12*
*Upper	*	-2112	*	131.97*	131.97*	131.97*
*Upper	•	-2165	*Bridge	*	*	*
*Upper	*	-2243.97	*	56.03*	56.03*	56.03*
*Upper	*	-2300	•	50*	50*	50*
*Upper	*	-2350	*	50*	50*	50*
*Upper	*	-2400	*	50*	50*	50*
*Upper	*	-2450	*	50*	50*	50*
*Upper	*	-2500	*	50*	50*	50*
*Upper	•	-2550	*	50*	50*	50*
*Upper	*	-2600	*	50*	50*	50*
*Upper	•	-2650	*	50*	50*	50*
*Upper	*	-2700	*	50*	50*	50*
*Upper	*	-2750	*	50*	50*	50*
*Upper	*	-2800	*	50*	50*	50*
*Upper	*	-2850	*	50*	50*	50*
*Upper	*	-2900	*	21.44*	21.44*	21.44*
*Upper	*	-2921.44	*	*	*	*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Las Vegas Wash

• Reach	*	River Sta.	*	Contr.	•	Expan.	*
*Upper	*	-1000	*	.1*		.3*	
*Upper	*	-1050	*	.1*		.3*	
*Upper	*	-1100	*	.1*		.3*	
*Upper	*	-1150	*	.1*		.3*	
*Upper	*	-1200	*	.1*		.3*	
*Upper	*	-1250	*	.1*		.3*	
*Upper	*	-1300	*	.1*		.3*	
*Upper	•	-1350	*	.1*		.3*	
*Upper	*	-1400	*	.1*		.3*	
*Upper	*	-1450	*	.1*		.3*	
*Upper	*	-1500	•	.1*		.3*	
*Upper	•	-1550	*	.1*		.3*	
*Upper	*	-1600	*	.1*		.3*	
*Upper	*	-1650	*	.1*		.3*	
*Upper	•	-1700	*	.1*		.3*	
*Upper	*	-1750	*	.1*		.3*	
*Upper	*	-1800	*	.1*		.3*	
*Upper	*	-1850	*	.1*		.3*	
*Upper	*	-1900	*	.1*		.3*	
*Upper	*	-1950	*	.1*		.3*	
*Upper	*	-2000	*	.1*		.3*	
*Upper	*	-2050	*	.1*		.3*	
*Upper	•	-2100	*	.1*		.3*	
*Upper	*	-2112	•	.3*		.5*	
*Upper	•	-2165	*Bridge	*		*	
*Upper	*	-2243.97	*	.3*		.5*	
*Upper	*	-2300	*	.1*		.3*	
*Upper	*	-2350	*	.1*		.3*	
*Upper	*	-2400	*	.1*		.3*	
*Upper	*	-2450	*	.1*		.3*	
*Upper	*	-2500	*	.1*		.3*	
*Upper	•	-2550	*	.1*		.3*	
*Upper	*	-2600	*	.1*		.3*	
*Upper	•	-2650	*	.1*		.3*	
*Upper	*	-2700	*	.1*		.3*	
*Upper	•	-2750	*	.1*		.3*	
*Upper	*	-2800	*	.1*		.3*	
*Upper	*	-2850	*	.1*		.3*	
*Upper	*	-2900	*	.1*		.3*	
*Upper	*	-2921.44	*	.1*		.3*	

Appendix D
FEMA Forms

VTN nevada

FEMA
Overview & Concurrence Form
MT-2 Form 1 – CLV

FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one):

☒ CLOMR: A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
320007	CITY OF NORTH LAS VEGAS	NV	32003C	1754E	09/27/02
325276	CITY OF LAS VEGAS	NV	32003C	1754E	09/27/02

2. Flooding Source: UPPER LAS VEGAS WASH

3. *Project Name/Identifier:* DECATUR BOULDEVARD ACCESS ROAD

4. FEMA zone designations affected: AE, X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

   a. The basis for this revision request is (check all that apply)

   ☒ Physical Change ☒ Improved Methodology/Data

   ☒ Regulatory Floodway Revision ☐ Other (Attach Description)

   Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

   b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding:	☒ Riverine	☐ Coastal	☐ Shallow Flooding (e.g., Zones AO and AH)
	☐ Alluvial fan	☐ Lakes	☐ Other (Attach Description)
Structures:	☒ Channelization	☐ Levee/Floodwall	☒ Bridge/Culvert
	☐ Dam	☐ Fill	☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $4000.00

☐ No, Attach Explanation

Please see the FEMA Web site at http://www.fema.gov/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: DANIEL BENDER, PE	Company: VTN NEVADA	
Mailing Address: 2727 SOUTH RAINBOW BOULEVARD LAS VEGAS NEVADA 89146	*Daytime Telephone No.:* 702-247-4020	Fax No.: 702-247-4262
	E-Mail Address: danb@vtnnv.com	
Signature of Requester (required):		Date: 8-28-2007

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: RANDY FULTZ, PE / ASSISTANT CITY ENGINEER		Telephone No.: 702-229-2176
Community Name: CITY OF LAS VEGAS	Community Official's Signature (required): Randy Fultz	Date: 8-30-07

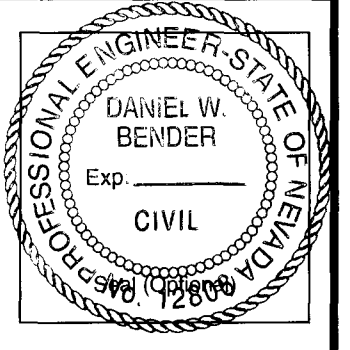
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: DANIEL BENDER, PE	License No.: 12806	*Expiration Date:* 12-31-2008
Company Name: VTN NEVADA	Telephone No.: 702-247-4020	Fax No.: 702-247-4262
Signature: DeWR		Date: 8-28-2007

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ *Riverine Hydrology and Hydraulics Form (Form 2)*	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans



FEMA
Overview & Concurrence Form
MT-2 Form 1 – CNLV

FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one):

☒ CLOMR: A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
320007	CITY OF NORTH LAS VEGAS	NV	32003C	1754E	09/27/02
325276	CITY OF LAS VEGAS	NV	32003C	1754E	09/27/02

2. Flooding Source: UPPER LAS VEGAS WASH

3. Project Name/Identifier: DECATUR BOULDEVARD ACCESS ROAD

4. FEMA zone designations affected: AE, X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☒ Improved Methodology/Data

☒ Regulatory Floodway Revision ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)

☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

Structures: ☒ Channelization ☐ Levee/Floodwall ☒ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $4000.00

☐ No, Attach Explanation

Please see the FEMA Web site at http://www.fema.gov/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: DANIEL BENDER, PE	Company: VTN NEVADA	
Mailing Address: 2727 SOUTH RAINBOW BOULEVARD LAS VEGAS NEVADA 89146	Daytime Telephone No.: 702-247-4020	Fax No.: 702-247-4262
	E-Mail Address: danb@vtnnv.com	
Signature of Requester (required):		Date: 8-28-2007

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: MARK ESCOBEDO, PE / SENIOR ENGINEER		Telephone No.: 702-633-1912
Community Name: CITY OF NORTH LAS VEGAS	Community Official's Signature (required): Mark A. Escobedo, P.E.	Date: August 28, 2007

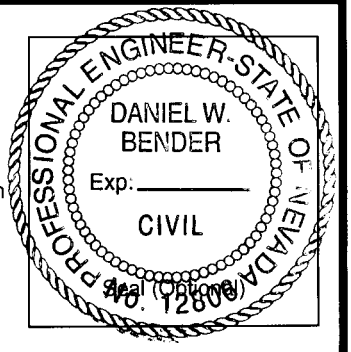
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: DANIEL BENDER, PE	License No.: 12806	Expiration Date: 12-31-2008
Company Name: VTN NEVADA	Telephone No.: 702-247-4020	Fax No.: 702-247-4262
Signature: Daniel Bender		Date: 8-28-2007

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans



FEMA
Riverine Hydrology & Hydraulics
Form
MT-2 Form 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: UPPER LAS VEGAS WASH
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: *http://www.fema.gov/fhm/en_modl.shtm.*

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	UPPER LAS VEGAS WASH	-2921.44	2322.98	2322.98
Upstream Limit	UPPER LAS VEGAS WASH DET. BASIN OUTLET	-1000	2338.83	2338.83

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name:		Floodway File Name:
Corrected Effective Model*	Natural File Name:		Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name:	DAR_pre.prj	Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name:	DAR_post.prj	Floodway File Name:
Other - (attach description)	Natural File Name:		Floodway File Name:

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☒ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☒ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

FEMA
Riverine Structures Form
MT-2 Form 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: UPPER LAS VEGAS WASH
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam .....complete Section D
Levee/Floodwall .....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Structure

1. Name of Structure: FLOODWAY

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: UPPER LAS VEGAS WASH: BETWEEN UPPER LAS VEGAS WASH DETENTION BASIN AND DECATUR BLVD

Downstream Limit/Cross Section: -2921.44

Upstream Limit/Cross Section: -1000.00

2. Name of Structure: 3 BARREL - 24' X 8' RCBC

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: DECATUR BLVD AND UPPER LAS VEGAS WASH

Downstream Limit/Cross Section: -2243.97

Upstream Limit/Cross Section: -2112.00

3. Name of Structure: UPPER LAS VEGAS WASH DETENTION BASIN

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☒ Dam

Location of Structure: UPPER LAS VEGAS WASH

Downstream Limit/Cross Section: -1000.00

Upstream Limit/Cross Section: N/A

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: UPPER LAS VEGAS WASH

Name of Structure: FLOODWAY

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☒ Debris basin/detention basin
- ☒ Other (Describe): FLOODWAY
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 5,019 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☒ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

Sediment transport was not considered due to the short distance between detention basin outlet and Decatur Boulevard

C. BRIDGE/CULVERT

Flooding Source: UPPER LAS VEGAS WASH

Name of Structure: 3 BARREL - 24' X 8' RCB

1. This revision reflects (check one):

- ☒ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☒ Dimensions (height, width, span, radius, length)
- ☒ Shape (culverts only)
- ☒ Material
- ☐ Beveling or Rounding
- ☒ Wing Wall Angle
- ☒ Skew Angle
- ☐ Distances Between Cross Sections
- ☒ Erosion Protection
- ☒ Low Chord Elevations – Upstream and Downstream
- ☒ Top of Road Elevations – Upstream and Downstream
- ☒ Structure Invert Elevations – Upstream and Downstream
- ☒ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

Sediment transport was not considered due to the short distance between detention basin outlet and Decatur Boulevard

D. DAM

Flooding Source: UPPER LAS VEGAS WASH

Name of Structure: UPPER LAS VEGAS WASH DETENTION BASIN

1. This request is for (check one): ☒ Existing dam ☐ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☒ Local government agency

   ☐ Private organization Name of the agency or organization:

3. Does the project involve revised hydrology? ☐ Yes ☒ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

4. Does the submittal include debris/sediment yield analysis? ☐ Yes ☒ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

5. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☒ Yes ☐ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

Stillwater Elevation Behind the Dam

FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)	2351.26	2351.26
50-year (2%)	2366.98	2366.98
100-year (1%)	2372.40	2372.40
500-year (0.2%)	2375.68	2375.68
Normal Pool Elevation	DRY	DRY

6. Please attach a copy of the formal Operation and Maintenance Plan Refer to: Appendix F - Data CD - RFCD O&M Manuel.pdf

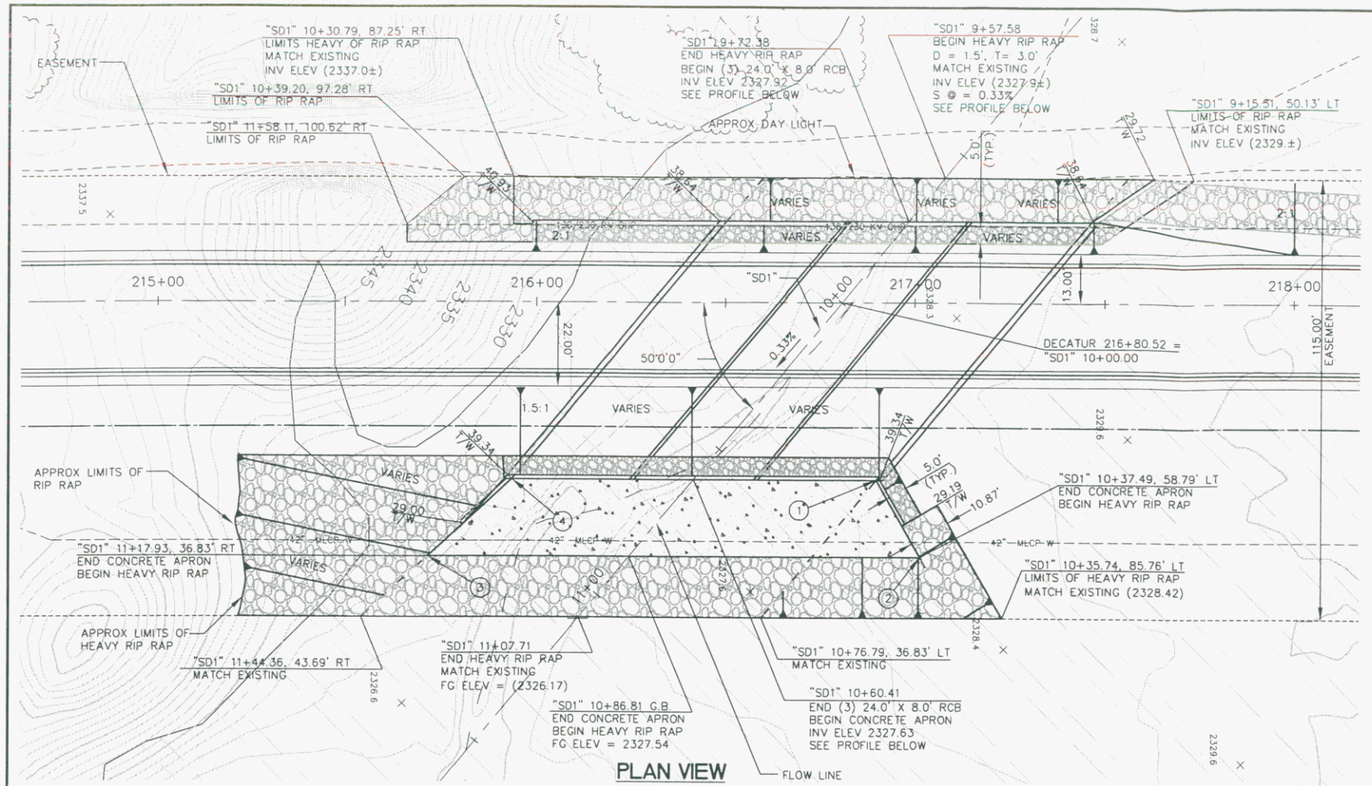
Sediment transport was not considered due to the short distance between detention basin outlet and Decatur Boulevard

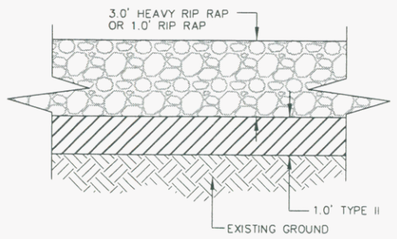
Appendix E
Reference Material

nevada

For Reference Only:

Storm Drain Plan & Profile





RIP RAP DETAIL

CONCRETE APRON CONTROL

POINT NO.	NORTHING	EASTING	ELEVATION
1	26825599.71	767178.19	2327.73
2	26825611.39	767198.42	2327.71
3	26825481.57	767198.45	2327.44
4	26825503.54	767178.21	2327.53

BASIS OF BEARINGS

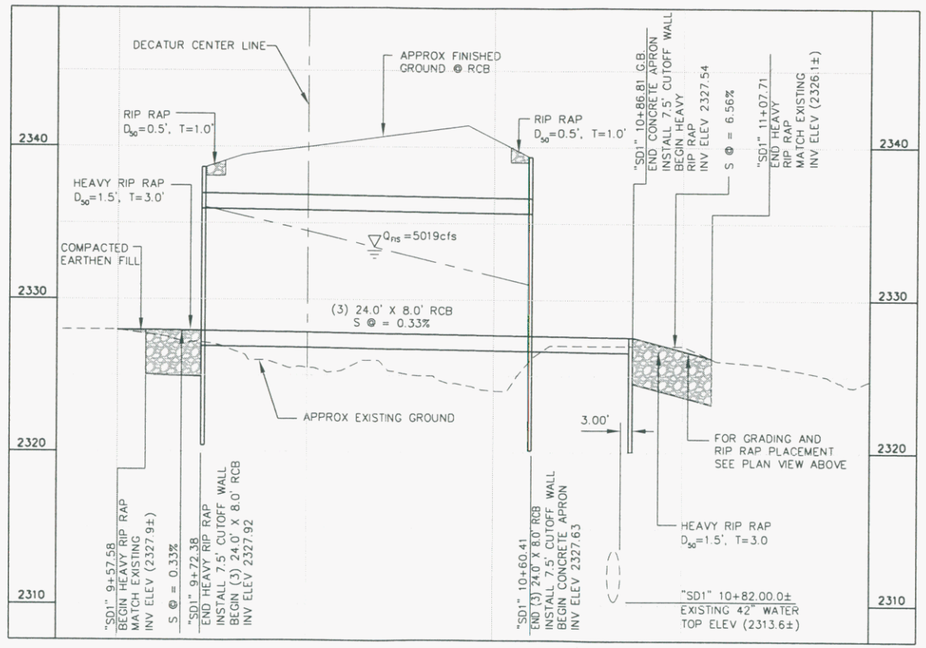
THE BASIS OF BEARINGS FOR THIS PROJECT IS NORTH 87°46'13" EAST BEING THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, AS SHOWN ON A RECORD OF SURVEY OF FILE IN THE CLARK COUNTY, NEVADA RECORDER'S OFFICE IN FILE 162 AT PAGE 46.

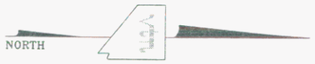
PROJECT BENCHMARK

PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

CITY OF LAS VEGAS BENCHMARK: 1LV81: 31SWS
NAVD88 ELEVATION: 736.315 METERS (2415.73 FEET)

CLARK COUNTY GIS PT #803 1989 AT MOCCASIN AND DECATUR





LEGEND

- HEAVY RIP RAP SECTION D = 1.5' T=3.0'
- RIP RAP SECTION D = 0.5' T=1.0'
- CONCRETE
- FEMA FLOOD ZONE
- SLOPE SCARP
- 2:1 SLOPE

CLARK COUNTY SHOOTING PARK-DECATUR BOULEVARD ACCESS ROAD

Avoid overhead power line contact.
2 working days Call before you Overhead
1-702-227-2929
Nevada Power Environment and Safety Services Department

Avoid cutting underground utility lines. It's costly.
2 working days Call before you Dig
1-800-227-2600
Underground Service Alert (U.S.A.)

I/6722/DWG/6722-SD.DWG

REV No	DATE	DESCRIPTION	APPROVED
8			
7			
6			
5			
4			
3			
2			
1			

CLARK COUNTY SHOOTING PARK-DECATUR BOULEVARD ACCESS ROAD

IRON MOUNTAIN ROAD TO MOCCASIN ROAD
RCB GRADING PLAN

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER-STATE OF NEVADA
DANIEL W. BENDER
EXP. 12/31/08
CIVIL
No. 12806

DESIGNED BY:	DAB
DRAWN BY:	BAH
CHECKED BY:	DB
DATE:	8/20/07

VTN nevada — CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PHONE (702) 873-7500 FAX (702) 362-2567

SCALE	
HORIZ:	1" = 20'
VERT:	1" = 5'
FIELD BOOK	NONE
	SS

SHEET No **SD-1**

16 of 29

L-1826

For Reference Only:

Current FEMA Flood Zone Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0° North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 11. The **horizontal** datum is NAD83. GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1999 or newer, and GBF/DIME data. Segments were digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
FAX: 800-358-9620
www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

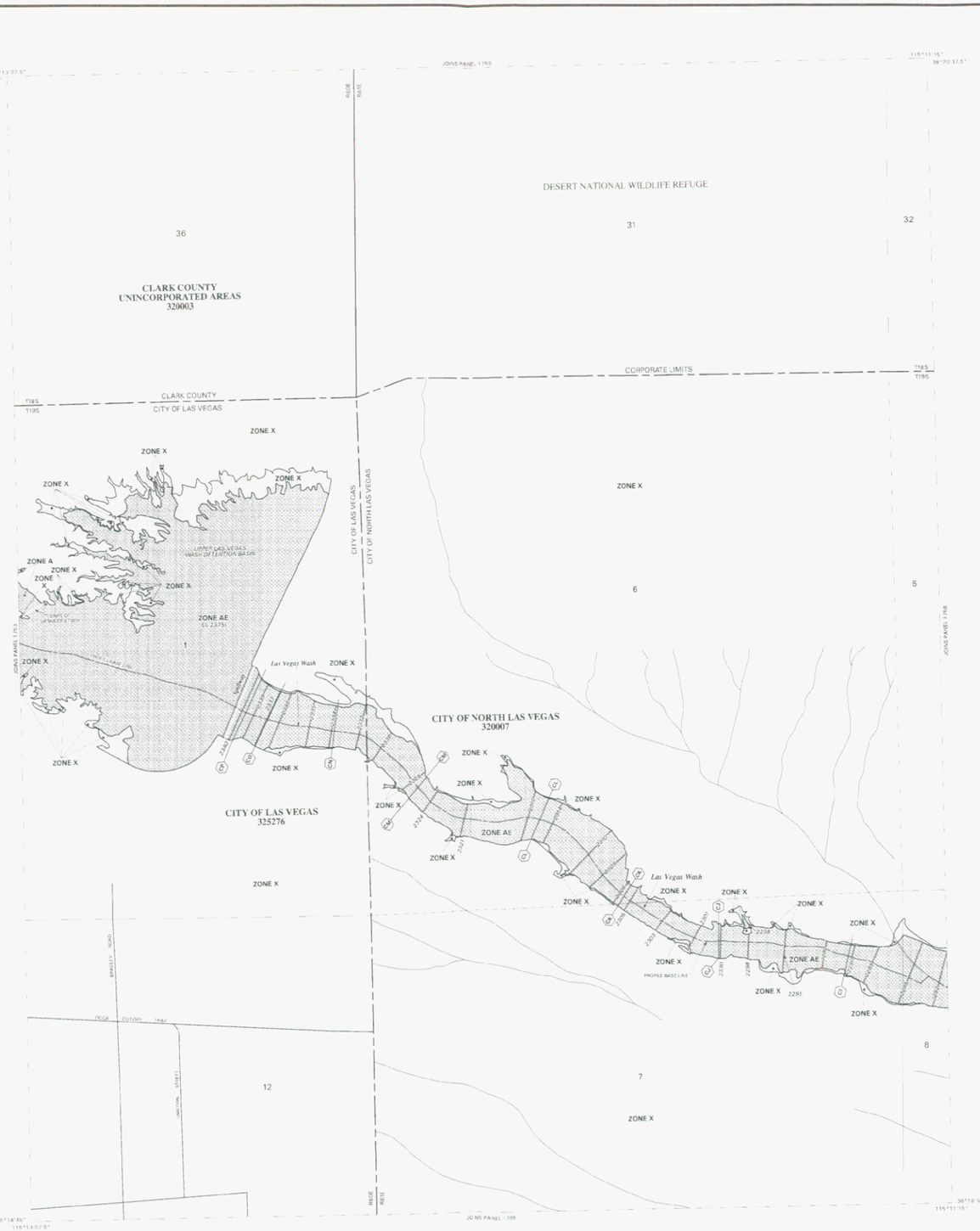
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include: Southern Nevada GIS Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 911 dispatch services. This centerline database serves as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: http://www.co.clark.nv.us/cet/gismo/gismo.htm



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

ZONE A99 Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Coastal Barrier Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- (A) — (A) Cross Section Line
- (23) — (23) Transect Line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M — 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT — 5000-foot grid ticks
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 16, 1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 27, 2002: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change zone designations, to add roads and road names, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendment, and to change floodway.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

PANEL 1754 E

FIRM
FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 1754 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY: UNINCORPORATED AREAS	320003	1754	E
NORTH LAS VEGAS, CITY OF	320007	1754	E
LAS VEGAS, CITY OF	325276	1754	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C1754 E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

For Reference Only:

CCRFCD MPU Facilities Map

REGIONAL FLOOD CONTROL DISTRICT

2002
LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert
- Bridge
- Pipeline
- Lined Channel
- Unlined Channel
- Dike
- Natural Wash
- ID-Mile Separator

N
W E
S

0 1,000 2,000 3,000 4,000 5,000
Feet

SCALE: 1 inch = 3000 feet



FIGURE F-4

PBS&J

G.C. WALLACE, INC.

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
CN95		**CENTENNIAL PKWY CHANNEL WEST / U.S 95 BRANCH**						
0000	P3	Conc Chnl 22'W 10'D 0:1 SS	3600	3533	CDBB3-C	CWEST3	4.68	0.84
0068	P1	3: 8' X 7' RCBC	1800	3192	CNW103-C	CWEST3	4.12	2.12
0102	P1	3: 8' X 6' RCBC	3400	2850	2CNW89-C	CWEST3	3.73	2.09
0167	P1	2: 10' X 7' RCBC	1700	2421	3CNW72-C	CWEST3	3.03	1.50
0199	P1	10' X 9' RCBC	1703	2081	2CNW72-C	CWEST3	2.20	1.84
0259	P1	96" RCP	1688	923	CNW74-C	CWEST3	0.80	1.53
CNEA		**CENTENNIAL PKWY CHANNEL EAST**						
0176	P3	Conc Chnl 15'W 6.5'D 0:1 SS	1500	948	CNN078-C	CWEST3	1.13	0.86
CNGT		**CENTENNIAL PKWY CHANNEL WEST / GRAND TETON BRANCH**						
0000	P1	66" RCP	3640	399	CNW71-C	CWEST3	0.84	3.09
CNWE		**CENTENNIAL PKWY CHANNEL WEST**						
0000	E	2: 27' X 10' RCBC @ Beltway	278	4834	CNW3D3-C	CWEST3	7.73	1.50
0005	P2	2: 27' X 10' RCBC	764	4834	CNW3D3-C	CWEST3	7.73	1.10
0020	E	2: 27' X 10' RCB @ Decatur	308	4834	CNW3D3-C	CWEST3	7.73	2.60
0026	P2	2: 27' X 10' RCB	953	4834	CNW3D3-C	CWEST3	7.73	0.60
0045	P2	Conc Chnl 56'W 10'D 0:1 SS	1404	4834	CNW3D3-C	CWEST3	7.73	0.59
0070	E	27' X 10' RCBC @ Bradley	220	4834	CNW3D3-C	CWEST3	7.73	0.40
0071	P1	Add 27' X 10' RCBC @ Bradley	220	4834	CNW3D3-C	CWEST3	7.73	0.40
0075	P2	Conc Chnl 56'W 10'D 0:1 SS	1498	4735	2C3B4-C	CWEST3	7.47	0.40
0104	P2	56' X 10' RCBC	350	4735	2C3B4-C	CWEST3	7.47	0.40
0110	P2	Conc Chnl 56'W 10'D 0:1 SS	641	4735	2C3B4-C	CWEST3	7.47	0.40
0122	E	20' X 10' RCBC @ Jones	350	4735	2C3B4-C	CWEST3	7.47	0.40
0123	P2	36' X 10' RCBC @ Jones	350	4735	2C3B4-C	CWEST3	7.47	0.40
0129	P2	Conc Chnl 56'W 10'D 0:1 SS	763	4547	CNW3B3-C	CWEST3	6.71	0.40
0143	P2	56' X 10' RCBC	352	4547	CNW3B3-C	CWEST3	6.71	0.40
0150	P2	Conc Chnl 42'W 10'D 0:1 SS	1182	4547	CNW3B3-C	CWEST3	6.71	0.40
0173	P2	42' X 10' RCBC @ Torrey Pines	190	4547	CNW3B3-C	CWEST3	6.71	0.40
0176	P2	Conc Chnl 32'W 10'D 0:1 SS	2440	4547	CNW3B3-C	CWEST3	6.71	0.60
0222	P2	32' X 10' RCBC @ Rainbow	200	4520	CNW2D4-C	CWEST3	6.47	0.60
0226	P2	Conc Chnl 12'W 12'D 2:1 SS	1165	4390	CNW2D3-C	CWEST3	5.97	1.00
0248	P2	36' X 8' RCBC@ Rio	150	4390	CNW2D3-C	CWEST3	5.97	0.59
0251	P2	Conc Chnl 12'W 12'D 2:1 SS	1219	4390	CNW2D3-C	CWEST3	5.97	0.59
0274	E	32' X 10' RCBC @ Tenaya	140	4390	CNW2D3-C	CWEST3	5.97	0.45
0277	P2	Conc Chnl 13'W 10'D 2:1 SS	1430	3853	CNW2B2-C	CWEST3	5.16	0.45
0304	P2	32' X 10' RCB	6510	3853	CNW2B2-C	CWEST3	5.16	1.00
EKBU		**ELKHORN SPRINGS AND BUFFALO**						
0000	P1	84" RCP	800	444	NW134-C	CWEST3	0.54	1.00
EKDB		**ELKHORN SPRINGS DETENTION BASIN**						
0000	P3	Grass Chnl 15'W 5'D 4:1 SS	2640	269	CNW150-C	WEST3	1.16	0.57
0025	P1	54" RCP	1320	129	ELKBASIN	WEST3	0.91	1.50
0049	E	60" RCP	938	129	ELKBASIN	WEST3	0.91	0.13
0068	E	7,200 cfs PMF Spillway		7200	CNW133-C	WEST3	0.91	
0069	E	60" RCP Outlet	100	129	ELKBASIN	WEST3	0.91	
0070	E	48 ac-ft Elkhorn Springs Detention Basin		720	CNW133-C	WEST3	0.91	
EKEA		**ELKHORN ROAD CHANNEL EAST**						
0124	P2	Conc Chnl 40'W 7.5'D 0:1 SS	2440	2017	CELK06E	CWEST3	3.01	0.80
0171	P2	40' X 7.5' RCBC	190	1888	CELK06D	CWEST3	2.76	0.80
0174	P2	Conc Chnl 30'W 7.5'D 0:1 SS	2480	1888	CELK06D	CWEST3	2.76	0.50
0221	P2	30' X 7.5' RCBC	195	1727	CNN048-C	CWEST3	2.51	0.50
0225	P2	Conc Chnl 30'W 7.5'D 0:1 SS	2600	1727	CNN048-C	CWEST3	2.51	0.38
0274	P2	30' X 7.5' RCBC	305	1486	2C035-C	CWEST3	2.16	0.38
0280	P2	Conc Chnl 20'W 8.5'D 0:1 SS	3570	826	CNN035-C	CWEST3	1.04	0.25
0348	P2	16' X 9' RCBC	270	568	CNN020-C	CWEST3	0.65	0.30

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
EKEA		**ELKHORN ROAD CHANNEL EAST - continued**						
0353	P2	Conc Chnl 16'W 7'D 0:1 SS	3160	378	NN021-C	CWEST3	0.41	0.30
0413	P2	10' X 5' RCBC	265	378	NN021-C	CWEST3	0.41	0.30
0417	P2	Conc Chnl 10'W 5'D 0:1 SS	1485	378	NN021-C	CWEST3	0.41	0.30
FMEA		**FARM ROAD CHANNEL EAST**						
0076	P0	Conc Chnl 12'W 5'D 2:1 SS	2640	805	CELK06B	CWEST3	1.11	0.80
0126	P0	Conc Chnl 12'W 4.5'D 2:1 SS	4000	645	CELK06A	CWEST3	0.86	0.60
GOEC		**GOWAN NORTH - EL CAPITAN BRANCH**						
0126	P1	10' X 7' RCB	1320	652	CTRFR-C	GW3SC	0.96	0.38
0152	P1	7' X 6' RCB	1320	502	CARFP-C	GW3SC	0.70	0.77
0176	P1	78" RCP	1320	376	CCPFR-C	GW3SC	0.46	1.15
GTEA		**GRAND TETON DRIVE CHANNEL EAST**						
0000	P0	Conc Chnl 12'W 5.5'D 2:1 SS	7483	1307	CGT03E	CWEST3	2.89	1.03
0144	P0	12' X 7' RCBC	100	1141	CGT03D	CWEST3	2.55	1.50
0146	P0	Conc Chnl 12'W 5.5'D 2:1 SS	5300	1141	CGT03D	CWEST3	2.55	0.97
0246	P0	12' X 8' RCBC	100	1042	CGT03B	CWEST3	2.27	0.70
0248	P0	Conc Chnl 12'W 5.5'D 2:1 SS	5200	1042	CGT03B	CWEST3	2.27	0.74
LV03		**CLAYTON STREET CHANNEL**						
0031	E	Conc Chnl 8'W 8.1'D 1.5:1 SS	2600	948	CNN054-C	CWEST3	1.00	0.40
0081	E	2: 10' X 7' RCBC @ Tropical	100	731	CNN052-C	CWEST3	0.74	0.42
0082	E	Conc Chnl 7'W 7.1'D 1.5:1 SS	2600	731	CNN052-C	CWEST3	0.74	2.80
0131	P1	7' X 7' RCBC @ Centennial	100	731	CNN052-C	CWEST3	0.74	2.00
LVDE		**LAS VEGAS WASH - DECATUR**						
0000	P1	96" RCP	2640	509	CNW198-C	CWEST3	0.68	0.60
LVIM		**LAS VEGAS WASH AND IRON MOUNTAIN**						
0000	P1	90" RCP	1300	555	CNW206-C	CWEST3	1.16	1.10
LVMD		**LAS VEGAS WASH - MIDDLE**						
2197	E	Conc Chnl 50'W 10'D 0:1 SS	3629	5759	CNN030-C	CWEST5	19.66	1.04
2266	E	2: 24.5' X 10' RCBC @ Tropical	575	5698	CNN011-C	CWEST5	19.37	1.04
2276	E	Conc Chnl 50'W 10'D 0:1 SS	985	5698	CNN011-C	CWEST5	19.37	1.04
2294	E	2: 24.5' X 10' RCBC @ Ranchhouse	292	5698	CNN011-C	CWEST5	19.37	1.04
2300	E	Conc Chnl 50'W 10'D 0:1 SS	1100	5698	CNN011-C	CWEST5	19.37	1.48
2322	P2	2: 24.5' X 10' RCB	1200	3937	CNW3D4-C	WEST4	11.39	1.50
2324	P1	3: 12' X 10' RCB	5280	3937	CNW3D4-C	WEST4	11.39	0.36
2443	P1	3: 12' X 9 RCB	5280	3571	CNW188-C	WEST4	9.95	0.39
2490	P1	3: 12' X 9' RCB	5280	3528	CNW162-C*	WEST3	6.70	0.36
2525	P1	3: 12' X 9' RCB	1320	3528	CNW162-C*	WEST3	6.70	0.39
2550	P1	3: 12' X 9' RCB	1320	3528	CNW162-C*	WEST3	6.70	0.38
2574	P1	2: 12' X 10' RCB	1320	3528	CNW162-C*	WEST3	6.70	0.61
2599	P1	Conc Chnl 20'W 10.5'D 0:1 SS	1700	3528	CNW162-C	WEST3	6.70	0.70
2632	P1	11' X 9' RCBC	1400	1359	CNW139-C	WEST3	1.66	0.59
2661	P1	9' X 9' RCBC	2640	1359	CNW139-C	WEST3	1.66	1.00
2711	P1	9' X 7" RCBC	1320	1359	CNW139-C	WEST3	1.66	1.80
2737	P1	8' X 8' RCBC	1320	1359	CNW139-C	WEST3	1.66	1.81
2763	P1	78" RCP	2640	654	CNW109-C	WEST3	0.77	2.40
LVMJ		**LAS VEGAS WASH - JONES**						
0000	P1	7' X 6' RCB	2600	310	CNW178-C	CWEST3	0.50	0.40
LVMO		**LAS VEGAS WASH - MOCCASIN**						
0000	P1	Conc Chnl 30'W 12.5'D 0:1 SS	6800	12113	CNW130-C	VSPRING5	76.52	2.10
0127	P1	Conc Chnl 27'W 12.5'D 0:1 SS	7700	12092	3CNW64-C	VSPRING5	75.87	3.10
LVSM		**LAS VEGAS WASH-SIMMONS**						
0000	P1	8' X 8' RCB	4000	699	CNN044-C	CWEST3	0.82	0.63
0084	P1	6' X 5' RCB	2700	490	CNN040-C	CWEST3	0.51	2.22

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
LVUP		**UPPER LAS VEGAS WASH**						
0446	E	Floodway	24000	4259	ULWDB	SPRING5	199.03	1.04
0908	E	182,000 cfs PMF Spillway		182000	ULWIN	LOWER	200.44	
0909	E	3: 108" RCP Outlet	100	4259	ULWDB	SPRING5	199.03	
0910	E	1,760 ac-ft Upper Las Vegas Wash Detention Basin		15918	ULWIN	LOWER	200.44	
0911	P0	Upgrade to 2,190 ac-ft Upper Las Vegas Wash Detention Basin		15918	ULWIN	LOWER	200.44	
0976	E	Floodway	7000	13317	ULWIN	SPRING5	199.03	0.71
1076	E	Unlined Chnl 300'W 8.5'D 3:1 SS	9200	13317	ULWIN	SPRING5	199.03	0.80
1077	E	Soil Cement Levee 8.5' with 300'W Chnl	9200	13317	ULWIN	SPRING5	199.03	0.82
MOKC		**MOCCASIN AND KYLE CANYON**						
0000	P1	12' X 10' RCB	6000	3891	2CNW64-C	VSPRING3	4.62	2.70
MSBU		**MOUTAIN SPA AND BUFFALO**						
0000	P1	9' X 8' RCB	2640	897	CCNW128	CWEST3	1.52	0.60
MSIM		**MOUNTAIN SPA AND IRON MOUNTAIN**						
0000	P1	10' X 9' RCBC	700	1755	CNW147-C	CWEST3	2.87	1.14
0004	P1	90" RCP	5280	857	2C113-C	CWEST3	0.91	2.27
0106	P1	90" RCP	1320	857	2C113-C	CWEST3	0.91	2.30
MSLC		**MOUNTAIN SPA AND LOG CABIN**						
0000	P1	90" RCP	2640	622	CNW148-C	CWEST3	0.84	1.03
MSNV		**MOUNTAIN SPA/VISTA RANCH**						
0000	E	Grass Chnl 100'W 4.5'D 10:1 SS	6960	2555	CNW163-C	CWEST3	4.79	0.40
RCBC		**RANCHO ROAD SYSTEM - BELTWAY CHANNEL**						
0000	E	82 ac-ft Ft. Apache Detention Basin		1031	FADBIN	WEST3	1.23	
0001	E	10,310 cfs PMF Spillway		10310	FADBIN	WEST3	1.23	
0002	E	66" RCP Outlet with 42" Orifice	100	204	FADBIN	WEST3	1.23	
RCHB		**RANCHO ROAD SYSTEM - BELTWAY CHANNEL**						
0000	E	2: 12' X 8' RCB	1800	2543	CNW1C1-C	WEST3	4.81	0.50
0034	E	Conc Chnl 21'W 7.6'D 0:1 SS	1000	2282	CNWBE2-C	WEST3	4.50	0.80
0053	E	2: 12' X 8' RCBC	80	2282	CNWBE2-C	WEST3	4.50	1.38
0054	E	Conc Chnl 21'W 7.6'D 0:1 SS	600	2282	CNWBE2-C	WEST3	4.50	1.51
0065	E	2: 12' X 8' RCB	500	1985	CNWBC6-C	WEST3	4.16	0.30
0075	P2	2: 10' X 6' RCB	1400	1985	CNWBC6-C	WEST3	4.16	2.53
0101	P2	Conc Chnl 20'W 7.0'D 0:1 SS	1000	1985	CNWBC6-C	WEST3	4.16	0.94
0120	P2	2: 10' X 6' RCBC	100	1985	CNWBC6-C	WEST3	4.16	0.94
0122	P2	Conc Chnl 16'W 6'D 0:1 SS	2600	1985	CNWBC6-C	WEST3	4.16	2.27
0171	P2	16' X 7' RCBC	200	1767	CNWBC3	WEST3	3.91	1.75
0175	P2	Conc Chnl 16'W 6'D 0:1 SS	2700	1767	CNWBC3	WEST3	3.91	2.40
RCHO		**RANCHO ROAD SYSTEM**						
0028	E	54" RCP	1500	150	RCHDOB	WEST3	5.19	0.80
0056	P1	60" RCP	4000	227	NW1A-4-C	CWEST3	0.80	1.57
0059	P1	70,000 cfs PMF Spillway		70000	RCHOIN	WEST3	5.19	
0060	E	60" RCP Outlet	200	150	RCHODB	WEST3	5.19	
0061	E	125 ac-ft Rancho Road Detention Basin		2692	RCHOIN	WEST3	5.19	
0062	P1	Upgrade to 250 ac-ft Rancho Road Detention Basin		2692	RCHOIN	WEST3	5.19	
UPEA		**UPPER LAS VEGAS WASH - EAST**						
0000	E	Natural Wash 582'W	9600	4088	C116-9	VSHEEP5	14.84	1.00
UPEB		**UPPER LAS VEGAS WASH - EAST BRANCH**						
0000	P0	Rip Rap Chnl 140'W 5'D 3:1 SS	8500	4206	C102A	VSHEEP4	10.92	1.18
0001	P0	Rip Rap Levee 12'	8500	4206	C102A	VSHEEP4	10.92	1.18
0161	P0	Rip Rap Chnl 100'W 5'D 3:1 SS	10600	2790	102B	VSHEEP3	5.64	0.94
0162	P0	Rip Rap Levee 12'	10600	2790	102B	VSHEEP3	5.64	0.94
UPWE		**UPPER LAS VEGAS WASH - WEST**						
0000	E	Natural Wash 1001'W	24000	13460	C125A-15	VSHEEP5	190.36	1.30

*The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.

**As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.

REGIONAL FLOOD CONTROL DISTRICT

2002 LAS VEGAS VALLEY
FLOOD CONTROL MASTER PLAN UPDATE
FACILITY INVENTORY
FIGURE F-4

LEGEND

Street Name Designator AA BB
Parent Stream Name
Stream Name
ID / River Mile 00 00
Distance above confluence
With parent stream
Miles in tenths

Existing Facility ..... E
Proposed or Modified Facility ..... P
Contingency Level
Category B P0
Master Plan P1
Preliminary Design P2
Design P3

Bottom Width ..... W
Depth ..... D
Side Slope, H:V ..... SS

Construction Features

Cast in Place Concrete Pipe ..... CIPCP
Corrugated Metal Arch Pipe Culvert ..... CMAP
Corrugated Metal Pipe Culvert ..... CMP
High Density Polyethylene ..... HDPE
Helical Elliptical Reinforced Concrete Pipe ..... HERCP
Reinforced Concrete Arch Pipe ..... RCAC
Reinforced Concrete Box ..... RCB
Reinforced Concrete Box Culvert ..... RCBC
Reinforced Concrete Pipe ..... RCP
Reinforced Concrete Pipe Culvert ..... RCPC
Storm Sewer Pipe ..... SSP

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