

November 2010

Request for Letter of Map Revision (LOMR)

Decatur Boulevard Access Road

from Iron Mountain Road
to Moccasin Road

CLOMR Case №: 07-09-1939R – Approved 6/23/08

prepared for CLARK COUNTY NEVADA

prepared by vtn

November 2010

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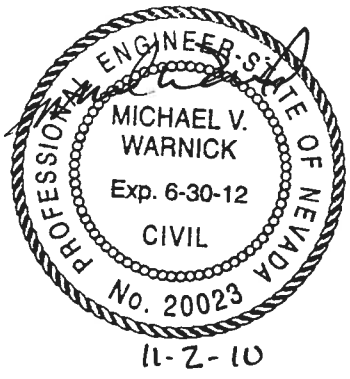
from Iron Mountain Road to Moccasin Road

CLOMR Case №: 07-09-1939R – Approved 6/23/08

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 89146-5148

(702) 247-4020

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1.0 INTRODUCTION

The purpose of this request for a Letter of Map Revision (LOMR) is to analyze and address a needed revision to the current flood zone within the Las Vegas Wash, in the City of Las Vegas and the City of North Las Vegas, Clark County, Nevada. This request for a LOMR is provided to address the modification of the existing Zone AE flood zone between the Upper Las Vegas Wash Detention Basin and Decatur Boulevard, approximately one-quarter mile downstream of the detention basin outlet. This analysis provides documentation to demonstrate that the recently completed storm drain improvements for the Decatur Boulevard Access Road contain the 100-year flood flow and the revised flood zone delineations upstream of the roadway. Refer to Appendix B, Figure 1, Vicinity Map, for an overall view of the project location.

The Upper Las Vegas Wash has been identified as a Master Plan Flood Control Facility by the Clark County Flood Control District. This section of the wash is identified as a floodway, ID # LVUP0493, just downstream of the 2: 8'x8' RCB Outlet, ID # LVUP0909, to the Upper Las Vegas Wash Detention Basin, ID #LVUP0910. Refer to Figures 2.1 and 2.2 in Appendix B for the location of these Master Plan Flood Control Facilities.

The existing Las Vegas Wash has been identified as a Zone AE and Zone X on the latest Flood Insurance Rate Map, Figure 3. This LOMR serves to update the Base Flood Elevations identified in this section of the Las Vegas Wash.

Due to the development north of the Upper Las Vegas Wash, Decatur Boulevard has been extended across the wash to provide access to the north side of the wash. A reinforced concrete box culvert (RCBC) provides conveyance of floodwater under the roadway. Clark County has completed construction as previously approved in the CLOMR, Case Number: 07-09-1939R, for the Decatur Boulevard Access Road (see attached As-built plans in Appendix D). The improvements north of the wash are part of the 2,900-acre Clark County Shooting Park. The shooting park is a culmination of community and citizen advisory, state, local and national government efforts. Prior to construction, Clark County completed botanical, wildlife, and paleontological studies and implemented a lead mitigation plan to address potential concerns. The first phase of the shooting park includes an archery center, shotgun center, rifle-pistol center, education center, maintenance area, and host site. Phase 1 is designed to provide safe recreational shooting to the citizens and visitors in Clark County. The remaining two phases of

construction are the Events Module and the Service Module. The existing and future shooting park improvements are north of the identified flood zones.

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 B, Figure 4, Existing Flood Zone Exhibit. Because of the BLM Grant, this property is not currently developed and will not be privately developed. The only development upstream of the Decatur Boulevard wash crossing is the existing Upper Las Vegas Wash Detention Basin. There are not any structures in the identified Special Flood Hazard Area, the NV Energy substation to the south is elevated several feet above the revised base flood elevations. This analysis will show that due to the 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 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 submitted with 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 model 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 Storm ID	Tributary Area (mi^2)	100 Year Flow (cfs)	500 Year Flow (cfs)
Upper Las Vegas Wash Detention Basin Outflow	ULWDB / Spring Mtn	136.34	5,019	17,855
North Las Vegas Detention Basin Dike	NLVIN / Spring Mtn Interbasin	54.37	8,537	17,855

The 1998 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 for the post-project model upstream of the RCBC facility. This flow rate is closer to the Master Plan flow rate for this portion of the Las Vegas Wash (3,333 cfs). Flow was added to the model at the downstream side of the access road to model the wash to the downstream tie-in location. The 0.2% chance flow rate of 17,855 cfs has also been analyzed to satisfy the FEMA policy of evaluating the same recurrence intervals as previously studied in the effective FIS report.

3.0 HYDRAULICS

Pre-Project Condition – HEC-RAS

The purpose of the VTN pre-project condition model is to identify the baseline flood conditions by analyzing the base flow rates identified in Section 2 of this study in the wash before the project was constructed. 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 flow rates of 8,537 cfs for the 100-Year Flow and 17,855 cfs for the 500-Year Flow. The pre-project HEC-RAS report and cross sections have been included in Appendix C.

Post-Project Condition – HEC-RAS

The intent of the post-project condition model is to provide an analysis of the wash with the completed Decatur Boulevard Access Road RCBC. The objective of this model is to provide a comparison between the pre-project condition and the post-project condition and be able to verify the impact to the current FEMA flood zones and base flood elevations. The post-project condition model was analyzed with the flow rate of 5,019 cfs upstream of the RCBC, and the same hydrology elsewhere as the pre-project condition model, but the hydraulic model includes the RCBC improvements for the Decatur Boulevard Access Road. Upstream and downstream of the Decatur Boulevard Access Road, this model incorporates the same channel geometrics as the pre-project condition model. The post-project condition HEC-RAS report and cross sections have been included in Appendix C.

4.0 RESULTS

The HEC-RAS post-project condition model output shows that base flood elevations are impacted by the proposed Decatur Boulevard Access Road improvements, but the flood zone limits are not significantly impacted due to the wash being sufficiently incised to contain the base flow rates. These results are shown on the Pre-Project and Post-Project Condition Work Maps, Figures 5.2 and 5.3, respectively, and Figure 5.1, Annotated Flood Zone Map, included in Appendix B. The complete HEC-RAS results are included in Appendix C (Pre-Project Condition Model and Post-Project Condition Model) along with the CHECK-RAS output files. Electronic HEC-RAS files are included on the Data CD in Appendix E.

A comparison of the pre-project condition hydraulics and post-project condition hydraulics at the end points and around the Decatur Boulevard Access Road RCBC shows the changes to the Water Surface elevation, the constriction at the RCBC raises the water surface upstream of the facility, however at the downstream tie-in point the pre-project and the post-project elevations are identical. Refer to Table 2 for a summary of this information.

Table 2

Location	River Station	Pre-Project Condition Water Surface Elevation	Post-Project Condition Water Surface Elevation
Upstream	-1100	2342.59	2341.70
Upstream of RCBC	-2200	2333.30	2337.70
Downstream of RCBC	-2450	2330.87	2331.47
Downstream	-4341.67	2315.09	2315.09

5.0 CONCLUSION

With the Decatur Boulevard Access Road Improvements, a RCBC structure was constructed to convey floodwater 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 the 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, sp_100.out). The peak discharge flow rate during a storm event having a 0.2% chance of being exceeded in any given year is approximately 17,855 cfs. The hydraulic model of these improvements (post-project condition 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 and downstream of Decatur Boulevard. Since all of the land west of Decatur Boulevard has been granted by the BLM to the City of North Las Vegas for "Flood Control Purposes" and the land downstream is publicly owned, this property will not be privately developed. The analysis in this study shows that due to the roadway and storm drain crossing improvements the base flood elevations are impacted by this project, but the impact is of no significant consequence because the land is public land, does not currently contain any structures, and will not be developed in the future.

Below is a photo showing the current conditions of the area immediately upstream and downstream of the Decatur Boulevard Access Road crossing of the Las Vegas Wash. These photos are taken from the RCBC looking west to the detention basin spillway and east at the wash downstream. The view of the downstream wash shows the steep walls and how the wash is incised compared to the surrounding area. The last photo is the alignment of the Decatur Boulevard Access Road looking north towards the Clark County Shooting Park.



Figure 6 – View upstream of RCBC, Upper Las Vegas Wash Detention Basin Outfall



Figure 7 – View downstream of RCBC, incised channel



Figure 8 – View north along Decatur Boulevard Access Road

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, *2008 Las Vegas Valley Flood Control Master Plan Update*, 2008 – by PBS&J, Louis Berger Group, and Parsons Brinckerhoff.

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

Appendix A
FEMA Forms

FEMA ‘OVERVIEW & CONCURRENCE FORM’

– MT-2 FORM 1 –

CLV

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

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, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). 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 DHS-FEMA

This request is for a (check one):

☐ CLOMR: A letter from DHS-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 DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

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 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
320007	NORTH LAS VEGAS, CITY OF	NV	32003C	1754E	09/27/02
325276	LAS VEGAS, CITY OF	NV	32003C	1754E	09/27/02

2. a. Flooding Source: LAS VEGAS WASH

   b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
   ☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: DECATUR BOULEVARD ACCESS ROAD

4. FEMA zone designations affected: AE AND 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 ☐ Base Map Changes
   ☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
   ☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
   ☐ New Topographic Data ☐ 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 structures (check all that apply)

   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: $5,000

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/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: Michael Warnick, P.E.	Company: VTN Nevada	
Mailing Address: 2727 S. Rainbow Blvd. Las Vegas, NV 89146	Daytime Telephone No.: (702) 253-2463	Fax No.: (702) 247-4262
	E-Mail Address: michaelw@vtnnv.com	
Signature of Requester (required): Michael Warnick	Date: 11-2-10	

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	Community Name: City of Las Vegas	
Mailing Address: 731 S. Fourth Street Las Vegas, NV 89101	Daytime Telephone No.: (702) 229-6541	Fax No.: (702) 382-0848
	E-Mail Address: rfultz@lasvegasnevada.gov	
Community Official's Signature (required): Randy Fultz	Date: 11/23/10	

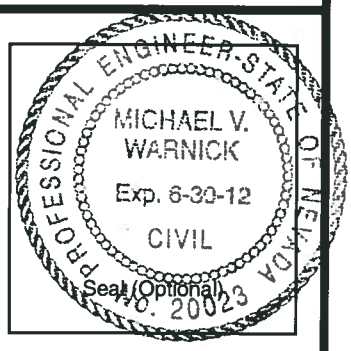
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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: Michael Warnick, P.E.	License No.: NV 20023	Expiration Date: 06/30/2012
Company Name: VTN Nevada	Telephone No.: (702) 253-2463	Fax No.: (702) 247-4262
Signature: Michael Warnick		Date: 11-2-10

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

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

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3. Project Name/Identifier: DECATUR BOULEVARD ACCESS ROAD

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   ☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
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   ☐ Dam ☐ Fill ☐ Other (Attach Description)

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $5,000

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/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: Michael Warnick, P.E.	Company: VTN Nevada	
Mailing Address: 2727 S. Rainbow Blvd. Las Vegas, NV 89146	Daytime Telephone No.: (702) 253-2463	Fax No.: (702) 247-4262
	E-Mail Address: michaelw@vtnnv.com	
Signature of Requester (required):	Date: 11-2-10	

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: JENNIFER DOODY, PE CFM / MANAGER OF DEVELOPMENT AND FLOOD CONTROL DIVISION	Community Name: City of North Las Vegas	
Mailing Address: 2266 Civic Center Drive North Las Vegas, NV 89030	Daytime Telephone No.: (702) 633-1223	Fax No.: (702) 633-9784
	E-Mail Address: doodyj@cityofnorthlasvegas.com	
Community Official's Signature (required):	Date: 11/18/10	

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 data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. 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.

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Company Name: VTN Nevada	Telephone No.: (702) 253-2463	Fax No.: (702) 247-4262
Signature:		Date: 11-2-10

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

Form Name and (Number)	Required if ...
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☒ 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

PROFESSIONAL ENGINEER-STATE OF NEVADA
MICHAEL V. WARNICK
Exp. 6-30-12
CIVIL
No. 20023
Seal (Optional)

FEMA ‘RIVERINE HYDROLOGY & HYDRAULICS FORM’

– MT-2 FORM 2

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

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Flooding Source: 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 B) ☐ 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.)	Effective/FIS (cfs)	Revised (cfs)

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

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model
☐ 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.

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	-4341.67	2315.09	2315.09
Upstream Limit	Upper Las Vegas Wash Det. Basin Outlet	-1100	2338.93	2338.93

2. Hydraulic Method/Model Used

HEC-RAS

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-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 may help 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/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. Review of your submittal and resolution of valid modeling discrepancies may result in reduced review time.

4. Models Submitted

Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Existing or Pre-Project Conditions Model	File Name: DAR_pre	Plan Name: Pre	File Name:	Plan Name:	_____
Revised or Post-Project Conditions Model	File Name: DAR_post	Plan Name: Post	File Name:	Plan Name:	_____
Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	_____

* For details, refer to the corresponding section of the instructions.

☒ Digital Models Submitted? (Required)

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.).

☒ Digital Mapping (GIS/CADD) Data Submitted

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.

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

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

   a. 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 or without BFEs established and would result in increases above 1.00 foot.

   b. 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.

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/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

   If Yes, please submit documentation to the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

   For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

FEMA ‘RIVERINE STRUCTURES FORM’
– MT-2 FORM 3

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

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, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). 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: 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/Basin.....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/Basin

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

Downstream Limit/Cross Section: -2274.76

Upstream Limit/Cross Section: -1100.00

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

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

Location of Structure: DECATUR BLVD AND LAS VEGAS WASH

Downstream Limit/Cross Section: -2406.83

Upstream Limit/Cross Section: -2274.76

3. Name of Structure: FLOODWAY

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

Location of Structure: LAS VEGAS WASH: DOWNSTREAM OF DECATUR BLVD

Downstream Limit/Cross Section: -4341.67

Upstream Limit/Cross Section: -2406.83

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

B. CHANNELIZATION

Flooding Source: 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 [Attach Section D (Dam/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.

C. BRIDGE/CULVERT

Flooding Source: LAS VEGAS WASH

Name of Structure: 3 BARREL - 24' x 8' RCBC

1. This revision reflects (check one):

☒ Bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ Revised 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.

B. CHANNELIZATION

Flooding Source: 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 [Attach Section D (Dam/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 8,537 (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.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ Bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ Revised 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):
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.

D. DAM/BASIN

Flooding Source: 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. The Dam was permitted as (check one):

   a. ☐ Federal Dam ☒ State Dam

      Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

      Permit or ID number Permitting Agency or Organization

   b. ☒ Local Government Dam ☐ Private Dam

      Provided related drawings, specification and supporting design information.

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

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

   Was the dam/basin designed using critical duration storm?

   ☐ Yes, provide supporting documentation with your completed Form 2.

   ☐ No, provide a written explanation and justification for not using the critical duration storm.

5. 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.

6. 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.

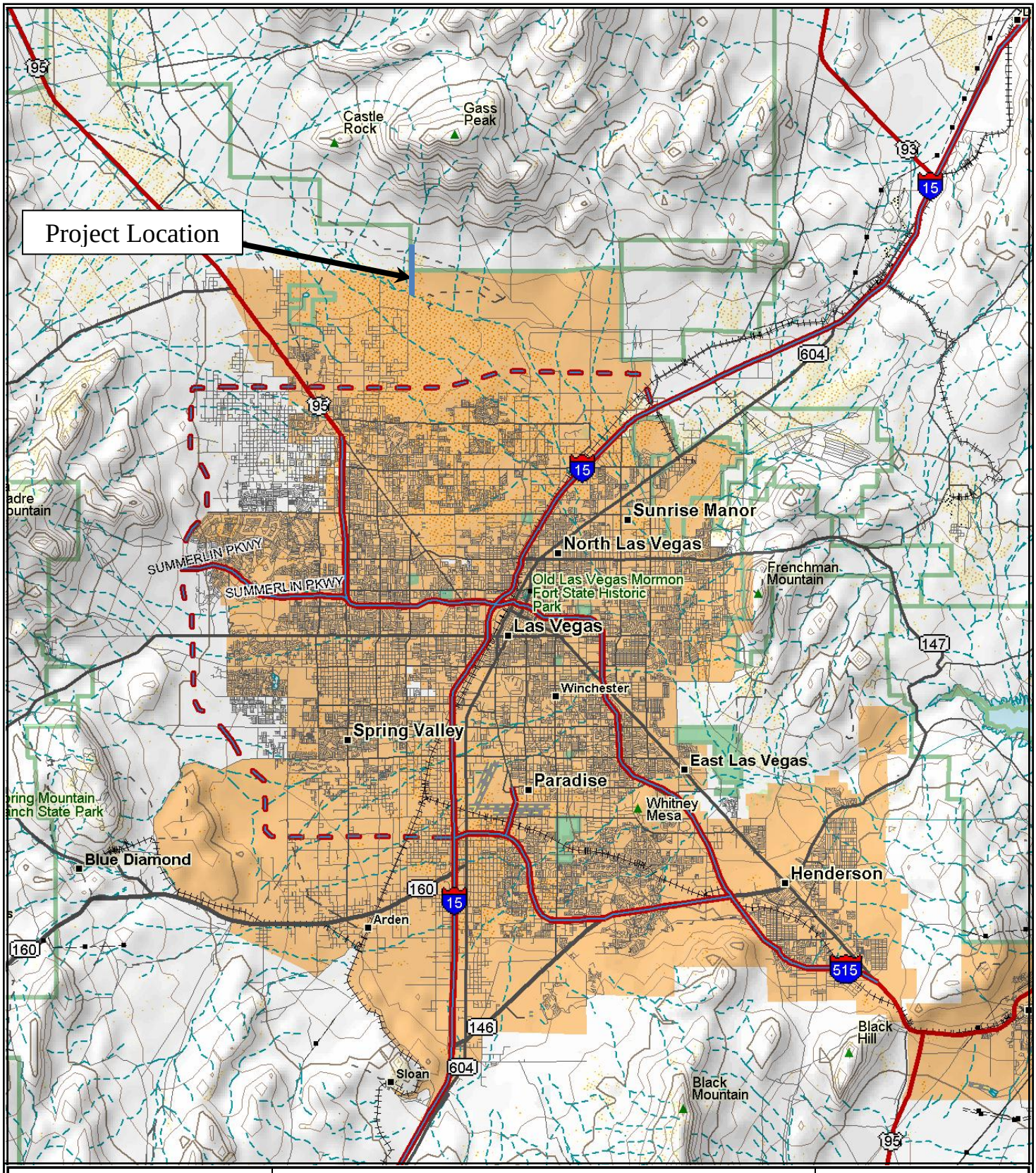
Stillwater Elevation Behind the Dam

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

7. Please attach a copy of the formal Operation and Maintenance Plan

Appendix B
Figures

DECATUR BOULEVARD ACCESS ROAD
VICINITY MAP
- FIGURE 1



Vicinity Map
Decatur Boulevard Access Road
Request for LOMR

Figure 1

November 2010

FIGURE F-9
2008 CCRFCD MASTER PLAN UPDATE FACILITIES MAP
- FIGURE 2.1

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F- 9

FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

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	1	2	3			
4	5	6				
		7	8	9	10	
11	12	13	14	15	16	17
	18	19	20	21	22	23
	24	25	26	27	28	
	29	30	31	32	33	34
	35	36	37	38	39	40
	41	42	43	44	45	46
	47	48	49	50	51	52
	53	54	55	56		
	57	58	59			

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FIGURE 2.1

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**						
0493	E	Floodway	24000	3333	ULWDB*	LOWER5	121.90	1.04
0908	E	182,000 cfs PMF Spillway		182000	ULWIN2	LOWER5	121.90	
0909	E	2: 8' X 8' RCB Outlet	260	3333	ULWDB	LOWER5	121.90	1.18
0910	E	1,836 ac-ft Upper Las Vegas Wash Detention Basin		15898	ULWIN2	LOWER5	121.90	
0911	P0	Upgrade to 3,247 ac-ft Upper LV Wash Detention Basin		15898	ULWIN2	LOWER5	121.90	
0976	E	Floodway	7000	14661	ULWIN	LOWER5	110.99	0.71
UPDE		**UPPER LAS VEGAS WASH - DECATUR**						
0000	P0	Conc Chnl 20'W 5'-Varies D 4:1 SS	930	1797	C116-6	LOWER3	4.06	0.30
0017	P0	Conc Chnl 30'W 5'-Varies D 4:1 SS	1150	1797	C116-6	LOWER3	4.06	0.40
0039	P0	4: 8' X 6' RCBC	220	1797	C116-6	LOWER3	4.06	0.40
0043	P0	Conc Chnl 70'W Unknown Depth 4:1 SS	220	1797	C116-6	LOWER3	4.06	4.43
0047	P0	Conc Chnl 30'W 3'D 4:1 SS	1150	1797	C116-6	LOWER3	4.06	4.43
0056	P0	Unlined Levee 8.75'	6745	1725	C110	LOWER3	3.58	6.30
0069	P0	Conc Chnl 20'W 3'D 4:1 SS	3400	1725	C110	LOWER3	3.58	6.07
0133	P0	Conc Chnl 10'W 3'D 4:1 SS	2888	193	116-3	LOWER3	0.32	7.21
UPEA		**UPPER LAS VEGAS WASH - EAST**						
0140	P0	Unlined Levee 8'	6050	1925	C117	LOWER3	3.87	2.39
0160	P0	Conc Chnl 50'W 5'D 4:1 SS	5614	1925	C117	LOWER3	3.87	2.24
0264	P0	Unlined Levee 8.75'	5545	960	117	LOWER3	2.39	2.95
0266	P0	Conc Chnl 20'-50'W 5'D 4:1 SS	364	960	117	LOWER3	2.39	2.44
0273	P0	Conc Chnl 20'W 5'D 4:1 SS	1578	960	117	LOWER3	2.39	2.09
0303	P0	Conc Chnl 20'W 5'D 4:1-Varies SS	1938	960	117	LOWER3	2.39	3.31
0340	P0	Conc Chnl 20'W 5'D 4:1 SS	1762	960	117	LOWER3	2.39	3.53
UPEB		**UPPER LAS VEGAS WASH - EAST BRANCH**						
0000	P0	Riprap Chnl 140'W 5'D 3:1 SS	8750	4195	C102A	LOWER4	10.92	1.18
0001	P0	Riprap Levee 12'	7880	4195	C102A	LOWER4	10.92	1.18
0161	P0	Riprap Chnl 100'W 5'D 3:1 SS	10600	2790	102B	LOWER3	5.64	0.94
0162	P0	Riprap Levee 12'	10600	2790	102B	LOWER3	5.64	0.94
UPWE		**UPPER LAS VEGAS WASH - WEST**						
0000	E	Floodway	30000	14272	2C116-7	LOWER5	105.83	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.*
^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

2008 LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FACILITY INVENTORY
FIGURE F - 9

LEGEND

ID (Facility Identifier) AABB
Parent Stream Name
Stream Name
River Mile 0000
Distance Above Confluence with Parent Stream (Miles)
Miles in Hundredths

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..... CMPC
High Density Polyethylene..... HDPE
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP
Reinforced Concrete Arch Pipe..... RCAP
Reinforced Concrete Arch Culvert..... 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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FIGURE 2.1

FIGURE F-14
2008 CCRFCD MASTER PLAN UPDATE FACILITIES MAP
- FIGURE 2.2

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-14
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

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FIGURE 2.2

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
CNEA		**CENTENNIAL PKWY CHANNEL EAST**						
0123	E	14' X 6' RCB	1585	1457	CNN093-C	WEST3	1.67	0.92
0153	E	14' X 6' RCB	1125	1457	CNN093-C	WEST3	1.67	1.34
0175	E	15' X 6' RCB	125	1174	CNN078-C	WEST3	1.35	5.66
0176	E	Conc Chnl 15'W 6.5'D 0:1 SS	540	1174	CNN078-C	WEST3	1.35	0.70
CNWE		**CENTENNIAL PKWY CHANNEL WEST**						
0000	E	2: 27' X 10' RCBC @ Beltway	235	4465	CNW3D3-C	WEST3	6.41	1.51
0005	P2	2: 27' X 10' RCB	764	4465	CNW3D3-C	WEST3	6.41	1.10
0020	E	2: 27' X 10' RCBC @ Decatur	310	4465	CNW3D3-C	WEST3	6.41	2.58
0026	P2	2: 27' X 10' RCB	1006	4465	CNW3D3-C	WEST3	6.41	0.59
0045	P2	Conc Chnl 56'W 10'D 0:1 SS	1404	4465	CNW3D3-C	WEST3	6.41	0.59
0070	E	27' X 10' RCBC @ Bradley	155	2233^	CNW3D3-C^	WEST3	6.41	0.40
0071	P2	Add 1: 27' X 10' RCBC @ Bradley	155	2233^	CNW3D3-C^	WEST3	6.41	0.40
0075	P2	Conc Chnl 56'W 10'D 0:1 SS	1915	4465	CNW3D3-C	WEST3	6.41	0.40
0110	P2	2: 27' X 10' RCB	650	4382	2CW3B4-C	WEST3	6.15	0.40
0122	E	27' X 10' RCBC @ Jones	122	2191^	2CW3B4-C^	WEST3	6.15	0.40
0123	P2	Add 1: 27' X 10' RCBC @ Jones	122	2191^	2CW3B4-C^	WEST3	6.15	0.40
0129	P2	2: 27' X 10' RCB	1695	4382	2CW3B4-C	WEST3	6.15	0.40
0150	P2	Conc Chnl 42'W 10'D 0:1 SS	720	4233	CNW3B3-C	WEST3	5.64	0.40
0173	P2	42' X 10' RCBC @ Torrey Pines	190	4233	CNW3B3-C	WEST3	5.64	0.40
0176	P2	Conc Chnl 32'W 12'D 0:1 SS	795	4233	CNW3B3-C	WEST3	5.64	0.40
0189	P2	Conc Chnl 32'W 10'D 0:1 SS	1845	4067	CNW2D4-C	WEST3	5.15	0.54
EKEA		**ELKHORN ROAD CHANNEL EAST**						
0056	P3	Conc Chnl 21'W 8.5'D 0:1 SS	2516	2961	CELK06G	WEST3	4.30	1.58
0104	P3	Conc Chnl 21'W 9.5'D 0:1 SS	971	2759	CCELK06E	WEST3	3.90	1.58
0119	P3	20' X 9' RCB	384	2759	CCELK06E	WEST3	3.90	0.66
0124	P3	Conc Chnl 20'W 10'D 0:1 SS	3659	2444	CELK06E	WEST3	3.48	0.66
0192	P3	20' X 9.5' RCBC @ Clayton	330	2444	CELK06E	WEST3	3.48	0.49
0198	P3	Conc Chnl 20'W 9.5'D 0:1 SS	1766	2152	CELK06D	WEST3	3.02	0.60
0231	P3	Conc Chnl 18'W 9.5'D 0:1 SS	182	2152	CELK06D	WEST3	3.02	1.82
0234	P3	30' X 7' RCBC	132	2152	CELK06D	WEST3	3.02	0.47
0237	E	Conc Chnl 16'W 7'D 0:1 SS	2012	1944	CC048-C	WEST3	2.64	0.51
0274	E	16' X 7' RCBC @ Aliante	439	1191	CNN035-C	WEST3	1.47	0.55
0282	E	16' X 7' RCB	89	1191	CNN035-C	WEST3	1.47	0.92
0284	E	Conc Chnl 15'W 9'D 0:1 SS	343	1191	CNN035-C	WEST3	1.47	0.46
0290	E	Conc Chnl 27'W 9'D 0:1 SS Confluence Structure	147	1191	CNN035-C	WEST3	1.47	0.47
0292	E	Conc Chnl 15'W 9'D 0:1 SS	779	1191	CNN035-C	WEST3	1.47	0.47
0307	E	Conc Chnl 15'W 6'D 0:1 SS	1625	1191	CNN035-C	WEST3	1.47	0.56
0338	E	60" RCP	1259	504	NN021-C	WEST3	0.57	0.76
GTEA		**GRAND TETON DRIVE CHANNEL EAST**						
0000	P0	12' X 8' RCAP	4927	1283	CGT03D	WEST3	2.79	1.30
0093	P0	12' X 8' RCAP	3600	1283	CGT03D	WEST3	2.79	0.71
0161	P0	12' X 8' RCAP	5385	1283	CGT03D	WEST3	2.79	0.66
0263	P0	12' X 8' RCAP	4435	1174	CGT03B	WEST3	2.55	0.50
0347	P0	12' X 8' RCAP	452	1009	CNW202-C	WEST3	2.00	1.87
0355	P0	14' X 6' RCB	274	1009	CNW202-C	WEST3	2.00	0.50
0360	P0	6' X 6' RCB	2650	291	CNW205-C	WEST3	0.68	0.40
LV03		**CLAYTON STREET CHANNEL**						
0082	E	Conc Chnl 7'W 7.1'D 1.5:1 SS	2444	757	CNN054-C	WEST3	0.81	2.80
0128	E	Conc Chnl 7'W 7.1'D 1.5:1 SS	167	257	1/2NN052-C	WEST3	0.55	2.80
0129	E	2: 10' X 6' RCB	801	257	1/2NN052-C	WEST3	0.55	1.60
0131	E	10' X 6' RCB	665	257	1/2NN052-C	WEST3	0.55	1.28
LVDE		**LAS VEGAS WASH - DECATUR**						
0000	P3	7' X 6' RCB	128	547	CNW198-C	WEST3	0.69	0.78
0003	P3	96" RCP	1250	547	CNW198-C	WEST3	0.69	0.46
0027	P3	84" RCP	1320	547	CNW198-C	WEST3	0.69	0.50
LVIM		**LAS VEGAS WASH AND IRON MOUNTAIN**						
0000	P1	84" RCP	1235	465	CNW206-C	WEST3	1.16	1.10
LVMD		**LAS VEGAS WASH - MIDDLE**						
2308	E	Confluence Structure	480	5734	2C3D4-C	CLVMD4	11.98	1.50
2322	P2	2: 24.5' X 10' RCB	1200	3317	CNW3D4-C	CWEST3	6.88	1.50

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
LVMD		**LAS VEGAS WASH - MIDDLE**						
2324	P2	2:14' X 8' RCB	5485	3317	CNW3D4-C	CWEST3	6.88	0.40
2443	P2	2: 13' X 7' RCB	5150	2574	CNW188-C	CWEST3	5.43	0.40
2490	P2	2: 13' X 7' RCB	2555	2278	CNW168-C	CWEST3	4.69	0.40
2507	E	2: 13' X 9' RCB	2831	2278	CNW168-C	CWEST3	4.69	0.36
LVMJ		**LAS VEGAS WASH - JONES**						
0000	P3	76" X 48" HERCP	2320	296	CNW178-C	WEST3	0.50	0.40
LVSM		**LAS VEGAS WASH-SIMMONS**						
0109	E	48" RCP	2003	235	NN038-C	WEST3	0.24	1.91
LVUP		**UPPER LAS VEGAS WASH**						
0493	E	Floodway	24000	3333	ULWDB*	LOWER5	121.90	1.04
0908	E	182,000 cfs PMF Spillway		182000	ULWIN2	LOWER5	121.90	
0909	E	2: 8' X 8' RCB Outlet	260	3333	ULWDB	LOWER5	121.90	1.18
0910	E	1,836 ac-ft Upper Las Vegas Wash Detention Basin		15898	ULWIN2	LOWER5	121.90	
0911	P0	Upgrade to 3,247 ac-ft Upper LV Wash Detention Basin		15898	ULWIN2	LOWER5	121.90	
0976	E	Floodway	7000	14661	ULWIN	LOWER5	110.99	0.71

** 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.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

2008 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F - 14

LEGEND

ID (Facility Identifier) AABB
Parent Stream Name
Stream Name
River Mile 0000
Distance Above Confluence with Parent Stream (Miles)
Miles in Hundredths

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..... CMPC
High Density Polyethylene..... HDPE
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP
Reinforced Concrete Arch Pipe..... RCAP
Reinforced Concrete Arch Culvert..... RCAC
Reinforced Concrete Box..... RCB
Reinforced Concrete Box Culvert..... RCBC
Reinforced Concrete Pipe..... RCP
Reinforced Concrete Pipe Culvert..... RCPC
Storm Sewer Pipe..... SSP

PBS&J PB

FIGURE 2.2

CURRENT FEMA FIRM MAP

- FIGURE 3

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 Tranverse 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 the 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 infomation 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.

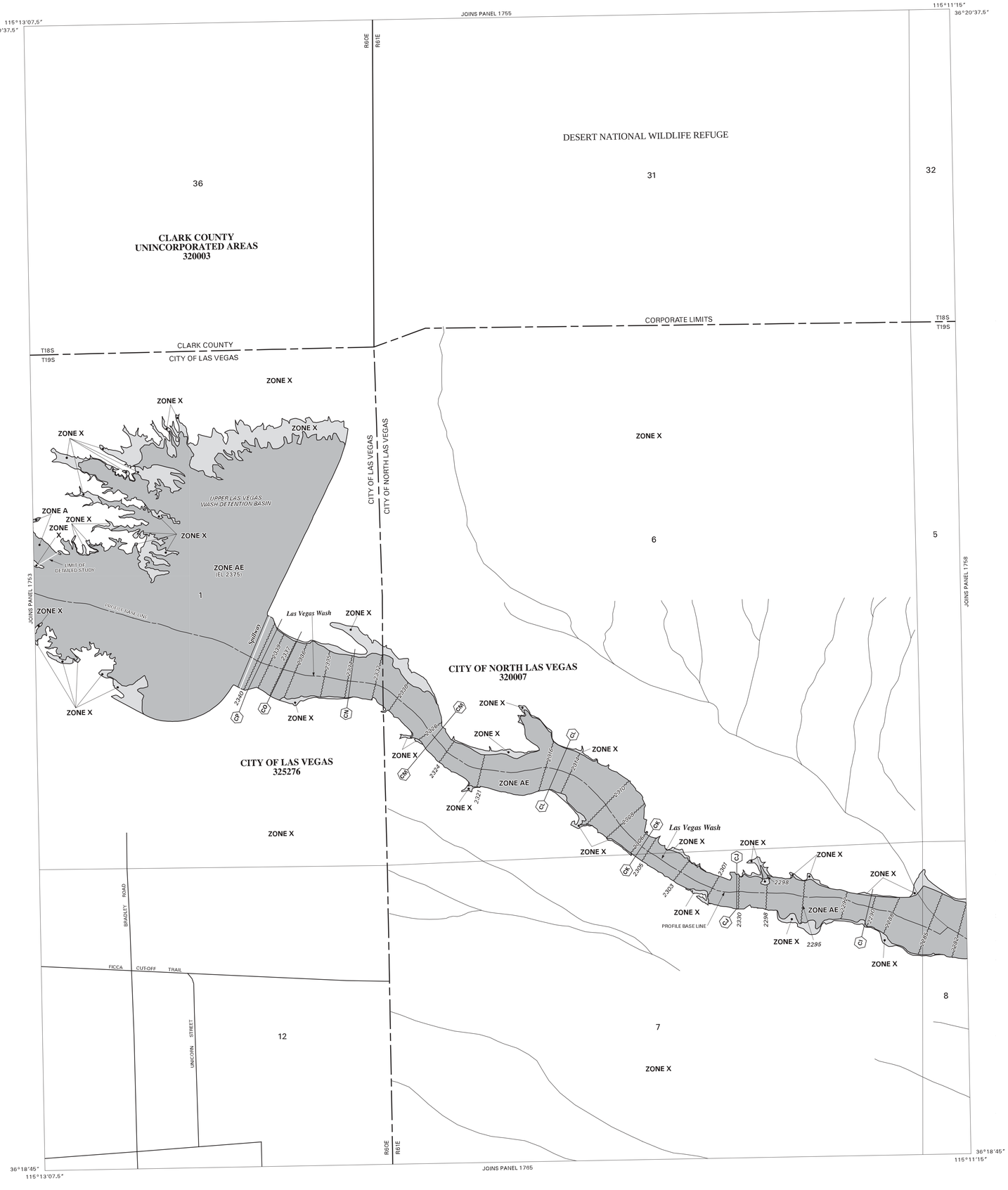
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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/ceit/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

NATIONAL FLOOD INSURANCE PROGRAM

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

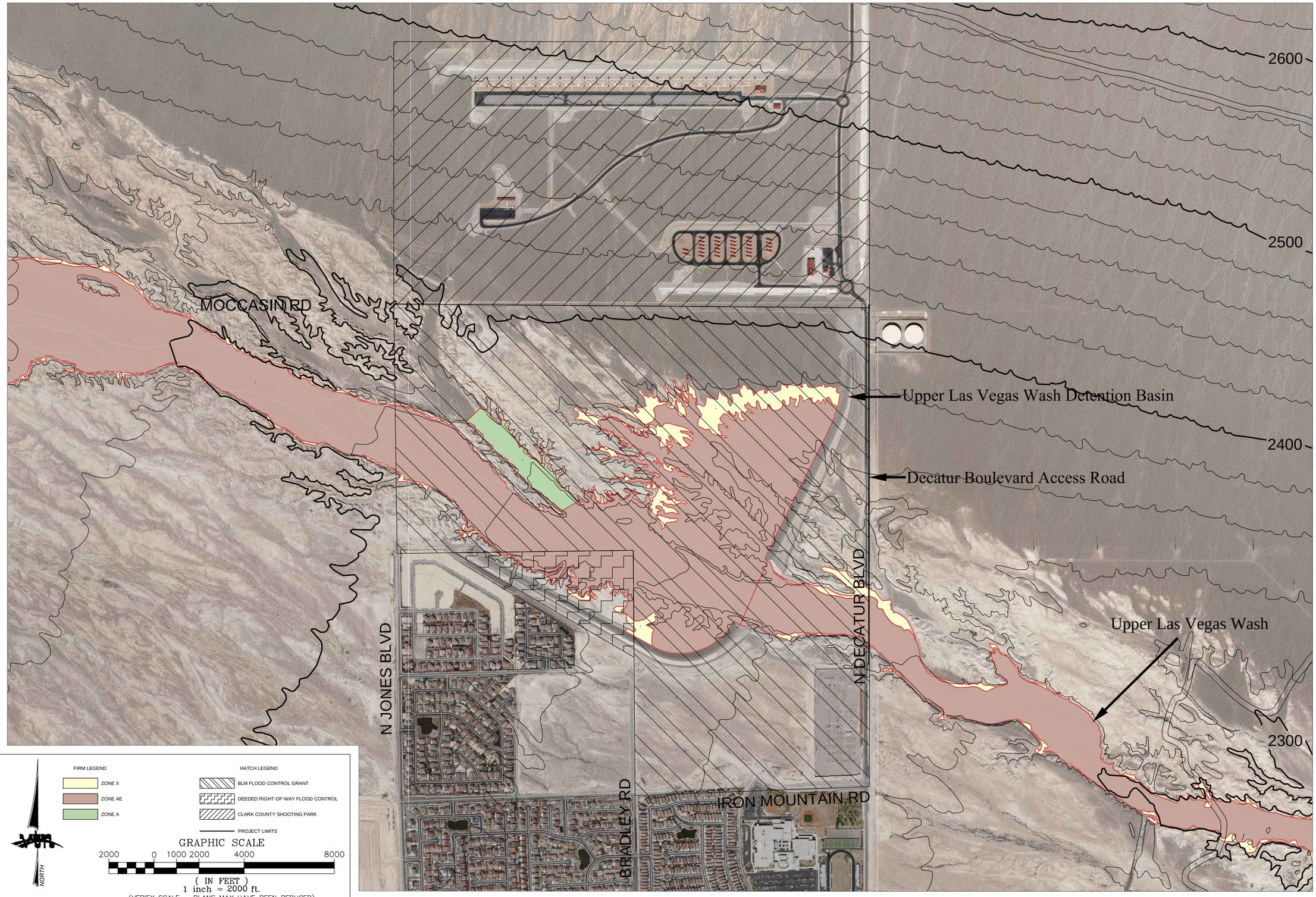
MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

FIGURE 3

EXISTING FLOOD ZONE EXHIBIT

- FIGURE 4



REVISION | BY | DATE | REV

vtn
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH: (702) 873-7550
FAX: (702) 873-7597
WEB SITE WWW.VTNNV.COM

DECATUR BOULEVARD ACCESS ROAD

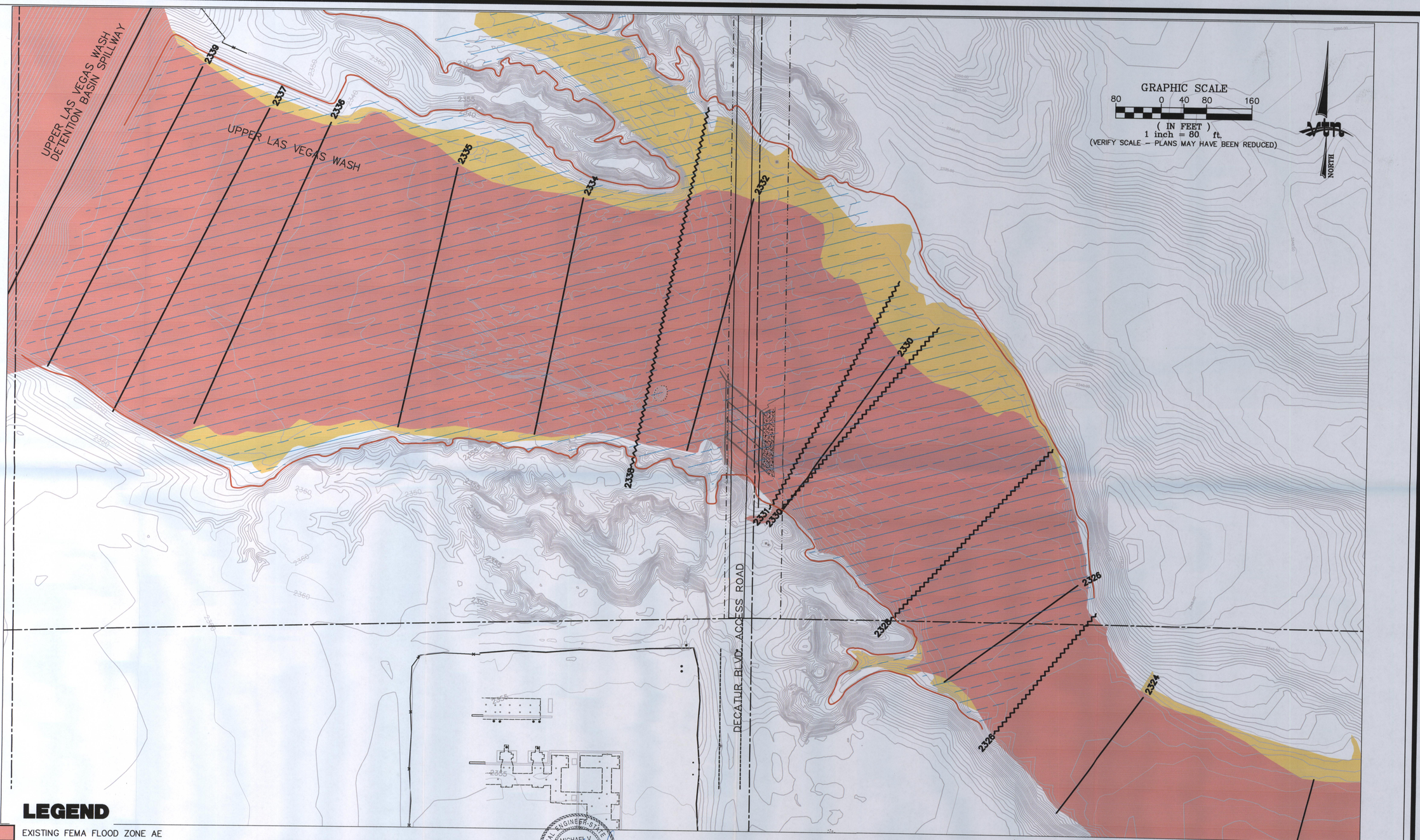
EXISTING FLOOD ZONE EXHIBIT

DRAWN BY: ALB
DESIGNED BY: VTN
CHECKED BY: MW
PROJECT NO: 6722
SCALE HORIZ. 1"=2000' VERT. NONE

SHEET
FIGURE 4
OF SHEETS
DRAWING NO.

FEMA ANNOTATED FLOOD ZONE MAP

- FIGURE 5.1



LEGEND

- EXISTING FEMA FLOOD ZONE AE
- EXISTING FEMA FLOOD ZONE X
- POST–PROJECT 100–YR FLOOD ZONE
- POST–PROJECT 500–YR FLOOD ZONE
- 2326 BASE FLOOD ELEVATION LINE AND VALUE, ELEVATION IN FEET.
- 2228 EXISTING BASE FLOOD ELEVATION LINE AND VALUE

PANEL 1754 OF 4090

	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	32003	1754	E

MAP NUMBER 32003L1754 E

PROFESSIONAL ENGINEER STATE OF NEVADA
MICHAEL V. WARNICK
Exp. 6-30-12
CIVIL
No. 20023
11-2-10

vtn

FIGURE 5.1
FEMA ANNOTATED FLOOD ZONE MAP

NOV. 2010

DECATUR BOULEVARD ACCESS ROAD LOMR
PRE-PROJECT CONDITION WORK MAP
- FIGURE 5.2

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 SPILLWAY

UPPER LAS VEGAS WASH

DECATUR BLVD. ACCESS ROAD

-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+00
-30+00
-30+05.67

LEGEND

- EXISTING FEMA FLOOD ZONE AE
- EXISTING FEMA FLOOD ZONE X
- PRE-PROJECT 100-YR FLOOD ZONE
- PRE-PROJECT 500-YR FLOOD ZONE
- -28+00 PRE-PROJECT HEC-RAS STATION

PROFESSIONAL ENGINEER STATE OF NEVADA
MICHAEL L. WILLIAMSON
No. 20023
EXP. 5-30-12
CIVIL
11-2-10

vtn

FIGURE 5.2
DECATUR BLVD. ACCESS ROAD LOMR
PRE-PROJECT CONDITION WORK MAP

NOV. 2010

DECATUR BOULEVARD ACCESS ROAD LOMR
POST-PROJECT CONDITION WORK MAP
- FIGURE 5.3

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 SPILLWAY

UPPER LAS VEGAS WASH

DECATUR BLVD. ACCESS ROAD

-11+00
-12+00
-13+00
-14+00
-15+00
-16+00
-17+00
-18+00
-19+00
-20+00
-21+00
-22+00
-27+74.86
-24+06.83
-25+00
-26+00
-27+00
-28+00
-29+00
-30+00
-30+05.67

LEGEND

- EXISTING FEMA FLOOD ZONE AE
- EXISTING FEMA FLOOD ZONE X
- POST-PROJECT 100-YR FLOOD ZONE
- POST-PROJECT 500-YR FLOOD ZONE
- -28+00 POST-PROJECT HEC-RAS STATION

PROFESSIONAL ENGINEER STATE OF NEVADA
MICHAEL V. WADNICK
Exp. 6-30-12
CIVIL
No. 20023
11-2-10

vtn

FIGURE 5.3
DECATUR BLVD. ACCESS ROAD LOMR
POST-PROJECT CONDITION WORK MAP

NOV. 2010

Appendix C
Hydraulic Analysis

DECATUR BOULEVARD ACCESS ROAD
PRE-PROJECT CONDITION: HEC-RAS MODEL

(File Name: *DAR_pre.prj* Plan: *PRE*)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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

****

PROJECT DATA
Project Title: Decatur Access Road (FIS) Pre-Project
Project File : DAR_pre.prj
Run Date and Time: 11/2/2010 11:10:15 AM

Project in English units

Project Description:

****

PLAN DATA

Plan Title: LOMR Pre-Project
Plan File : C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.p01

Geometry Title: Existing Conditions
Geometry File : C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.g01

Flow Title : FIS Flows
Flow File : C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.f02

Plan Summary Information:

Number of:	Cross Sections	= 41	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: Subcritical Flow

****

FLOW DATA

Flow Title: FIS Flows
Flow File : C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.f02

Flow Data (cfs)

River	Reach	RS	100-yr FIS Flow	500-yr FIS Flow
Las Vegas Wash	Upper	-1100	8537	17855

Boundary Conditions

River	Reach	Profile	Upstream	Downstream

```
* Las Vegas Wash  Upper          100-yr FIS Flow  *                                    Known WS = 2315.09 *
* Las Vegas Wash  Upper          500-yr FIS Flow  *                                    Known WS = 2317.34 *
*************************************************************************************************************

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

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.g01

CROSS SECTION


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

INPUT
Description:
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************
    -400 2357.02 -396.47    2356 -395.27 2355.43 -384.83    2352 -382.63 2351.27
 -367.45 2349.53 -364.52  2349.2    -357 2348.98 -337.95 2348.47 -335.85 2348.41
 -262.77 2346.79 -169.45 2344.45  -155.3 2344.17  -92.84 2343.06   -70.1 2342.21
   -68.5    2342  -61.05 2340.95  -55.91    2340  -32.33 2339.31  -17.45  2339.3
  -11.75  2339.2   -9.85 2338.93   26.56 2339.26    32.6 2339.48   42.44 2339.82
   43.31 2339.82   43.87 2339.81   51.84    2340   54.21 2340.23   55.94 2340.36
   65.72 2340.18   66.71 2340.16   73.51    2340  103.73  2339.8   106.6 2339.79
  122.29 2339.68  124.28 2339.69   139.6  2339.6  143.66 2339.63  151.71  2339.6
  159.63  2339.6  187.92 2339.52  191.15 2339.57   205.3 2339.52  222.05    2340
  239.36    2340  239.76 2340.19  243.79    2342   246.2 2343.14  248.01    2344
  251.66 2345.68  252.35    2346  252.68 2346.15  256.51    2348  259.89 2349.62
  260.71    2350   264.6 2351.86   264.9    2352  265.29 2352.19  267.67 2353.33
  269.06    2354  269.14 2354.04  277.36    2358  277.81 2358.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -400     .04 -367.45     .04  260.71     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -367.45  260.71               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #100-yr FIS Flow
*************************************************************************************************
* E.G. Elev (ft)         * 2343.98  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.40  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)         * 2342.59  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         * 2342.59  * Flow Area (sq ft)      *          *  900.19  *          *
* E.G. Slope (ft/ft)     *0.016823  * Area (sq ft)           *          *  900.19  *          *
* Q Total (cfs)          * 8537.00  * Flow (cfs)             *          * 8537.00  *          *
* Top Width (ft)         *  325.17  * Top Width (ft)         *          *  325.17  *          *
* Vel Total (ft/s)       *    9.48  * Avg. Vel. (ft/s)       *          *    9.48  *          *
* Max Chl Dpth (ft)      *    3.66  * Hydr. Depth (ft)       *          *    2.77  *          *
* Conv. Total (cfs)      * 65820.1  * Conv. (cfs)            *          * 65820.1  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *  325.99  *          *
* Min Ch El (ft)         * 2338.93  * Shear (lb/sq ft)       *          *    2.90  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *  277.81  *    0.00  *    0.00  *
* Frctn Loss (ft)        *    0.71  * Cum Volume (acre-ft)   *    0.16  *   98.90  *    0.00  *
* C & E Loss (ft)        *    0.21  * Cum SA (acres)         *    0.19  *   32.92  *    0.00  *
*************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #500-yr FIS Flow
*************************************************************************************************
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* E.G. Elev (ft)	* 2346.42	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.93	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2344.49	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	* 2344.49	* Flow Area (sq ft)	*	* 1601.52	*	*
* E.G. Slope (ft/ft)	*0.015185	* Area (sq ft)	*	* 1601.52	*	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*	*
* Top Width (ft)	* 420.10	* Top Width (ft)	*	* 420.10	*	*
* Vel Total (ft/s)	* 11.15	* Avg. Vel. (ft/s)	*	* 11.15	*	*
* Max Chl Dpth (ft)	* 5.56	* Hydr. Depth (ft)	*	* 3.81	*	*
* Conv. Total (cfs)	*144894.3	* Conv. (cfs)	*	*144894.3	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 421.36	*	*
* Min Ch El (ft)	* 2338.93	* Shear (lb/sq ft)	*	* 3.60	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 277.81	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.66	* Cum Volume (acre-ft)	* 0.89	* 160.96	* 0.02	*
* C & E Loss (ft)	* 0.21	* Cum SA (acres)	* 0.68	* 34.10	* 0.03	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the
need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the 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: -1150

INPUT
Description:
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2357.41	-397.42	2356.17	-397.08	2356	-392.09	2353.59	-388.81	2352
-382.89	2349.14	-378.39	2346.96	-373.87	2344.78	-372.27	2344	-369.34	2342.59
-364.7	2340.35	-363.99	2340	-359.94	2338.04	-359.86	2338	-302.66	2338
-277.36	2337.66	-261.95	2337.67	-252.92	2337.64	-251.32	2337.65	-241.63	2337.63
-237.12	2337.64	-109.01	2337.56	-56.18	2336.68	-48.64	2336.66	-45.47	2336.56
-40.71	2336.55	-37.52	2336.57	-36	2336.52	-29.08	2336.58	-25.88	2336.54
-22.14	2336.56	-20.13	2336.55	-13.81	2336.5	-10.06	2336.48	-4.45	2336.47
6.89	2336.4	7.74	2336.37	13.47	2336.4	25.01	2336.36	26.49	2336.39
30.64	2336.39	34.55	2336.44	36.71	2336.45	37.87	2336.43	49.15	2336.91
63.07	2336.85	66.51	2336.94	79.21	2336.92	123.63	2337.25	131.52	2337.25
144.29	2337.28	145.87	2337.27	152.95	2337.28	153.67	2337.28	154.5	2337.29
173.49	2337.29	183.89	2337.33	208.12	2337.6	226.92	2338	235.17	2338
237.19	2338.22	242.04	2339.88	242.24	2339.94	242.39	2340	246.67	2342
247.31	2342.3	250.96	2344	252.11	2344.54	255.25	2346	267.11	2351.52
268.13	2352	272.25	2353.86	272.55	2354	273.21	2354.26	275.23	2354.76
278.24	2355.61	278.84	2355.75	281.54	2356	287.78	2356.8	289.29	2356.89
293.28	2357.14	300.17	2357.31	302.22	2357.53	302.64	2357.61	304.23	2358

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-382.89	.04	267.11	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.89	267.11	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2340.14	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.71	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2339.43	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1266.41	*	*
* E.G. Slope (ft/ft)	*0.012274	* Area (sq ft)	*	* 1266.41	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 603.55	* Top Width (ft)	*	* 603.55	*	*
* Vel Total (ft/s)	* 6.74	* Avg. Vel. (ft/s)	*	* 6.74	*	*
* Max Chl Dpth (ft)	* 3.07	* Hydr. Depth (ft)	*	* 2.10	*	*

* Conv. Total (cfs)	* 77055.9	* Conv. (cfs)	*	* 77055.9	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 604.13	*	*
* Min Ch El (ft)	* 2336.36	* Shear (lb/sq ft)	*	* 1.61	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 304.23	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.55	* Cum Volume (acre-ft)	* 0.16	* 97.65	* 0.00	*
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	* 0.19	* 32.38	* 0.00	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2341.89	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.21	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2340.67	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	* 2340.33	* Flow Area (sq ft)	*	* 2018.61	*	*
* E.G. Slope (ft/ft)	*0.011505	* Area (sq ft)	*	* 2018.61	*	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*	*
* Top Width (ft)	* 609.20	* Top Width (ft)	*	* 609.20	*	*
* Vel Total (ft/s)	* 8.85	* Avg. Vel. (ft/s)	*	* 8.85	*	*
* Max Chl Dpth (ft)	* 4.31	* Hydr. Depth (ft)	*	* 3.31	*	*
* Conv. Total (cfs)	*166465.3	* Conv. (cfs)	*	*166465.3	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 610.31	*	*
* Min Ch El (ft)	* 2336.36	* Shear (lb/sq ft)	*	* 2.38	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 304.23	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.53	* Cum Volume (acre-ft)	* 0.89	* 158.88	* 0.02	*
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	* 0.68	* 33.51	* 0.03	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2353.95	-395.65	2353.71	-394.01	2353.37	-386.52	2352	-385.9	2351.73
-382.16	2350	-381.39	2349.66	-377.78	2348	-376.85	2347.59	-373.39	2346
-370.25	2344.62	-368.89	2344	-365.48	2342.47	-364.45	2342	-360.72	2340.33
-360	2340	-359.38	2339.72	-355.53	2338	-355.07	2338	-279.78	2336.98
-274.76	2336.99	-269.4	2336.99	-266.93	2337	-265.64	2337	-259.1	2337.01
-253.65	2336.99	-249.1	2337	-243.21	2336.99	-230.85	2337.01	-105.3	2336.95
-48.31	2336	120.36	2336	140.45	2336.15	142.9	2336.15	146.92	2336.14
147.73	2336.14	149.56	2336.15	151.71	2336.17	154.14	2336.17	160.23	2336.22
179.27	2336.63	188.27	2336.84	198.64	2337.05	238.73	2338	240.94	2338.97
243.21	2340	245.6	2341.04	247.71	2342	250.26	2343.12	252.21	2344
254.93	2345.19	256.72	2346	259.6	2347.26	261.25	2348	264.29	2349.33
265.78	2350	268.99	2351.4	270.39	2352	271.39	2352.22	293.07	2354
295.54	2354								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-382.16	.04	265.78	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.16	265.78	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2339.57	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.62	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2338.95	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1349.76	*	*
* E.G. Slope (ft/ft)	*0.009812	* Area (sq ft)	*	* 1349.76	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 598.53	* Top Width (ft)	*	* 598.53	*	*
* Vel Total (ft/s)	* 6.32	* Avg. Vel. (ft/s)	*	* 6.32	*	*
* Max Chl Dpth (ft)	* 2.95	* Hydr. Depth (ft)	*	* 2.26	*	*
* Conv. Total (cfs)	* 86183.9	* Conv. (cfs)	*	* 86183.9	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 598.96	*	*
* Min Ch El (ft)	* 2336.00	* Shear (lb/sq ft)	*	* 1.38	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 295.54	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.55	* Cum Volume (acre-ft)	* 0.16	* 96.15	* 0.00	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.19	* 31.69	* 0.00	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2341.33	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.10	Wt. n-Val.		0.040		
W.S. Elev (ft)	2340.22	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		2116.88		
E.G. Slope (ft/ft)	0.009709	Area (sq ft)		2116.88		
Q Total (cfs)	17855.00	Flow (cfs)		17855.00		
Top Width (ft)	604.20	Top Width (ft)		604.20		
Vel Total (ft/s)	8.43	Avg. Vel. (ft/s)		8.43		
Max Chl Dpth (ft)	4.22	Hydr. Depth (ft)		3.50		
Conv. Total (cfs)	181204.8	Conv. (cfs)		181204.8		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		605.18		
Min Ch El (ft)	2336.00	Shear (lb/sq ft)		2.12		
Alpha	1.00	Stream Power (lb/ft s)	295.54	0.00	0.00	
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	0.89	156.51	0.02	
C & E Loss (ft)	0.01	Cum SA (acres)	0.68	32.81	0.03	

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2354	-395.24	2354	-394.69	2353.86	-387.27	2352	-385.46	2351.22
-382.46	2350	-380.22	2349.1	-377.66	2348	-374.3	2346.67	-372.77	2346
-371.8	2345.58	-368	2344	-366.24	2343.25	-363.33	2342	-360.73	2340.96
-356.36	2339.08	-353.77	2338	-336	2337.16	-324.36	2337.05	-321.74	2336.97
-310.78	2336.62	-305.73	2336.62	-282.21	2336.3	-280.65	2336.3	-267.57	2336.33
-267.15	2336.32	-256.24	2336.34	-254.39	2336.34	-246.87	2336.35	-244.8	2336.35
-224.58	2336.39	-217.5	2336.38	-171.93	2336.39	-168.57	2336.38	-157.12	2336.38
-154.76	2336.37	-143.7	2336.37	-141.11	2336.36	-101.58	2336.35	-80.87	2336
-38.99	2336	-2.89	2335.02	0	2335.02	34.2	2335.11	39.16	2335.29
48.79	2335.68	48.93	2335.69	53.65	2335.86	53.95	2335.87	54.09	2335.88
61.6	2336	104.94	2336	107.92	2335.98	156.46	2335.97	163.37	2336
184.53	2336	197.55	2336.27	203.66	2336.47	221.36	2336.75	228.5	2337.08
233.49	2337.19	248.87	2338	249.78	2338.42	253.25	2340	254.56	2340.61
257.61	2342	260.45	2343.32	261.94	2344	266.16	2345.97	266.24	2346
266.48	2346.11	270.56	2348	271.33	2348.37	274.84	2350	276.28	2350.68
279.11	2352	281.88	2353.06	284.54	2354	305.29	2354		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-382.46	.04	274.84	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.46	274.84	50	50	50 .1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2339.01	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.70	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)		1268.66		
E.G. Slope (ft/ft)	0.012206	Area (sq ft)		1268.66		
Q Total (cfs)	8537.00	Flow (cfs)		8537.00		
Top Width (ft)	604.05	Top Width (ft)		604.05		
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)		6.73		
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)		2.10		
Conv. Total (cfs)	77271.8	Conv. (cfs)		77271.8		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		604.28		
Min Ch El (ft)	2335.02	Shear (lb/sq ft)		1.60		
Alpha	1.00	Stream Power (lb/ft s)	305.29	0.00	0.00	
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	0.16	94.65	0.00	
C & E Loss (ft)	0.05	Cum SA (acres)	0.19	31.00	0.00	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2340.84	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.06	Wt. n-Val.		0.040		
W.S. Elev (ft)	2339.78	Reach Len. (ft)	50.00	50.00	50.00	

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2161.39	*	*
* E.G. Slope (ft/ft)	*0.009187	* Area (sq ft)	*	* 2161.39	*	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*	*
* Top Width (ft)	* 610.75	* Top Width (ft)	*	* 610.75	*	*
* Vel Total (ft/s)	* 8.26	* Avg. Vel. (ft/s)	*	* 8.26	*	*
* Max Chl Dpth (ft)	* 4.76	* Hydr. Depth (ft)	*	* 3.54	*	*
* Conv. Total (cfs)	*186286.4	* Conv. (cfs)	*	*186286.4	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 611.59	*	*
* Min Ch El (ft)	* 2335.02	* Shear (lb/sq ft)	*	* 2.03	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 305.29	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.36	* Cum Volume (acre-ft)	* 0.89	* 154.05	* 0.02	*
* C & E Loss (ft)	* 0.08	* Cum SA (acres)	* 0.68	* 32.11	* 0.03	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2353.96	-399.88	2354	-397.23	2354	-396.77	2353.81	-391.97	2352
-390.34	2351.32	-387.1	2350	-382.16	2348	-380.99	2347.53	-377.22	2346
-376.3	2345.63	-372.28	2344	-371.69	2343.76	-367.34	2342	-367.21	2341.95
-366.24	2341.56	-361.04	2339.46	-357.4	2338	-353.18	2337.13	-343.04	2336.06
-342.65	2336.01	-342.44	2336	-285.22	2336	-255.3	2335.71	-247.41	2335.73
-244.14	2335.72	-222.34	2335.76	-221.21	2335.76	-206.73	2335.78	-172.05	2335.77
-169.39	2335.78	-83.75	2335.75	-77.01	2335.76	-57.95	2335.76	-34.48	2335.51
-33.66	2335.5	-26.25	2335.45	26.45	2334	28.6	2334	71.83	2335.13
74.17	2335.16	75.78	2335.19	78.42	2335.23	85.07	2335.2	114.33	2335.19
131.52	2335.26	134.75	2335.3	158.12	2335.52	161.27	2335.53	218.92	2336
258.24	2336	258.43	2336.09	262.47	2338	264.06	2338.76	266.05	2339.8
266.44	2340	267.78	2340.65	270.41	2342	273.33	2343.47	274.38	2344
275.45	2344.52	278.27	2346	281.37	2347.51	282.35	2348	285.53	2349.6
286.31	2350	290.54	2351.97	290.68	2352.03	290.77	2352	306.13	2352
310.52	2353.37	312.64	2354						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-387.1	.04	286.31	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-387.1	286.31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2338.48	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.52	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2337.96	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1473.82	*	*
* E.G. Slope (ft/ft)	*0.007667	* Area (sq ft)	*	* 1473.82	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 619.58	* Top Width (ft)	*	* 619.58	*	*
* Vel Total (ft/s)	* 5.79	* Avg. Vel. (ft/s)	*	* 5.79	*	*
* Max Chl Dpth (ft)	* 3.96	* Hydr. Depth (ft)	*	* 2.38	*	*
* Conv. Total (cfs)	* 97495.3	* Conv. (cfs)	*	* 97495.3	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 620.21	*	*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*	* 1.14	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 312.64	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.34	* Cum Volume (acre-ft)	* 0.16	* 93.07	* 0.00	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.19	* 30.30	* 0.00	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2340.40	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.79	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2339.60	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2499.65	*	*
* E.G. Slope (ft/ft)	*0.005866	* Area (sq ft)	*	* 2499.65	*	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*	*
* Top Width (ft)	* 627.07	* Top Width (ft)	*	* 627.07	*	*
* Vel Total (ft/s)	* 7.14	* Avg. Vel. (ft/s)	*	* 7.14	*	*
* Max Chl Dpth (ft)	* 5.60	* Hydr. Depth (ft)	*	* 3.99	*	*

* Conv. Total (cfs)	*233118.1	* Conv. (cfs)	*	*233118.1	*				
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 628.40	*				
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*	* 1.46	*				
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	312.64	*	0.00	*	0.00	*
* Frctn Loss (ft)	* 0.26	* Cum Volume (acre-ft)	*	0.89	*	151.38	*	0.02	*
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	0.68	*	31.40	*	0.03	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2351.82	-398.46	2352	-392.59	2352	-390.7	2351.01	-389.12	2350
-384.26	2348.02	-384.19	2347.99	-379.29	2346	-378.59	2345.71	-374.38	2344
-372.75	2343.33	-369.49	2342	-366.47	2340.75	-364.63	2340	-360.63	2338.34
-359.84	2338	-359.18	2337.73	-354.63	2336	-348.42	2336	-256.42	2335.12
-251.26	2335.13	-240.78	2335.11	-213.3	2335.15	-208.47	2335.15	-203.96	2335.16
-182.92	2335.16	-173	2335.19	-137.34	2335.18	-97.73	2335.15	-56.78	2335.18
23.89	2334.33	26.73	2334.28	28.11	2334.27	37.93	2334	38.33	2334
46.38	2334.21	51.22	2334.27	54.54	2334.32	59.96	2334.42	62.23	2334.41
72.2	2334.4	78.06	2334.43	84.91	2334.51	134.48	2334.97	141.15	2335.01
263.43	2336	264.79	2336	267.04	2337.23	268.44	2338	269.33	2338.48
272.1	2340	274.5	2341.31	275.76	2342	278.83	2343.67	279.43	2344
280.34	2344.48	283.16	2346	284.9	2346.95	286.81	2348	288.67	2348.99
290.52	2350	293.26	2351.56	313.24	2352				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-379.29	.04	283.16	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-379.29	283.16	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2338.12	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	* 0.45	* Wt. n-Val.	*		*	0.040	*		*
* W.S. Elev (ft)	* 2337.66	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		*	1577.18	*		*
* E.G. Slope (ft/ft)	*0.006214	* Area (sq ft)	*		*	1577.18	*		*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*		*	8537.00	*		*
* Top Width (ft)	* 626.82	* Top Width (ft)	*		*	626.82	*		*
* Vel Total (ft/s)	* 5.41	* Avg. Vel. (ft/s)	*		*	5.41	*		*
* Max Chl Dpth (ft)	* 3.66	* Hydr. Depth (ft)	*		*	2.52	*		*
* Conv. Total (cfs)	*108299.3	* Conv. (cfs)	*		*	108299.3	*		*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		*	627.58	*		*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*		*	0.97	*		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	313.24	*	0.00	*	0.00	*
* Frctn Loss (ft)	* 0.27	* Cum Volume (acre-ft)	*	0.16	*	91.32	*	0.00	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	0.19	*	29.58	*	0.00	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2340.10	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	* 0.69	* Wt. n-Val.	*		*	0.040	*		*
* W.S. Elev (ft)	* 2339.41	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		*	2682.63	*		*
* E.G. Slope (ft/ft)	*0.004708	* Area (sq ft)	*		*	2682.63	*		*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*		*	17855.00	*		*
* Top Width (ft)	* 634.25	* Top Width (ft)	*		*	634.25	*		*
* Vel Total (ft/s)	* 6.66	* Avg. Vel. (ft/s)	*		*	6.66	*		*
* Max Chl Dpth (ft)	* 5.41	* Hydr. Depth (ft)	*		*	4.23	*		*
* Conv. Total (cfs)	*260208.6	* Conv. (cfs)	*		*	260208.6	*		*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		*	635.80	*		*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*		*	1.24	*		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	313.24	*	0.00	*	0.00	*
* Frctn Loss (ft)	* 0.21	* Cum Volume (acre-ft)	*	0.89	*	148.40	*	0.02	*
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	0.68	*	30.68	*	0.03	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2346.87	-386.12	2346.79	-385.54	2346.8	-382.81	2346.53	-382.15	2346.42
-381.14	2346	-379.3	2345.23	-378.78	2344.99	-376.21	2344	-371.69	2342.21
-371.17	2342	-366.35	2340.11	-361.46	2338.19	-360.95	2338	-356.51	2336.27
-355.81	2336	-351.1	2335.89	-349.71	2335.87	-306.39	2334.99	-257.53	2334.52
-255.12	2334.53	-237.42	2334.49	-224.05	2334.51	-211.47	2334.52	-203.62	2334.54
-193.8	2334.54	-176.61	2334.59	-126.04	2334.57	-123.17	2334.56	-89.49	2334.56
-79.83	2334.58	-75.23	2334.57	-55.61	2334.6	0	2334.01	1.34	2334
64.7	2334	110.83	2334.43	121.03	2334.49	181.87	2334.98	191.01	2335.04
267.92	2336	269.51	2336.79	271.97	2338	273.44	2338.73	280.08	2342
281.11	2342.51	284.14	2344	284.57	2344.22	288.24	2346	292.32	2347.96
292.39	2348								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-381.14	.04	288.24	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-381.14	288.24	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.83	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.38	Wt. n-Val.		0.040		
W.S. Elev (ft)	2337.45	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		1731.23		
E.G. Slope (ft/ft)	*0.004588	Area (sq ft)		1731.23		
Q Total (cfs)	8537.00	Flow (cfs)		8537.00		
Top Width (ft)	630.39	Top Width (ft)		630.39		
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)		4.93		
Max Chl Dpth (ft)	3.45	Hydr. Depth (ft)		2.75		
Conv. Total (cfs)	*126036.0	Conv. (cfs)		*126036.0		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		631.02		
Min Ch El (ft)	2334.00	Shear (lb/sq ft)		0.79		
Alpha	1.00	Stream Power (lb/ft s)	292.39	0.00	0.00	
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	0.16	89.42	0.00	
C & E Loss (ft)	0.01	Cum SA (acres)	0.19	28.86	0.00	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2339.87	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.59	Wt. n-Val.		0.040		
W.S. Elev (ft)	2339.27	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		2887.45		
E.G. Slope (ft/ft)	*0.003718	Area (sq ft)		2887.45		
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00		
Top Width (ft)	638.75	Top Width (ft)		638.75		
Vel Total (ft/s)	6.18	Avg. Vel. (ft/s)		6.18		
Max Chl Dpth (ft)	5.27	Hydr. Depth (ft)		4.52		
Conv. Total (cfs)	*292819.1	Conv. (cfs)		*292819.1		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		640.16		
Min Ch El (ft)	2334.00	Shear (lb/sq ft)		1.05		
Alpha	1.00	Stream Power (lb/ft s)	292.39	0.00	0.00	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	0.89	145.21	0.02	
C & E Loss (ft)	0.01	Cum SA (acres)	0.68	29.95	0.03	

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
 ***************************************************************************
  -431.96    2344 -427.75    2342 -408.15    2340    -400  2339.6  -396.4 2339.56
   -391.5 2339.48 -388.77 2339.38 -380.44 2339.22 -375.34 2339.08 -372.93 2338.98
   -366.8  2338.4 -364.92 2338.34 -363.66    2338 -362.34 2337.61 -357.69    2336
  -351.33 2335.64 -346.65 2335.59 -334.71 2335.14 -316.66 2334.89 -273.48 2334.09
  -272.49 2334.07 -271.15 2334.04 -267.89    2334 -206.27    2334 -202.38 2333.93
  -202.22 2333.93  -180.2    2334 -134.87    2334 -130.66 2333.98 -119.73 2333.96
   -54.44 2334.02  -52.72    2334  108.51    2334  114.68 2334.04  115.15 2334.04
   116.27 2334.06  118.67 2334.09  136.23 2334.29   265.7    2336  274.03 2337.83
   274.95    2338  275.15 2338.09  279.27    2340

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ******************************************
  -431.96     .04 -363.66     .04  274.95     .04

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -363.66  274.95               50      50      50             .1       .3

 CROSS SECTION OUTPUT  Profile #100-yr FIS Flow
 ********************************************************************************************************
 * E.G. Elev (ft)         * 2337.60  * Element                *  Left OB *  Channel * Right OB *
 * Vel Head (ft)          *    0.34  * Wt. n-Val.             *          *    0.040 *          *
 * W.S. Elev (ft)         * 2337.26  * Reach Len. (ft)        *   50.00  *    50.00 *   50.00  *
 * Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1812.85  *          *
 * E.G. Slope (ft/ft)     *0.003953  * Area (sq ft)           *          * 1812.85  *          *
 * Q Total (cfs)          * 8537.00  * Flow (cfs)             *          * 8537.00  *          *
 * Top Width (ft)         *  632.76  * Top Width (ft)         *          *  632.76  *          *
 * Vel Total (ft/s)       *    4.71  * Avg. Vel. (ft/s)       *          *    4.71  *          *
 * Max Chl Dpth (ft)      *    3.33  * Hydr. Depth (ft)       *          *    2.86  *          *
 * Conv. Total (cfs)      *135788.9  * Conv. (cfs)            *          *135788.9  *          *
 * Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *  633.15  *          *
 * Min Ch El (ft)         * 2333.93  * Shear (lb/sq ft)       *          *    0.71  *          *
 * Alpha                  *    1.00  * Stream Power (lb/ft s) *  279.27  *    0.00  *    0.00  *
 * Frctn Loss (ft)        *    0.19  * Cum Volume (acre-ft)   *    0.16  *   87.39  *    0.00  *
 * C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    0.19  *   28.14  *    0.00  *
 ********************************************************************************************************

 CROSS SECTION OUTPUT  Profile #500-yr FIS Flow
 ********************************************************************************************************
 * E.G. Elev (ft)         * 2339.68  * Element                *  Left OB *  Channel * Right OB *
 * Vel Head (ft)          *    0.55  * Wt. n-Val.             *   0.040  *   0.040  *   0.040  *
 * W.S. Elev (ft)         * 2339.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
 * Crit W.S. (ft)         *          * Flow Area (sq ft)      *    5.62  * 3004.73  *    1.38  *
 * E.G. Slope (ft/ft)     *0.003246  * Area (sq ft)           *    5.62  * 3004.73  *    1.38  *
 * Q Total (cfs)          *17855.00  * Flow (cfs)             *    6.61  *17846.52  *    1.88  *
 * Top Width (ft)         *  654.54  * Top Width (ft)         *   13.49  *  638.61  *    2.44  *
 * Vel Total (ft/s)       *    5.93  * Avg. Vel. (ft/s)       *    1.18  *    5.94  *    1.36  *
 * Max Chl Dpth (ft)      *    5.20  * Hydr. Depth (ft)       *    0.42  *    4.71  *    0.57  *
 * Conv. Total (cfs)      *313372.7  * Conv. (cfs)            *   115.9  *313223.8  *    32.9  *
 * Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *   13.56  *  639.19  *    2.69  *
 * Min Ch El (ft)         * 2333.93  * Shear (lb/sq ft)       *    0.08  *    0.95  *    0.10  *
 * Alpha                  *    1.00  * Stream Power (lb/ft s) *  279.27  *    0.00  *    0.00  *
 * Frctn Loss (ft)        *    0.16  * Cum Volume (acre-ft)   *    0.89  *  141.83  *    0.02  *
 * C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    0.67  *   29.21  *    0.03  *
 ********************************************************************************************************

 CROSS SECTION


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

 INPUT
 Description:
 Station Elevation Data    num=      42
      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
 ***************************************************************************
     -400 2345.16  -398.4 2345.09 -392.64 2344.74 -386.48 2344.44 -382.46 2344.14
   -381.6    2344 -380.44 2343.62 -373.43    2342 -368.74 2340.27 -368.04    2340
  -367.92 2339.95 -362.64    2338 -362.33 2337.88 -357.25    2336 -300.01 2334.71
  -267.94 2334.21 -264.68 2334.15 -262.47  2334.1  -261.2 2334.08 -257.24 2334.03
   -257.1 2334.03 -250.55    2334 -205.22    2334 -198.98 2333.88 -124.05 2333.67
   -82.83 2333.54  -53.75  2333.5  -38.59 2333.47   -3.81 2333.42  170.95    2334
   246.11 2335.87  250.56 2335.97  250.92    2336  262.06    2336  294.55    2338
    306.1    2340  307.97 2341.33  309.12    2342  310.27  2342.6  312.37    2344
   314.77 2345.17  316.11    2346

 Manning's n Values        num=       3
```

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-362.64	.04	294.55	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-362.64	294.55	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.08	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1845.15	
E.G. Slope (ft/ft)	*0.003780	Area (sq ft)		1845.15	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	639.68	Top Width (ft)		639.68	
Vel Total (ft/s)	4.63	Avg. Vel. (ft/s)		4.63	
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)		2.88	
Conv. Total (cfs)	*138853.5	Conv. (cfs)		*138853.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		639.95	
Min Ch El (ft)	2333.42	Shear (lb/sq ft)		0.68	
Alpha	1.00	Stream Power (lb/ft s)	316.11	0.00	0.00
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	0.16	85.29	0.00
C & E Loss (ft)	0.03	Cum SA (acres)	0.19	27.41	0.00

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2339.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2339.00	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	1.34	3099.13	2.86
E.G. Slope (ft/ft)	*0.003043	Area (sq ft)	1.34	3099.13	2.86
Q Total (cfs)	*17855.00	Flow (cfs)	1.65	*17849.70	3.65
Top Width (ft)	665.63	Top Width (ft)	2.70	657.19	5.75
Vel Total (ft/s)	5.75	Avg. Vel. (ft/s)	1.23	5.76	1.27
Max Chl Dpth (ft)	5.58	Hydr. Depth (ft)	0.50	4.72	0.50
Conv. Total (cfs)	*323690.7	Conv. (cfs)	30.0	*323594.6	66.1
Length Wtd. (ft)	50.00	Wetted Per. (ft)	2.87	657.66	5.83
Min Ch El (ft)	2333.42	Shear (lb/sq ft)	0.09	0.90	0.09
Alpha	1.00	Stream Power (lb/ft s)	316.11	0.00	0.00
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	0.88	138.32	0.01
C & E Loss (ft)	0.03	Cum SA (acres)	0.66	28.47	0.03

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-409.13	2340	-400	2339.09	-397.35	2338.91	-388.46	2338.39	-385.69	2338.3
-384.78	2338.26	-380.62	2338	-374.43	2337.66	-365.22	2337.24	-359.28	2336.82
-356.44	2336.52	-355.09	2336.42	-352.89	2336	-339.58	2335.19	-334.83	2334.87
-324.82	2334.59	-320.52	2334.35	-302.91	2334	-216.34	2334	-179.02	2333.27
-177.23	2333.25	-155	2333.26	-136.48	2333.1	-128.39	2333.09	-120.29	2333
-102.31	2332.89	-97.89	2332.88	-87.17	2332.84	-81.53	2332.83	-50.45	2332.82
-6.06	2332.75	233	2333	238	2334	249.22	2336	253.61	2337.33
254.37	2337.42	257.73	2338	259.47	2338.91	261.76	2340		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-409.13	.04	-380.62	.04	257.73	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-380.62	257.73	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.02	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2240.48	

* E.G. Slope (ft/ft)	*0.001878	* Area (sq ft)	*		* 2240.48	*		*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*		* 8537.00	*		*
* Top Width (ft)	* 614.70	* Top Width (ft)	*		* 614.70	*		*
* Vel Total (ft/s)	* 3.81	* Avg. Vel. (ft/s)	*		* 3.81	*		*
* Max Chl Dpth (ft)	* 4.27	* Hydr. Depth (ft)	*		* 3.64	*		*
* Conv. Total (cfs)	*197001.8	* Conv. (cfs)	*		*197001.8	*		*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 615.25	*		*
* Min Ch El (ft)	* 2332.75	* Shear (lb/sq ft)	*		* 0.43	*		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	261.76	* 0.00	*	0.00	*
* Frctn Loss (ft)	* 0.10	* Cum Volume (acre-ft)	*	0.16	* 82.95	*	0.00	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	0.19	* 26.69	*	0.00	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2339.36	* Element	*	Left OB	* Channel	*	Right OB	*
* Vel Head (ft)	* 0.41	* Wt. n-Val.	*	0.040	* 0.040	*	0.040	*
* W.S. Elev (ft)	* 2338.94	* Reach Len. (ft)	*	50.00	* 50.00	*	50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	8.25	* 3455.87	*	0.85	*
* E.G. Slope (ft/ft)	*0.002036	* Area (sq ft)	*	8.25	* 3455.87	*	0.85	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	8.46	*17845.74	*	0.79	*
* Top Width (ft)	* 657.37	* Top Width (ft)	*	17.21	* 638.35	*	1.81	*
* Vel Total (ft/s)	* 5.15	* Avg. Vel. (ft/s)	*	1.03	* 5.16	*	0.94	*
* Max Chl Dpth (ft)	* 6.19	* Hydr. Depth (ft)	*	0.48	* 5.41	*	0.47	*
* Conv. Total (cfs)	*395738.7	* Conv. (cfs)	*	187.6	*395533.4	*	17.6	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	17.24	* 639.03	*	2.04	*
* Min Ch El (ft)	* 2332.75	* Shear (lb/sq ft)	*	0.06	* 0.69	*	0.05	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	261.76	* 0.00	*	0.00	*
* Frctn Loss (ft)	* 0.11	* Cum Volume (acre-ft)	*	0.88	* 134.56	*	0.01	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	0.65	* 27.73	*	0.02	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2340.45	-397.67	2340	-385.77	2338	-381.93	2337.36	-373.85	2336
-364.07	2335.61	-358.79	2335.41	-341.53	2334.87	-330.38	2334.47	-314.18	2334
-227.45	2334	-159.07	2332.65	-155.78	2332.63	-144.62	2332.63	-110.43	2332.34
-107.94	2332.34	-93.12	2332.17	-92.53	2332.17	-90.94	2332.16	-90.06	2332.15
-82.72	2332.13	-47.14	2332.13	-24.27	2332.09	-8.31	2332.08	150	2333
163.2	2334	169.23	2334.13	169.34	2334.14	170.46	2334.18	181	2334.45
186.25	2334.66	201.52	2335.13	220.27	2336	223.63	2337.3	225.31	2338
228.35	2339.45	229.47	2340	229.64	2340.09	233.54	2342		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-385.77	.04	225.31	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-385.77	225.31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.15	* Element	*	Left OB	* Channel	*	Right OB	*
* Vel Head (ft)	* 0.24	* 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)	*		* 2168.21	*		*
* E.G. Slope (ft/ft)	*0.002036	* Area (sq ft)	*		* 2168.21	*		*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*		* 8537.00	*		*
* Top Width (ft)	* 601.84	* Top Width (ft)	*		* 601.84	*		*
* Vel Total (ft/s)	* 3.94	* Avg. Vel. (ft/s)	*		* 3.94	*		*
* Max Chl Dpth (ft)	* 4.83	* Hydr. Depth (ft)	*		* 3.60	*		*
* Conv. Total (cfs)	*189207.8	* Conv. (cfs)	*		*189207.8	*		*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 602.21	*		*
* Min Ch El (ft)	* 2332.08	* Shear (lb/sq ft)	*		* 0.46	*		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	233.54	* 0.00	*	0.00	*
* Frctn Loss (ft)	* 0.13	* Cum Volume (acre-ft)	*	0.16	* 80.42	*	0.00	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	0.19	* 25.99	*	0.00	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2339.25	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.45	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2338.80	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 1.89	* 3319.84	* 0.67 *
* E.G. Slope (ft/ft)	*0.002197	* Area (sq ft)	* 1.89	* 3319.84	* 0.67 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 1.77	*17852.64	* 0.59 *
* Top Width (ft)	* 617.50	* Top Width (ft)	* 4.75	* 611.08	* 1.67 *
* Vel Total (ft/s)	* 5.37	* Avg. Vel. (ft/s)	* 0.94	* 5.38	* 0.88 *
* Max Chl Dpth (ft)	* 6.72	* Hydr. Depth (ft)	* 0.40	* 5.43	* 0.40 *
* Conv. Total (cfs)	*380891.0	* Conv. (cfs)	* 37.8	*380840.6	* 12.6 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 4.82	* 611.76	* 1.85 *
* Min Ch El (ft)	* 2332.08	* Shear (lb/sq ft)	* 0.05	* 0.74	* 0.05 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 233.54	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.14	* Cum Volume (acre-ft)	* 0.87	* 130.67	* 0.01 *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.64	* 27.01	* 0.02 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2346.75	-397.65	2346	-393.63	2344.7	-391.45	2344	-385.85	2342.18
-385.28	2342	-384.74	2341.86	-378.67	2340	-378.07	2339.86	-371.71	2338
-367.6	2337.1	-363.3	2336	-309.27	2334	-238.57	2334	-139.11	2332.04
-134.33	2332.01	-134.24	2332.01	-133.62	2332	-133.17	2332	-21.38	2332
24.55	2332	27.84	2333.6	140.44	2334.92	142.98	2334.76	145.21	2334
169.61	2334.87	199.56	2336	202.38	2337.12	204.31	2338	205.25	2338.5
208.29	2340	209.34	2340.63	211.71	2342	213.93	2343.43	214.82	2344
217.92	2345.98	218	2346.04	221.33	2348				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-371.71	.04	204.31	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-371.71	204.31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.00	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.36	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2336.64	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1777.60	* *
* E.G. Slope (ft/ft)	*0.003649	* Area (sq ft)	*	* 1777.60	* *
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	* *
* Top Width (ft)	* 566.99	* Top Width (ft)	*	* 566.99	* *
* Vel Total (ft/s)	* 4.80	* Avg. Vel. (ft/s)	*	* 4.80	* *
* Max Chl Dpth (ft)	* 4.64	* Hydr. Depth (ft)	*	* 3.14	* *
* Conv. Total (cfs)	*141317.5	* Conv. (cfs)	*	*141317.5	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 567.80	* *
* Min Ch El (ft)	* 2332.00	* Shear (lb/sq ft)	*	* 0.71	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 221.33	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.18	* Cum Volume (acre-ft)	* 0.16	* 78.15	* 0.00 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.19	* 25.32	* 0.00 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2339.09	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.62	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2338.47	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 0.38	* 2826.13	* 0.21 *
* E.G. Slope (ft/ft)	*0.003479	* Area (sq ft)	* 0.38	* 2826.13	* 0.21 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 0.31	*17854.52	* 0.16 *
* Top Width (ft)	* 578.53	* Top Width (ft)	* 1.62	* 576.02	* 0.89 *
* Vel Total (ft/s)	* 6.32	* Avg. Vel. (ft/s)	* 0.82	* 6.32	* 0.77 *
* Max Chl Dpth (ft)	* 6.47	* Hydr. Depth (ft)	* 0.24	* 4.91	* 0.24 *
* Conv. Total (cfs)	*302703.5	* Conv. (cfs)	* 5.3	*302695.5	* 2.8 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 1.69	* 577.26	* 1.01 *

* Min Ch El (ft)	* 2332.00	* Shear (lb/sq ft)	* 0.05	* 1.06	* 0.05	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 221.33	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.18	* Cum Volume (acre-ft)	* 0.87	* 127.14	* 0.01	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.63	* 26.33	* 0.02	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2339.99	-394.1	2338.48	-392.17	2338	-360.68	2336.37	-355.05	2336
-351.48	2335.87	-351.06	2335.86	-339.43	2335.42	-325.59	2334.93	-324.58	2334.93
-279.88	2334	-229.43	2334	-115.72	2332	25.64	2332	161.04	2334
171.49	2334	174.26	2334.5	178.62	2336	180.85	2337.59	181.38	2338
181.74	2338.29	183.11	2339.21	183.76	2339.62				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-392.17	.04	178.62	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-392.17	178.62	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2336.82	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.36	* 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)	*	* Flow Area (sq ft)	*	* 1779.07	* 0.15 *
* E.G. Slope (ft/ft)	*0.003417	* Area (sq ft)	*	* 1779.07	* 0.15 *
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8536.89	* 0.11 *
* Top Width (ft)	* 541.82	* Top Width (ft)	*	* 541.17	* 0.65 *
* Vel Total (ft/s)	* 4.80	* Avg. Vel. (ft/s)	*	* 4.80	* 0.72 *
* Max Chl Dpth (ft)	* 4.47	* Hydr. Depth (ft)	*	* 3.29	* 0.23 *
* Conv. Total (cfs)	*146052.5	* Conv. (cfs)	*	*146050.7	* 1.9 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 541.54	* 0.80 *
* Min Ch El (ft)	* 2332.00	* Shear (lb/sq ft)	*	* 0.70	* 0.04 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 183.76	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.21	* Cum Volume (acre-ft)	* 0.16	* 76.11	* 0.00 *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.19	* 24.68	* 0.00 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2338.91	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.63	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2338.28	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 0.16	* 2790.92	* 3.61 *
* E.G. Slope (ft/ft)	*0.003574	* Area (sq ft)	* 0.16	* 2790.92	* 3.61 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 0.09	*17847.21	* 7.69 *
* Top Width (ft)	* 575.02	* Top Width (ft)	* 1.12	* 570.79	* 3.11 *
* Vel Total (ft/s)	* 6.39	* Avg. Vel. (ft/s)	* 0.59	* 6.39	* 2.13 *
* Max Chl Dpth (ft)	* 6.28	* Hydr. Depth (ft)	* 0.14	* 4.89	* 1.16 *
* Conv. Total (cfs)	*298660.0	* Conv. (cfs)	* 1.5	*298529.8	* 128.7 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 1.16	* 571.20	* 3.85 *
* Min Ch El (ft)	* 2332.00	* Shear (lb/sq ft)	* 0.03	* 1.09	* 0.21 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 183.76	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.22	* Cum Volume (acre-ft)	* 0.87	* 123.92	* 0.01 *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.63	* 25.67	* 0.02 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

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*****************************************************************************
 -386.17  2345.2 -379.29 2343.24 -365.72 2341.33 -361.97 2341.13  -357.1 2342.32
 -344.11 2341.16 -343.28 2339.23 -335.69 2336.38 -334.01 2335.72 -333.28 2335.67
 -250.99 2334.17 -242.71    2334 -240.73    2334  -111.9 2333.19 -106.69    2332
  -45.05    2332  -44.81 2331.99  -2.37 2330.62       0 2330.35   24.03    2332
      33    2332   47.93 2332.21  49.77 2332.24  166.89    2334  167.73 2334.35
     172    2336  174.63  2337.1  176.7    2338  178.69 2338.85  182.48 2340.49
  185.77 2341.92  185.95    2342 187.04 2342.58  189.74    2344  191.84 2345.56
  192.43    2346  195.14    2348

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*******************************************
 -386.17     .04 -335.69     .04   176.7     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -335.69   176.7               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #100-yr FIS Flow
*****************************************************************************************
* E.G. Elev (ft)         * 2336.60  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.50  * Wt. n-Val.            *          *    0.040  *          *
* W.S. Elev (ft)         * 2336.10  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1504.86  *          *
* E.G. Slope (ft/ft)     *0.005481  * Area (sq ft)          *          * 1504.86  *          *
* Q Total (cfs)          * 8537.00  * Flow (cfs)           *          * 8537.00  *          *
* Top Width (ft)         *  507.20  * Top Width (ft)       *          *  507.20  *          *
* Vel Total (ft/s)       *    5.67  * Avg. Vel. (ft/s)     *          *    5.67  *          *
* Max Chl Dpth (ft)      *    5.75  * Hydr. Depth (ft)     *          *    2.97  *          *
* Conv. Total (cfs)      *115317.0  * Conv. (cfs)          *          *115317.0  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *          *  507.93  *          *
* Min Ch El (ft)         * 2330.35  * Shear (lb/sq ft)     *          *    1.01  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *  195.14  *    0.00  *    0.00  *
* Frctn Loss (ft)        *    0.26  * Cum Volume (acre-ft)  *    0.16  *   74.23  *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.19  *   24.08  *          *
*****************************************************************************************

CROSS SECTION OUTPUT  Profile #500-yr FIS Flow
*****************************************************************************************
* E.G. Elev (ft)         * 2338.67  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.88  * Wt. n-Val.            *   0.040  *   0.040  *          *
* W.S. Elev (ft)         * 2337.79  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *    2.65  * 2368.64  *          *
* E.G. Slope (ft/ft)     *0.005353  * Area (sq ft)          *    2.65  * 2368.64  *          *
* Q Total (cfs)          *17855.00  * Flow (cfs)           *    5.47  *17849.54  *          *
* Top Width (ft)         *  515.67  * Top Width (ft)       *    3.76  *  511.91  *          *
* Vel Total (ft/s)       *    7.53  * Avg. Vel. (ft/s)     *    2.06  *    7.54  *          *
* Max Chl Dpth (ft)      *    7.44  * Hydr. Depth (ft)     *    0.71  *    4.63  *          *
* Conv. Total (cfs)      *244042.4  * Conv. (cfs)          *    74.7  *243967.7  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)     *    4.01  *  513.04  *          *
* Min Ch El (ft)         * 2330.35  * Shear (lb/sq ft)     *    0.22  *    1.54  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *  195.14  *    0.00  *    0.00  *
* Frctn Loss (ft)        *    0.25  * Cum Volume (acre-ft)  *    0.87  *  120.96  *    0.01  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *    0.63  *   25.05  *    0.01  *
*****************************************************************************************

CROSS SECTION


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

INPUT
Description:
Station Elevation Data    num=      76
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************************
    -400 2339.33 -398.75    2339 -395.04 2338.24 -394.02    2338 -386.55    2337
  -382.6 2336.74  -381.6 2336.67 -373.77 2336.15 -372.54 2336.07 -371.54    2336
 -352.76    2336 -341.81 2335.78 -327.44 2335.72 -325.26 2335.73 -324.88 2335.73
 -322.38 2335.69 -316.39 2335.52 -312.28 2335.37 -311.63 2335.35 -301.86 2335.01
 -301.37    2335 -297.91    2335 -282.32 2334.06 -281.86 2334.03 -281.73 2334.03
 -281.57 2334.02 -281.09 2334.01 -280.19 2334.02  -248.5 2334.46 -234.82 2334.12
 -220.41 2334.05 -212.93    2334 -209.12    2334 -168.38 2333.34 -168.08 2333.34
 -153.75 2333.14 -152.46 2333.12 -143.58    2333 -142.24    2333 -129.78 2332.84
 -129.32 2332.84 -129.15 2332.83 -125.37  2332.7 -124.77 2332.67 -124.67 2332.67
 -122.75 2332.61 -110.21 2332.19 -104.87 2331.07 -104.65 2331.34  -102.8 2330.96
 -101.39 2330.99 -100.02    2332  -95.31 2331.75   -94.7 2331.71  -94.62 2331.71
  -88.46 2331.74  -88.45 2331.56  -76.99 2331.36   -7.04 2330.43    1.12    2330
```

12.32	2330	13.68	2329.33	22.59	2329.74	23.16	2330	26.94	2330.3
49	2332	50.2	2332	168.48	2334	169.57	2335.93	169.62	2336
169.66	2336.07	170.91	2338	171.91	2339.45	172.22	2340	172.75	2341.11
173.42	2342								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-352.76	.04	170.91	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-352.76	170.91	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2336.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.		0.040	
W.S. Elev (ft)	2335.86	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1561.04	
E.G. Slope (ft/ft)	*0.004974	Area (sq ft)		1561.04	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	515.33	Top Width (ft)		515.33	
Vel Total (ft/s)	5.47	Avg. Vel. (ft/s)		5.47	
Max Chl Dpth (ft)	6.53	Hydr. Depth (ft)		3.03	
Conv. Total (cfs)	*121047.9	Conv. (cfs)		*121047.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		517.61	
Min Ch El (ft)	2329.33	Shear (lb/sq ft)		0.94	
Alpha	1.00	Stream Power (lb/ft s)	173.42	0.00	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	0.16	72.47	
C & E Loss (ft)	0.02	Cum SA (acres)	0.19	23.49	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2338.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.040	0.040	
W.S. Elev (ft)	2337.60	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	48.06	2472.61	
E.G. Slope (ft/ft)	*0.004730	Area (sq ft)	48.06	2472.61	
Q Total (cfs)	*17855.00	Flow (cfs)	142.65	*17712.35	
Top Width (ft)	561.72	Top Width (ft)	38.31	523.41	
Vel Total (ft/s)	7.08	Avg. Vel. (ft/s)	2.97	7.16	
Max Chl Dpth (ft)	8.27	Hydr. Depth (ft)	1.25	4.72	
Conv. Total (cfs)	*259614.0	Conv. (cfs)	2074.1	*257539.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)	38.38	526.65	
Min Ch El (ft)	2329.33	Shear (lb/sq ft)	0.37	1.39	
Alpha	1.02	Stream Power (lb/ft s)	173.42	0.00	0.00
Frctn Loss (ft)	0.28	Cum Volume (acre-ft)	0.84	118.18	0.01
C & E Loss (ft)	0.02	Cum SA (acres)	0.60	24.45	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 101

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2339.72	-396.82	2339.29	-396.44	2339.24	-394.93	2339	-393.45	2338.83
-393.1	2338.8	-390.61	2338.6	-385.84	2338.1	-385.14	2338.05	-384.75	2338
-383.1	2337.86	-374.48	2337	-374.25	2336.99	-369.14	2336.7	-364.93	2336.45
-358.18	2336	-355.25	2335.83	-339.38	2335	-319.36	2335	-306.11	2334.83
-305.94	2334.83	-299.93	2334.76	-297.67	2334.73	-272.56	2334	-270.8	2334
-267.64	2334.01	-259.2	2334.39	-258.68	2334.37	-255.71	2334.24	-250	2334
-247.04	2334.12	-246.98	2334.12	-243.54	2334	-225.83	2334	-204.33	2333.69
-188.6	2333.36	-183.09	2333.3	-181.6	2333.25	-181.13	2333.24	-181.02	2333.24
-171.4	2333	-168.51	2333	-160.88	2332.73	-150.68	2332.55	-149.1	2332.53
-136.43	2332	-131.23	2332	-109.73	2331.59	-107.68	2331.56	-65.28	2331
-40.42	2331.18	-36.7	2331.01	-32.21	2331	-25.19	2331.25	-24.36	2331.27
-24.31	2331.27	-24	2331.26	-23.64	2331.26	-22.18	2331.15	-21.93	2331.15
-21.26	2331.13	-21.01	2331.11	-19.89	2331.12	-19.03	2331.09	-11.4	2331
-1.89	2331	-.83	2331.29	0	2331.36	5.29	2331.79	10.76	2330.97
11.47	2330.85	13.51	2330.5	16.71	2329.39	19.13	2329	20.26	2328.93
20.86	2328.79	22.47	2328.97	22.94	2328.99	23.07	2329	24.6	2329.4
25.99	2329.76	27.05	2330	30.73	2330.96	30.98	2331	35.37	2331.51

35.79	2331.57	39.08	2332	55.89	2332	85.48	2332.52	109.37	2333
118.16	2333	118.25	2332.95	128.25	2333	139.01	2333.71	153.5	2334
153.63	2334.51	154.05	2336	154.22	2336.73	154.61	2338	154.85	2338.92
155.2	2340								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-358.18	.04	154.05	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-358.18	154.05	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2336.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.		0.040	
W.S. Elev (ft)	2335.38	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1346.76	
E.G. Slope (ft/ft)	*0.007819	Area (sq ft)		1346.76	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	500.46	Top Width (ft)		500.46	
Vel Total (ft/s)	6.34	Avg. Vel. (ft/s)		6.34	
Max Chl Dpth (ft)	6.59	Hydr. Depth (ft)		2.69	
Conv. Total (cfs)	96546.7	Conv. (cfs)		96546.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		502.37	
Min Ch El (ft)	2328.79	Shear (lb/sq ft)		1.31	
Alpha	1.00	Stream Power (lb/ft s)	155.20	0.00	0.00
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	0.16	70.80	
C & E Loss (ft)	0.01	Cum SA (acres)	0.19	22.91	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2338.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2337.11	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	9.58	2228.57	0.15
E.G. Slope (ft/ft)	*0.006576	Area (sq ft)	9.58	2228.57	0.15
Q Total (cfs)	*17855.00	Flow (cfs)	19.41	*17835.48	0.11
Top Width (ft)	529.87	Top Width (ft)	17.35	512.23	0.29
Vel Total (ft/s)	7.98	Avg. Vel. (ft/s)	2.02	8.00	0.77
Max Chl Dpth (ft)	8.32	Hydr. Depth (ft)	0.55	4.35	0.52
Conv. Total (cfs)	*220184.4	Conv. (cfs)	239.4	*219943.6	1.4
Length Wtd. (ft)	50.00	Wetted Per. (ft)	17.39	514.63	1.14
Min Ch El (ft)	2328.79	Shear (lb/sq ft)	0.23	1.78	0.05
Alpha	1.01	Stream Power (lb/ft s)	155.20	0.00	0.00
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	0.81	115.48	0.01
C & E Loss (ft)	0.00	Cum SA (acres)	0.57	23.86	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 111

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-367.02	2341	-365.76	2340.7	-362.45	2340	-362.09	2339.92	-361.45	2339.76
-358.96	2339	-356.01	2338.01	-355.93	2337.99	-355.76	2337.97	-349.09	2337
-346.59	2336.71	-345.42	2336.54	-342.13	2336	-337.95	2335.65	-331.35	2335
-311.57	2334.53	-299.76	2334.26	-295.27	2334.17	-289.15	2334	-288.46	2334
-274.2	2334.27	-267.4	2334.38	-265.93	2334.4	-264.06	2334.42	-263.56	2334.42
-262.94	2334.43	-250.06	2334.12	-249.76	2334.12	-194.2	2333.14	-190.47	2333.08
-190.31	2333.08	-186	2333	-178.52	2333	-169.04	2332.68	-167.96	2332.67
-167.89	2332.66	-167.66	2332.66	-166.63	2332.62	-145.9	2332	-142.76	2332
-135.26	2331.96	-134.02	2331.95	-124.97	2331.9	-115.08	2331.88	-91.57	2331.34
-91.43	2331.34	-90.97	2331.33	-90.45	2331.32	-81.94	2331.07	-81.5	2331.06
-80.23	2331.04	-79.18	2331.04	-75.22	2331.79	-74.68	2331.76	-74.59	2331.76
-74.45	2331.59	-66.55	2331.31	-65.56	2331.18	-65.3	2331.16	-62.82	2331.04
-62.4	2331	-62.17	2331	-56.94	2330.82	-53.75	2330.63	-52.08	2330.55
-42.5	2330	-21.64	2330	-16.67	2330	-9.27	2330.56	-2.6	2331
-1.9	2331	0	2330.6	1.05	2330.37	2.92	2330	13.14	2330
21.43	2329.91	24.33	2329.2	26.79	2329	28.99	2329	31.42	2328.66
33.15	2329	34.15	2329.7	34.65	2330	35.89	2330.83	36.19	2331

38.62	2331.07	38.72	2331.07	47.97	2331.35	80.57	2332	85.38	2332
85.88	2332.01	148.28	2333.07	148.47	2333.07	152.33	2333	152.35	2333.42
152.43	2334	152.47	2334.41	152.55	2335	152.56	2335.42	152.64	2337.07
152.7	2336.78	152.71	2337	152.75	2337.29	152.79	2337.63	152.84	2338.11
152.92	2338.74	152.94	2340	152.96	2340.37	153.05	2341	153.14	2341.69
153.16	2342								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-367.02	.04	-349.09	.04	152.71	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-349.09	152.71	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2335.59	Element			
Vel Head (ft)	0.68	Wt. n-Val.		0.040	
W.S. Elev (ft)	2334.91	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1292.88	
E.G. Slope (ft/ft)	0.008502	Area (sq ft)		1292.88	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	480.17	Top Width (ft)		480.17	
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)		6.60	
Max Chl Dpth (ft)	6.25	Hydr. Depth (ft)		2.69	
Conv. Total (cfs)	92584.6	Conv. (cfs)		92584.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		483.05	
Min Ch El (ft)	2328.66	Shear (lb/sq ft)		1.42	
Alpha	1.00	Stream Power (lb/ft s)	153.16	0.00	0.00
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	0.16	69.28	
C & E Loss (ft)	0.05	Cum SA (acres)	0.19	22.35	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2337.76	Element			
Vel Head (ft)	1.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.72	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2180.30	
E.G. Slope (ft/ft)	0.006894	Area (sq ft)		2180.30	
Q Total (cfs)	17855.00	Flow (cfs)		17855.00	
Top Width (ft)	499.26	Top Width (ft)		499.26	
Vel Total (ft/s)	8.19	Avg. Vel. (ft/s)		8.19	
Max Chl Dpth (ft)	8.06	Hydr. Depth (ft)		4.37	
Conv. Total (cfs)	215043.6	Conv. (cfs)		215043.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		503.97	
Min Ch El (ft)	2328.66	Shear (lb/sq ft)		1.86	
Alpha	1.00	Stream Power (lb/ft s)	153.16	0.00	0.00
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	0.80	112.95	0.01
C & E Loss (ft)	0.04	Cum SA (acres)	0.56	23.28	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-371.62	2350	-371.15	2349.87	-367.78	2349	-366.53	2348.65	-364.59	2348
-361.54	2347.07	-361.34	2347	-359.25	2346.4	-358.13	2346	-355.51	2345.48
-355.18	2345.41	-354.09	2345.1	-353.94	2345.06	-353.78	2345	-351.41	2344
-350.46	2343.62	-348.98	2343	-347.54	2342.43	-346.49	2342	-343.95	2341.07
-343.76	2341	-343.27	2340.82	-341.23	2340	-340.88	2339.87	-340.51	2339.73
-338.75	2339	-337.9	2338.69	-336.06	2338	-334.25	2337.52	-332.48	2337
-328.59	2336	-324.89	2335.41	-322.86	2335	-312.15	2334.4	-304.61	2334
-293.59	2334	-262.75	2334.34	-259.99	2334.46	-256.99	2334.38	-247.2	2333.38
-247.08	2334.12	-235.34	2333.3	-234.84	2333.3	-214.17	2333	-193.69	2333
-191.08	2332.71	-181.67	2332.25	-163.33	2331.97	-162.76	2331.98	-160.66	2332
-160.17	2331.91	-159.94	2331.89	-159.19	2331.86	-159.07	2331.85	-158.78	2331.84
-158.7	2331.84	-158.4	2331.83	-155.78	2331.79	-151.52	2331.92	-150.96	2331.92
-139	2331.61	-136.62	2331.59	-134.94	2331.57	-132.85	2331.54	-124.17	2331.37
-119.71	2331.26	-117.82	2331.22	-110.05	2331.1	-106.7	2331	-74.11	2331
-73.74	2330.85	-69.45	2329.73	-48.47	2329.63	-44.66	2330	-18.46	2330

-18.23	2329.91	-15.63	2329	-14.48	2329	-12.75	2329.83	-12.42	2330
8.46	2330	10.33	2329.62	14.9	2329	15.33	2329	16.35	2328.72
18.99	2328	23.06	2328	24.28	2328.75	24.83	2329	25.6	2329.32
27.28	2330	35.21	2330.59	41.44	2331	74.42	2331	79.91	2331.31
87.31	2331.66	91.5	2331.87	94.36	2332	101.7	2329.26	103.05	2328.74
105.55	2327.77	106.09	2327.58	106.85	2327.33	108.42	2326.92	109.7	2327.3
109.77	2327.31	112.03	2327.75	128.81	2332	135.75	2332	146.14	2332.62
150.01	2332.98	150.24	2332.98	152.69	2333	152.71	2334.17	152.73	2333.43
152.93	2334.57	152.97	2335	153.03	2335.32	153.19	2336.63	153.26	2337
153.36	2337.65	153.42	2338	153.52	2338.68	153.57	2339	153.68	2339.71
153.74	2340	153.78	2340.2	153.89	2341	154.08	2341.96	154.24	2343
154.29	2343.31	154.38	2344	154.41	2344.24	154.51	2345	154.57	2345.45
154.6	2346	154.61	2346.11	154.71	2347	154.72	2347.14	154.81	2348
154.82	2348.18	154.91	2349.22	155	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-371.62	.04	-332.48	.04	153.26	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-332.48	153.26	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2335.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	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)		1473.61	
E.G. Slope (ft/ft)	*0.005403	Area (sq ft)		1473.61	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	470.20	Top Width (ft)		470.20	
Vel Total (ft/s)	5.79	Avg. Vel. (ft/s)		5.79	
Max Chl Dpth (ft)	7.77	Hydr. Depth (ft)		3.13	
Conv. Total (cfs)	*116146.8	Conv. (cfs)		*116146.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		476.81	
Min Ch El (ft)	2326.92	Shear (lb/sq ft)		1.04	
Alpha	1.00	Stream Power (lb/ft s)	155.00	0.00	0.00
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	0.16	67.69	
C & E Loss (ft)	0.01	Cum SA (acres)	0.19	21.80	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2337.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.52	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2352.48	
E.G. Slope (ft/ft)	*0.005185	Area (sq ft)		2352.48	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	483.80	Top Width (ft)		483.80	
Vel Total (ft/s)	7.59	Avg. Vel. (ft/s)		7.59	
Max Chl Dpth (ft)	9.60	Hydr. Depth (ft)		4.86	
Conv. Total (cfs)	*247965.4	Conv. (cfs)		*247965.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		492.19	
Min Ch El (ft)	2326.92	Shear (lb/sq ft)		1.55	
Alpha	1.00	Stream Power (lb/ft s)	155.00	0.00	0.00
Frctn Loss (ft)	0.28	Cum Volume (acre-ft)	0.80	110.35	0.01
C & E Loss (ft)	0.01	Cum SA (acres)	0.56	22.72	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 162

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-348.89	2350	-348.79	2349.93	-347.66	2349	-347.38	2348.76	-346.44	2348
-346.08	2347.76	-345.07	2347	-343.61	2346.08	-343.46	2346	-343.27	2345.88
-341.9	2345	-341.75	2344.92	-340.37	2344	-340.04	2343.81	-338.78	2343
-338.61	2342.9	-337.3	2342	-336.2	2341.45	-335.32	2341	-333.92	2340.43
-332.84	2340	-332.34	2339.8	-330.4	2339	-328.38	2338.15	-328	2338
-325.78	2337.06	-325.62	2337	-324.97	2336.85	-323.34	2336.43	-321.56	2336
-317.87	2335.13	-317.34	2335	-311.77	2334.42	-308.25	2334	-294.25	2333

-272.54	2333	-262.4	2334.02	-261.86	2334.08	-259.64	2334.31	-259.29	2334.34
-259.23	2334.35	-258.32	2334.46	-251.02	2333.15	-243.44	2333.04	-243.36	2332.99
-242.69	2331.92	-242.54	2331.92	-241.39	2331.79	-240.43	2332.18	-235.7	2333
-220.84	2333	-214.92	2332.92	-213.96	2332.89	-208.92	2332.82	-205.96	2332.77
-205.89	2332.77	-205.17	2332.76	-196.86	2332.58	-178.35	2332.23	-169.82	2332
-158.13	2331.62	-157.44	2331.6	-154.19	2331.5	-141.68	2331.14	-141.35	2331.13
-137.73	2331	-127.4	2331	-105.82	2330.77	-99.03	2330.68	-90.27	2330.54
-67.57	2330.36	-67.28	2330.36	-56.34	2330.02	-56.2	2330.02	-55.49	2330
-54.87	2330	-54.71	2329.99	-53.73	2329.87	-49.8	2329.55	-44.47	2330
-26.94	2330	-14.86	2329.65	-12.86	2329.48	-10.45	2329.52	-9.28	2329.36
-8.81	2329.35	-6.72	2329.04	-6.49	2329	-1.8	2329	-1.24	2329.1
-.74	2329.16	0	2329.27	.96	2329.41	1.3	2329.36	1.59	2329.4
7.09	2329.44	9.27	2329.57	10.56	2329.63	11.21	2329.62	20.57	2330.32
20.74	2330.33	21.12	2330.32	21.35	2330.32	22.6	2330.27	23.43	2330.27
25.61	2329.38	26.71	2329	29.05	2328	30.53	2328.79	32.19	2328.2
32.62	2328	34.49	2328.74	34.98	2329	36.01	2329.45	37.33	2330
42.91	2330	51.38	2330.37	75.93	2330.7	87.59	2331	87.94	2331
116.65	2330.94	116.8	2331.02	129.12	2331.57	138.03	2332	138.14	2332.03
141.85	2333	141.99	2333.04	143.02	2333.4	143.5	2333.57	144.63	2334
145.61	2334.49	146.74	2335	146.94	2335.17	147.12	2336	147.14	2336.19
147.38	2337	147.41	2337.4	147.56	2338	147.6	2338.59	147.69	2339
147.8	2339.67	147.85	2340	147.95	2340.68	148.07	2340.77	148.11	2341
148.14	2341.22	148.29	2342	148.32	2342.22	148.48	2343	148.51	2343.22
148.81	2344.78	148.84	2345	148.85	2345.27	149.08	2346	149.26	2346.89
149.28	2347	149.45	2347.89	149.47	2348	149.65	2348.89	149.67	2349
149.76	2349.78	149.8	2350						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-348.89	.04	-325.62	.04	147.38	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-325.62	147.38	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2334.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.		0.040	
W.S. Elev (ft)	2334.30	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1368.19	
E.G. Slope (ft/ft)	*0.006528	Area (sq ft)		1368.19	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	453.64	Top Width (ft)		453.64	
Vel Total (ft/s)	6.24	Avg. Vel. (ft/s)		6.24	
Max Chl Dpth (ft)	6.30	Hydr. Depth (ft)		3.02	
Conv. Total (cfs)	*105662.3	Conv. (cfs)		*105662.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		456.44	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		1.22	
Alpha	1.00	Stream Power (lb/ft s)	149.80	0.00	0.00
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	0.16	66.06	
C & E Loss (ft)	0.01	Cum SA (acres)	0.19	21.27	

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2337.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	2336.11	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2208.00	
E.G. Slope (ft/ft)	*0.006076	Area (sq ft)		2208.00	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	469.14	Top Width (ft)		469.14	
Vel Total (ft/s)	8.09	Avg. Vel. (ft/s)		8.09	
Max Chl Dpth (ft)	8.11	Hydr. Depth (ft)		4.71	
Conv. Total (cfs)	*229061.7	Conv. (cfs)		*229061.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		473.12	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		1.77	
Alpha	1.00	Stream Power (lb/ft s)	149.80	0.00	0.00
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	0.80	107.73	0.01
C & E Loss (ft)	0.02	Cum SA (acres)	0.56	22.17	0.01

CROSS SECTION

RIVER: Las Vegas Wash

REACH: Upper RS: -2050

INPUT
Description:
Station Elevation Data num= 135

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-353.66	2350	-352.29	2349.15	-351.96	2349	-351.73	2348.77	-350.95	2348
-350.64	2347.61	-350.07	2347	-349.4	2346.64	-348.22	2346	-346.92	2345.44
-345.98	2345	-344.17	2344.2	-343.72	2344	-343.14	2343.71	-341.38	2343
-340.62	2342.67	-339.17	2342	-338.01	2341.53	-336.8	2341	-335.12	2340.36
-334.19	2340	-333.15	2339.57	-331.68	2339	-329.9	2338.27	-329.14	2338
-327.27	2337.26	-326.57	2337	-323.01	2336.07	-322.71	2336	-322.38	2335.93
-317.15	2335	-312.86	2334.31	-311	2334	-303.32	2333.25	-300.66	2333
-282.4	2333	-265.69	2333.61	-264.79	2333.63	-262.69	2333.71	-254.98	2334.46
-248.06	2334.33	-232.94	2334.12	-212.53	2333.1	-193.69	2332	-193.09	2332
-187.98	2331.86	-163.39	2331.27	-162.9	2331.26	-155.62	2331	-149.79	2331
-57.74	2330	-55.81	2330	-55.65	2329.96	-28.71	2328.75	-28.13	2328.77
-26.34	2328.84	-21.97	2329	18.21	2329	20.4	2329.65	20.91	2329.7
21.02	2329.7	21.07	2329.37	21.15	2329.3	21.7	2329.28	21.85	2329.36
21.9	2329.54	22.62	2328	24.45	2328.25	29.25	2328.95	31.73	2329.52
32.72	2329.52	33.07	2328.68	33.36	2328	33.65	2328.09	35.92	2328.79
35.95	2328.24	37.08	2328.56	39.57	2328	39.72	2328.05	45.22	2329
45.62	2329	50.96	2329.21	51.5	2329.23	61.51	2329.47	61.61	2329.47
66.3	2329.45	76.1	2329.78	76.49	2329.82	76.59	2329.82	78.94	2330
81.28	2329.35	105.89	2329.74	106.86	2330	107.67	2330	109.85	2330.31
112.94	2330.77	114.02	2331	117.35	2331.69	118.95	2332	123.36	2332.9
123.83	2333	125.97	2333.48	128.12	2334	129.64	2334.59	130.76	2335
131.99	2335.55	132.13	2335.65	132.29	2336	132.38	2336.95	132.4	2337.04
132.57	2338	132.72	2338.78	132.77	2339	132.9	2339.7	132.98	2340
133.11	2340.63	133.21	2341	133.32	2341.56	133.44	2342	133.54	2342.49
133.69	2343	133.78	2343.43	134.04	2344	134.15	2344.39	134.29	2345
134.41	2345.44	134.55	2346	134.69	2346.5	134.81	2347	134.97	2347.56
135.11	2348	135.3	2348.66	135.37	2349	135.58	2349.72	135.64	2350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-353.66	.04	-326.57	.04	132.38	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-326.57	132.38	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2334.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.040	
W.S. Elev (ft)	2333.90	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1300.03	
E.G. Slope (ft/ft)	*0.006698	Area (sq ft)		1300.03	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	405.29	Top Width (ft)		405.29	
Vel Total (ft/s)	6.57	Avg. Vel. (ft/s)		6.57	
Max Chl Dpth (ft)	5.90	Hydr. Depth (ft)		3.21	
Conv. Total (cfs)	*104313.8	Conv. (cfs)		*104313.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		409.52	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		1.33	
Alpha	1.00	Stream Power (lb/ft s)	135.64	0.00	0.00
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	0.16	64.53	
C & E Loss (ft)	0.03	Cum SA (acres)	0.19	20.78	

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2336.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.		0.040	
W.S. Elev (ft)	2335.57	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2035.80	
E.G. Slope (ft/ft)	*0.007607	Area (sq ft)		2035.80	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	452.38	Top Width (ft)		452.38	
Vel Total (ft/s)	8.77	Avg. Vel. (ft/s)		8.77	
Max Chl Dpth (ft)	7.57	Hydr. Depth (ft)		4.50	
Conv. Total (cfs)	*204715.4	Conv. (cfs)		*204715.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		457.10	
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		2.12	
Alpha	1.00	Stream Power (lb/ft s)	135.64	0.00	0.00

* Frctn Loss (ft)	*	0.35	* Cum Volume (acre-ft)	*	0.80	*	105.30	*	0.01 *
* C & E Loss (ft)	*	0.03	* Cum SA (acres)	*	0.56	*	21.64	*	0.01 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-348.79	2350	-348.7	2349.78	-347.57	2349	-347.37	2348.6	-347.15	2348
-346.9	2347.47	-346.7	2347	-346.48	2346.5	-346.28	2346	-346.01	2345.38
-345.86	2345	-345.43	2344.46	-345.14	2344	-344.49	2343.54	-343.08	2342.6
-342.57	2342.18	-342.3	2342	-341.83	2341.77	-341.64	2341.6	-341.35	2341.4
-340.57	2341	-339.26	2340.39	-338.44	2340	-337.33	2339.5	-336.3	2339
-334.07	2338.09	-333.91	2338	-333.83	2337.96	-331.81	2337	-328.73	2336.11
-328.39	2336	-327.81	2335.86	-324.12	2335	-322.73	2334.67	-319.78	2334
-311.17	2333.2	-309.17	2333	-306.6	2332.78	-299.48	2332.27	-296.77	2332.08
-296.69	2332.07	-296.26	2332.04	-239.89	2332	-229.48	2330.81	-229.36	2330.4
-229.07	2330.82	-228.12	2330.87	-226.93	2330.4	-217.73	2330.4	-212.52	2331.78
-204.77	2334.12	-198.49	2333.67	-198.37	2333.67	-157.13	2331.02	-156.4	2331
-155.92	2331	-130.55	2330.62	-129.98	2330.62	-69	2330	-65.35	2330
-49.34	2328.74	-47.92	2328.63	-43.86	2328.3	-39.85	2328.01	-39.31	2327.97
-38.68	2327.88	-37.66	2327.93	-37.53	2327.94	-19.76	2329	25.72	2329
26.43	2328.52	27.37	2328	28.05	2327.55	29.01	2327	30.24	2326.23
30.61	2326	35.85	2328	41.45	2328.76	43.56	2329	44.64	2329
47.95	2329.15	53.33	2329.47	53.78	2329.46	53.97	2329.47	54.22	2329.46
54.34	2329.47	55.86	2329.22	56.07	2329.2	68.02	2328.54	68.11	2328.53
76.4	2328.25	80.31	2328.28	80.4	2328.29	86.09	2327.09	86.23	2327.08
86.55	2327.05	87.36	2327	87.42	2326.92	87.96	2327.18	88.94	2327.44
91.22	2328.2	93.7	2329	102.75	2329.96	103.17	2330	103.69	2330.07
110	2330.94	110.39	2331	110.57	2331.05	114.03	2332	114.11	2332.41
114.37	2333	114.55	2333.68	114.62	2334	114.87	2334.72	114.93	2335
115.18	2335.82	115.22	2336	115.5	2336.86	115.54	2337	115.84	2337.9
115.87	2338	116.19	2338.94	116.21	2339	116.55	2339.98	116.7	2340.4
116.95	2341	116.98	2341.07	117.36	2342	117.44	2342.17	117.79	2343
117.91	2343.26	118.22	2344	118.37	2344.34	118.65	2345	118.97	2345.66
119.13	2346	119.3	2346.37	119.78	2347.45	120.03	2348	120.27	2348.52
120.48	2349	120.75	2349.58	120.94	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-348.79	.04	-331.81	.04	115.54	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-331.81	115.54	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	*	2334.24	* Element	*	Left OB	*	Channel	*	Right OB *
* Vel Head (ft)	*	0.57	* Wt. n-Val.	*		*	0.040	*	*
* W.S. Elev (ft)	*	2333.67	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00 *
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	1409.81	*	*
* E.G. Slope (ft/ft)	*	0.005414	* Area (sq ft)	*		*	1409.81	*	*
* Q Total (cfs)	*	8537.00	* Flow (cfs)	*		*	8537.00	*	*
* Top Width (ft)	*	422.77	* Top Width (ft)	*		*	422.77	*	*
* Vel Total (ft/s)	*	6.06	* Avg. Vel. (ft/s)	*		*	6.06	*	*
* Max Chl Dpth (ft)	*	7.67	* Hydr. Depth (ft)	*		*	3.33	*	*
* Conv. Total (cfs)	*	116025.7	* Conv. (cfs)	*		*	116025.7	*	*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	427.54	*	*
* Min Ch El (ft)	*	2326.00	* Shear (lb/sq ft)	*		*	1.11	*	*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	120.94	*	0.00	*	0.00 *
* Frctn Loss (ft)	*	0.24	* Cum Volume (acre-ft)	*	0.16	*	62.98	*	*
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	0.19	*	20.30	*	*

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2336.39	* Element	*	Left OB	*	Channel	*	Right OB *
* Vel Head (ft)	*	1.11	* Wt. n-Val.	*		*	0.040	*	*
* W.S. Elev (ft)	*	2335.28	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00 *

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 2113.68	*	
* E.G. Slope (ft/ft)	*0.006507	* Area (sq ft)	*		* 2113.68	*	
* Q Total (cfs)	*17855.00	* Flow (cfs)	*		*17855.00	*	
* Top Width (ft)	* 440.35	* Top Width (ft)	*		* 440.35	*	
* Vel Total (ft/s)	* 8.45	* Avg. Vel. (ft/s)	*		* 8.45	*	
* Max Chl Dpth (ft)	* 9.28	* Hydr. Depth (ft)	*		* 4.80	*	
* Conv. Total (cfs)	*221343.4	* Conv. (cfs)	*		*221343.4	*	
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 446.58	*	
* Min Ch El (ft)	* 2326.00	* Shear (lb/sq ft)	*		* 1.92	*	
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	120.94	* 0.00	*	0.00	*
* Frctn Loss (ft)	* 0.26	* Cum Volume (acre-ft)	*	0.80	* 102.92	*	0.01	*
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	0.56	* 21.13	*	0.01	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 166

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-506.18	2340	-489.96	2335	-484.66	2334	-428.15	2333	-400	2332.58
-397.73	2332.51	-397.57	2332.5	-395.27	2332.31	-393.06	2332.1	-387.5	2331.55
-385.89	2331.5	-380.23	2330.73	-378.09	2331.15	-377.57	2331.2	-370.96	2332.51
-370.5	2332.51	-369.07	2332.49	-368.76	2332.49	-359.75	2332.78	-358.95	2332.8
-358.3	2332.81	-357.88	2332.82	-357.78	2332.82	-357.31	2332.81	-354.35	2332.91
-354.3	2332.91	-354.12	2332.91	-352.57	2332.96	-352.54	2332.96	-350.25	2333
-347.61	2333.15	-347.01	2333.16	-346.92	2333.16	-343.44	2333.09	-343.28	2333.09
-343.23	2333.08	-342.52	2333.05	-342.39	2333.04	-341.89	2333	-336.29	2332.82
-336.2	2332.82	-335.64	2332.75	-332.64	2332.35	-331.32	2332.22	-331.02	2332.19
-329.61	2332	-329.56	2332	-329.22	2332	-328.7	2332	-327.85	2332
-320.49	2332	-319.67	2332	-316.46	2332.3	-314.74	2332.5	-313.76	2332.59
-310.92	2332.89	-309.48	2333	-304.5	2333	-304.31	2333	-304.21	2332.99
-303.74	2332.94	-302.41	2332.71	-300.99	2332.79	-298.6	2332.63	-298.45	2332.63
-289.49	2333.53	-263.98	2334.46	-258.3	2333.58	-257.96	2333.56	-255.5	2333.45
-240.72	2332	-231.06	2332	-219.85	2331.02	-208.62	2330.4	-179.99	2330.4
-172.87	2330.87	-172.28	2331	-157.07	2331.69	-155.94	2331.71	-155.86	2331.72
-155.59	2331.75	-112.44	2331.01	-99.89	2330	-92.39	2330	-61.13	2329.36
-48.38	2329.12	-46.51	2329.08	-42.27	2329	-36.07	2328.42	-31.77	2327.88
-21.11	2328.15	-15.98	2328.82	-14.56	2328.81	-12.45	2329	7.35	2329
10.94	2328.36	14.36	2328.17	16.46	2328.44	16.72	2328.33	18.1	2328
19.67	2328	21.19	2327.91	21.51	2327.9	26.13	2328	27.53	2328.2
27.75	2328.25	28.35	2328.26	28.73	2328.19	29.67	2328	31.63	2327.84
31.81	2327.82	32.62	2327.65	32.9	2327.63	33.79	2327.94	39.63	2327.7
40.12	2327	40.52	2327	81.16	2326.92	83.57	2327.8	84.3	2327.89
84.66	2327.94	84.96	2328	85.23	2328.17	85.42	2328.24	85.94	2328.36
86.73	2328.59	87.26	2328.6	87.4	2328.6	91.74	2328.63	101.46	2329
104.67	2329.66	104.99	2329.72	105.76	2329.72	105.99	2329.73	107.7	2329.88
109.97	2330	112.6	2330.58	114.24	2331	115.96	2331.54	117.08	2332
118.04	2332.56	118.87	2333	119.13	2333.14	120.48	2334	120.82	2334.19
122.11	2335	122.6	2335.32	123.68	2336	124.91	2336.74	125.25	2337
125.6	2337.27	126.61	2338	127.29	2338.6	127.8	2339	128.33	2339.44
128.96	2340	129.68	2340.66	130.07	2341	130.41	2341.49	130.78	2342
131.37	2342.8	131.51	2343	131.84	2343.44	132.29	2343.96	132.35	2344.02
133.32	2345								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-506.18	.04	-257.96	.04	122.11	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-257.96	122.11	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2333.98	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	* 0.51	* Wt. n-Val.	*	0.040	*	0.040	*		*
* W.S. Elev (ft)	* 2333.47	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	138.19	*	1413.04	*		*
* E.G. Slope (ft/ft)	*0.004241	* Area (sq ft)	*	138.19	*	1413.04	*		*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	297.18	*	8239.82	*		*
* Top Width (ft)	* 539.91	* Top Width (ft)	*	164.39	*	375.51	*		*
* Vel Total (ft/s)	* 5.50	* Avg. Vel. (ft/s)	*	2.15	*	5.83	*		*
* Max Chl Dpth (ft)	* 6.55	* Hydr. Depth (ft)	*	0.84	*	3.76	*		*

* Conv. Total (cfs)	*131097.3	* Conv. (cfs)	* 4563.6	*126533.8	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 164.86	* 377.55	*	*
* Min Ch El (ft)	* 2326.92	* Shear (lb/sq ft)	* 0.22	* 0.99	*	*
* Alpha	* 1.09	* Stream Power (lb/ft s)	* 133.32	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.22	* Cum Volume (acre-ft)	* 0.08	* 61.36	*	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.10	* 19.85	*	*

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2336.04	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.81	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2335.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 516.74	* 2080.53	* 0.04 *
* E.G. Slope (ft/ft)	*0.004321	* Area (sq ft)	* 516.74	* 2080.53	* 0.04 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 2143.23	*15711.75	* 0.02 *
* Top Width (ft)	* 613.16	* Top Width (ft)	* 232.74	* 380.07	* 0.35 *
* Vel Total (ft/s)	* 6.87	* Avg. Vel. (ft/s)	* 4.15	* 7.55	* 0.51 *
* Max Chl Dpth (ft)	* 8.31	* Hydr. Depth (ft)	* 2.22	* 5.47	* 0.11 *
* Conv. Total (cfs)	*271624.7	* Conv. (cfs)	* 32604.6	*239019.8	* 0.3 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 233.43	* 382.55	* 0.42 *
* Min Ch El (ft)	* 2326.92	* Shear (lb/sq ft)	* 0.60	* 1.47	* 0.03 *
* Alpha	* 1.11	* Stream Power (lb/ft s)	* 133.32	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.22	* Cum Volume (acre-ft)	* 0.51	* 100.51	* 0.01 *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.43	* 20.66	* 0.01 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 172

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-486.51	2340	-464.91	2335	-400	2333.85	-359.96	2332.47	-324.94	2332.27
-317.93	2331.74	-317.18	2331	-298.19	2331	-278.01	2331	-277.34	2331.08
-277.17	2331.02	-277.06	2331.02	-274.21	2331.07	-273.63	2331.07	-273.32	2331.08
-273.22	2331.08	-265.31	2331.15	-264.85	2331.16	-262.65	2331.2	-262.44	2331.19
-258	2331.24	-257.55	2331.24	-253.11	2331.26	-252.96	2331.25	-252.39	2331.23
-243.21	2331.28	-238.71	2331.19	-236.05	2331.18	-231.79	2331.18	-229.27	2331.19
-214.5	2331.14	-214.37	2331.14	-211.87	2331.12	-208.16	2330.92	-206.12	2330.89
-202.93	2330.82	-202.03	2330.82	-195.22	2330.78	-192.73	2330.77	-187.48	2330.63
-186.48	2330.63	-185.15	2330.64	-181.14	2330.78	-177.68	2330.4	-176.95	2330.44
-173.28	2331	-171.34	2330.78	-170.38	2330.83	-165.92	2330.72	-165.17	2330.72
-161.27	2330.73	-153.22	2330.82	-140.89	2330.48	-139.51	2330.4	-138.63	2330.62
-109.55	2330	-82.06	2330	-77.27	2329.89	-76.58	2329.87	-41.76	2329
-40.12	2329	-39.89	2328.97	-22.17	2327.88	-10.14	2327.97	-3.38	2328.13
-2.3	2328.14	-2.06	2328.14	-.8	2328.16	0	2328.16	.32	2328.17
7.75	2328.42	8.68	2328.44	12.72	2328.4	13.52	2328.42	16.99	2328.4
17.08	2328.4	17.11	2328.48	23.54	2328.64	24.21	2328.59	24.35	2328.59
24.73	2328.57	24.99	2328.57	25.17	2328.6	25.57	2328.64	25.84	2328.63
28.06	2328.63	30.81	2328.51	36.77	2328.23	42.17	2328	42.82	2328.18
43.19	2328.26	43.85	2328.47	44.1	2328.47	44.59	2328.37	44.99	2328.22
45.92	2327.83	46.33	2327.59	48.08	2327	52.42	2327.18	53.64	2327
53.97	2328.09	54.44	2328.14	54.61	2328.24	54.68	2328.24	54.8	2328.32
55.27	2328.31	55.57	2328.31	56.21	2328.22	56.83	2328.07	57.78	2328
59.5	2328.01	59.93	2328	60.69	2328.01	62.33	2327.99	67.07	2328.04
71.67	2327.97	71.95	2327.97	72.22	2327.98	72.68	2327.97	73.53	2327.97
78.54	2328	81.97	2327.39	82.41	2327.32	87.91	2328.01	88.54	2328.13
88.63	2328.15	89.68	2328.15	96.15	2328.06	97.82	2328.03	97.92	2328.03
98.12	2328.01	98.55	2328.01	98.66	2328.02	98.77	2328.01	98.97	2328.02
101.27	2328.02	102.35	2328.01	102.98	2328.01	103.07	2327.95	103.45	2327.94
104.44	2327.94	105.23	2328	105.96	2328.38	108.71	2329.2	109.47	2329.2
109.74	2329.16	109.96	2329.27	110.23	2329.24	111.8	2329.81	112.65	2330
113.4	2330.41	114.32	2331	114.71	2331.18	115.56	2331.53	116.6	2331.93
116.66	2331.96	116.79	2332	119.63	2332.65	121.04	2333	121.33	2333.35
121.73	2334	121.84	2334.24	122.23	2334.94	122.32	2335.12	122.79	2336
122.95	2336.29	123.33	2337	123.6	2337.51	123.87	2338	124.28	2338.76
124.82	2339.76	124.98	2340						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

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 -486.51      .04    -400      .04  121.73      .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -400  121.73               50      50      50             .1      .3
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CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2333.74	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.44	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2333.30	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1606.27	*	*
* E.G. Slope (ft/ft)	*0.004416	* Area (sq ft)	*	* 1606.27	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 505.37	* Top Width (ft)	*	* 505.37	*	*
* Vel Total (ft/s)	* 5.31	* Avg. Vel. (ft/s)	*	* 5.31	*	*
* Max Chl Dpth (ft)	* 6.30	* Hydr. Depth (ft)	*	* 3.18	*	*
* Conv. Total (cfs)	*128464.0	* Conv. (cfs)	*	*128464.0	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 508.48	*	*
* Min Ch El (ft)	* 2327.00	* Shear (lb/sq ft)	*	* 0.87	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 124.98	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.23	* Cum Volume (acre-ft)	* 0.00	* 59.62	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.00	* 19.34	*	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2335.81	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.78	* Wt. n-Val.	* 0.040	* 0.040	* 0.040	*
* W.S. Elev (ft)	* 2335.03	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 39.05	* 2501.79	* 0.27	*
* E.G. Slope (ft/ft)	*0.004570	* Area (sq ft)	* 39.05	* 2501.79	* 0.27	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 69.79	*17784.95	* 0.26	*
* Top Width (ft)	* 587.30	* Top Width (ft)	* 65.02	* 521.73	* 0.54	*
* Vel Total (ft/s)	* 7.03	* Avg. Vel. (ft/s)	* 1.79	* 7.11	* 0.95	*
* Max Chl Dpth (ft)	* 8.03	* Hydr. Depth (ft)	* 0.60	* 4.80	* 0.50	*
* Conv. Total (cfs)	*264133.9	* Conv. (cfs)	* 1032.4	*263097.7	* 3.8	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 65.04	* 525.24	* 1.16	*
* Min Ch El (ft)	* 2327.00	* Shear (lb/sq ft)	* 0.17	* 1.36	* 0.07	*
* Alpha	* 1.02	* Stream Power (lb/ft s)	* 124.98	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.23	* Cum Volume (acre-ft)	* 0.19	* 97.88	* 0.01	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.26	* 20.14	* 0.01	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 131

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-492.12	2340	-453.51	2339	-432.77	2335	-393.8	2333	-384.63	2332.9
-384.44	2332.89	-383.77	2332.89	-382.63	2332.88	-373.44	2332.71	-371.37	2332.7
-367.28	2332.67	-361.5	2332.57	-360.63	2332.56	-352.73	2332.44	-352.64	2332.44
-349.59	2332.39	-348.96	2332.37	-336.73	2332	-312.68	2332	-306.08	2331.87
-262.3	2331	-241.87	2331	-235.55	2332.11	-229.74	2332.15	-225.25	2331.89
-221.71	2332.04	-193.04	2330.41	-190.49	2330.36	-190.15	2330.36	-186.83	2330.3
-183.87	2330.27	-179.61	2330.25	-177.65	2330.21	-177.43	2330.2	-164.08	2330.13
-163.53	2330.12	-163.37	2330.12	-152.71	2330.07	-146.46	2330.05	-144.32	2330.02
-137.93	2330	-84.68	2329	-67.11	2329	-36.2	2328.79	-34.67	2328.71
-29.03	2328.56	-11.09	2327.88	-10.46	2327.99	-10.2	2327.99	-8.76	2328
10.96	2328	26.95	2328	32.68	2328	33.39	2328.2	33.74	2328.26
34.73	2328.41	35.57	2328.41	38.11	2328.25	42.6	2328	43.26	2328.01
43.42	2328	47.33	2327.99	50.22	2327.99	51.13	2327.69	51.64	2327.69
52.77	2327.6	54.05	2327.51	54.32	2327.48	60.34	2327	61.12	2327.31
61.56	2327.35	62.28	2327.69	63.51	2327.69	63.99	2327.42	69.19	2326.92
69.9	2326.72	70.12	2326.74	70.4	2326.74	70.64	2326.73	71.08	2326.69
71.66	2326.61	71.85	2326.58	75.38	2326.59	75.88	2326.85	76.52	2327.23
76.61	2327.3	76.87	2327.34	77.55	2327.34	78.04	2327.32	79.55	2327
79.73	2327	81.05	2327.47	81.71	2327.5	82.21	2327.46	82.67	2327.52
83.22	2327.66	83.39	2327.67	85.51	2327.69	87.07	2327.65	87.21	2327.66
87.67	2327.65	87.91	2327.68	90.91	2328	107.65	2328	109.22	2328.47
110.96	2329	113.72	2330	113.8	2329.99	114.07	2330.09	114.52	2330.21
115.01	2330.3	115.6	2330.41	116.58	2330.41	117.69	2331.37	118.31	2332
120.09	2332.76	120.64	2333	122.27	2333.63	123.13	2334	125.13	2334.85
125.51	2335	127.74	2335.93	127.91	2336	128.24	2336.13	130.3	2337

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  132.11 2337.76  132.74    2338  133.33 2338.21  136.07  2339.4  136.97 2339.71
  137.67    2340

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*******************************************
 -492.12     .04  -393.8     .04  123.13     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -393.8  123.13               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #100-yr FIS Flow
*********************************************************************************************
* E.G. Elev (ft)         * 2333.51  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.45  * Wt. n-Val.            *   0.040  *    0.040 *          *
* W.S. Elev (ft)         * 2333.06  * Reach Len. (ft)       *   50.00  *    50.00 *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *    0.03  * 1578.81 *          *
* E.G. Slope (ft/ft)     *0.004779  * Area (sq ft)          *    0.03  * 1578.81 *          *
* Q Total (cfs)          * 8537.00  * Flow (cfs)            *    0.01  * 8536.99 *          *
* Top Width (ft)         *  515.65  * Top Width (ft)        *    1.07  *  514.58 *          *
* Vel Total (ft/s)       *    5.41  * Avg. Vel. (ft/s)      *    0.23  *    5.41 *          *
* Max Chl Dpth (ft)      *    6.47  * Hydr. Depth (ft)      *    0.03  *    3.07 *          *
* Conv. Total (cfs)      *123487.8  * Conv. (cfs)           *     0.1  *123487.7 *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *    1.07  *  516.77 *          *
* Min Ch El (ft)         * 2326.58  * Shear (lb/sq ft)      *    0.01  *    0.91 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *  137.67  *    0.00 *    0.00  *
* Frctn Loss (ft)        *    0.27  * Cum Volume (acre-ft)  *    0.00  *   57.80 *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.00  *   18.76 *          *
*********************************************************************************************

CROSS SECTION OUTPUT  Profile #500-yr FIS Flow
*********************************************************************************************
* E.G. Elev (ft)         * 2335.57  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.81  * Wt. n-Val.            *   0.040  *    0.040 *   0.040  *
* W.S. Elev (ft)         * 2334.77  * Reach Len. (ft)       *   50.00  *    50.00 *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *   30.38  * 2462.29 *    0.69  *
* E.G. Slope (ft/ft)     *0.004745  * Area (sq ft)          *   30.38  * 2462.29 *    0.69  *
* Q Total (cfs)          *17855.00  * Flow (cfs)            *   71.48  *17782.64 *    0.88  *
* Top Width (ft)         *  553.14  * Top Width (ft)        *   34.41  *  516.93 *    1.80  *
* Vel Total (ft/s)       *    7.16  * Avg. Vel. (ft/s)      *    2.35  *    7.22 *    1.28  *
* Max Chl Dpth (ft)      *    8.19  * Hydr. Depth (ft)      *    0.88  *    4.76 *    0.38  *
* Conv. Total (cfs)      *259211.3  * Conv. (cfs)           *  1037.8  *258160.8 *    12.8  *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *   34.45  *  519.30 *    1.96  *
* Min Ch El (ft)         * 2326.58  * Shear (lb/sq ft)      *    0.26  *    1.40 *    0.10  *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *  137.67  *    0.00 *    0.00  *
* Frctn Loss (ft)        *    0.25  * Cum Volume (acre-ft)  *    0.15  *   95.03 *    0.00  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *    0.20  *   19.54 *    0.01  *
*********************************************************************************************

CROSS SECTION


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

INPUT
Description:
Station Elevation Data    num=     126
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
 -640.89    2340    -562    2335    -412    2333    -400  2332.8 -399.47 2332.79
 -395.69 2332.71 -377.94 2332.38 -360.54 2332.17 -360.02 2332.17 -358.47 2332.14
 -349.07 2332.05 -345.31    2332 -343.07    2332 -341.56 2331.99  -341.5 2331.99
  -334.5 2331.92 -333.98 2331.91 -309.97 2331.79 -301.88 2331.84 -297.49 2331.75
 -296.99 2331.73 -294.04 2331.76  -293.9 2331.76 -293.69 2331.75 -292.63 2331.75
 -288.43  2331.7 -280.55 2331.53 -280.28 2331.52 -279.81 2331.51 -267.48 2331.17
 -265.51  2331.1 -265.23  2331.1 -262.15    2331 -259.24    2331 -248.44  2330.8
 -244.68 2330.76 -244.14 2330.76 -242.03 2330.73 -241.77 2330.73 -178.21    2330
 -129.56    2330 -119.07 2329.86 -118.69 2329.86 -118.35 2329.87 -117.15 2329.88
 -117.08 2329.87 -117.03 2329.88  -111.9 2329.84  -88.18  2329.6  -87.03 2329.58
   -84.9 2329.55  -84.84 2329.55   -50.6 2329.05  -47.94    2329  -46.81    2329
  -35.83 2328.71  -17.51 2328.28  -13.58 2328.21   -11.6 2328.16   -7.23    2328
   -5.75    2328   -5.68 2327.99    -.63    2327     .81 2326.52    8.55    2326
   17.05    2326   23.71    2327   35.59  2327.3   45.16    2328   45.22 2328.06
   45.52 2328.11   45.76 2328.16   46.15 2328.24   46.22 2328.25   47.15 2328.03
   47.32 2328.02   47.42 2328.01   47.48 2328.01   48.44 2328.04   48.72 2328.05
   49.18 2328.02   51.23 2328.02   51.48  2327.9   53.28 2327.99   53.39    2328
   56.75    2328   57.34 2327.94   58.31 2327.79   61.45 2327.29   63.21    2327
    66.5    2327   67.12 2327.02   67.21 2327.02   67.49    2327   67.93 2327.04
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   77.32  2327.7   78.81 2327.71   79.18 2327.67   85.44 2327.96   85.73    2328
   101.9    2328  102.71 2328.15  105.77    2329  108.21 2329.92  108.26 2329.93
  109.07 2329.93  109.59 2330.25  110.11 2330.46   110.2 2330.52  110.27 2330.51
  110.31 2330.57  110.42    2331  110.83 2331.18  112.52    2332     114 2332.71
  114.49    2333  115.92 2333.69  116.45    2334   117.8 2334.67   118.4    2335
   119.7 2335.66  120.35    2336  121.18 2336.45  122.28    2337   123.3 2337.54
  124.21    2338

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
 -640.89     .04    -400     .04  116.45     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -400  116.45               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #100-yr FIS Flow
*************************************************************************************************
* E.G. Elev (ft)         * 2333.24  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.52  * Wt. n-Val.             *          *   0.040  *          *
* W.S. Elev (ft)         * 2332.72  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1473.52  *          *
* E.G. Slope (ft/ft)     *0.005937  * Area (sq ft)           *          * 1473.52  *          *
* Q Total (cfs)          * 8537.00  * Flow (cfs)             *          * 8537.00  *          *
* Top Width (ft)         *  509.93  * Top Width (ft)         *          *  509.93  *          *
* Vel Total (ft/s)       *    5.79  * Avg. Vel. (ft/s)       *          *    5.79  *          *
* Max Chl Dpth (ft)      *    6.71  * Hydr. Depth (ft)       *          *    2.89  *          *
* Conv. Total (cfs)      *110795.8  * Conv. (cfs)            *          *110795.8  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *  511.69  *          *
* Min Ch El (ft)         * 2326.00  * Shear (lb/sq ft)       *          *    1.07  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *  124.21  *    0.00  *    0.00  *
* Frctn Loss (ft)        *    0.43  * Cum Volume (acre-ft)   *          *   56.04  *          *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)         *          *   18.17  *          *
*************************************************************************************************

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 OUTPUT  Profile #500-yr FIS Flow
*************************************************************************************************
* E.G. Elev (ft)         * 2335.32  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.84  * Wt. n-Val.             *   0.040  *   0.040  *   0.040  *
* W.S. Elev (ft)         * 2334.49  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *  101.79  * 2386.28  *    0.24  *
* E.G. Slope (ft/ft)     *0.005159  * Area (sq ft)           *  101.79  * 2386.28  *    0.24  *
* Q Total (cfs)          *17855.00  * Flow (cfs)             *  238.84  *17615.93  *    0.23  *
* Top Width (ft)         *  640.85  * Top Width (ft)         *  123.42  *  516.45  *    0.98  *
* Vel Total (ft/s)       *    7.18  * Avg. Vel. (ft/s)       *    2.35  *    7.38  *    0.96  *
* Max Chl Dpth (ft)      *    8.49  * Hydr. Depth (ft)       *    0.82  *    4.62  *    0.24  *
* Conv. Total (cfs)      *248584.5  * Conv. (cfs)            *  3325.2  *245256.1  *     3.2  *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *  123.43  *  518.53  *    1.09  *
* Min Ch El (ft)         * 2326.00  * Shear (lb/sq ft)       *    0.27  *    1.48  *    0.07  *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *  124.21  *    0.00  *    0.00  *
* Frctn Loss (ft)        *    0.37  * Cum Volume (acre-ft)   *    0.07  *   92.25  *    0.00  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *    0.11  *   18.95  *    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.
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: -2350

INPUT
Description:
Station Elevation Data    num=     115
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
 -586.53    2335 -567.18    2334     -500 2333.67 -456.14    2334 -446.61  2334.5
  -439.8    2334     -400 2332.82 -383.05    2332 -378.37    2332 -307.22    2331
 -305.26 2330.97 -300.01  2330.9 -279.75 2330.72 -279.13 2330.72  -275.9 2330.66
  -271.7 2330.62 -268.31 2330.56 -267.96 2330.56 -260.23 2330.41 -240.65    2330
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-188.75	2330	-184.94	2329.96	-184.51	2329.95	-183.51	2329.94	-183.44	2329.93
-180.61	2329.87	-178.99	2329.85	-175.8	2329.79	-168.87	2329.63	-167.7	2329.6
-161.09	2329.47	-160.17	2329.45	-145.5	2329.21	-139.49	2329.1	-138.88	2329.09
-138.73	2329.09	-135	2329	-124.11	2329	-100.3	2328.78	-97.48	2328.79
-95.6	2328.79	-88.61	2328.76	-88.13	2328.76	-83.9	2328.71	-82.61	2328.71
-78.2	2328.67	-76.14	2328.64	-74.01	2328.62	-64.81	2328.49	-57.66	2328.36
-40.82	2328	-11.78	2328	-11.09	2327.68	-10.94	2327.58	-9.6	2327
-7.94	2326.15	-7.59	2326	-7.16	2325.9	-3.51	2325	-2.96	2325.26
-2.13	2325.55	-2.12	2325.19	-1.14	2325.35	-.27	2325	5.63	2325.88
6.56	2326	6.75	2326.01	19.44	2327	19.66	2327.01	32.08	2327.34
32.83	2327.37	33.58	2327.37	34.14	2327.38	34.78	2327.4	35.3	2327.41
35.42	2327.42	45.36	2327.93	45.52	2327.93	46.16	2327.98	46.47	2328
47.26	2328	49.87	2328.24	57.38	2328.6	59.38	2328.82	60.28	2329
60.51	2329	61.28	2329.24	63.97	2330	65.65	2330.67	67.52	2331
68.85	2331.62	69.67	2332	70.63	2332.52	71.74	2333	72.57	2333.43
73.71	2334	75.52	2334	78.18	2334.65	80.24	2334.78	80.48	2334.79
81.77	2335.54	83.37	2335.39	85.55	2335.43	86.4	2335.39	87.57	2334.91
90.12	2335	93.87	2335.14	94.32	2335.14	94.52	2335.15	97.33	2335.33
102.12	2335.85	103.24	2335.94	103.32	2335.95	103.42	2335.97	103.52	2336

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-586.53	.04	-400	.04	73.71	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	73.71	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2332.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.		0.040	
W.S. Elev (ft)	2331.79	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.53	Flow Area (sq ft)		1078.48	
E.G. Slope (ft/ft)	0.013505	Area (sq ft)		1078.48	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	432.54	Top Width (ft)		432.54	
Vel Total (ft/s)	7.92	Avg. Vel. (ft/s)		7.92	
Max Chl Dpth (ft)	6.79	Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	73462.5	Conv. (cfs)		73462.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		434.35	
Min Ch El (ft)	2325.00	Shear (lb/sq ft)		2.09	
Alpha	1.00	Stream Power (lb/ft s)	103.52	0.00	0.00
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)		54.58	
C & E Loss (ft)	0.02	Cum SA (acres)		17.63	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2334.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.	0.040	0.040	
W.S. Elev (ft)	2333.44	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2333.06	Flow Area (sq ft)	6.40	1841.26	
E.G. Slope (ft/ft)	0.011170	Area (sq ft)	6.40	1841.26	
Q Total (cfs)	17855.00	Flow (cfs)	11.47	17843.54	
Top Width (ft)	493.37	Top Width (ft)	20.79	472.58	
Vel Total (ft/s)	9.66	Avg. Vel. (ft/s)	1.79	9.69	
Max Chl Dpth (ft)	8.44	Hydr. Depth (ft)	0.31	3.90	
Conv. Total (cfs)	168941.6	Conv. (cfs)	108.5	168833.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)	20.79	474.79	
Min Ch El (ft)	2325.00	Shear (lb/sq ft)	0.21	2.70	
Alpha	1.01	Stream Power (lb/ft s)	103.52	0.00	0.00
Frctn Loss (ft)	0.53	Cum Volume (acre-ft)	0.01	89.82	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	0.03	18.38	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 94

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2333.81	-398.6	2333.71	-392.21	2333.22	-376.94	2332	-342.37	2331.24
-330.54	2331	-327.37	2331	-318.54	2330.8	-304.36	2330.55	-292.01	2330.3

-285.51	2330.19	-272.52	2330	-272.33	2330	-244.04	2329.52	-234.59	2329.38
-231.98	2329.33	-231.02	2329.32	-225.38	2329.23	-225.06	2329.22	-223.65	2329.2
-212.21	2329	-196.16	2329	-189	2328.87	-188.72	2328.87	-180.27	2328.82
-176.39	2328.67	-175.55	2328.66	-174.62	2328.63	-173.62	2328.59	-166.09	2328.37
-165.61	2328.37	-161.69	2328.39	-160.88	2328.37	-159.3	2328.34	-140.93	2328.03
-140.05	2328	-134.82	2327.53	-127.89	2327.14	-122.94	2327.04	-121.96	2327.04
-113.48	2327.2	-109.83	2327.25	-106.86	2327.4	-99.6	2327.54	-93.31	2327.8
-92.74	2327.79	-89.2	2327.8	-85.93	2327.83	-85.28	2327.83	-83.05	2327.82
-81.43	2327.8	-78.36	2327.77	-77.67	2327.76	-74.53	2327.71	-71.61	2327.65
-70.58	2327.62	-70.33	2327.62	-61.5	2327.47	-60.66	2327.48	-58.85	2327.46
-57.41	2327.47	-57.01	2327.46	-55.62	2327.48	-55.34	2327.48	-52.48	2327.43
-48.38	2327.48	-34.17	2327.45	-33.83	2327.44	-33.16	2327.43	-11.87	2327
3.76	2327	5.56	2326.24	6.17	2326	6.34	2325.98	12.22	2325.55
14.54	2325.26	20.89	2325.35	23.35	2325.32	25.78	2326	27.52	2326.75
28.29	2327	37.89	2328	47.55	2328.62	53.7	2329	54.06	2329.04
61.15	2330	64.1	2330.57	66.65	2331	67.97	2331.46	69.39	2332
70.38	2332.37	72.1	2333	73.34	2333.48	74.78	2334		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-400	.04	69.39	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	69.39	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2332.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.		0.040	
W.S. Elev (ft)	2331.22	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1113.42	
E.G. Slope (ft/ft)	0.011221	Area (sq ft)		1113.42	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	408.47	Top Width (ft)		408.47	
Vel Total (ft/s)	7.67	Avg. Vel. (ft/s)		7.67	
Max Ch1 Dpth (ft)	5.96	Hydr. Depth (ft)		2.73	
Conv. Total (cfs)	80593.1	Conv. (cfs)		80593.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		409.36	
Min Ch El (ft)	2325.26	Shear (lb/sq ft)		1.91	
Alpha	1.00	Stream Power (lb/ft s)	74.78	0.00	0.00
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)		53.32	
C & E Loss (ft)	0.05	Cum SA (acres)		17.14	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2334.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2332.94	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1872.36	1.18
E.G. Slope (ft/ft)	0.010112	Area (sq ft)		1872.36	1.18
Q Total (cfs)	17855.00	Flow (cfs)		17852.45	2.55
Top Width (ft)	460.60	Top Width (ft)		458.06	2.54
Vel Total (ft/s)	9.53	Avg. Vel. (ft/s)		9.53	2.15
Max Ch1 Dpth (ft)	7.68	Hydr. Depth (ft)		4.09	0.47
Conv. Total (cfs)	177561.9	Conv. (cfs)		177536.6	25.4
Length Wtd. (ft)	50.00	Wetted Per. (ft)		459.14	2.71
Min Ch El (ft)	2325.26	Shear (lb/sq ft)		2.57	0.28
Alpha	1.00	Stream Power (lb/ft s)	74.78	0.00	0.00
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	0.01	87.69	0.00
C & E Loss (ft)	0.08	Cum SA (acres)	0.02	17.85	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 121

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2334.08	-395.88	2333.51	-388.18	2332.46	-383.37	2332	-371.95	2331.62
-367.87	2331.49	-363.77	2331.37	-345.06	2331	-344.42	2331	-340.66	2330.91
-331.78	2330.74	-300.05	2330	-242.01	2329	-241.18	2329	-190.78	2328.11
-188.8	2328.08	-188.2	2328.07	-184.6	2328	-184.38	2328	-150.18	2327.35

-142.86	2327.24	-142.52	2327.24	-136.77	2327.18	-135.42	2327.17	-135.32	2327.17
-130.23	2326.79	-129.9	2326.79	-125.09	2326.65	-123.62	2326.64	-115.55	2326.64
-113.64	2326.67	-106.48	2326.05	-106.39	2326.05	-106.32	2326.05	-100.42	2326.94
-100.04	2327	-87.95	2327	-78.21	2326.8	-51.77	2326.3	-44.47	2326.3
-43.04	2326.28	-38.65	2326.19	-35.52	2326.1	-35.26	2326.1	-34.64	2326.11
-34.15	2326.1	-33.51	2326.11	-30.93	2326.09	-30.08	2326.09	-29.66	2326.08
-26.13	2326.13	-25.87	2326.12	-18.58	2326	-6.57	2326	0	2325.43
1.54	2325.3	6.01	2325	7.95	2324.51	9.68	2324.09	10	2324
10.25	2324.22	10.61	2324.4	11.17	2325.55	11.97	2324.96	12.6	2324
12.99	2324.1	17.27	2325	18.55	2325.53	19.51	2326	22.11	2326.79
22.47	2326.84	23.68	2327	26.13	2327.16	30.66	2327.44	32.68	2327.57
37.77	2327.87	40.08	2328	45.35	2328.45	51.47	2328.92	52.58	2329
53.15	2329.03	70.99	2330	76.73	2330.58	83.18	2331	83.66	2331.06
84.28	2331.14	85.85	2331.35	86.12	2331.39	90.18	2332	92.53	2332.31
94.23	2332.5	95.08	2332.61	98.13	2333	102.08	2333.47	104.29	2333.75
106.38	2334	115.16	2334.81	117.08	2335	117.64	2335.05	122.22	2335.49
127.17	2335.73	127.62	2335.76	130.52	2336	132.18	2336	136.65	2336.42
138	2336.56	138.12	2336.58	141.16	2336.91	141.31	2336.93	141.81	2337
142.15	2337	142.43	2337.03	145.75	2337.26	146.13	2337.28	148.14	2337.39
148.32	2337.41	151.59	2337.52	152.49	2337.63	153.43	2337.68	154.07	2337.75
158.14	2338								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-400	.04	141.81	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	141.81	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2331.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.		0.040	
W.S. Elev (ft)	2330.87	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1239.54	
E.G. Slope (ft/ft)	*0.008168	Area (sq ft)		1239.54	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	419.39	Top Width (ft)		419.39	
Vel Total (ft/s)	6.89	Avg. Vel. (ft/s)		6.89	
Max Chl Dpth (ft)	6.86	Hydr. Depth (ft)		2.96	
Conv. Total (cfs)	94462.2	Conv. (cfs)		94462.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		421.86	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		1.50	
Alpha	1.00	Stream Power (lb/ft s)	158.14	0.00	0.00
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)		51.97	
C & E Loss (ft)	0.01	Cum SA (acres)		16.67	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2333.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	2332.68	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2077.70	
E.G. Slope (ft/ft)	*0.007757	Area (sq ft)		2077.70	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	485.46	Top Width (ft)		485.46	
Vel Total (ft/s)	8.59	Avg. Vel. (ft/s)		8.59	
Max Chl Dpth (ft)	8.68	Hydr. Depth (ft)		4.28	
Conv. Total (cfs)	*202723.0	Conv. (cfs)		*202723.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		488.10	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		2.06	
Alpha	1.00	Stream Power (lb/ft s)	158.14	0.00	0.00
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	0.01	85.42	0.00
C & E Loss (ft)	0.02	Cum SA (acres)	0.02	17.31	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 110

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

-400	2333.29	-397.61	2333	-390.05	2332.06	-389.58	2332	-376.46	2331.05
-375.15	2331	-372.05	2331	-367.09	2330.71	-353.03	2330.21	-350.08	2330.08
-349.51	2330.07	-346.34	2330	-333.42	2329.91	-331.23	2329.88	-305.64	2329.61
-256.53	2329.07	-191.05	2328	-150.43	2327.22	-130.99	2327	-129.14	2327
-111.13	2326.48	-97.07	2326.04	-77.5	2326	-64.85	2326	-63.21	2326.02
-61.86	2326.04	-61.5	2325.23	-61.41	2325.13	-61.33	2325.1	-61.31	2325
-61.13	2325	-60.32	2325.84	-57.62	2325.7	-56.14	2325.72	-54.14	2326.11
-53.87	2326.11	-53.78	2325.96	-53.66	2325.92	-52.97	2325.92	-52.68	2325.96
-52.42	2325.92	-51.94	2325.92	-50.8	2325.93	-44.89	2325.34	-32.78	2325
-31.34	2324.92	-31.2	2324.92	-27.23	2324.65	-21.53	2325.08	-21.52	2325.55
-18.26	2325.42	-17.9	2325.42	-17.61	2325.41	-16.16	2325.35	-15.82	2325.33
-14.28	2325.26	-13.74	2325.23	-9.97	2325	-9.93	2324.9	-9.69	2323.33
-9.07	2324.74	-7.56	2324.5	-5.01	2325.22	-4.24	2325.27	-3.48	2325.31
-3.3	2325.32	-.92	2325.5	-.07	2325.51	0	2325.51	1.47	2325.63
3.39	2325.72	9.65	2325.17	9.75	2325.17	11.73	2325.31	11.84	2325.32
12.52	2325.35	12.79	2325.36	14.74	2325.41	25.7	2325.79	28.56	2325.95
29.67	2326	35.67	2326.4	37.75	2326.58	37.87	2326.59	41.97	2327
45.31	2327.44	46.38	2327.6	48.06	2327.81	49.16	2328	50.87	2328.41
53.36	2329	56.23	2329.7	57.38	2330	59.68	2330.78	60.05	2330.91
60.16	2330.95	60.34	2331	61.61	2331.5	62.84	2331.98	62.9	2332
63.06	2332.07	65.57	2333	66.25	2333.25	68.22	2334	69.36	2334.55
70.14	2335	71.48	2335.64	72.19	2336	74.01	2336.85	74.32	2337

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-400	.04	70.14	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	70.14	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2331.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.		0.040	
W.S. Elev (ft)	2330.34	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1177.98	
E.G. Slope (ft/ft)	*0.009609	Area (sq ft)		1177.98	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	414.91	Top Width (ft)		414.91	
Vel Total (ft/s)	7.25	Avg. Vel. (ft/s)		7.25	
Max Chl Dpth (ft)	7.00	Hydr. Depth (ft)		2.84	
Conv. Total (cfs)	87089.2	Conv. (cfs)		87089.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		419.57	
Min Ch El (ft)	2323.33	Shear (lb/sq ft)		1.68	
Alpha	1.00	Stream Power (lb/ft s)	74.32	0.00	0.00
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)		50.58	
C & E Loss (ft)	0.02	Cum SA (acres)		16.19	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2333.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.31	Wt. n-Val.		0.040	
W.S. Elev (ft)	2332.09	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1944.62	
E.G. Slope (ft/ft)	*0.008896	Area (sq ft)		1944.62	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	453.39	Top Width (ft)		453.39	
Vel Total (ft/s)	9.18	Avg. Vel. (ft/s)		9.18	
Max Chl Dpth (ft)	8.76	Hydr. Depth (ft)		4.29	
Conv. Total (cfs)	*189301.7	Conv. (cfs)		*189301.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		458.41	
Min Ch El (ft)	2323.33	Shear (lb/sq ft)		2.36	
Alpha	1.00	Stream Power (lb/ft s)	74.32	0.00	0.00
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	0.01	83.12	0.00
C & E Loss (ft)	0.07	Cum SA (acres)	0.02	16.77	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

-420.58	2335	-400	2331.82	-397.37	2331.53	-394.11	2331.18	-392.49	2331
-387.02	2330.41	-383.3	2330	-378.95	2330	-348.26	2329.49	-317.4	2329.14
-314.44	2329.11	-312.95	2329.1	-276.62	2328.76	-270.05	2328.71	-263.83	2328.61
-259.25	2328.56	-251.08	2328.44	-211.26	2328	-208.97	2327.97	-208.6	2327.96
-196.06	2327.8	-178.22	2327.61	-136.81	2327	-128.82	2327	-121.88	2326.88
-113.61	2326.72	-81.14	2326	-65.23	2325.33	-56.39	2325	-54.27	2324.17
-53.7	2324	-53.3	2324.33	-52.18	2325.55	-43.63	2324.14	-42.98	2324
-42.73	2324.05	-29.54	2325	-24.13	2325	-16.77	2323.37	-16.64	2323.36
-16.57	2323.35	-12.86	2325	-10.75	2325.47	-10.38	2325.51	-9.6	2325.7
-8.74	2325.78	-8.31	2325.79	-7.18	2325.8	-5.99	2325.64	-5.68	2325.66
-5.33	2325.64	-4.17	2325.77	-3.82	2325.73	-3.43	2325.76	0	2325.02
.09	2325	34.81	2325	35.49	2324.87	42.32	2324.91	43.18	2324.76
44.7	2325.04	45.09	2325	45.93	2325.08	57.71	2326	61.12	2326.73
62.46	2327	63.21	2327.22	66.02	2328	68.44	2329	68.66	2329.09
70.84	2330	71.78	2330.39	73.27	2331	74.78	2331.7	75.53	2332
76.44	2332.36	77.67	2333	78.81	2333.47	79.82	2334	82.21	2334.99
82.55	2335.12	83.37	2335.46	84.65	2335.98	84.74	2336.02	87.08	2337
89.56	2337.81	90.09	2338						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-420.58	.04	-392.49	.04	73.27	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-392.49	73.27	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2330.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.93	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1242.03	
E.G. Slope (ft/ft)	0.008792	Area (sq ft)		1242.03	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	445.57	Top Width (ft)		445.57	
Vel Total (ft/s)	6.87	Avg. Vel. (ft/s)		6.87	
Max Chl Dpth (ft)	6.58	Hydr. Depth (ft)		2.79	
Conv. Total (cfs)	91046.4	Conv. (cfs)		91046.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		448.06	
Min Ch El (ft)	2323.35	Shear (lb/sq ft)		1.52	
Alpha	1.00	Stream Power (lb/ft s)	90.09	0.00	0.00
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)		49.19	
C & E Loss (ft)	0.02	Cum SA (acres)		15.70	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2332.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2331.86	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	3.37	2131.70	0.80
E.G. Slope (ft/ft)	0.006738	Area (sq ft)	3.37	2131.70	0.80
Q Total (cfs)	17855.00	Flow (cfs)	5.87	17847.85	1.28
Top Width (ft)	475.42	Top Width (ft)	7.75	465.76	1.90
Vel Total (ft/s)	8.36	Avg. Vel. (ft/s)	1.74	8.37	1.61
Max Chl Dpth (ft)	8.51	Hydr. Depth (ft)	0.43	4.58	0.42
Conv. Total (cfs)	217522.1	Conv. (cfs)	71.5	217435.0	15.6
Length Wtd. (ft)	50.00	Wetted Per. (ft)	7.80	468.52	2.09
Min Ch El (ft)	2323.35	Shear (lb/sq ft)	0.18	1.91	0.16
Alpha	1.00	Stream Power (lb/ft s)	90.09	0.00	0.00
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	0.00	80.78	0.00
C & E Loss (ft)	0.05	Cum SA (acres)	0.01	16.24	0.01

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-417.46	2335	-400	2332.47	-398.01	2332.14	-397.15	2332	-396.14	2331.86
-389.83	2331	-388.97	2330.88	-382.88	2330.05	-382.49	2330	-380.81	2329.92

-365.64	2329.35	-362.1	2329.35	-348.05	2329	-329.18	2329	-298.5	2328.37
-231.43	2327.7	-195.58	2327.07	-193.09	2327.03	-192.84	2327.02	-191.15	2327
-176.64	2326.8	-162.52	2326.66	-150.76	2326.51	-142.93	2326.43	-116.62	2326.11
-108.48	2326	-84.29	2325.57	-56.16	2324.73	-27.1	2324.43	-25.87	2324.54
-25.22	2324.61	-24.22	2324.2	-22.44	2324.65	-22.19	2324.74	-21.36	2325
21.31	2325	21.51	2324.94	25.13	2323.68	25.47	2324.14	25.61	2324.2
26.07	2324.33	26.34	2324.39	26.79	2324.45	29.82	2325.12	30.09	2325.19
30.28	2325.19	30.46	2325.17	38.16	2325	40.34	2325	43.85	2325.2
43.89	2324.98	44.61	2325.29	45.06	2325.32	49.13	2325.2	49.25	2325.21
49.51	2325.24	49.56	2325.24	50.11	2325.23	50.18	2325.23	57.01	2325.93
57.33	2325.92	57.42	2325.92	59.37	2326	68.6	2326	69.25	2326.09
69.36	2326.13	71.47	2326.53	73.46	2327	73.98	2327	77.88	2327.85
78.5	2328	82.12	2328.88	82.61	2329	83.53	2329.2	85	2329.59
85.05	2329.61	86.53	2330	90.95	2330.91	91.34	2331	94.71	2331.73
96.02	2332	97.86	2332.41	99.77	2332.77	100.82	2333		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-417.46	.04	-397.15	.04	91.34	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-397.15	91.34	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2330.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.58	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1314.95	
E.G. Slope (ft/ft)	*0.007492	Area (sq ft)		1314.95	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	456.80	Top Width (ft)		456.80	
Vel Total (ft/s)	6.49	Avg. Vel. (ft/s)		6.49	
Max Chl Dpth (ft)	5.90	Hydr. Depth (ft)		2.88	
Conv. Total (cfs)	98627.8	Conv. (cfs)		98627.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		458.33	
Min Ch El (ft)	2323.68	Shear (lb/sq ft)		1.34	
Alpha	1.00	Stream Power (lb/ft s)	100.82	0.00	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)		47.73	
C & E Loss (ft)	0.01	Cum SA (acres)		15.18	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2332.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2331.66	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2304.44	1.02
E.G. Slope (ft/ft)	*0.005488	Area (sq ft)		2304.44	1.02
Q Total (cfs)	*17855.00	Flow (cfs)		*17853.68	1.32
Top Width (ft)	489.10	Top Width (ft)		486.04	3.06
Vel Total (ft/s)	7.74	Avg. Vel. (ft/s)		7.75	1.30
Max Chl Dpth (ft)	7.98	Hydr. Depth (ft)		4.74	0.33
Conv. Total (cfs)	*241019.5	Conv. (cfs)		*241001.7	17.8
Length Wtd. (ft)	50.00	Wetted Per. (ft)		487.85	3.14
Min Ch El (ft)	2323.68	Shear (lb/sq ft)		1.62	0.11
Alpha	1.00	Stream Power (lb/ft s)	100.82	0.00	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	0.00	78.23	0.00
C & E Loss (ft)	0.00	Cum SA (acres)	0.01	15.69	0.00

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 104

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2334.1	-399.49	2334.04	-399.28	2334	-399.17	2333.98	-390.4	2332.36
-384.48	2331.33	-381.42	2331	-372.26	2330	-357.91	2329.06	-340.65	2328
-321.81	2328	-278.26	2327.69	-248.74	2327.26	-237.75	2327.07	-236.32	2327.06
-233.6	2327.03	-230.21	2327	-221.97	2327	-208.77	2326.84	-206	2326.78
-173.79	2326.2	-170.05	2326.14	-162.5	2326	-139.49	2325.71	-125.13	2325.6
-115.82	2325.5	-95.8	2325.23	-84.59	2325.11	-77.98	2325	-65.03	2325

-24.42	2324.77	-22.89	2324.75	-17.88	2324.76	-14.85	2324.74	-13.84	2324.74
-12.35	2324.72	14.27	2324	15.43	2323.76	18.01	2324	25.81	2324.75
27.57	2324.76	32.22	2324.82	33.64	2324.82	35.2	2324.86	36.74	2324.88
37.17	2324.89	40.19	2324.97	40.77	2324.98	41.33	2325	45.67	2325
46.14	2325.05	46.35	2325.05	46.96	2325.11	48.85	2325.23	49.27	2325.23
49.46	2325.24	49.6	2325.23	49.85	2325.24	50.09	2325.2	50.71	2325.1
50.97	2325.11	51.27	2325.2	53	2325.33	53.17	2325.33	53.32	2325.32
54.14	2325.32	54.44	2325.31	60.54	2325.01	60.66	2325	63.22	2325.47
65.73	2326	65.81	2326.19	65.93	2326.25	66.97	2326.26	67.04	2326.26
67.86	2327	69.98	2327.88	70.23	2328	70.9	2328.31	72.45	2329
73.98	2329.67	74.76	2330	77.13	2330.98	79.43	2332	81.01	2332.8
81.47	2333	83.83	2333.79	84.43	2334	84.7	2334.13	85.29	2334.43
86.19	2334.89	86.43	2335	86.59	2335.08	88.3	2336	89.25	2336.55
90.1	2337	90.91	2337.44	91.88	2338	92.75	2338.46	93.67	2339
94.71	2339.54	95.49	2340	96.55	2340.61	97.34	2341		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-381.42	.04	81.47	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-381.42	81.47	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.88	Element		0.040	
Vel Head (ft)	0.63	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.25	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1338.37	
E.G. Slope (ft/ft)	0.006589	Area (sq ft)		1338.37	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	433.80	Top Width (ft)		433.80	
Vel Total (ft/s)	6.38	Avg. Vel. (ft/s)		6.38	
Max Chl Dpth (ft)	5.49	Hydr. Depth (ft)		3.09	
Conv. Total (cfs)	105174.5	Conv. (cfs)		105174.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		434.99	
Min Ch El (ft)	2323.76	Shear (lb/sq ft)		1.27	
Alpha	1.00	Stream Power (lb/ft s)	97.34	0.00	0.00
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)		46.20	
C & E Loss (ft)	0.00	Cum SA (acres)		14.67	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2332.33	Element		0.040	
Vel Head (ft)	0.93	Wt. n-Val.	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)	0.74	2307.04	
E.G. Slope (ft/ft)	0.005073	Area (sq ft)	0.74	2307.04	
Q Total (cfs)	17855.00	Flow (cfs)	0.70	17854.30	
Top Width (ft)	462.98	Top Width (ft)	3.48	459.50	
Vel Total (ft/s)	7.74	Avg. Vel. (ft/s)	0.94	7.74	
Max Chl Dpth (ft)	7.64	Hydr. Depth (ft)	0.21	5.02	
Conv. Total (cfs)	250676.2	Conv. (cfs)	9.8	250666.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)	3.50	461.21	
Min Ch El (ft)	2323.76	Shear (lb/sq ft)	0.07	1.58	
Alpha	1.00	Stream Power (lb/ft s)	97.34	0.00	0.00
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.00	75.58	0.00
C & E Loss (ft)	0.00	Cum SA (acres)	0.00	15.15	0.00

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2336.14	-398.97	2336.01	-398.85	2336	-392.5	2335.34	-389.26	2335.01
-386.48	2334.51	-385.08	2334.25	-383.77	2334	-374.82	2332.74	-370.5	2332.18
-369.58	2332	-368.02	2331.79	-357.05	2330.28	-354.81	2330	-352.13	2329.66
-340.71	2328.24	-338.82	2328	-338.28	2328	-267.26	2327.2	-253.31	2327.1
-86.48	2324.69	-85.3	2324.68	-84.01	2324.66	-68.5	2324.49	-31.14	2324
22.59	2324	28.07	2324.07	49.51	2324.69	59.17	2325	60.54	2325.14

60.89	2325.2	66.61	2326	69.46	2326.91	69.84	2327	71.29	2327.43
73.02	2328	73.97	2328.33	75.51	2329	77.42	2329.69	78.67	2330
80.04	2330.59	80.93	2330.85	81.03	2330.88	81.36	2331	82.95	2331.62
83.85	2332	85.35	2333	86.11	2333.43	87.49	2334	89.04	2334.67
89.81	2335	91.27	2335.63	92.14	2336	93.35	2336.52	94.5	2337
95.06	2337.25	96.82	2338	97.28	2338.2	99.15	2339	99.49	2339.15
101.48	2340								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-369.58	.04	87.49	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-369.58	87.49	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.56	Element			
Vel Head (ft)	0.62	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.94	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1355.78	
E.G. Slope (ft/ft)	0.006068	Area (sq ft)		1355.78	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	421.74	Top Width (ft)		421.74	
Vel Total (ft/s)	6.30	Avg. Vel. (ft/s)		6.30	
Max Chl Dpth (ft)	4.94	Hydr. Depth (ft)		3.21	
Conv. Total (cfs)	109590.3	Conv. (cfs)		109590.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		422.39	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		1.22	
Alpha	1.00	Stream Power (lb/ft s)	101.48	0.00	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)		44.66	
C & E Loss (ft)	0.00	Cum SA (acres)		14.18	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2332.08	Element			
Vel Head (ft)	0.92	Wt. n-Val.		0.040	
W.S. Elev (ft)	2331.16	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2318.69	
E.G. Slope (ft/ft)	0.004777	Area (sq ft)		2318.69	
Q Total (cfs)	17855.00	Flow (cfs)		17855.00	
Top Width (ft)	445.24	Top Width (ft)		445.24	
Vel Total (ft/s)	7.70	Avg. Vel. (ft/s)		7.70	
Max Chl Dpth (ft)	7.16	Hydr. Depth (ft)		5.21	
Conv. Total (cfs)	258329.0	Conv. (cfs)		258329.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		446.43	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		1.55	
Alpha	1.00	Stream Power (lb/ft s)	101.48	0.00	0.00
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	0.00	72.93	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	0.00	14.63	0.00

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2750

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2341	-394.81	2341	-389.64	2340.62	-383.96	2339.52	-379.03	2338.6
-368.71	2336.39	-364.44	2335.47	-362.21	2335	-358.41	2334.18	-357.56	2334
-356.28	2333.72	-353.04	2333	-349.54	2332.23	-348.48	2332	-347.33	2331.74
-343.98	2331	-340.31	2330.18	-339.48	2330	-338.87	2329.87	-336.88	2329.42
-334.94	2329	-333.74	2328.73	-330.42	2328	-322.13	2327.63	-316.16	2327.38
-310.92	2327	-307.9	2327	-304.64	2326.8	-303.41	2326.8	-240.06	2326.15
-239.02	2326.11	-225.44	2326	-179.66	2325.79	-178.06	2325.77	-171.32	2325.67
-137.09	2325	-136.94	2325	-133.74	2324.93	-66.59	2324	26.59	2324
45.63	2325.24	56.2	2326	58.25	2326.28	70.27	2327.95	70.43	2328
70.7	2328.08	73.55	2329	74.22	2329.21	76.68	2330	77.88	2330.39
79.8	2331	80	2331.06	82.92	2332	84.8	2332.6	86.04	2333
88.54	2333.8	89.16	2334	91.19	2334.65	92.15	2335	94.21	2335.76
94.88	2336	96.32	2336.31	100.49	2337.55	101.99	2338	107.39	2338.99
107.44	2339								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-343.98	.04	79.8	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-343.98	79.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.24	Element			
Vel Head (ft)	0.67	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.58	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1304.36	
E.G. Slope (ft/ft)	0.006541	Area (sq ft)		1304.36	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	405.27	Top Width (ft)		405.27	
Vel Total (ft/s)	6.54	Avg. Vel. (ft/s)		6.54	
Max Chl Dpth (ft)	4.58	Hydr. Depth (ft)		3.22	
Conv. Total (cfs)	105553.8	Conv. (cfs)		105553.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		405.68	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		1.31	
Alpha	1.00	Stream Power (lb/ft s)	107.44	0.00	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)		43.13	
C & E Loss (ft)	0.01	Cum SA (acres)		13.70	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2331.84	Element			
Vel Head (ft)	0.98	Wt. n-Val.		0.040	
W.S. Elev (ft)	2330.86	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2248.35	
E.G. Slope (ft/ft)	0.004938	Area (sq ft)		2248.35	
Q Total (cfs)	17855.00	Flow (cfs)		17855.00	
Top Width (ft)	422.68	Top Width (ft)		422.68	
Vel Total (ft/s)	7.94	Avg. Vel. (ft/s)		7.94	
Max Chl Dpth (ft)	6.86	Hydr. Depth (ft)		5.32	
Conv. Total (cfs)	254099.6	Conv. (cfs)		254099.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		423.70	
Min Ch El (ft)	2324.00	Shear (lb/sq ft)		1.64	
Alpha	1.00	Stream Power (lb/ft s)	107.44	0.00	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	0.00	70.31	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	0.00	14.13	0.00

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2341	-373.57	2341	-367.4	2340.03	-367.23	2340	-367.15	2339.99
-366.94	2339.95	-356.18	2338	-352.63	2337.12	-352.02	2337	-351.7	2336.94
-346.96	2336	-343.36	2335.07	-343.06	2335	-342.5	2334.86	-336.26	2333.25
-332.46	2332.28	-331.17	2332	-330.23	2331.8	-321.3	2330	-314.94	2329.08
-314.22	2329	-313.57	2328.93	-300.22	2327.39	-272.87	2326	-265.4	2326
-162.23	2325	-156.11	2324.87	-153.98	2324.83	-148.16	2324.73	-144.18	2324.65
-107.91	2324	-91.71	2323.92	47.56	2324	50.65	2324.57	52.78	2325
52.98	2325	54.83	2325.34	59.11	2325.9	59.9	2326	70.06	2327.79
71.22	2328	71.77	2328.16	77.98	2330	82.78	2331.94	82.93	2332
83.02	2332.04	85.4	2333	85.55	2333.06	87.87	2334	88.11	2334.1
90.34	2335	92.81	2336	93.38	2336.23	97.75	2338	99.57	2338.74
100.22	2339	106.28	2339						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-321.3	.04	77.98	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-321.3	77.98	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2328.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.13	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1226.32	
E.G. Slope (ft/ft)	*0.007333	Area (sq ft)		1226.32	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	378.33	Top Width (ft)		378.33	
Vel Total (ft/s)	6.96	Avg. Vel. (ft/s)		6.96	
Max Chl Dpth (ft)	4.21	Hydr. Depth (ft)		3.24	
Conv. Total (cfs)	99695.3	Conv. (cfs)		99695.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		378.79	
Min Ch El (ft)	2323.92	Shear (lb/sq ft)		1.48	
Alpha	1.00	Stream Power (lb/ft s)	106.28	0.00	0.00
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)		41.68	
C & E Loss (ft)	0.08	Cum SA (acres)		13.25	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2331.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2330.50	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	0.63	2154.55	0.31
E.G. Slope (ft/ft)	*0.005272	Area (sq ft)	0.63	2154.55	0.31
Q Total (cfs)	*17855.00	Flow (cfs)	0.67	*17854.01	0.32
Top Width (ft)	403.03	Top Width (ft)	2.50	399.28	1.25
Vel Total (ft/s)	8.28	Avg. Vel. (ft/s)	1.06	8.29	1.02
Max Chl Dpth (ft)	6.58	Hydr. Depth (ft)	0.25	5.40	0.25
Conv. Total (cfs)	*245898.9	Conv. (cfs)	9.2	*245885.2	4.4
Length Wtd. (ft)	50.00	Wetted Per. (ft)	2.55	400.13	1.35
Min Ch El (ft)	2323.92	Shear (lb/sq ft)	0.08	1.77	0.08
Alpha	1.00	Stream Power (lb/ft s)	106.28	0.00	0.00
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.00	67.78	0.00
C & E Loss (ft)	0.10	Cum SA (acres)	0.00	13.66	0.00

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2850

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-327.91	2340	-325.03	2339.35	-323.51	2339	-319.74	2338.14	-319.11	2338
-318.27	2337.81	-313.93	2336.55	-312.02	2336	-310.18	2335.46	-308.7	2335
-305.44	2334.09	-305.24	2334.03	-305.12	2334	-304.94	2333.95	-304.47	2333.81
-299.73	2332.37	-298.52	2332	-295.32	2331.03	-295.23	2331	-294.92	2330.9
-291.95	2330	-289.86	2329.36	-288.51	2329	-281.93	2327.23	-277.37	2326
-273.23	2325.31	-272.18	2325	-270.8	2324.6	-261.59	2324.53	-260.2	2324.49
-253.58	2324.69	-251.39	2324.77	-247.7	2325	-184.27	2325	-177.87	2324.83
-161.73	2324.44	-150.01	2324.13	-148.58	2324.09	-144.58	2324	-144.17	2324
-109.93	2323.76	-95.31	2323.75	-65.3	2323.6	26.66	2323.67	63.31	2323.89
76.42	2324	100.03	2325.59	104.83	2326	106.95	2326.34	107.95	2326.3
108.92	2326.25	110.78	2326.05	111.12	2326	114.15	2326	123.74	2326.9
135.32	2327.84	136.17	2327.9	136.22	2327.91	136.7	2328	137.16	2328.09
151.59	2330.86	152.34	2331	152.4	2331.01	157.84	2332	158.84	2332.2
166.02	2333.61	167.52	2334	168.21	2334.16	171.71	2335	173.34	2335.38
176.09	2336	184.67	2338						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-327.91	.04	-295.23	.04	157.84	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-295.23	157.84	50	50	50	.1 .3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2328.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.		0.040	
W.S. Elev (ft)	2328.05	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1520.83	

* E.G. Slope (ft/ft)	*0.004140	* Area (sq ft)	*	* 1520.83	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 421.90	* Top Width (ft)	*	* 421.90	*	*
* Vel Total (ft/s)	* 5.61	* Avg. Vel. (ft/s)	*	* 5.61	*	*
* Max Chl Dpth (ft)	* 4.45	* Hydr. Depth (ft)	*	* 3.60	*	*
* Conv. Total (cfs)	*132678.9	* Conv. (cfs)	*	*132678.9	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 422.57	*	*
* Min Ch El (ft)	* 2323.60	* Shear (lb/sq ft)	*	* 0.93	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 184.67	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.22	* Cum Volume (acre-ft)	*	* 40.10	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 12.79	*	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2331.27	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.73	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2330.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2596.78	*	*
* E.G. Slope (ft/ft)	*0.003259	* Area (sq ft)	*	* 2596.78	*	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*	*
* Top Width (ft)	* 443.59	* Top Width (ft)	*	* 443.59	*	*
* Vel Total (ft/s)	* 6.88	* Avg. Vel. (ft/s)	*	* 6.88	*	*
* Max Chl Dpth (ft)	* 6.93	* Hydr. Depth (ft)	*	* 5.85	*	*
* Conv. Total (cfs)	*312745.9	* Conv. (cfs)	*	*312745.9	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 444.84	*	*
* Min Ch El (ft)	* 2323.60	* Shear (lb/sq ft)	*	* 1.19	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 184.67	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.18	* Cum Volume (acre-ft)	*	* 65.05	*	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 13.18	*	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-285.23	2338.49	-284.09	2338	-283.46	2337.72	-281.79	2337	-281.3	2336.78
-278.47	2335.56	-277.19	2335	-274.97	2334.04	-274.83	2333.97	-274.67	2333.9
-271.52	2333	-265.61	2331.3	-264.55	2331	-263.94	2330.82	-261.07	2330
-258.22	2329.48	-255.65	2329	-254.51	2328.79	-250.67	2328	-243.04	2327.03
-242.83	2327	-242.43	2326.95	-232.03	2326	-209.99	2325.3	-201.81	2325
-181.68	2324.31	-173.43	2324.08	-169.34	2324	-129.23	2323.7	-127.45	2323.7
-111.87	2323.54	-90.5	2323.38	-53.11	2323.35	-38.88	2323.29	0	2323.31
4.73	2323.32	22.1	2323.42	39.32	2323.57	62.32	2323.54	76.35	2323.71
91.63	2324	104.06	2324	113.22	2324.65	120.9	2325.32	124.17	2326
125.37	2326.32	126.63	2326.67	127.86	2327	128.51	2327.18	134.85	2328.9
135.23	2329	135.64	2329.11	138.93	2330	141.21	2330.59	142.83	2331
146.18	2331.88	146.63	2332	146.84	2332.05	150.53	2333	151.81	2333.32
154.49	2334	157.14	2334.68	158.38	2335	161.98	2335.91	162.32	2336
163.54	2336.31	169.25	2337.82	169.99	2338	171.27	2338.3	174.47	2339
176.64	2339.46	179.12	2340						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-285.23	.04	-271.52	.04	142.83	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-271.52	142.83	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2328.31	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.58	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2327.73	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1396.16	*	*
* E.G. Slope (ft/ft)	*0.004771	* Area (sq ft)	*	* 1396.16	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 379.02	* Top Width (ft)	*	* 379.02	*	*
* Vel Total (ft/s)	* 6.11	* Avg. Vel. (ft/s)	*	* 6.11	*	*
* Max Chl Dpth (ft)	* 4.43	* Hydr. Depth (ft)	*	* 3.68	*	*
* Conv. Total (cfs)	*123597.5	* Conv. (cfs)	*	*123597.5	*	*

* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 379.51	*	*
* Min Ch El (ft)	* 2323.29	* Shear (lb/sq ft)	*	* 1.10	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 179.12	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.28	* Cum Volume (acre-ft)	*	* 38.43	*	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 12.33	*	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2331.07	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.89	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2330.18	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2354.00	* *
* E.G. Slope (ft/ft)	*0.003955	* Area (sq ft)	*	* 2354.00	* *
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	* *
* Top Width (ft)	* 401.31	* Top Width (ft)	*	* 401.31	* *
* Vel Total (ft/s)	* 7.58	* Avg. Vel. (ft/s)	*	* 7.58	* *
* Max Chl Dpth (ft)	* 6.89	* Hydr. Depth (ft)	*	* 5.87	* *
* Conv. Total (cfs)	*283929.0	* Conv. (cfs)	*	*283929.0	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 402.35	* *
* Min Ch El (ft)	* 2323.29	* Shear (lb/sq ft)	*	* 1.44	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 179.12	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.23	* Cum Volume (acre-ft)	*	* 62.21	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 12.69	* *

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2950

INPUT
Description:
Station Elevation Data num= 67

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-256.57	2340	-255.64	2339.56	-254.44	2339	-252.44	2338.06	-252.32	2338
-252.05	2337.89	-249.45	2337	-248.84	2336.79	-246.53	2336	-244.38	2335.26
-243.62	2335	-242.9	2334.75	-238.99	2333.41	-237.8	2333	-234.88	2332
-234.16	2331.75	-231.97	2331	-231.86	2330.96	-231.54	2330.85	-228.62	2330
-226.99	2329.52	-225.19	2329	-223.8	2328.59	-221.75	2328.19	-220.79	2328
-206.14	2326.71	-199.92	2326	-190.04	2325.41	-179.54	2324.71	-171.18	2324
-78.82	2323.04	-71.26	2323	-21.57	2323	-14.02	2322.94	-13.46	2322.94
-5.97	2323	52.56	2323	106.88	2324	115.56	2324.85	117.04	2325
120.39	2326	122.24	2326.56	123.72	2327	127.05	2328	128.34	2328.39
132.45	2329.62	133.3	2330	133.58	2330.12	135.56	2331	136.77	2331.54
137.82	2332	139.14	2332.59	140.07	2333	140.69	2333.28	144.34	2334.88
144.62	2335	144.86	2335.11	146.92	2336	148.88	2336.81	149.33	2337
149.94	2337.26	151.73	2338	153.25	2338.64	154.13	2339	155.43	2339.54
161.14	2341.92	161.37	2341.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-256.57	.04	-237.8	.04	154.13	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-237.8	154.13	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2328.01	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.78	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2327.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1204.95	* *
* E.G. Slope (ft/ft)	*0.006653	* Area (sq ft)	*	* 1204.95	* *
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	* *
* Top Width (ft)	* 336.47	* Top Width (ft)	*	* 336.47	* *
* Vel Total (ft/s)	* 7.08	* Avg. Vel. (ft/s)	*	* 7.08	* *
* Max Chl Dpth (ft)	* 4.29	* Hydr. Depth (ft)	*	* 3.58	* *
* Conv. Total (cfs)	*104664.2	* Conv. (cfs)	*	*104664.2	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 337.00	* *
* Min Ch El (ft)	* 2322.94	* Shear (lb/sq ft)	*	* 1.49	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 161.37	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.40	* Cum Volume (acre-ft)	*	* 36.94	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 11.92	* *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2330.81	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.18	Wt. n-Val.		0.040		
W.S. Elev (ft)	2329.63	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		2046.89		
E.G. Slope (ft/ft)	0.005453	Area (sq ft)		2046.89		
Q Total (cfs)	17855.00	Flow (cfs)		17855.00		
Top Width (ft)	359.83	Top Width (ft)		359.83		
Vel Total (ft/s)	8.72	Avg. Vel. (ft/s)		8.72		
Max Chl Dpth (ft)	6.69	Hydr. Depth (ft)		5.69		
Conv. Total (cfs)	241801.3	Conv. (cfs)		241801.3		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		360.95		
Min Ch El (ft)	2322.94	Shear (lb/sq ft)		1.93		
Alpha	1.00	Stream Power (lb/ft s)	161.37	0.00	0.00	
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)		59.69		
C & E Loss (ft)	0.12	Cum SA (acres)		12.26		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -3000

INPUT
Description:
Station Elevation Data num= 94

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-232.96	2340	-229.83	2339.12	-229.36	2339	-226.27	2338.14	-225.74	2338
-224.86	2337.75	-222.14	2337	-219.17	2336.17	-218.13	2336	-217.43	2335.88
-212.24	2335	-208.17	2334.31	-206.36	2334	-204.82	2333.74	-204.09	2333.61
-200.49	2333	-197.3	2332.46	-194.62	2332	-192.24	2331.57	-190.13	2331.19
-189.3	2331	-188.96	2330.92	-185.04	2330	-181.89	2329.26	-180.78	2329
-179.77	2328.76	-176.51	2328	-174.75	2327.59	-172.25	2327	-171.31	2326.78
-169.07	2326.25	-168.45	2326.07	-168.19	2326	-167.78	2325.88	-164.73	2325
-162.36	2324.31	-161.22	2324.12	-160.51	2324	-152.36	2323.8	-121.49	2323.2
-105.05	2323	-92.1	2323	-83.5	2323	-79.25	2322.91	-68.04	2322.84
-3.51	2322.32	0	2322.3	2.84	2322.29	33.22	2322.55	49.87	2322.4
62	2322.26	66.78	2322.22	83.52	2323	84.09	2323	90.21	2323.31
98.62	2323.65	102.27	2323.76	105.23	2323.62	109.19	2324	115.79	2324.64
119.5	2325	121.69	2325.21	123.88	2326	124.7	2326.29	125.74	2326.67
126.66	2327	127.5	2327.3	129.43	2328	131.52	2328.75	132.21	2329
132.86	2329.24	134.99	2330	136.71	2330.62	137.77	2331	138.78	2331.36
140.55	2332	141.11	2332.2	142.92	2332.85	143.26	2333	145.19	2333.82
145.62	2334	146.09	2334.2	147.97	2335	150.09	2335.9	150.38	2336
150.66	2336.1	153.37	2337	155.45	2337.75	156.18	2338	156.79	2338.21
158.73	2338.88	159.2	2339	159.37	2339.05	163.04	2340		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-232.96	.04	-200.49	.04	140.55	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-200.49	140.55	5.67	5.67	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2327.57	Element	Left OB	Channel	Right OB	
Vel Head (ft)	1.10	Wt. n-Val.		0.040		
W.S. Elev (ft)	2326.48	Reach Len. (ft)	5.67	5.67	5.67	
Crit W.S. (ft)		Flow Area (sq ft)		1016.19		
E.G. Slope (ft/ft)	0.009871	Area (sq ft)		1016.19		
Q Total (cfs)	8537.00	Flow (cfs)		8537.00		
Top Width (ft)	295.24	Top Width (ft)		295.24		
Vel Total (ft/s)	8.40	Avg. Vel. (ft/s)		8.40		
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)		3.44		
Conv. Total (cfs)	85924.5	Conv. (cfs)		85924.5		
Length Wtd. (ft)	5.67	Wetted Per. (ft)		295.92		
Min Ch El (ft)	2322.22	Shear (lb/sq ft)		2.12		
Alpha	1.00	Stream Power (lb/ft s)	163.04	0.00	0.00	

* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 35.66	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 11.56	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2330.28	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 2.39	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2327.89	* Reach Len. (ft)	* 5.67	* 5.67	* 5.67 *
* Crit W.S. (ft)	* 2327.89	* Flow Area (sq ft)	*	* 1440.17	*
* E.G. Slope (ft/ft)	*0.014137	* Area (sq ft)	*	* 1440.17	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*
* Top Width (ft)	* 305.16	* Top Width (ft)	*	* 305.16	*
* Vel Total (ft/s)	* 12.40	* Avg. Vel. (ft/s)	*	* 12.40	*
* Max Chl Dpth (ft)	* 5.67	* Hydr. Depth (ft)	*	* 4.72	*
* Conv. Total (cfs)	*150168.5	* Conv. (cfs)	*	*150168.5	*
* Length Wtd. (ft)	* 5.67	* Wetted Per. (ft)	*	* 306.25	*
* Min Ch El (ft)	* 2322.22	* Shear (lb/sq ft)	*	* 4.15	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 163.04	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.08	* Cum Volume (acre-ft)	*	* 57.68	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 11.87	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the 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: -3005.67

INPUT
Description: Compare to FEMA Section 54519
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-228.7	2340	-227.93	2339.78	-224.93	2339	-223.93	2338.72	-221.19	2338
-218.65	2337.29	-216.88	2337	-216.12	2336.87	-210.86	2336	-205.65	2335.11
-204.97	2335	-204.45	2334.91	-199.1	2334	-194.56	2333.23	-193.23	2333
-190.24	2332.49	-188.15	2332	-184.52	2331.15	-183.89	2331	-181.06	2330.34
-179.62	2330	-177.7	2329.55	-175.36	2329	-173.78	2328.63	-172.2	2328.17
-171.61	2328	-170.11	2327.57	-168.15	2327	-167.32	2326.76	-164.69	2326
-161.84	2325.18	-160.8	2325	-157.55	2324.45	-154.89	2324	-124.39	2323.27
-114.21	2323.07	-108.79	2323	-104.52	2323	-85.97	2323	-76.81	2322.82
-52.63	2322.65	-2.32	2322.25	0	2322.24	4.69	2322.22	27.38	2322.41
49.13	2322.21	64.98	2322.04	65.69	2322.03	69.18	2322.2	82.41	2322.72
89.43	2323	91.22	2323.07	100.8	2323.37	108.38	2323	108.54	2322.99
108.62	2323	108.98	2323.03	118.94	2324	120.67	2324.17	122.22	2324.32
124.11	2325	125.06	2325.34	126.89	2326	128.64	2326.63	129.66	2327
130.86	2327.43	132.44	2328	133.91	2328.53	135.22	2329	137.89	2329.96
138	2330	138.21	2330.08	140.39	2331	141.94	2331.66	142.74	2332
143.78	2332.44	145.09	2333	145.99	2333.38	147.44	2334	149.07	2334.69
149.8	2335	150.62	2335.35	152.51	2336	154.41	2336.66	155.45	2337
156.24	2337.29	158.31	2338	160.04	2338.59	161.21	2339	163.46	2339.77
164.12	2340								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-228.7	.04	-188.15	.04	140.39	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-188.15	140.39	1336	1336	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2327.50	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.04	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2326.47	* Reach Len. (ft)	* 1336.00	* 1336.00	* 1336.00 *
* Crit W.S. (ft)	* 2325.86	* Flow Area (sq ft)	*	* 1045.52	*
* E.G. Slope (ft/ft)	*0.008952	* Area (sq ft)	*	* 1045.52	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*

* Top Width (ft)	* 294.49	* Top Width (ft)	*		* 294.49	*		*
* Vel Total (ft/s)	* 8.17	* Avg. Vel. (ft/s)	*		* 8.17	*		*
* Max Chl Dpth (ft)	* 4.44	* Hydr. Depth (ft)	*		* 3.55	*		*
* Conv. Total (cfs)	* 90231.1	* Conv. (cfs)	*		* 90231.1	*		*
* Length Wtd. (ft)	* 1336.00	* Wetted Per. (ft)	*		* 295.26	*		*
* Min Ch El (ft)	* 2322.03	* Shear (lb/sq ft)	*		* 1.98	*		*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	164.12	* 0.00	*	0.00	*
* Frctn Loss (ft)	* 11.61	* Cum Volume (acre-ft)	*		* 35.53	*		*
* C & E Loss (ft)	* 0.10	* Cum SA (acres)	*		* 11.52	*		*

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the
need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2330.17	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 2.40	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2327.78	* Reach Len. (ft)	* 1336.00	* 1336.00	* 1336.00	*
* Crit W.S. (ft)	* 2327.78	* Flow Area (sq ft)	*	* 1436.59	*	*
* E.G. Slope (ft/ft)	*0.014106	* Area (sq ft)	*	* 1436.59	*	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*	*
* Top Width (ft)	* 302.65	* Top Width (ft)	*	* 302.65	*	*
* Vel Total (ft/s)	* 12.43	* Avg. Vel. (ft/s)	*	* 12.43	*	*
* Max Chl Dpth (ft)	* 5.75	* Hydr. Depth (ft)	*	* 4.75	*	*
* Conv. Total (cfs)	*150336.7	* Conv. (cfs)	*	*150336.7	*	*
* Length Wtd. (ft)	* 1336.00	* Wetted Per. (ft)	*	* 303.83	*	*
* Min Ch El (ft)	* 2322.03	* Shear (lb/sq ft)	*	* 4.16	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 164.12	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 10.77	* Cum Volume (acre-ft)	*	* 57.50	*	*
* C & E Loss (ft)	* 0.44	* Cum SA (acres)	*	* 11.84	*	*

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -4341.67

INPUT
Description: Copy of FEMA Section 53183
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	2338.27	1009.35	2323.57	1023.46	2326.97	1030.59	2319.97	1051.21	2313.87
1063.56	2312.97	1069.39	2313.47	1083.59	2312.27	1090.73	2313.17	1111.32	2312.77
1118.92	2311.57	1128.82	2313.67	1174.74	2313.67	1246.96	2313.27	1311.05	2312.07
1343.78	2311.57	1377.97	2311.37	1382.06	2308.87	1387.2	2311.87	1398.02	2312.07
1410.17	2308.07	1422.56	2309.67	1435.3	2310.87	1459.21	2311.17	1488.67	2311.07
1499.24	2312.87	1510.35	2318.17	1542.44	2327.37	1557.17	2331.77	1572.24	2334.67
1584.75	2338.57	1606.24	2339.57	1626.09	2339.77	1659.02	2339.27		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.04	1023.46	.04	1584.75	.04

Bank Sta: Left Right Coeff Contr. Expan.
1023.46 1584.75 .1 .3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2315.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.040	
W.S. Elev (ft)	2315.09	Reach Len. (ft)			
Crit W.S. (ft)	2314.49	Flow Area (sq ft)		1271.14	
E.G. Slope (ft/ft)	*0.008440	Area (sq ft)		1271.14	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	456.81	Top Width (ft)		456.81	
Vel Total (ft/s)	6.72	Avg. Vel. (ft/s)		6.72	
Max Chl Dpth (ft)	7.02	Hydr. Depth (ft)		2.78	
Conv. Total (cfs)	92924.8	Conv. (cfs)		92924.8	
Length Wtd. (ft)		Wetted Per. (ft)		460.45	
Min Ch El (ft)	2308.07	Shear (lb/sq ft)		1.45	
Alpha	1.00	Stream Power (lb/ft s)	1659.02	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2318.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.		0.040	
W.S. Elev (ft)	2317.34	Reach Len. (ft)			
Crit W.S. (ft)	2315.89	Flow Area (sq ft)		2312.82	
E.G. Slope (ft/ft)	*0.005213	Area (sq ft)		2312.82	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	469.13	Top Width (ft)		469.13	
Vel Total (ft/s)	7.72	Avg. Vel. (ft/s)		7.72	
Max Chl Dpth (ft)	9.27	Hydr. Depth (ft)		4.93	
Conv. Total (cfs)	*247299.0	Conv. (cfs)		*247299.0	
Length Wtd. (ft)		Wetted Per. (ft)		473.61	
Min Ch El (ft)	2308.07	Shear (lb/sq ft)		1.59	
Alpha	1.00	Stream Power (lb/ft s)	1659.02	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Las Vegas Wash

Reach	River Sta.	n1	n2	n3
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	-2950	.04	.04	.04
*Upper	-3000	.04	.04	.04
*Upper	-3005.67	.04	.04	.04
*Upper	-4341.67	.04	.04	.04

SUMMARY OF REACH LENGTHS

River: Las Vegas Wash

Reach	River Sta.	Left	Channel	Right
*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	50	50	50
*Upper	-2950	50	50	50
*Upper	-3000	5.67	5.67	5.67
*Upper	-3005.67	1336	1336	1336
*Upper	-4341.67			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Las Vegas Wash

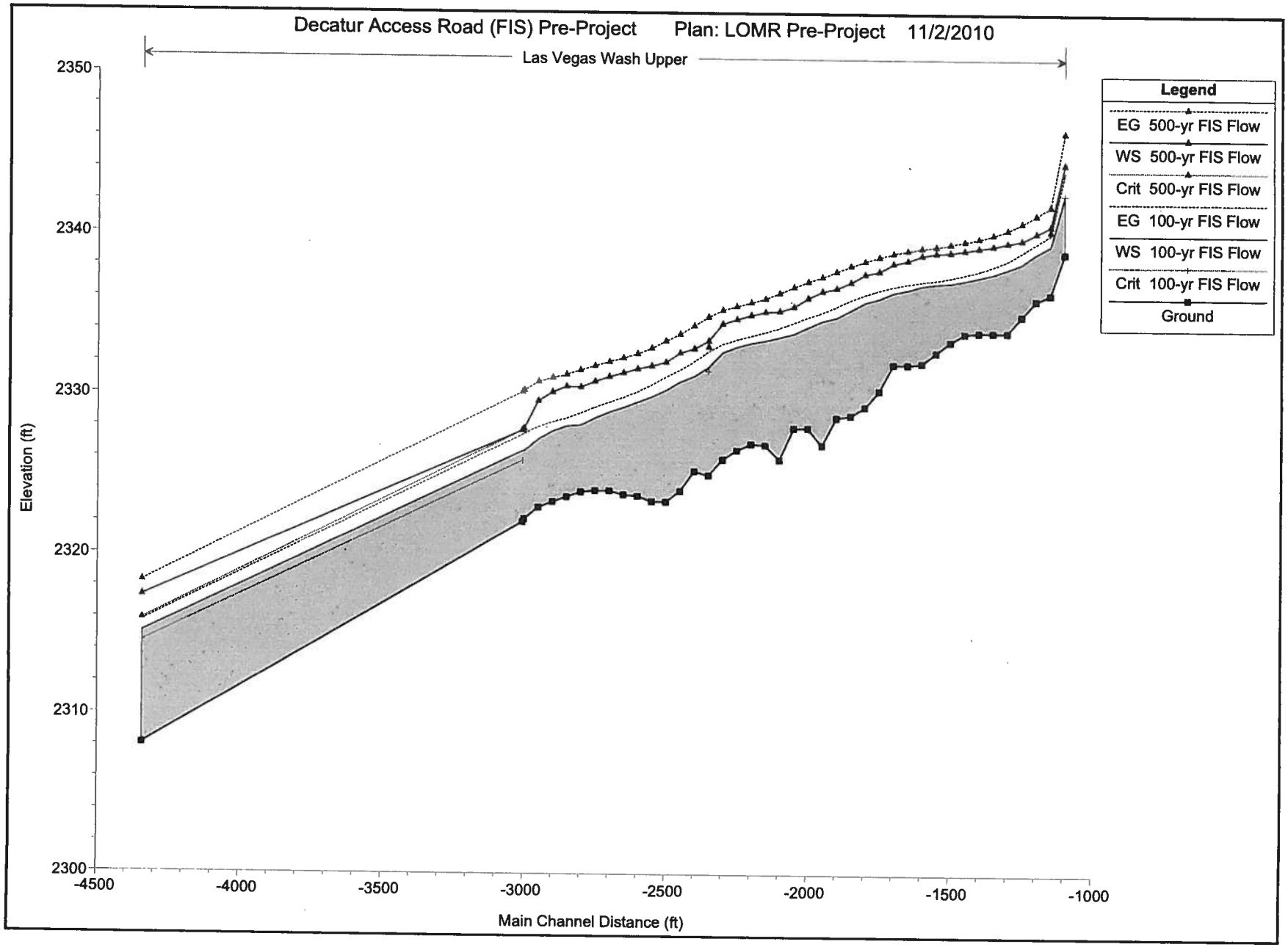
Reach	River Sta.	Contr.	Expan.
*Upper	-1100	.1	.3
*Upper	-1150	.1	.3
*Upper	-1200	.1	.3
*Upper	-1250	.1	.3
*Upper	-1300	.1	.3
*Upper	-1350	.1	.3
*Upper	-1400	.1	.3
*Upper	-1450	.1	.3
*Upper	-1500	.1	.3
*Upper	-1550	.1	.3
*Upper	-1600	.1	.3

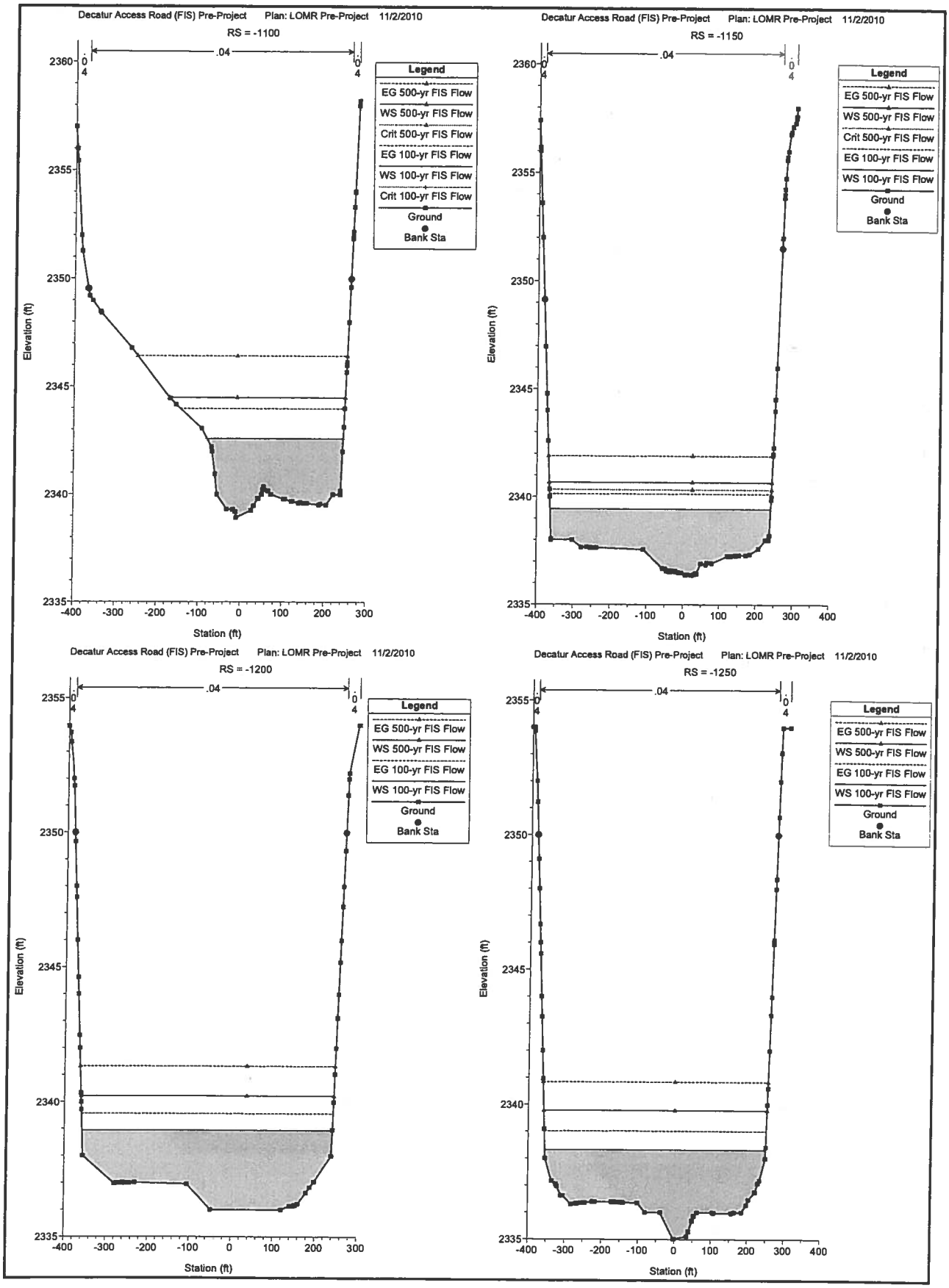
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*Upper          *    -1650   *       .1*       .3*
*Upper          *    -1700   *       .1*       .3*
*Upper          *    -1750   *       .1*       .3*
*Upper          *    -1800   *       .1*       .3*
*Upper          *    -1850   *       .1*       .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          *    -2950   *       .1*       .3*
*Upper          *    -3000   *       .1*       .3*
*Upper          *    -3005.67*       .1*       .3*
*Upper          *    -4341.67*       .1*       .3*
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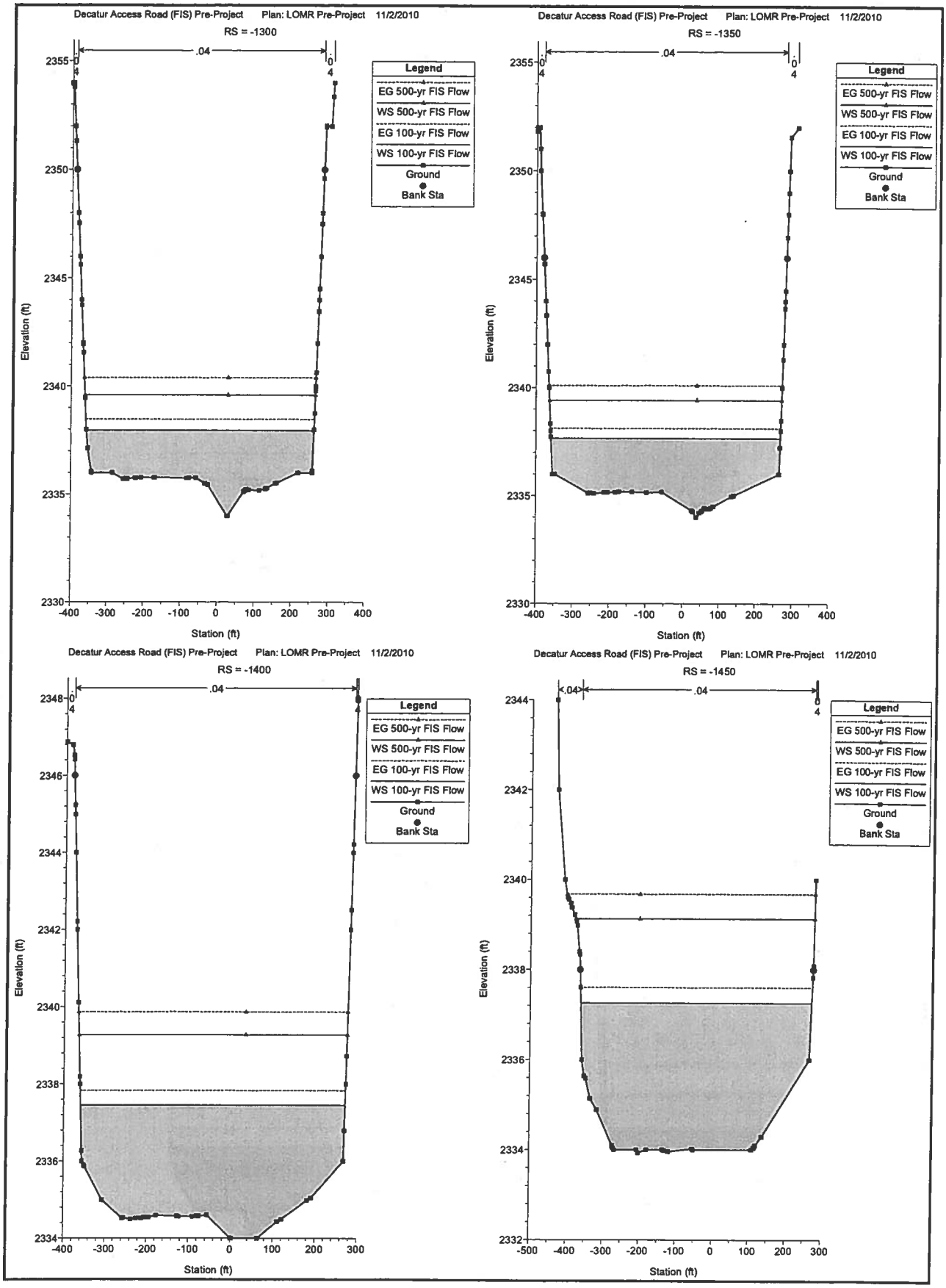
Profile Output Table - CHECKRAS

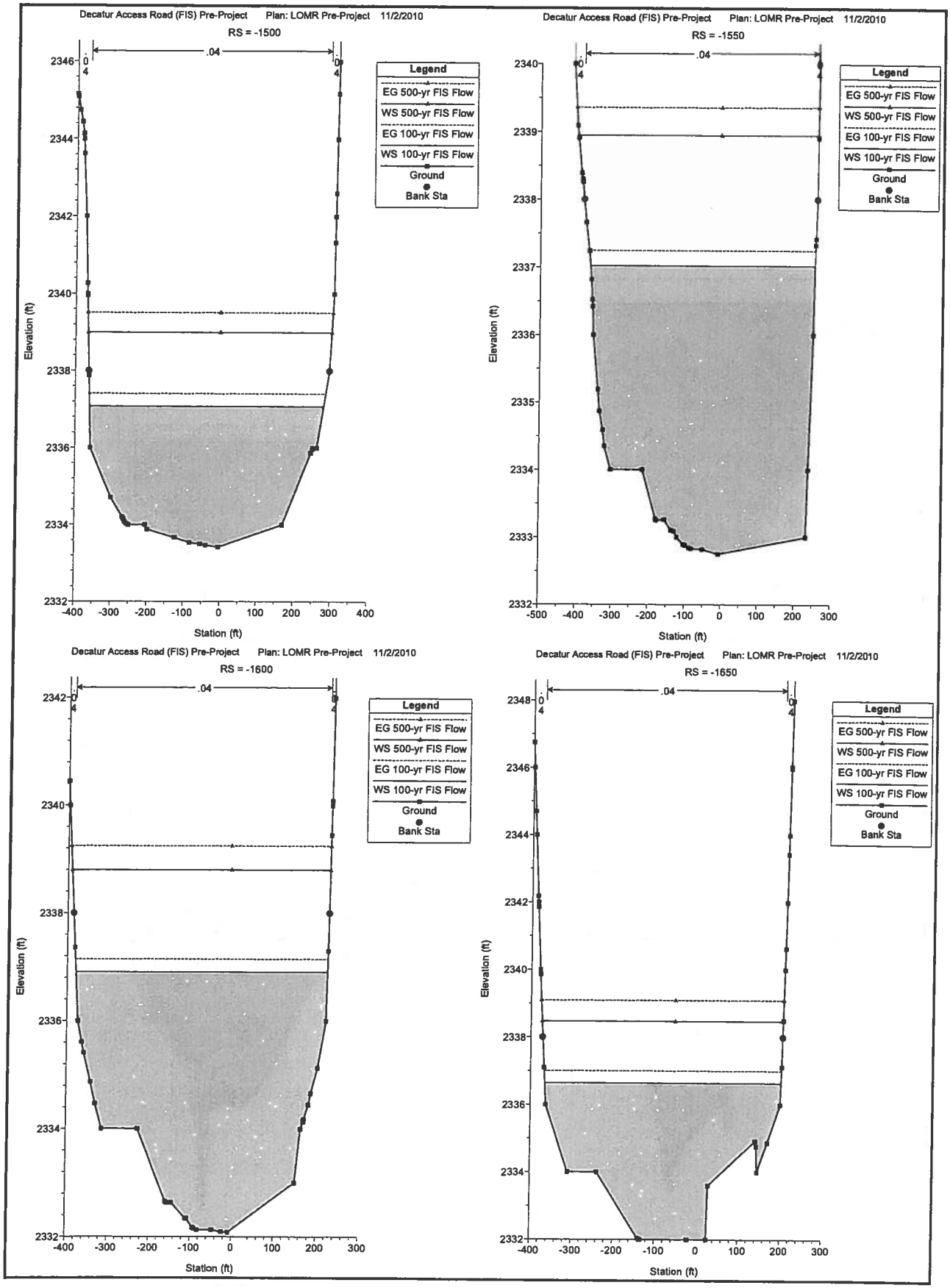
Reach	River Sta	Froude # Chl	Top Wdth Act (ft)	Conv. Total (cfs)	Prof Delta WS (ft)	Left Sta Eff (ft)	Enc Sta L (ft)	Center Station (ft)	Enc Sta R (ft)	Rght Sta Eff (ft)	Min Ch El (ft)	Left Stagn (ft)	Right Stagn (ft)
Upper	-1100	1.00	325.17	65820.1		-80.14		-53.37		245.03	2338.93		
Upper	-1100	1.01	420.10	144894.3	1.90	-171.03		-53.37		249.07	2338.93		
Upper	-1150	0.82	603.55	77055.9		-362.82		-57.89		240.73	2336.36		
Upper	-1150	0.86	609.20	166465.3	1.24	-365.37		-57.89		243.83	2336.36		
Upper	-1200	0.74	598.53	86183.9		-357.65		-58.19		240.88	2336.00		
Upper	-1200	0.79	604.20	181204.8	1.28	-360.48		-58.19		243.72	2336.00		
Upper	-1250	0.82	604.05	77271.8		-354.51		-53.81		249.54	2335.02		
Upper	-1250	0.77	610.75	186286.4	1.47	-357.98		-53.81		252.76	2335.02		
Upper	-1300	0.66	619.58	97495.3		-357.20		-50.40		262.38	2334.00		
Upper	-1300	0.63	627.07	233118.1	1.65	-361.40		-50.40		265.68	2334.00		
Upper	-1350	0.60	626.82	108299.3		-359.00		-48.07		267.82	2334.00		
Upper	-1350	0.57	634.25	260208.6	1.75	-363.22		-48.07		271.03	2334.00		
Upper	-1400	0.52	630.39	126036.0		-359.54		-46.45		270.85	2334.00		
Upper	-1400	0.51	638.75	292819.1	1.82	-364.21		-46.45		274.54	2334.00		
Upper	-1450	0.49	632.76	135788.9		-361.33		-44.36		271.43	2333.93		
Upper	-1450	0.48	654.54	313372.7	1.87	-377.15		-44.36		277.39	2333.93		
Upper	-1500	0.48	639.68	138853.5		-360.15		-34.05		279.52	2333.42		
Upper	-1500	0.47	665.63	323690.7	1.92	-365.34		-34.05		300.30	2333.42		
Upper	-1550	0.35	614.70	197001.8		-362.11		-61.44		252.59	2332.75		
Upper	-1550	0.39	657.37	395738.7	1.92	-397.83		-61.44		259.54	2332.75		
Upper	-1600	0.37	601.84	189207.8		-379.23		-80.23		222.61	2332.08		
Upper	-1600	0.41	617.50	380891.0	1.89	-390.52		-80.23		226.98	2332.08		
Upper	-1650	0.48	566.99	141317.5		-365.81		-83.70		201.18	2332.00		
Upper	-1650	0.50	578.53	302703.5	1.83	-373.33		-83.70		205.20	2332.00		
Upper	-1700	0.47	541.82	146052.5		-362.55		-106.78		179.27	2332.00		
Upper	-1700	0.51	575.02	298660.0	1.81	-393.29		-106.78		181.73	2332.00		
Upper	-1750	0.58	507.20	115317.0		-334.97		-79.50		172.23	2330.35		
Upper	-1750	0.62	515.67	244042.4	1.69	-339.45		-79.50		176.22	2330.35		
Upper	-1800	0.55	515.33	121047.9		-345.80		-90.93		169.53	2329.33		
Upper	-1800	0.58	561.72	259614.0	1.74	-391.07		-90.93		170.65	2329.33		
Upper	-1850	0.68	500.46	96546.7		-346.58		-102.07		153.87	2328.79		
Upper	-1850	0.68	529.87	220184.4	1.73	-375.53		-102.07		154.34	2328.79		
Upper	-1900	0.71	480.17	92584.6		-327.63		-98.19		152.54	2328.66		
Upper	-1900	0.69	499.26	215043.6	1.80	-346.64		-98.19		152.62	2328.66		
Upper	-1950	0.58	470.20	116146.8		-317.26		-89.61		152.94	2326.92		
Upper	-1950	0.61	483.80	247965.4	1.84	-330.62		-89.61		153.18	2326.92		
Upper	-2000	0.63	453.64	105662.3		-310.75		-89.12		145.23	2328.00		
Upper	-2000	0.66	469.14	229061.7	1.81	-322.01		-89.12		147.13	2328.00		
Upper	-2050	0.65	405.29	104313.8		-309.93		-97.10		127.69	2328.00		
Upper	-2050	0.73	452.38	204715.4	1.68	-320.36		-97.10		132.02	2328.00		
Upper	-2100	0.58	422.77	116025.7		-316.19		-108.14		114.55	2326.00		
Upper	-2100	0.68	440.35	221343.4	1.62	-325.33		-108.14		115.02	2326.00		
Upper	-2150	0.53	539.91	131097.3		-454.51		-67.93		119.64	2326.92		
Upper	-2150	0.57	613.16	271624.7	1.76	-490.70		-67.93		122.46	2326.92		
Upper	-2200	0.53	505.37	128464.0		-384.08		-139.14		121.29	2327.00		
Upper	-2200	0.57	587.30	264133.9	1.73	-465.03		-139.14		122.27	2327.00		
Upper	-2250	0.54	515.65	123487.8		-394.87		-135.34		120.78	2326.58		
Upper	-2250	0.58	553.14	259211.3	1.71	-428.21		-135.34		124.93	2326.58		

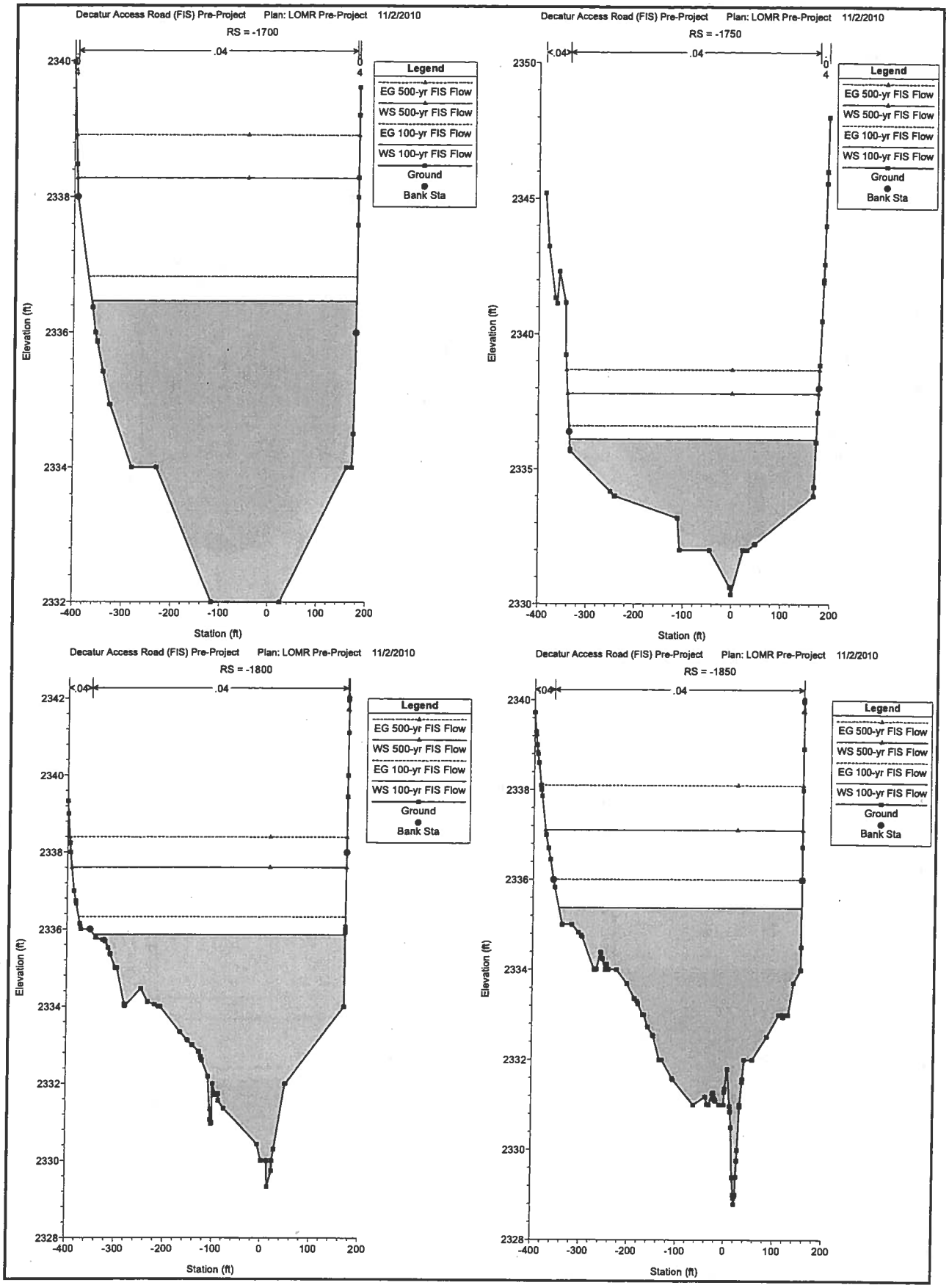
Upper	-2300		0.60	509.93	110795.8			-395.92		-141.78		114.01	2326.00						
Upper	-2300		0.61	640.85	248584.5		1.77	-523.42		-141.78		117.43	2326.00						
Upper	-2350		0.88	432.54	73462.5			-363.33		-163.15		69.21	2325.00						
Upper	-2350		0.87	493.37	168941.6		1.65	-420.79		-163.15		72.58	2325.00						
Upper	-2400		0.82	408.47	80593.1			-341.20		-165.31		67.27	2325.26						
Upper	-2400		0.83	460.60	177561.9		1.72	-388.67		-165.31		71.93	2325.26						
Upper	-2450		0.71	419.39	94462.2			-338.29		-129.10		81.10	2324.00						
Upper	-2450		0.73	485.46	202723.0		1.82	-389.81		-129.10		95.65	2324.00						
Upper	-2500		0.76	414.91	87089.2			-356.55		-164.93		58.37	2323.33						
Upper	-2500		0.78	453.39	189301.7		1.75	-390.28		-164.93		63.11	2323.33						
Upper	-2550		0.73	445.57	91046.4			-374.90		-159.61		70.68	2323.35						
Upper	-2550		0.69	475.42	217522.1		1.93	-400.24		-159.61		75.17	2323.35						
Upper	-2600		0.67	456.80	98627.8			-371.83		-152.91		84.97	2323.68						
Upper	-2600		0.63	489.10	241019.5		2.08	-394.70		-152.91		94.40	2323.68						
Upper	-2650		0.64	433.80	105174.5			-360.78		-149.98		73.02	2323.76						
Upper	-2650		0.61	462.98	250676.2		2.15	-384.90		-149.98		78.08	2323.76						
Upper	-2700		0.62	421.74	109590.3			-346.36		-141.05		75.38	2324.00						
Upper	-2700		0.59	445.24	258329.0		2.22	-363.46		-141.05		81.78	2324.00						
Upper	-2750		0.64	405.27	105553.8			-333.04		-132.09		72.23	2324.00						
Upper	-2750		0.61	422.68	254099.6		2.28	-343.33		-132.09		79.35	2324.00						
Upper	-2800		0.68	378.33	99695.3			-306.66		-121.66		71.68	2323.92						
Upper	-2800		0.63	403.03	245898.9		2.37	-323.80		-121.66		79.23	2323.92						
Upper	-2850		0.52	421.90	132678.9			-284.97		-68.70		136.94	2323.60						
Upper	-2850		0.50	443.59	312745.9		2.49	-293.71		-68.70		149.88	2323.60						
Upper	-2900		0.56	379.02	123597.5			-248.51		-64.34		130.52	2323.29						
Upper	-2900		0.55	401.31	283929.0		2.45	-261.69		-64.34		139.62	2323.29						
Upper	-2950		0.66	336.47	104664.2			-212.00		-41.84		124.47	2322.94						
Upper	-2950		0.64	359.83	241801.3		2.40	-227.36		-41.84		132.47	2322.94						
Upper	-3000		0.80	295.24	85924.5			-170.03		-29.97		125.21	2322.22						
Upper	-3000		1.01	305.16	150168.5		1.41	-176.03		-29.97		129.12	2322.22						
Upper	-3005.67		0.76	294.49	90231.1			-166.30		-23.88		128.18	2322.03						
Upper	-3005.67		1.01	302.65	150336.7		1.31	-170.83		-23.88		131.82	2322.03						
Upper	-4341.67		0.71	456.81	92924.8			1047.09		1304.11		1503.89	2308.07						
Upper	-4341.67		0.61	469.13	247299.0		2.25	1039.48		1304.11		1508.61	2308.07						

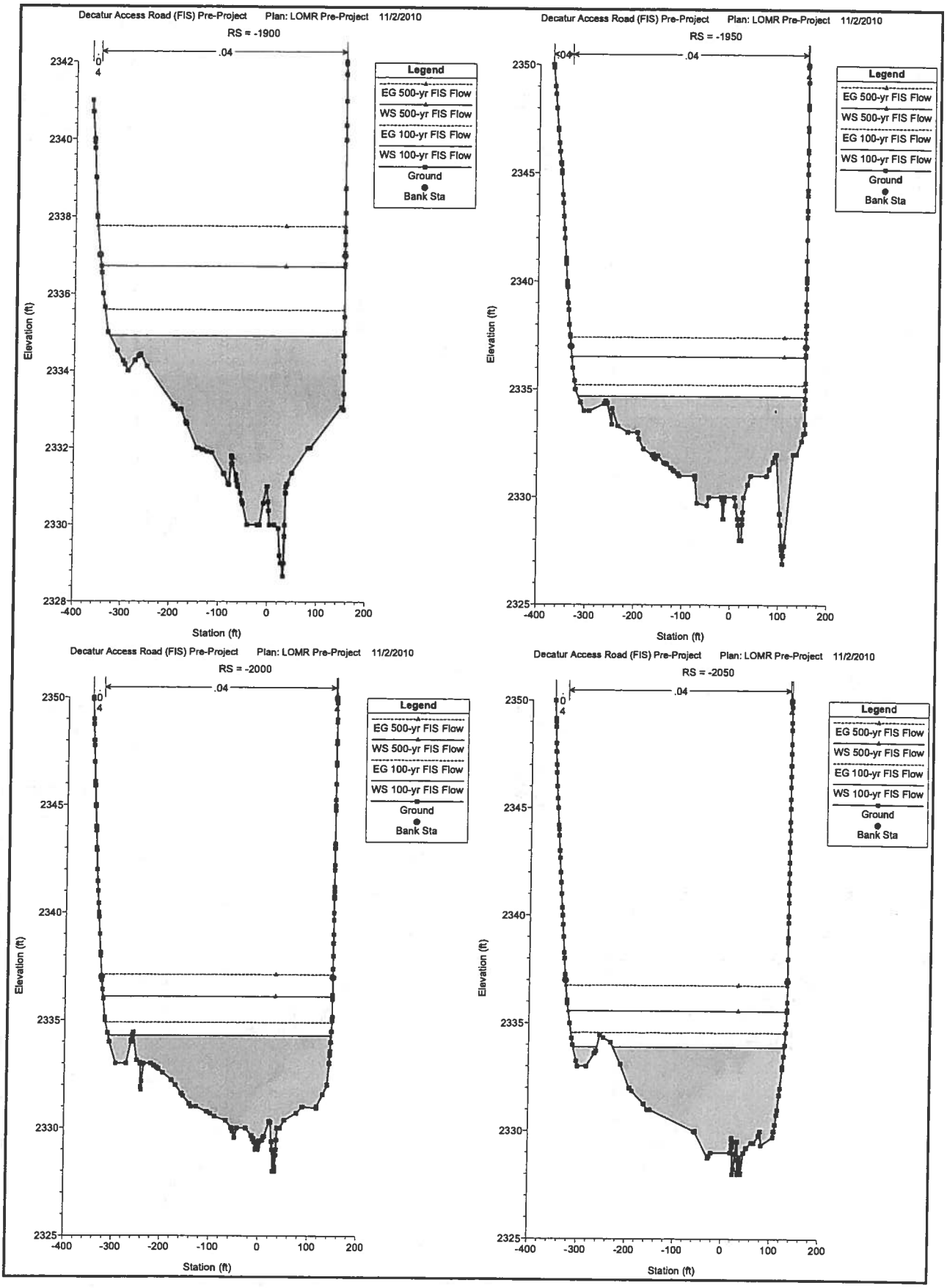

Decatur Access Road (FIS) Pre-Project
Plan: LOMR Pre-Project
11/2/2010
Las Vegas Wash Upper
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Elevation (ft)
2350
2340
2330
2320
2310
2300
-4500
-4000
-3500
-3000
-2500
-2000
-1500
-1000
Main Channel Distance (ft)

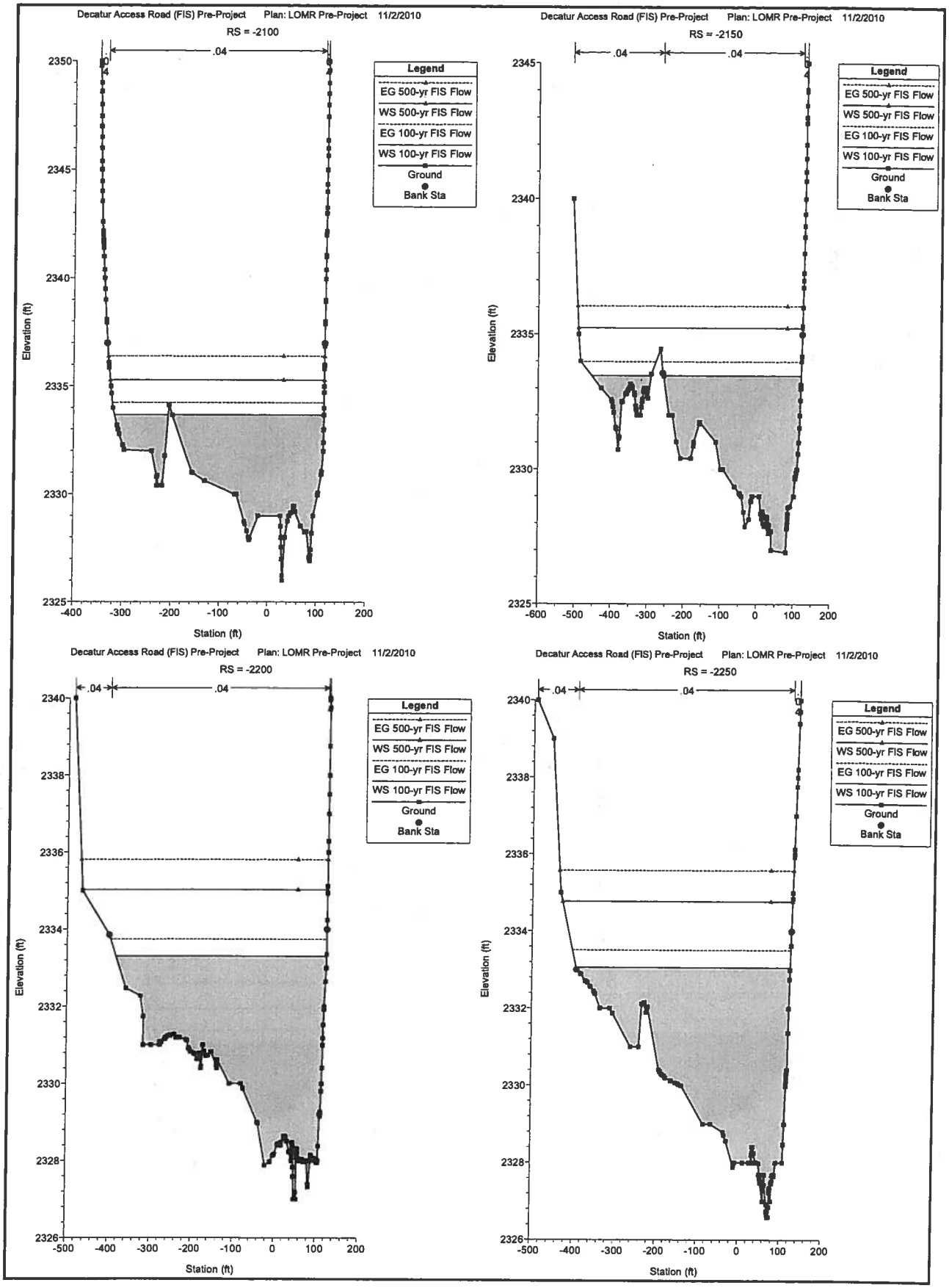

Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1100
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1150
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1200
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1250
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

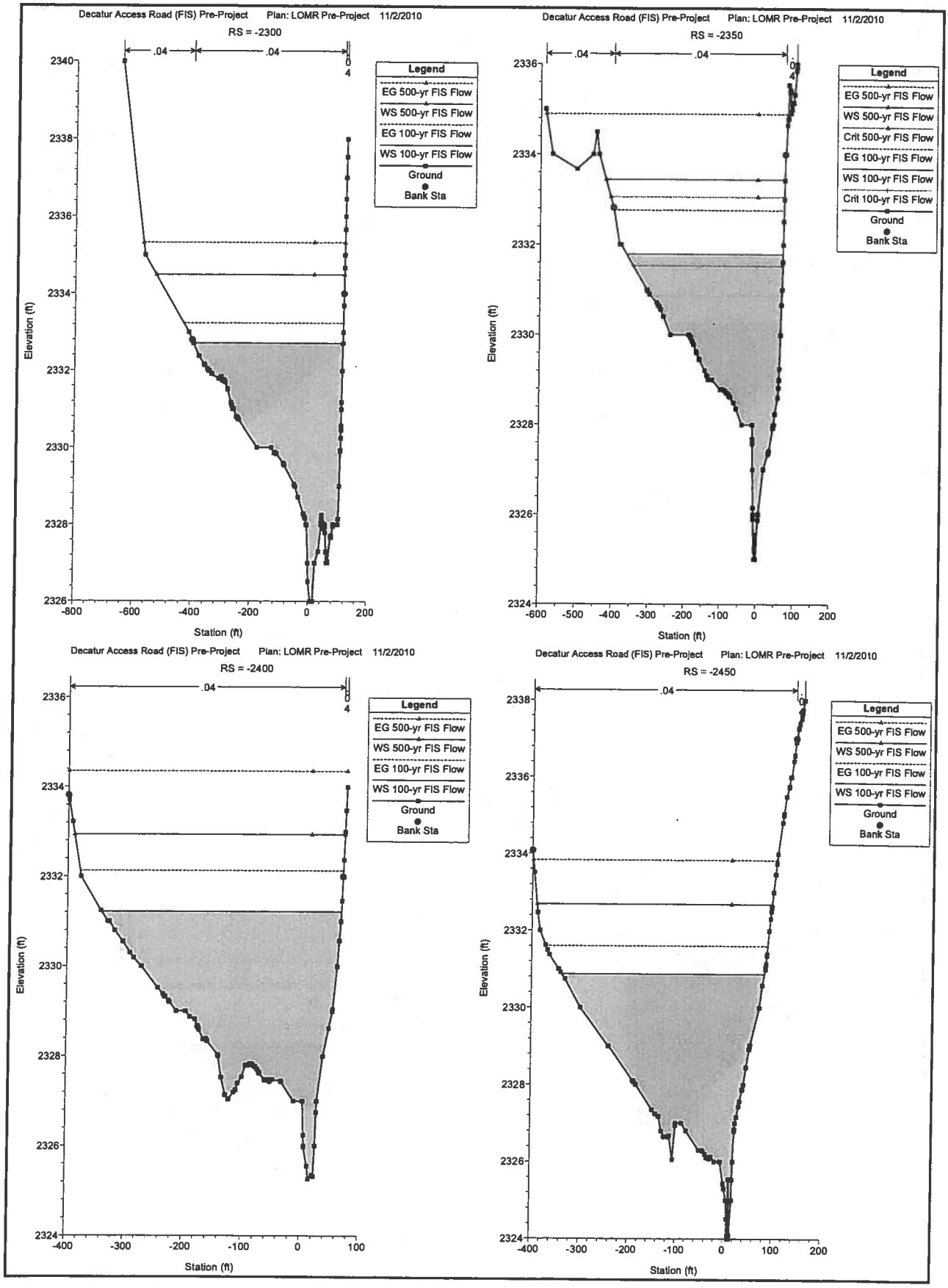

Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1300
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1350
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1400
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1450
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

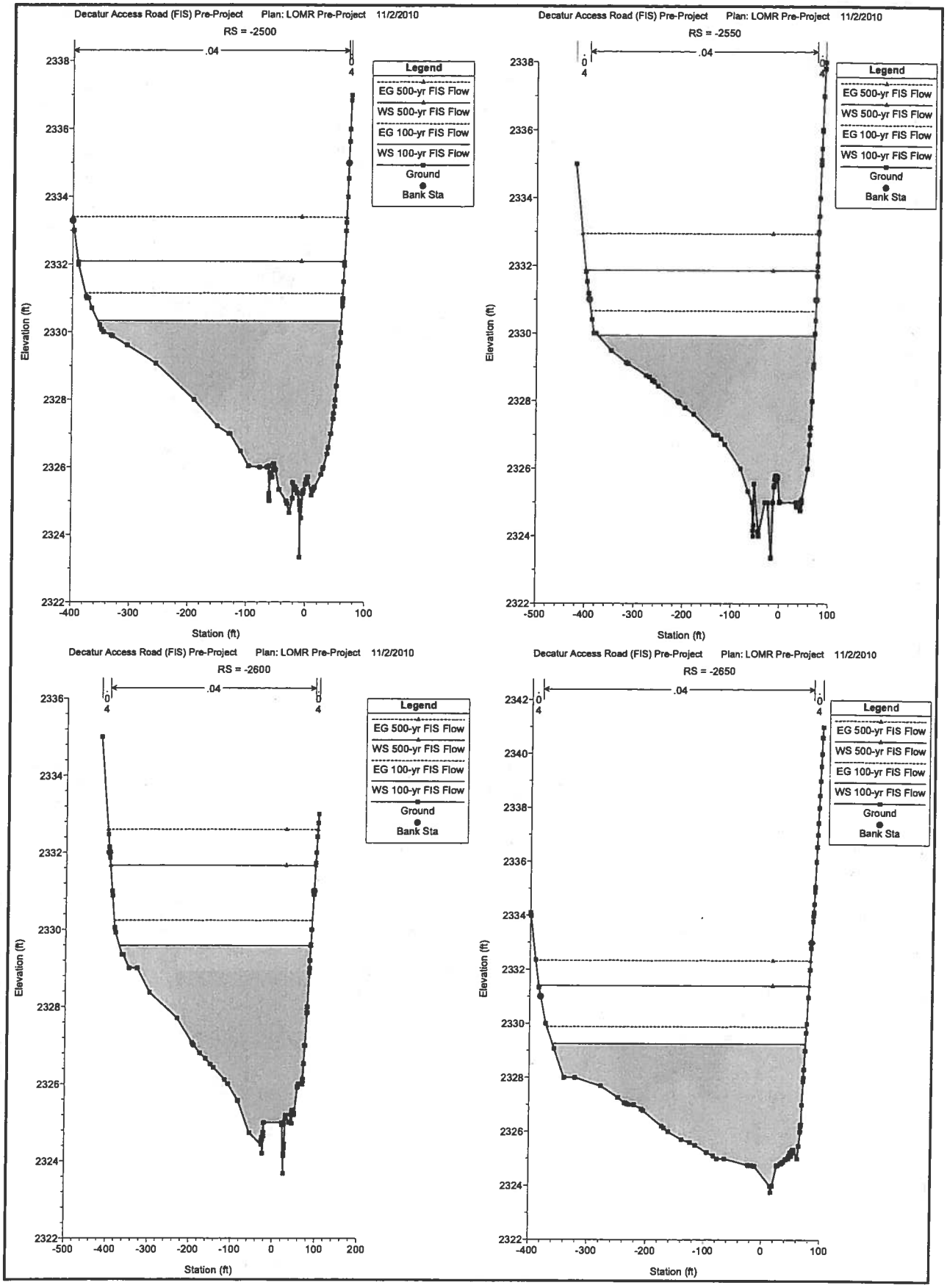

Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1500
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1550
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1600
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1650
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

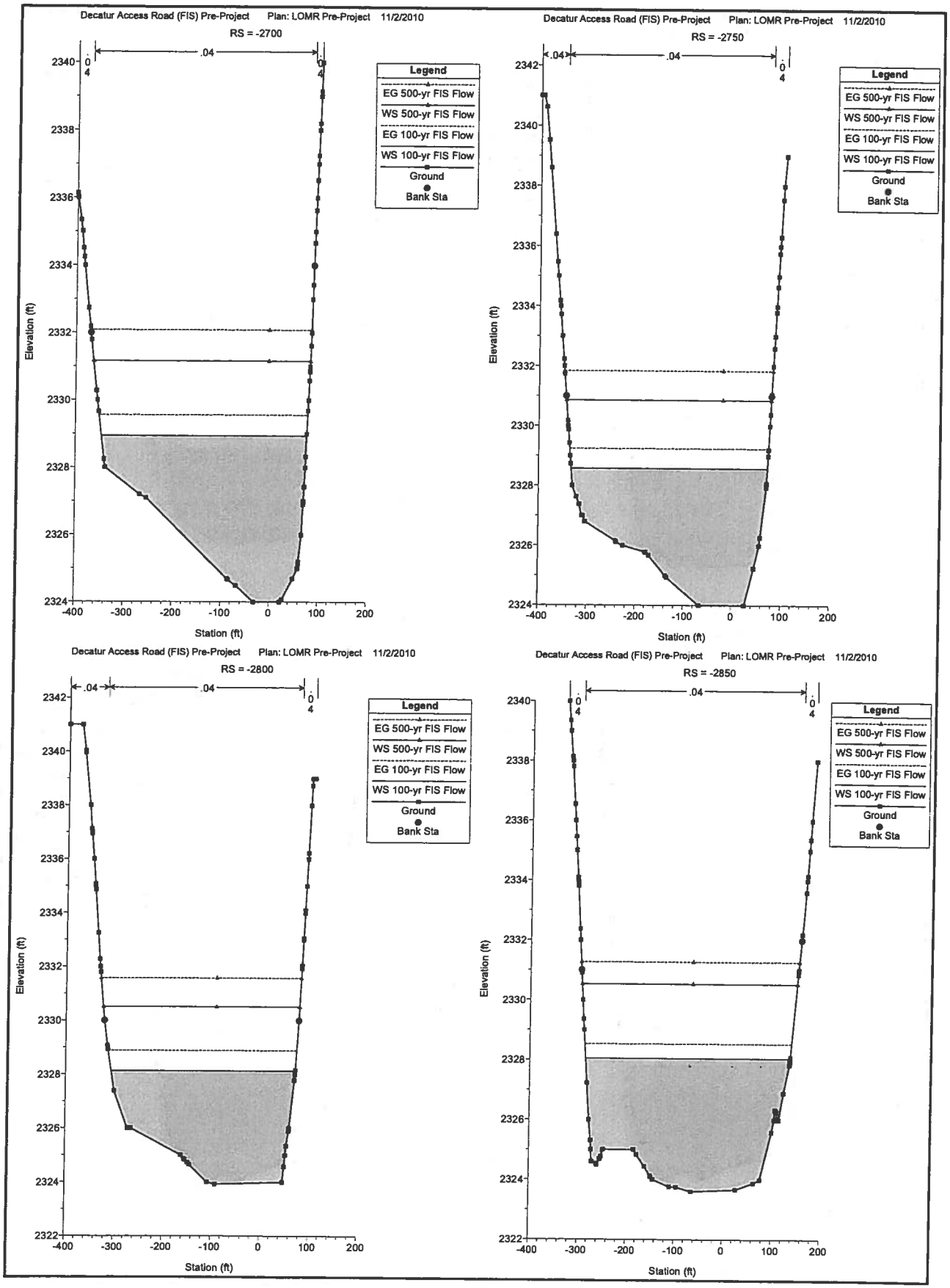

Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1700
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1750
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1800
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1850
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

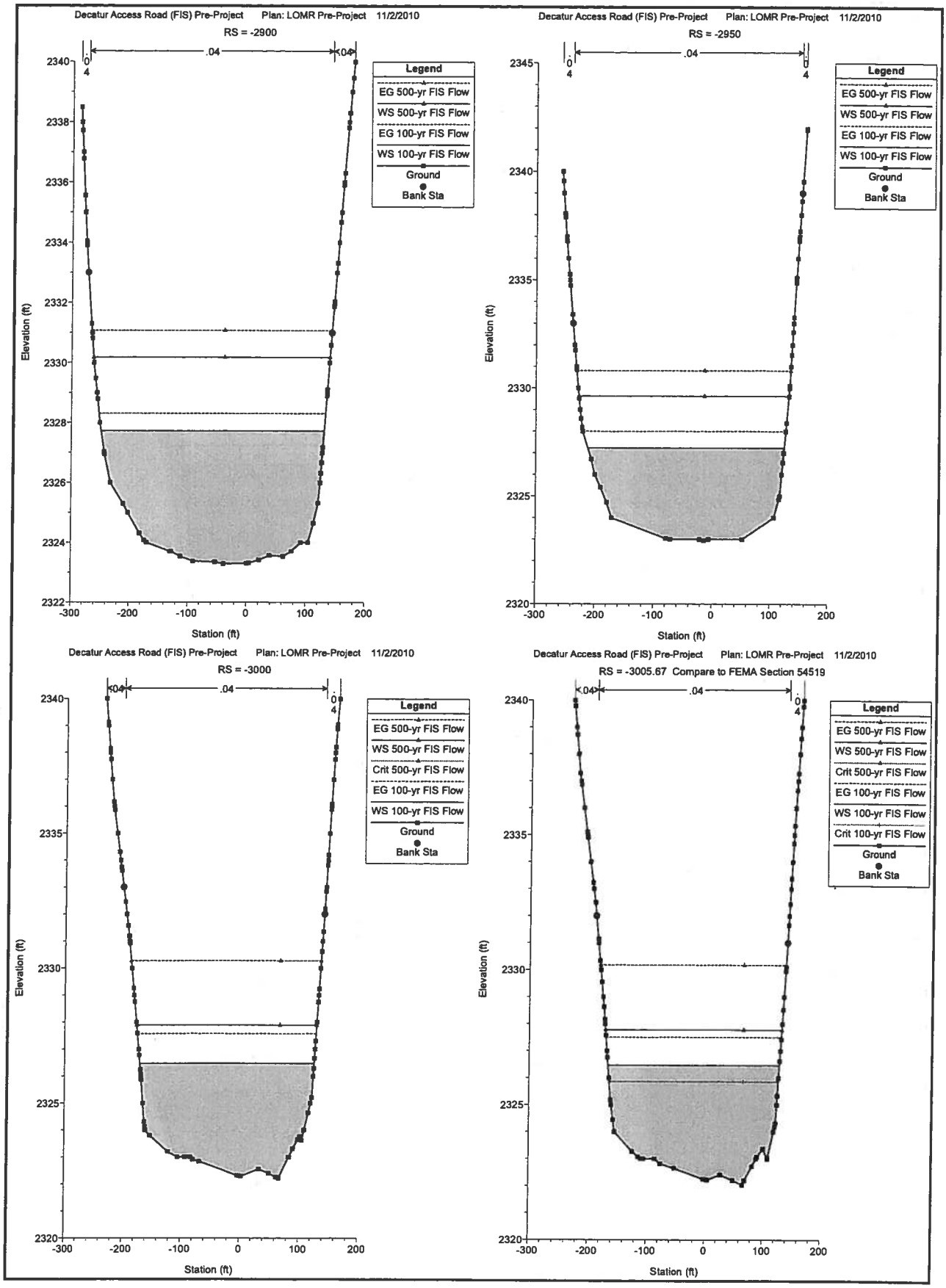

Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1900
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -1950
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2000
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2050

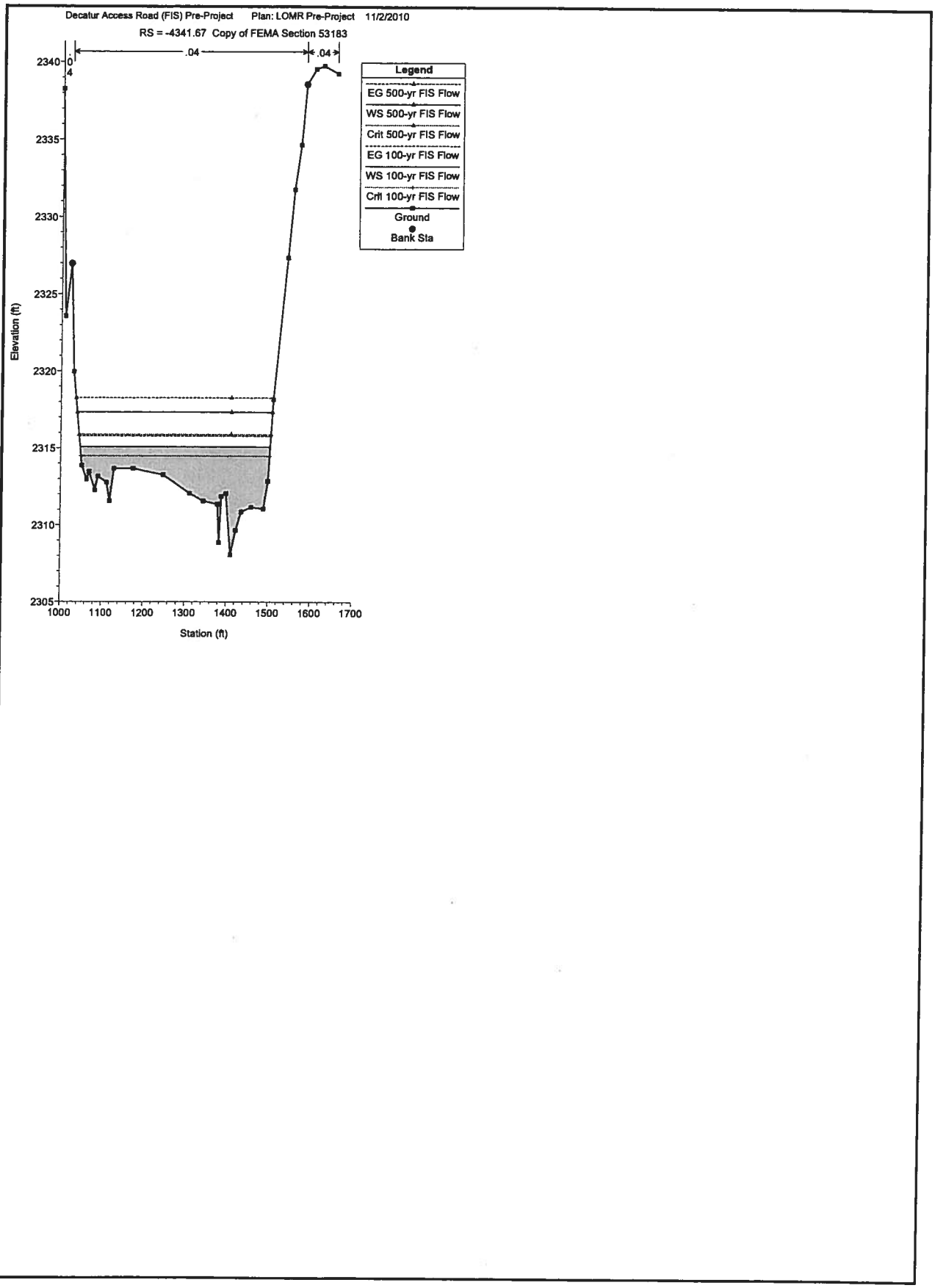

Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2100
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2150
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2200
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2250


Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2300
.04
.04
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2350
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2400
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2450


Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2500
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2550
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2600
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2650
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2700
.04
.04
0
4
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2750
.04
.04
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2800
.04
.04
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2850
.04
0
4
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2900
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -2950
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -3000
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -3005.67 Compare to FEMA Section 54519
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Pre-Project Plan: LOMR Pre-Project 11/2/2010
RS = -4341.67 Copy of FEMA Section 53183
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
2340
2335
2330
2325
2320
2315
2310
2305
1000
1100
1200
1300
1400
1500
1600
1700
Station (ft)

DECATUR BOULEVARD ACCESS ROAD
PRE-PROJECT CONDITION: CHECK-RAS OUTPUT

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.f02
Report File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.nt
Selected profiles: 100-yr FIS Flow
Date: 11/2/2010
Time: 11:42:53 AM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
Las Vegas Wash,Upper						
-1100		0.04	0.04	0.04	0.1	0.3
-1150		0.04	0.04	0.04	0.1	0.3
-1200		0.04	0.04	0.04	0.1	0.3
-1250		0.04	0.04	0.04	0.1	0.3
-1300		0.04	0.04	0.04	0.1	0.3
-1350		0.04	0.04	0.04	0.1	0.3
-1400		0.04	0.04	0.04	0.1	0.3
-1450		0.04	0.04	0.04	0.1	0.3
-1500		0.04	0.04	0.04	0.1	0.3
-1550		0.04	0.04	0.04	0.1	0.3
-1600		0.04	0.04	0.04	0.1	0.3
-1650		0.04	0.04	0.04	0.1	0.3
-1700		0.04	0.04	0.04	0.1	0.3
-1750		0.04	0.04	0.04	0.1	0.3
-1800		0.04	0.04	0.04	0.1	0.3
-1850		0.04	0.04	0.04	0.1	0.3
-1900		0.04	0.04	0.04	0.1	0.3
-1950		0.04	0.04	0.04	0.1	0.3
-2000		0.04	0.04	0.04	0.1	0.3
-2050		0.04	0.04	0.04	0.1	0.3
-2100		0.04	0.04	0.04	0.1	0.3
-2150		0.04	0.04	0.04	0.1	0.3
-2200		0.04	0.04	0.04	0.1	0.3
-2250		0.04	0.04	0.04	0.1	0.3
-2300		0.04	0.04	0.04	0.1	0.3
-2350		0.04	0.04	0.04	0.1	0.3
-2400		-----	0.04	0.04	0.1	0.3
		-----	0.04	-----		
-2450		-----	0.04	0.04	0.1	0.3
		-----	0.04	-----		
-2500		-----	0.04	0.04	0.1	0.3
		-----	0.04	-----		
-2550		0.04	0.04	0.04	0.1	0.3
-2600		0.04	0.04	0.04	0.1	0.3
-2650		0.04	0.04	0.04	0.1	0.3
-2700		0.04	0.04	0.04	0.1	0.3
-2750		0.04	0.04	0.04	0.1	0.3
-2800		0.04	0.04	0.04	0.1	0.3
-2850		0.04	0.04	0.04	0.1	0.3
-2900		0.04	0.04	0.04	0.1	0.3
-2950		0.04	0.04	0.04	0.1	0.3
-3000		0.04	0.04	0.04	0.1	0.3
-3005.67		0.04	0.04	0.04	0.1	0.3
-4341.67		0.04	0.04	0.04	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.04	0.04
Right Overbank n Value:	0.04	0.04
Channel n Value:	0.04	0.04
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

RS: -1100
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1150
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1200
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1250
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1300
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1350
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1400
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1450
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1500
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1550
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1600
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1650
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1700
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1750
NT RC 05 The left overbank n value of 0.04 and the right overbank n value

of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1800
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1850
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1900
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1950
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2000
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2050
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2100
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2150
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2200
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2250
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2300
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2350
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2550
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2600
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04

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          The overbank n values should be reevaluated.

RS:      -2650
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -2700
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -2750
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -2800
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -2850
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -2900
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -2950
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -3000
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

RS:      -3005.67
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

TRANSITION LOSS COEFFICIENT CHECK
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ROUGHNESS COEFFICIENT AT STRUCTURES
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---END---
```

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.f02
Report File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.xs
Selected profiles: 100-yr FIS Flow
Date: 11/2/2010
Time: 11:43:16 AM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
Las Vegas Wash,Upper						
-1100	50	50	50	325.17	8537	C
-1150	50	50	50	603.55	8537	
-1200	50	50	50	598.53	8537	
-1250	50	50	50	604.05	8537	
-1300	50	50	50	619.58	8537	
-1350	50	50	50	626.82	8537	
-1400	50	50	50	630.39	8537	
-1450	50	50	50	632.76	8537	
-1500	50	50	50	639.68	8537	
-1550	50	50	50	614.7	8537	
-1600	50	50	50	601.84	8537	
-1650	50	50	50	566.99	8537	
-1700	50	50	50	541.82	8537	
-1750	50	50	50	507.2	8537	
-1800	50	50	50	515.33	8537	
-1850	50	50	50	500.46	8537	
-1900	50	50	50	480.17	8537	
-1950	50	50	50	470.2	8537	
-2000	50	50	50	453.64	8537	D
-2050	50	50	50	405.29	8537	D
-2100	50	50	50	422.77	8537	D
-2150	50	50	50	539.91	8537	D
-2200	50	50	50	505.37	8537	
-2250	50	50	50	515.65	8537	
-2300	50	50	50	509.93	8537	
-2350	50	50	50	432.54	8537	
-2400	50	50	50	408.47	8537	
-2450	50	50	50	419.39	8537	
-2500	50	50	50	414.91	8537	
-2550	50	50	50	445.57	8537	
-2600	50	50	50	456.8	8537	
-2650	50	50	50	433.8	8537	
-2700	50	50	50	421.74	8537	
-2750	50	50	50	405.27	8537	
-2800	50	50	50	378.33	8537	
-2850	50	50	50	421.9	8537	
-2900	50	50	50	379.02	8537	
-2950	50	50	50	336.47	8537	
-3000	5.67	5.67	5.67	295.24	8537	
-3005.67	1336	1336	1336	294.49	8537	
-4341.67	0	0	0	456.81	8537	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

XS DC 02 Constant dicharge used for the Las Vegas Wash,Upper

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is Las Vegas Wash,Upper
Known WS = 2315.09 is specified as the downstream boundary
for profile 100-yr FIS Flow

XS BC 03 Maximum number of iterations is 0
It should not be less than 20.

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: MULTIPLE PROFILE Check

Project File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.f02
Report File: C:\Documents and Settings\Mike\Desktop\Pre-Project\DAR_pre.mp
Selected profiles: #100-yr FIS Flow,#500-yr FIS Flow
Date: 11/2/2010
Time: 11:40:12 AM

River Station	WSEL	Q Total	Top Wdth Act	Vel Head	Profile Number
Las Vegas Wash,Upper					
-1100	2342.59	8537	325.17	1.4	1
-1100	2344.49	17855	420.1	1.93	2
-1150	2339.43	8537	603.55	0.71	1
-1150	2340.67	17855	609.2	1.21	2
-1200	2338.95	8537	598.53	0.62	1
-1200	2340.22	17855	604.2	1.1	2
-1250	2338.31	8537	604.05	0.7	1
-1250	2339.78	17855	610.75	1.06	2
-1300	2337.96	8537	619.58	0.52	1
-1300	2339.6	17855	627.07	0.79	2
-1350	2337.66	8537	626.82	0.45	1
-1350	2339.41	17855	634.25	0.69	2
-1400	2337.45	8537	630.39	0.38	1
-1400	2339.27	17855	638.75	0.59	2
-1450	2337.26	8537	632.76	0.34	1
-1450	2339.13	17855	654.54	0.55	2
-1500	2337.08	8537	639.68	0.33	1
-1500	2339	17855	665.63	0.51	2
-1550	2337.02	8537	614.7	0.23	1
-1550	2338.94	17855	657.37	0.41	2
-1600	2336.91	8537	601.84	0.24	1
-1600	2338.8	17855	617.5	0.45	2
-1650	2336.64	8537	566.99	0.36	1
-1650	2338.47	17855	578.53	0.62	2
-1700	2336.47	8537	541.82	0.36	1
-1700	2338.28	17855	575.02	0.63	2
-1750	2336.1	8537	507.2	0.5	1
-1750	2337.79	17855	515.67	0.88	2
-1800	2335.86	8537	515.33	0.46	1
-1800	2337.6	17855	561.72	0.79	2
-1850	2335.38	8537	500.46	0.62	1
-1850	2337.11	17855	529.87	0.99	2
-1900	2334.91	8537	480.17	0.68	1
-1900	2336.72	17855	499.26	1.04	2
-1950	2334.69	8537	470.2	0.52	1
-1950	2336.52	17855	483.8	0.89	2
-2000	2334.3	8537	453.64	0.6	1
-2000	2336.11	17855	469.14	1.02	2
-2050	2333.9	8537	405.29	0.67	1
-2050	2335.57	17855	452.38	1.19	2
-2100	2333.67	8537	422.77	0.57	1
-2100	2335.28	17855	440.35	1.11	2
-2150	2333.47	8537	539.91	0.51	1
-2150	2335.23	17855	613.16	0.81	2
-2200	2333.3	8537	505.37	0.44	1
-2200	2335.03	17855	587.3	0.78	2
-2250	2333.06	8537	515.65	0.45	1
-2250	2334.77	17855	553.14	0.81	2
-2300	2332.72	8537	509.93	0.52	1
-2300	2334.49	17855	640.85	0.84	2
-2350	2331.79	8537	432.54	0.97	1
-2350	2333.44	17855	493.37	1.46	2
-2400	2331.22	8537	408.47	0.91	1
-2400	2332.94	17855	460.6	1.41	2
-2450	2330.87	8537	419.39	0.74	1
-2450	2332.68	17855	485.46	1.15	2

-2500	2330.34	8537	414.91	0.82	1
-2500	2332.09	17855	453.39	1.31	2
-2550	2329.93	8537	445.57	0.73	1
-2550	2331.86	17855	475.42	1.09	2
-2600	2329.58	8537	456.8	0.65	1
-2600	2331.66	17855	489.1	0.93	2
-2650	2329.25	8537	433.8	0.63	1
-2650	2331.4	17855	462.98	0.93	2
-2700	2328.94	8537	421.74	0.62	1
-2700	2331.16	17855	445.24	0.92	2
-2750	2328.58	8537	405.27	0.67	1
-2750	2330.86	17855	422.68	0.98	2
-2800	2328.13	8537	378.33	0.75	1
-2800	2330.5	17855	403.03	1.07	2
-2850	2328.05	8537	421.9	0.49	1
-2850	2330.53	17855	443.59	0.73	2
-2900	2327.73	8537	379.02	0.58	1
-2900	2330.18	17855	401.31	0.89	2
-2950	2327.23	8537	336.47	0.78	1
-2950	2329.63	17855	359.83	1.18	2
-3000	2326.48	8537	295.24	1.1	1
-3000	2327.89	17855	305.16	2.39	2
-3005.67	2326.47	8537	294.49	1.04	1
-3005.67	2327.78	17855	302.65	2.4	2
-4341.67	2315.09	8537	456.81	0.7	1
-4341.67	2317.34	17855	469.13	0.93	2

Boundary Condition Check

MP SW 01 The name of the stream is Las Vegas Wash,Upper
(Known WS = 2315.09) is specified as the downstream boundary
for profile 100-yr FIS Flow

MP SW 01 The name of the stream is Las Vegas Wash,Upper
(Known WS = 2317.34) is specified as the downstream boundary
for profile 500-yr FIS Flow

Discharge Check

Water Surface Elevation Check

Topwidth Check

---END---

DECATUR BOULEVARD ACCESS ROAD
POST-PROJECT CONDITION: HEC-RAS MODEL

(File Name: *DAR_post.prj* Plan: *POST*)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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

****

PROJECT DATA
Project Title: Decatur Access Road (FIS) Post-Project
Project File : DAR_post.prj
Run Date and Time: 11/2/2010 12:42:56 PM

Project in English units

Project Description:

****

PLAN DATA

Plan Title: LOMR Post-Project
Plan File : C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.p01

Geometry Title: Proposed Conditions (Final)
Geometry File : C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.g01

Flow Title : FIS Flows
Flow File : C:\Documents and Settings\Mike\Desktop\Post-Project\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: Subcritical Flow

****

FLOW DATA

Flow Title: FIS Flows
Flow File : C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.f02

Flow Data (cfs)

River	Reach	RS	100-yr FIS Flow	500-yr FIS Flow
Las Vegas Wash	Upper	-1100	5019	17855
Las Vegas Wash	Upper	-2406.83	8537	17855

Boundary Conditions

River	Reach	Profile	Upstream	Downstream

```
*****************************************************************************************************
* Las Vegas Wash  Upper          100-yr FIS Flow  *                                  Known WS = 2315.09 *
* Las Vegas Wash  Upper          500-yr FIS Flow  *                                  Known WS = 2317.34 *
*****************************************************************************************************

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

GEOMETRY DATA

Geometry Title: Proposed Conditions (Final)
Geometry File : C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.g01

CROSS SECTION


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

INPUT
Description:
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************
    -400 2357.02 -396.47    2356 -395.27 2355.43 -384.83    2352 -382.63 2351.27
 -367.45 2349.53 -364.52  2349.2    -357 2348.98 -337.95 2348.47 -335.85 2348.41
 -262.77 2346.79 -169.45 2344.45  -155.3 2344.17  -92.84 2343.06   -70.1 2342.21
   -68.5    2342  -61.05 2340.95  -55.91    2340  -32.33 2339.31  -17.45  2339.3
  -11.75  2339.2   -9.85 2338.93   26.56 2339.26    32.6 2339.48   42.44 2339.82
   43.31 2339.82   43.87 2339.81   51.84    2340   54.21 2340.23   55.94 2340.36
   65.72 2340.18   66.71 2340.16   73.51    2340  103.73  2339.8   106.6 2339.79
  122.29 2339.68  124.28 2339.69   139.6  2339.6  143.66 2339.63  151.71  2339.6
  159.63  2339.6  187.92 2339.52  191.15 2339.57   205.3 2339.52  222.05    2340
  239.36    2340  239.76 2340.19  243.79    2342   246.2 2343.14  248.01    2344
  251.66 2345.68  252.35    2346  252.68 2346.15  256.51    2348  259.89 2349.62
  260.71    2350   264.6 2351.86   264.9    2352  265.29 2352.19  267.67 2353.33
  269.06    2354  269.14 2354.04  277.36    2358  277.81 2358.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -400     .04 -367.45     .04  260.71     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -367.45  260.71               50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #100-yr FIS Flow
*****************************************************************************************************
* E.G. Elev (ft)         * 2342.71  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.02  * Wt. n-Val.             *          *    0.040 *          *
* W.S. Elev (ft)         * 2341.70  * Reach Len. (ft)        *   50.00  *    50.00 *   50.00  *
* Crit W.S. (ft)         * 2341.70  * Flow Area (sq ft)      *          *   620.00 *          *
* E.G. Slope (ft/ft)     *0.018848  * Area (sq ft)           *          *   620.00 *          *
* Q Total (cfs)          * 5019.00  * Flow (cfs)             *          *  5019.00 *          *
* Top Width (ft)         *  309.46  * Top Width (ft)         *          *   309.46 *          *
* Vel Total (ft/s)       *    8.10  * Avg. Vel. (ft/s)       *          *    8.10 *          *
* Max Chl Dpth (ft)      *    2.77  * Hydr. Depth (ft)       *          *    2.00 *          *
* Conv. Total (cfs)      * 36557.9  * Conv. (cfs)            *          * 36557.9 *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   310.04 *          *
* Min Ch El (ft)         * 2338.93  * Shear (lb/sq ft)       *          *    2.35 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *  277.81  *    0.00 *    0.00  *
* Frctn Loss (ft)        *    0.76  * Cum Volume (acre-ft)   *    2.59  *  120.41 *    0.14  *
* C & E Loss (ft)        *    0.16  * Cum SA (acres)         *    0.64  *   32.06 *    0.05  *
*****************************************************************************************************

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

CROSS SECTION OUTPUT  Profile #500-yr FIS Flow
```

E.G. Elev (ft)	2346.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.92	Wt. n-Val.		0.040	
W.S. Elev (ft)	2344.50	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2344.50	Flow Area (sq ft)		1606.35	
E.G. Slope (ft/ft)	*0.015057	Area (sq ft)		1606.35	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	420.58	Top Width (ft)		420.58	
Vel Total (ft/s)	11.12	Avg. Vel. (ft/s)		11.12	
Max Chl Dpth (ft)	5.57	Hydr. Depth (ft)		3.82	
Conv. Total (cfs)	*145510.6	Conv. (cfs)		*145510.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		421.85	
Min Ch El (ft)	2338.93	Shear (lb/sq ft)		3.58	
Alpha	1.00	Stream Power (lb/ft s)	277.81	0.00	0.00
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	8.59	230.99	0.87
C & E Loss (ft)	0.45	Cum SA (acres)	2.04	33.78	0.27

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

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2357.41	-397.42	2356.17	-397.08	2356	-392.09	2353.59	-388.81	2352
-382.89	2349.14	-378.39	2346.96	-373.87	2344.78	-372.27	2344	-369.34	2342.59
-364.7	2340.35	-363.99	2340	-359.94	2338.04	-359.86	2338	-302.66	2338
-277.36	2337.66	-261.95	2337.67	-252.92	2337.64	-251.32	2337.65	-241.63	2337.63
-237.12	2337.64	-109.01	2337.56	-56.18	2336.68	-48.64	2336.66	-45.47	2336.56
-40.71	2336.55	-37.52	2336.57	-36	2336.52	-29.08	2336.58	-25.88	2336.54
-22.14	2336.56	-20.13	2336.55	-13.81	2336.5	-10.06	2336.48	-4.45	2336.47
6.89	2336.4	7.74	2336.37	13.47	2336.4	25.01	2336.36	26.49	2336.39
30.64	2336.39	34.55	2336.44	36.71	2336.45	37.87	2336.43	49.15	2336.91
63.07	2336.85	66.51	2336.94	79.21	2336.92	123.63	2337.25	131.52	2337.25
144.29	2337.28	145.87	2337.27	152.95	2337.28	153.67	2337.28	154.5	2337.29
173.49	2337.29	183.89	2337.33	208.12	2337.6	226.92	2338	235.17	2338
237.19	2338.22	242.04	2339.88	242.24	2339.94	242.39	2340	246.67	2342
247.31	2342.3	250.96	2344	252.11	2344.54	255.25	2346	267.11	2351.52
268.13	2352	272.25	2353.86	272.55	2354	273.21	2354.26	275.23	2354.76
278.24	2355.61	278.84	2355.75	281.54	2356	287.78	2356.8	289.29	2356.89
293.28	2357.14	300.17	2357.31	302.22	2357.53	302.64	2357.61	304.23	2358

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-382.89	.04	267.11	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.89	267.11	50	50	50 .1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2339.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.		0.040	
W.S. Elev (ft)	2338.85	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		914.06	
E.G. Slope (ft/ft)	*0.012491	Area (sq ft)		914.06	

* Q Total (cfs)	* 5019.00	* Flow (cfs)	*		* 5019.00	*					
* Top Width (ft)	* 600.63	* Top Width (ft)	*		* 600.63	*					
* Vel Total (ft/s)	* 5.49	* Avg. Vel. (ft/s)	*		* 5.49	*					
* Max Chl Dpth (ft)	* 2.49	* Hydr. Depth (ft)	*		* 1.52	*					
* Conv. Total (cfs)	* 44907.8	* Conv. (cfs)	*		* 44907.8	*					
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 600.98	*					
* Min Ch El (ft)	* 2336.36	* Shear (lb/sq ft)	*		* 1.19	*					
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	304.23	* 0.00	*	0.00	*			
* Frctn Loss (ft)	* 0.49	* Cum Volume (acre-ft)	*	2.59	* 119.53	*	0.14	*			
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	0.64	* 31.53	*	0.05	*			

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2343.37	* Element	*	Left OB	* Channel	*	Right OB	*			
* Vel Head (ft)	* 0.42	* Wt. n-Val.	*		* 0.040	*					
* W.S. Elev (ft)	* 2342.95	* Reach Len. (ft)	*	50.00	* 50.00	*	50.00	*			
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 3413.86	*					
* E.G. Slope (ft/ft)	*0.002043	* Area (sq ft)	*		* 3413.86	*					
* Q Total (cfs)	*17855.00	* Flow (cfs)	*		*17855.00	*					
* Top Width (ft)	* 618.77	* Top Width (ft)	*		* 618.77	*					
* Vel Total (ft/s)	* 5.23	* Avg. Vel. (ft/s)	*		* 5.23	*					
* Max Chl Dpth (ft)	* 6.59	* Hydr. Depth (ft)	*		* 5.52	*					
* Conv. Total (cfs)	*395059.3	* Conv. (cfs)	*		*395059.3	*					
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 620.90	*					
* Min Ch El (ft)	* 2336.36	* Shear (lb/sq ft)	*		* 0.70	*					
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	304.23	* 0.00	*	0.00	*			
* Frctn Loss (ft)	* 0.09	* Cum Volume (acre-ft)	*	8.59	* 228.11	*	0.87	*			
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	2.04	* 33.18	*	0.27	*			

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2353.95	-395.65	2353.71	-394.01	2353.37	-386.52	2352	-385.9	2351.73
-382.16	2350	-381.39	2349.66	-377.78	2348	-376.85	2347.59	-373.39	2346
-370.25	2344.62	-368.89	2344	-365.48	2342.47	-364.45	2342	-360.72	2340.33
-360	2340	-359.38	2339.72	-355.53	2338	-355.07	2338	-279.78	2336.98
-274.76	2336.99	-269.4	2336.99	-266.93	2337	-265.64	2337	-259.1	2337.01
-253.65	2336.99	-249.1	2337	-243.21	2336.99	-230.85	2337.01	-105.3	2336.95
-48.31	2336	120.36	2336	140.45	2336.15	142.9	2336.15	146.92	2336.14
147.73	2336.14	149.56	2336.15	151.71	2336.17	154.14	2336.17	160.23	2336.22
179.27	2336.63	188.27	2336.84	198.64	2337.05	238.73	2338	240.94	2338.97
243.21	2340	245.6	2341.04	247.71	2342	250.26	2343.12	252.21	2344
254.93	2345.19	256.72	2346	259.6	2347.26	261.25	2348	264.29	2349.33
265.78	2350	268.99	2351.4	270.39	2352	271.39	2352.22	293.07	2354
295.54	2354								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-382.16	.04	265.78	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.16	265.78	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2338.79	* Element	*	Left OB	* Channel	*	Right OB	*			
* Vel Head (ft)	* 0.36	* Wt. n-Val.	*		* 0.040	*					
* W.S. Elev (ft)	* 2338.43	* Reach Len. (ft)	*	50.00	* 50.00	*	50.00	*			
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 1041.89	*					
* E.G. Slope (ft/ft)	*0.007993	* Area (sq ft)	*		* 1041.89	*					
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*		* 5019.00	*					
* Top Width (ft)	* 596.20	* Top Width (ft)	*		* 596.20	*					
* Vel Total (ft/s)	* 4.82	* Avg. Vel. (ft/s)	*		* 4.82	*					
* Max Chl Dpth (ft)	* 2.43	* Hydr. Depth (ft)	*		* 1.75	*					
* Conv. Total (cfs)	* 56139.4	* Conv. (cfs)	*		* 56139.4	*					
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 596.42	*					
* Min Ch El (ft)	* 2336.00	* Shear (lb/sq ft)	*		* 0.87	*					
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	295.54	* 0.00	*	0.00	*			

* Frctn Loss (ft)	* 0.32	* Cum Volume (acre-ft)	* 2.59	* 118.40	* 0.14 *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.64	* 30.85	* 0.05 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2343.26	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.35	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2342.91	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 3758.81	* *
* E.G. Slope (ft/ft)	*0.001474	* Area (sq ft)	*	* 3758.81	* *
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	* *
* Top Width (ft)	* 616.25	* Top Width (ft)	*	* 616.25	* *
* Vel Total (ft/s)	* 4.75	* Avg. Vel. (ft/s)	*	* 4.75	* *
* Max Chl Dpth (ft)	* 6.91	* Hydr. Depth (ft)	*	* 6.10	* *
* Conv. Total (cfs)	*465067.0	* Conv. (cfs)	*	*465067.0	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 618.38	* *
* Min Ch El (ft)	* 2336.00	* Shear (lb/sq ft)	*	* 0.56	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 295.54	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.06	* Cum Volume (acre-ft)	* 8.59	* 223.99	* 0.87 *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 2.04	* 32.47	* 0.27 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2354	-395.24	2354	-394.69	2353.86	-387.27	2352	-385.46	2351.22
-382.46	2350	-380.22	2349.1	-377.66	2348	-374.3	2346.67	-372.77	2346
-371.8	2345.58	-368	2344	-366.24	2343.25	-363.33	2342	-360.73	2340.96
-356.36	2339.08	-353.77	2338	-336	2337.16	-324.36	2337.05	-321.74	2336.97
-310.78	2336.62	-305.73	2336.62	-282.21	2336.3	-280.65	2336.3	-267.57	2336.33
-267.15	2336.32	-256.24	2336.34	-254.39	2336.34	-246.87	2336.35	-244.8	2336.35
-224.58	2336.39	-217.5	2336.38	-171.93	2336.39	-168.57	2336.38	-157.12	2336.38
-154.76	2336.37	-143.7	2336.37	-141.11	2336.36	-101.58	2336.35	-80.87	2336
-38.99	2336	-2.89	2335.02	0	2335.02	34.2	2335.11	39.16	2335.29
48.79	2335.68	48.93	2335.69	53.65	2335.86	53.95	2335.87	54.09	2335.88
61.6	2336	104.94	2336	107.92	2335.98	156.46	2335.97	163.37	2336
184.53	2336	197.55	2336.27	203.66	2336.47	221.36	2336.75	228.5	2337.08
233.49	2337.19	248.87	2338	249.78	2338.42	253.25	2340	254.56	2340.61
257.61	2342	260.45	2343.32	261.94	2344	266.16	2345.97	266.24	2346
266.48	2346.11	270.56	2348	271.33	2348.37	274.84	2350	276.28	2350.68
279.11	2352	281.88	2353.06	284.54	2354	305.29	2354		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-382.46	.04	274.84	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-382.46	274.84	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2338.44	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.28	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2338.16	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1179.79	* *
* E.G. Slope (ft/ft)	*0.005366	* Area (sq ft)	*	* 1179.79	* *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	* *
* Top Width (ft)	* 603.38	* Top Width (ft)	*	* 603.38	* *
* Vel Total (ft/s)	* 4.25	* Avg. Vel. (ft/s)	*	* 4.25	* *
* Max Chl Dpth (ft)	* 3.14	* Hydr. Depth (ft)	*	* 1.96	* *
* Conv. Total (cfs)	* 68517.5	* Conv. (cfs)	*	* 68517.5	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 603.54	* *
* Min Ch El (ft)	* 2335.02	* Shear (lb/sq ft)	*	* 0.65	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 305.29	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.17	* Cum Volume (acre-ft)	* 2.59	* 117.13	* 0.14 *
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	* 0.64	* 30.16	* 0.05 *

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 OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2343.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.040	
W.S. Elev (ft)	2342.88	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		4080.30	
E.G. Slope (ft/ft)	0.001142	Area (sq ft)		4080.30	
Q Total (cfs)	17855.00	Flow (cfs)		17855.00	
Top Width (ft)	624.90	Top Width (ft)		624.90	
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)		4.38	
Max Chl Dpth (ft)	7.86	Hydr. Depth (ft)		6.53	
Conv. Total (cfs)	528306.1	Conv. (cfs)		528306.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		627.05	
Min Ch El (ft)	2335.02	Shear (lb/sq ft)		0.46	
Alpha	1.00	Stream Power (lb/ft s)	305.29	0.00	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	8.59	219.49	0.87
C & E Loss (ft)	0.02	Cum SA (acres)	2.04	31.76	0.27

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2353.96	-399.88	2354	-397.23	2354	-396.77	2353.81	-391.97	2352
-390.34	2351.32	-387.1	2350	-382.16	2348	-380.99	2347.53	-377.22	2346
-376.3	2345.63	-372.28	2344	-371.69	2343.76	-367.34	2342	-367.21	2341.95
-366.24	2341.56	-361.04	2339.46	-357.4	2338	-353.18	2337.13	-343.04	2336.06
-342.65	2336.01	-342.44	2336	-285.22	2336	-255.3	2335.71	-247.41	2335.73
-244.14	2335.72	-222.34	2335.76	-221.21	2335.76	-206.73	2335.78	-172.05	2335.77
-169.39	2335.78	-83.75	2335.75	-77.01	2335.76	-57.95	2335.76	-34.48	2335.51
-33.66	2335.5	-26.25	2335.45	26.45	2334	28.6	2334	71.83	2335.13
74.17	2335.16	75.78	2335.19	78.42	2335.23	85.07	2335.2	114.33	2335.19
131.52	2335.26	134.75	2335.3	158.12	2335.52	161.27	2335.53	218.92	2336
258.24	2336	258.43	2336.09	262.47	2338	264.06	2338.76	266.05	2339.8
266.44	2340	267.78	2340.65	270.41	2342	273.33	2343.47	274.38	2344
275.45	2344.52	278.27	2346	281.37	2347.51	282.35	2348	285.53	2349.6
286.31	2350	290.54	2351.97	290.68	2352.03	290.77	2352	306.13	2352
310.52	2353.37	312.64	2354						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-387.1	.04	286.31	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-387.1	286.31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2338.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	2338.08	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		1546.92	
E.G. Slope (ft/ft)	0.002259	Area (sq ft)		1546.92	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	620.22	Top Width (ft)		620.22	
Vel Total (ft/s)	3.24	Avg. Vel. (ft/s)		3.24	
Max Chl Dpth (ft)	4.08	Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	105609.9	Conv. (cfs)		105609.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		620.89	
Min Ch El (ft)	2334.00	Shear (lb/sq ft)		0.35	
Alpha	1.00	Stream Power (lb/ft s)	312.64	0.00	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	2.59	115.56	0.14
C & E Loss (ft)	0.01	Cum SA (acres)	0.64	29.46	0.05

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2343.12	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.24	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2342.88	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 4577.17	*
* E.G. Slope (ft/ft)	*0.000808	* Area (sq ft)	*	* 4577.17	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*
* Top Width (ft)	* 641.67	* Top Width (ft)	*	* 641.67	*
* Vel Total (ft/s)	* 3.90	* Avg. Vel. (ft/s)	*	* 3.90	*
* Max Chl Dpth (ft)	* 8.88	* Hydr. Depth (ft)	*	* 7.13	*
* Conv. Total (cfs)	*628280.0	* Conv. (cfs)	*	*628280.0	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 644.41	*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*	* 0.36	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 312.64	* 0.00	* 0.00
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	* 8.59	* 214.52	* 0.87
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 2.04	* 31.04	* 0.27

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2351.82	-398.46	2352	-392.59	2352	-390.7	2351.01	-389.12	2350
-384.26	2348.02	-384.19	2347.99	-379.29	2346	-378.59	2345.71	-374.38	2344
-372.75	2343.33	-369.49	2342	-366.47	2340.75	-364.63	2340	-360.63	2338.34
-359.84	2338	-359.18	2337.73	-354.63	2336	-348.42	2336	-256.42	2335.12
-251.26	2335.13	-240.78	2335.11	-213.3	2335.15	-208.47	2335.15	-203.96	2335.16
-182.92	2335.16	-173	2335.19	-137.34	2335.18	-97.73	2335.15	-56.78	2335.18
23.89	2334.33	26.73	2334.28	28.11	2334.27	37.93	2334	38.33	2334
46.38	2334.21	51.22	2334.27	54.54	2334.32	59.96	2334.42	62.23	2334.41
72.2	2334.4	78.06	2334.43	84.91	2334.51	134.48	2334.97	141.15	2335.01
263.43	2336	264.79	2336	267.04	2337.23	268.44	2338	269.33	2338.48
272.1	2340	274.5	2341.31	275.76	2342	278.83	2343.67	279.43	2344
280.34	2344.48	283.16	2346	284.9	2346.95	286.81	2348	288.67	2348.99
290.52	2350	293.26	2351.56	313.24	2352				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-379.29	.04	283.16	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-379.29	283.16	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2338.14	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.12	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2338.02	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1802.57	*
* E.G. Slope (ft/ft)	*0.001381	* Area (sq ft)	*	* 1802.57	*
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	*
* Top Width (ft)	* 628.36	* Top Width (ft)	*	* 628.36	*
* Vel Total (ft/s)	* 2.78	* Avg. Vel. (ft/s)	*	* 2.78	*
* Max Chl Dpth (ft)	* 4.02	* Hydr. Depth (ft)	*	* 2.87	*
* Conv. Total (cfs)	*135059.6	* Conv. (cfs)	*	*135059.6	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 629.28	*
* Min Ch El (ft)	* 2334.00	* Shear (lb/sq ft)	*	* 0.25	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 313.24	* 0.00	* 0.00
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	* 2.59	* 113.64	* 0.14
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.64	* 28.74	* 0.05

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2343.07	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.21	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2342.86	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 4895.78	*
* E.G. Slope (ft/ft)	*0.000656	* Area (sq ft)	*	* 4895.78	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*
* Top Width (ft)	* 648.95	* Top Width (ft)	*	* 648.95	*
* Vel Total (ft/s)	* 3.65	* Avg. Vel. (ft/s)	*	* 3.65	*

* Max Chl Dpth (ft)	*	8.86	* Hydr. Depth (ft)	*		*	7.54	*			
* Conv. Total (cfs)	*	697336.6	* Conv. (cfs)	*		*	697336.6	*			
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	652.07	*			
* Min Ch El (ft)	*	2334.00	* Shear (lb/sq ft)	*		*	0.31	*			
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	313.24	*	0.00	*	0.00		
* Frctn Loss (ft)	*	0.03	* Cum Volume (acre-ft)	*	8.59	*	209.09	*	0.87		
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	2.04	*	30.29	*	0.27		

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-468.78	2355	-451.24	2350	-400	2346.87	-386.12	2346.79	-385.54	2346.8
-382.81	2346.53	-382.15	2346.42	-381.14	2346	-379.3	2345.23	-378.78	2344.99
-376.21	2344	-371.69	2342.21	-371.17	2342	-366.35	2340.11	-361.46	2338.19
-360.95	2338	-356.51	2336.27	-355.81	2336	-351.1	2335.89	-349.71	2335.87
-306.39	2334.99	-257.53	2334.52	-255.12	2334.53	-237.42	2334.49	-224.05	2334.51
-211.47	2334.52	-203.62	2334.54	-193.8	2334.54	-176.61	2334.59	-126.04	2334.57
-123.17	2334.56	-89.49	2334.56	-79.83	2334.58	-75.23	2334.57	-55.61	2334.6
0	2334.01	1.34	2334	64.7	2334	110.83	2334.43	121.03	2334.49
181.87	2334.98	191.01	2335.04	267.92	2336	269.51	2336.79	271.97	2338
273.44	2338.73	280.08	2342	281.11	2342.51	284.14	2344	284.57	2344.22
288.24	2346	292.32	2347.96	292.39	2348	293.42	2348	298.51	2348
309.76	2348	310.17	2348	310.19	2348.02	312.8	2350	315.9	2351.28
317.56	2352	319.63	2352.65	323.88	2354				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-468.78	.04	-381.14	.04	288.24	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-381.14	288.24	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	*	2338.08	* Element	*	Left OB	*	Channel	*	Right OB		
* Vel Head (ft)	*	0.09	* Wt. n-Val.	*		*	0.040	*			
* W.S. Elev (ft)	*	2337.99	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00		
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	2070.02	*			
* E.G. Slope (ft/ft)	*	0.000879	* Area (sq ft)	*		*	2070.02	*			
* Q Total (cfs)	*	5019.00	* Flow (cfs)	*		*	5019.00	*			
* Top Width (ft)	*	632.85	* Top Width (ft)	*		*	632.85	*			
* Vel Total (ft/s)	*	2.42	* Avg. Vel. (ft/s)	*		*	2.42	*			
* Max Chl Dpth (ft)	*	3.99	* Hydr. Depth (ft)	*		*	3.27	*			
* Conv. Total (cfs)	*	169288.4	* Conv. (cfs)	*		*	169288.4	*			
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	633.72	*			
* Min Ch El (ft)	*	2334.00	* Shear (lb/sq ft)	*		*	0.18	*			
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	323.88	*	0.00	*	0.00		
* Frctn Loss (ft)	*	0.04	* Cum Volume (acre-ft)	*	2.59	*	111.42	*	0.14		
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	0.64	*	28.02	*	0.05		

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2343.03	* Element	*	Left OB	*	Channel	*	Right OB		
* Vel Head (ft)	*	0.18	* Wt. n-Val.	*		*	0.040	*			
* W.S. Elev (ft)	*	2342.85	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00		
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	5202.76	*			
* E.G. Slope (ft/ft)	*	0.000542	* Area (sq ft)	*		*	5202.76	*			
* Q Total (cfs)	*	17855.00	* Flow (cfs)	*		*	17855.00	*			
* Top Width (ft)	*	655.11	* Top Width (ft)	*		*	655.11	*			
* Vel Total (ft/s)	*	3.43	* Avg. Vel. (ft/s)	*		*	3.43	*			
* Max Chl Dpth (ft)	*	8.85	* Hydr. Depth (ft)	*		*	7.94	*			
* Conv. Total (cfs)	*	767059.6	* Conv. (cfs)	*		*	767059.6	*			
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	658.03	*			
* Min Ch El (ft)	*	2334.00	* Shear (lb/sq ft)	*		*	0.27	*			
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	323.88	*	0.00	*	0.00		
* Frctn Loss (ft)	*	0.02	* Cum Volume (acre-ft)	*	8.59	*	203.29	*	0.87		
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	2.04	*	29.55	*	0.27		

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-460.04	2360	-442.07	2350	-431.96	2344	-427.75	2342	-408.15	2340
-400	2339.6	-396.4	2339.56	-391.5	2339.48	-388.77	2339.38	-380.44	2339.22
-375.34	2339.08	-372.93	2338.98	-366.8	2338.4	-364.92	2338.34	-363.66	2338
-362.34	2337.61	-357.69	2336	-351.33	2335.64	-346.65	2335.59	-334.71	2335.14
-316.66	2334.89	-273.48	2334.09	-272.49	2334.07	-271.15	2334.04	-267.89	2334
-206.27	2334	-202.38	2333.93	-202.22	2333.93	-180.2	2334	-134.87	2334
-130.66	2333.98	-119.73	2333.96	-54.44	2334.02	-52.72	2334	108.51	2334
114.68	2334.04	115.15	2334.04	116.27	2334.06	118.67	2334.09	136.23	2334.29
265.7	2336	274.03	2337.83	274.95	2338	275.15	2338.09	279.27	2340
283.48	2342	286.56	2343.42	287.8	2344	290.78	2345.33	292.22	2346
295.88	2347.71	296.52	2348	297.55	2348	299.55	2348	304.91	2348
312.2	2348	314.88	2349.08	316.85	2350	321.73	2351.15	325.72	2352
326.22	2352	333.26	2353.13	339.01	2352.85	342.62	2352.72	345.14	2352.55
345.52	2352.54	348.46	2352.49	349.4	2352.48	357.56	2352.59	357.64	2352.59
358.63	2352.6	359.03	2352.61	368.85	2351.33	369.55	2351.35	370.91	2351.46
371.82	2351.62	372.32	2350.81	376.07	2353.38	377.37	2354		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-460.04	.04	-408.15	.04	279.27	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-408.15	279.27	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2338.04	Element		Channel	
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.96	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2256.36	
E.G. Slope (ft/ft)	0.000667	Area (sq ft)		2256.36	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	638.24	Top Width (ft)		638.24	
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)		2.22	
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)		3.54	
Conv. Total (cfs)	194402.2	Conv. (cfs)		194402.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		638.81	
Min Ch El (ft)	2333.93	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)	377.37	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	2.59	108.94	0.14
C & E Loss (ft)	0.00	Cum SA (acres)	0.64	27.29	0.05

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2343.00	Element			
Vel Head (ft)	0.16	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.84	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	36.85	5551.34	8.52
E.G. Slope (ft/ft)	0.000461	Area (sq ft)	36.85	5551.34	8.52
Q Total (cfs)	17855.00	Flow (cfs)	41.88	17805.12	8.00
Top Width (ft)	714.83	Top Width (ft)	21.37	687.42	6.04
Vel Total (ft/s)	3.19	Avg. Vel. (ft/s)	1.14	3.21	0.94
Max Chl Dpth (ft)	8.91	Hydr. Depth (ft)	1.72	8.08	1.41
Conv. Total (cfs)	831498.4	Conv. (cfs)	1950.2	829175.5	372.7
Length Wtd. (ft)	50.00	Wetted Per. (ft)	21.66	688.54	6.67
Min Ch El (ft)	2333.93	Shear (lb/sq ft)	0.05	0.23	0.04
Alpha	1.01	Stream Power (lb/ft s)	377.37	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	8.57	197.12	0.86
C & E Loss (ft)	0.00	Cum SA (acres)	2.02	28.78	0.27

CROSS SECTION

RIVER: Las Vegas Wash

REACH: Upper RS: -1500

INPUT
Description:
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-450.34	2360	-445.61	2350	-400	2345.16	-398.4	2345.09	-392.64	2344.74
-386.48	2344.44	-382.46	2344.14	-381.6	2344	-380.44	2343.62	-373.43	2342
-368.74	2340.27	-368.04	2340	-367.92	2339.95	-362.64	2338	-362.33	2337.88
-357.25	2336	-300.01	2334.71	-267.94	2334.21	-264.68	2334.15	-262.47	2334.1
-261.2	2334.08	-257.24	2334.03	-257.1	2334.03	-250.55	2334	-205.22	2334
-198.98	2333.88	-124.05	2333.67	-82.83	2333.54	-53.75	2333.5	-38.59	2333.47
-3.81	2333.42	170.95	2334	246.11	2335.87	250.56	2335.97	250.92	2336
262.06	2336	294.55	2338	306.1	2340	307.97	2341.33	309.12	2342
310.27	2342.6	312.37	2344	314.77	2345.17	316.11	2346	320.27	2347.87
320.5	2348	321.24	2348.31	324.64	2349.3	327.66	2350	330.28	2350.75
336.83	2352	340.9	2352.71	342.39	2352.8	344.44	2353		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-450.34	.04	-362.64	.04	294.55	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-362.64	294.55	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2338.00	Element		0.040	
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.93	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2401.39	
E.G. Slope (ft/ft)	*0.000562	Area (sq ft)		2401.39	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	655.94	Top Width (ft)		655.94	
Vel Total (ft/s)	2.09	Avg. Vel. (ft/s)		2.09	
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)		3.66	
Conv. Total (cfs)	*211801.7	Conv. (cfs)		*211801.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		656.39	
Min Ch El (ft)	2333.42	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)	344.44	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.59	106.26	0.14
C & E Loss (ft)	0.01	Cum SA (acres)	0.64	26.54	0.05

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2342.98	Element		0.040	
Vel Head (ft)	0.15	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.82	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	31.93	5615.10	50.17
E.G. Slope (ft/ft)	*0.000414	Area (sq ft)	31.93	5615.10	50.17
Q Total (cfs)	*17855.00	Flow (cfs)	39.67	*17737.41	77.92
Top Width (ft)	687.60	Top Width (ft)	14.35	657.19	16.06
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)	1.24	3.16	1.55
Max Chl Dpth (ft)	9.40	Hydr. Depth (ft)	2.22	8.54	3.12
Conv. Total (cfs)	*877134.6	Conv. (cfs)	1948.8	*871358.1	3827.7
Length Wtd. (ft)	50.00	Wetted Per. (ft)	15.17	657.66	17.05
Min Ch El (ft)	2333.42	Shear (lb/sq ft)	0.05	0.22	0.08
Alpha	1.01	Stream Power (lb/ft s)	344.44	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	8.53	190.71	0.83
C & E Loss (ft)	0.01	Cum SA (acres)	2.00	28.00	0.26

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-465.61	2360	-448.23	2350	-409.13	2340	-400	2339.09	-397.35	2338.91
-388.46	2338.39	-385.69	2338.3	-384.78	2338.26	-380.62	2338	-374.43	2337.66
-365.22	2337.24	-359.28	2336.82	-356.44	2336.52	-355.09	2336.42	-352.89	2336

-339.58	2335.19	-334.83	2334.87	-324.82	2334.59	-320.52	2334.35	-302.91	2334
-216.34	2334	-179.02	2333.27	-177.23	2333.25	-155	2333.26	-136.48	2333.1
-128.39	2333.09	-120.29	2333	-102.31	2332.89	-97.89	2332.88	-87.17	2332.84
-81.53	2332.83	-50.45	2332.82	-6.06	2332.75	233	2333	238	2334
249.22	2336	253.61	2337.33	254.37	2337.42	257.73	2338	259.47	2338.91
261.76	2340	263.46	2340.78	265.99	2342	266.1	2342.05	266.26	2342.13
269.36	2343.64	270.12	2344	271.17	2344.5	274.27	2346	276.91	2347.26
278.39	2348	281.32	2349.37	283.19	2350	285.69	2350.78	288.86	2351.14
293.78	2351.61	295.37	2352	297.98	2352.63	301.38	2354	303.73	2354.94
306.35	2356								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-465.61	.04	-380.62	.04	257.73	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-380.62	257.73	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2337.98	Element		0.040	
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	2337.93	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2806.52	
E.G. Slope (ft/ft)	*0.000321	Area (sq ft)		2806.52	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	636.56	Top Width (ft)		636.56	
Vel Total (ft/s)	1.79	Avg. Vel. (ft/s)		1.79	
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)		4.41	
Conv. Total (cfs)	*280123.3	Conv. (cfs)		*280123.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		637.23	
Min Ch El (ft)	2332.75	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)	306.35	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.59	103.27	0.14
C & E Loss (ft)	0.00	Cum SA (acres)	0.64	25.80	0.05

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2342.95	Element			
Vel Head (ft)	0.14	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.82	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)	128.60	5929.47	23.72
E.G. Slope (ft/ft)	*0.000329	Area (sq ft)	128.60	5929.47	23.72
Q Total (cfs)	*17855.00	Flow (cfs)	188.85	*17639.56	26.60
Top Width (ft)	687.82	Top Width (ft)	39.53	638.35	9.94
Vel Total (ft/s)	2.94	Avg. Vel. (ft/s)	1.47	2.97	1.12
Max Chl Dpth (ft)	10.07	Hydr. Depth (ft)	3.25	9.29	2.39
Conv. Total (cfs)	*984510.7	Conv. (cfs)	10412.8	*972631.4	1466.5
Length Wtd. (ft)	50.00	Wetted Per. (ft)	39.96	639.03	11.05
Min Ch El (ft)	2332.75	Shear (lb/sq ft)	0.07	0.19	0.04
Alpha	1.02	Stream Power (lb/ft s)	306.35	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	8.44	184.08	0.79
C & E Loss (ft)	0.00	Cum SA (acres)	1.97	27.26	0.24

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-489	2354	-435	2350	-400	2340.45	-397.67	2340	-385.77	2338
-381.93	2337.36	-373.85	2336	-364.07	2335.61	-358.79	2335.41	-341.53	2334.87
-330.38	2334.47	-314.18	2334	-227.45	2334	-159.07	2332.65	-155.78	2332.63
-144.62	2332.63	-110.43	2332.34	-107.94	2332.34	-93.12	2332.17	-92.53	2332.17
-90.94	2332.16	-90.06	2332.15	-82.72	2332.13	-47.14	2332.13	-24.27	2332.09
-8.31	2332.08	150	2333	163.2	2334	169.23	2334.13	169.34	2334.14
170.46	2334.18	181	2334.45	186.25	2334.66	201.52	2335.13	220.27	2336
223.63	2337.3	225.31	2338	228.35	2339.45	229.47	2340	229.64	2340.09
233.54	2342	234.5	2342.4	236.58	2342.87	241	2343.79	241.64	2343.93
241.67	2343.94	242.08	2344	247.59	2345.17	251.25	2346	252.3	2347.08
253.21	2348	254.56	2349.38	255.16	2350	256.82	2351.69	257.12	2352

259.04 2353.95 259.09 2354

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-489	.04	-385.77	.04	225.31	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-385.77	225.31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.96	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.05	Wt. n-Val.		0.040		
W.S. Elev (ft)	2337.91	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		2776.08		
E.G. Slope (ft/ft)	*0.000315	Area (sq ft)		2776.08		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	610.31	Top Width (ft)		610.31		
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)		1.81		
Max Chl Dpth (ft)	5.83	Hydr. Depth (ft)		4.55		
Conv. Total (cfs)	*282908.1	Conv. (cfs)		*282908.1		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		610.96		
Min Ch El (ft)	2332.08	Shear (lb/sq ft)		0.09		
Alpha	1.00	Stream Power (lb/ft s)	259.09	0.00	0.00	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.59	100.07	0.14	
C & E Loss (ft)	0.00	Cum SA (acres)	0.64	25.09	0.05	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2342.94	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.15	Wt. n-Val.	0.040	0.040	0.040	
W.S. Elev (ft)	2342.79	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)	61.10	5758.93	23.96	
E.G. Slope (ft/ft)	*0.000346	Area (sq ft)	61.10	5758.93	23.96	
Q Total (cfs)	*17855.00	Flow (cfs)	80.26	*17748.42	26.33	
Top Width (ft)	644.80	Top Width (ft)	22.80	611.08	10.91	
Vel Total (ft/s)	3.06	Avg. Vel. (ft/s)	1.31	3.08	1.10	
Max Chl Dpth (ft)	10.71	Hydr. Depth (ft)	2.68	9.42	2.20	
Conv. Total (cfs)	*959517.3	Conv. (cfs)	4312.9	*953789.6	1414.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)	23.33	611.76	11.96	
Min Ch El (ft)	2332.08	Shear (lb/sq ft)	0.06	0.20	0.04	
Alpha	1.01	Stream Power (lb/ft s)	259.09	0.00	0.00	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	8.33	177.38	0.76	
C & E Loss (ft)	0.00	Cum SA (acres)	1.94	26.54	0.23	

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-457.42	2358	-410.08	2350	-400	2346.75	-397.65	2346	-393.63	2344.7
-391.45	2344	-385.85	2342.18	-385.28	2342	-384.74	2341.86	-378.67	2340
-378.07	2339.86	-371.71	2338	-367.6	2337.1	-363.3	2336	-309.27	2334
-238.57	2334	-139.11	2332.04	-134.33	2332.01	-134.24	2332.01	-133.62	2332
-133.17	2332	-21.38	2332	24.55	2332	27.84	2333.6	140.44	2334.92
142.98	2334.76	145.21	2334	169.61	2334.87	199.56	2336	202.38	2337.12
204.31	2338	205.25	2338.5	208.29	2340	209.34	2340.63	211.71	2342
213.93	2343.43	214.82	2344	217.92	2345.98	218	2346.04	221.33	2348
223.92	2349.37	224.97	2350	226.29	2350.58	229.25	2352	230.15	2352
231.57	2352	237.11	2352.69	239.79	2353.11	241.76	2353.16	244.77	2353.38
249.61	2354								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-457.42	.04	-371.71	.04	204.31	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-371.71	204.31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.94	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.06	Wt. n-Val.		0.040		
W.S. Elev (ft)	2337.88	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		2481.78		
E.G. Slope (ft/ft)	*0.000423	Area (sq ft)		2481.78		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	575.18	Top Width (ft)		575.18		
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)		2.02		
Max Chl Dpth (ft)	5.88	Hydr. Depth (ft)		4.31		
Conv. Total (cfs)	*244004.9	Conv. (cfs)		*244004.9		
Length Wtd. (ft)	50.00	Wetted Per. (ft)		576.38		
Min Ch El (ft)	2332.00	Shear (lb/sq ft)		0.11		
Alpha	1.00	Stream Power (lb/ft s)	249.61	0.00	0.00	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.59	97.05	0.14	
C & E Loss (ft)	0.00	Cum SA (acres)	0.64	24.41	0.05	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2342.91	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.18	Wt. n-Val.	0.040	0.040	0.040	
W.S. Elev (ft)	2342.74	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)	38.17	5282.79	21.17	
E.G. Slope (ft/ft)	*0.000429	Area (sq ft)	38.17	5282.79	21.17	
Q Total (cfs)	*17855.00	Flow (cfs)	51.25	*17776.51	27.24	
Top Width (ft)	600.43	Top Width (ft)	15.86	576.02	8.55	
Vel Total (ft/s)	3.34	Avg. Vel. (ft/s)	1.34	3.36	1.29	
Max Chl Dpth (ft)	10.74	Hydr. Depth (ft)	2.41	9.17	2.48	
Conv. Total (cfs)	*862393.4	Conv. (cfs)	2475.2	*858602.5	1315.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)	16.55	577.26	9.78	
Min Ch El (ft)	2332.00	Shear (lb/sq ft)	0.06	0.24	0.06	
Alpha	1.01	Stream Power (lb/ft s)	249.61	0.00	0.00	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	8.27	171.04	0.73	
C & E Loss (ft)	0.00	Cum SA (acres)	1.92	25.86	0.22	

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-432.74	2358	-416.18	2350	-400	2339.99	-394.1	2338.48	-392.17	2338
-360.68	2336.37	-355.05	2336	-351.48	2335.87	-351.06	2335.86	-339.43	2335.42
-325.59	2334.93	-324.58	2334.93	-279.88	2334	-229.43	2334	-115.72	2332
25.64	2332	161.04	2334	171.49	2334	174.26	2334.5	178.62	2336
180.85	2337.59	181.38	2338	181.74	2338.29	183.11	2339.21	183.76	2339.62
184.54	2340	185.22	2340.33	188.38	2342	190.44	2342.97	192.59	2344
194.34	2344.74	197.12	2346	197.81	2346.29	201.42	2348	201.47	2348.02
201.79	2348.18	203.88	2349.2	205.39	2350	208.6	2351.18	210.88	2352
215.56	2353.31	217.93	2354						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-432.74	.04	-392.17	.04	181.38	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-392.17	181.38	50	50	50	.1 .3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.92	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.06	Wt. n-Val.		0.040		
W.S. Elev (ft)	2337.86	Reach Len. (ft)	50.00	50.00	50.00	
Crit W.S. (ft)		Flow Area (sq ft)		2553.29		
E.G. Slope (ft/ft)	*0.000381	Area (sq ft)		2553.29		
Q Total (cfs)	5019.00	Flow (cfs)		5019.00		
Top Width (ft)	570.63	Top Width (ft)		570.63		
Vel Total (ft/s)	1.97	Avg. Vel. (ft/s)		1.97		
Max Chl Dpth (ft)	5.86	Hydr. Depth (ft)		4.47		
Conv. Total (cfs)	*257248.5	Conv. (cfs)		*257248.5		

* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 571.64	*	*
* Min Ch El (ft)	* 2332.00	* Shear (lb/sq ft)	*	* 0.11	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 217.93	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 2.59	* 94.16	* 0.14	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.64	* 23.75	* 0.05	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2342.89	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.17	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2342.72	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 35.24	* 5341.71	* 18.71 *
* E.G. Slope (ft/ft)	*0.000411	* Area (sq ft)	* 35.24	* 5341.71	* 18.71 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 50.88	*17782.40	* 21.72 *
* Top Width (ft)	* 594.32	* Top Width (ft)	* 12.24	* 573.55	* 8.53 *
* Vel Total (ft/s)	* 3.31	* Avg. Vel. (ft/s)	* 1.44	* 3.33	* 1.16 *
* Max Chl Dpth (ft)	* 10.72	* Hydr. Depth (ft)	* 2.88	* 9.31	* 2.19 *
* Conv. Total (cfs)	*880893.8	* Conv. (cfs)	* 2510.2	*877311.8	* 1071.8 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 13.27	* 574.61	* 9.77 *
* Min Ch El (ft)	* 2332.00	* Shear (lb/sq ft)	* 0.07	* 0.24	* 0.05 *
* Alpha	* 1.01	* Stream Power (lb/ft s)	* 217.93	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 8.23	* 164.94	* 0.71 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 1.90	* 25.20	* 0.21 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-434.92	2355	-426.56	2350	-424	2345	-409	2340	-400	2338.54
-394.89	2338	-391.31	2337.71	-382.14	2337	-376.17	2336.75	-346.37	2336
-344.52	2336	-343.75	2336	-343.74	2336	-343.43	2336	-332.81	2335.63
-250.99	2334.17	-242.71	2334	-240.73	2334	-111.9	2333.19	-106.69	2332
-45.05	2332	-44.81	2331.99	-2.37	2330.62	0	2330.35	24.03	2332
33	2332	47.93	2332.21	49.77	2332.24	166.89	2334	167.73	2334.35
172	2336	174.63	2337.1	176.7	2338	178.69	2338.85	182.48	2340.49
185.77	2341.92	185.95	2342	187.04	2342.58	189.74	2344	191.84	2345.56
192.43	2346	195.14	2348	196.27	2348.78	196.77	2349.16	197.83	2350
198.09	2350.21	198.53	2350.56	199.77	2351.62	200.22	2352	201.86	2353.35
202.62	2354								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-434.92	.04	-394.89	.04	176.7	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-394.89	176.7	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.90	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2337.83	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2466.59	* *
* E.G. Slope (ft/ft)	*0.000426	* Area (sq ft)	*	* 2466.59	* *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	* *
* Top Width (ft)	* 569.15	* Top Width (ft)	*	* 569.15	* *
* Vel Total (ft/s)	* 2.03	* Avg. Vel. (ft/s)	*	* 2.03	* *
* Max Chl Dpth (ft)	* 7.48	* Hydr. Depth (ft)	*	* 4.33	* *
* Conv. Total (cfs)	*243259.9	* Conv. (cfs)	*	*243259.9	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 570.22	* *
* Min Ch El (ft)	* 2330.35	* Shear (lb/sq ft)	*	* 0.11	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 202.62	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 2.59	* 91.28	* 0.14 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.64	* 23.09	* 0.05 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2342.87	* Element	* Left OB	* Channel	* Right OB *

* Vel Head (ft)	* 0.18	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2342.69	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 64.31	* 5244.66	* 25.44 *
* E.G. Slope (ft/ft)	*0.000432	* Area (sq ft)	* 64.31	* 5244.66	* 25.44 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 99.18	*17722.58	* 33.23 *
* Top Width (ft)	* 604.34	* Top Width (ft)	* 22.19	* 571.59	* 10.56 *
* Vel Total (ft/s)	* 3.35	* Avg. Vel. (ft/s)	* 1.54	* 3.38	* 1.31 *
* Max Chl Dpth (ft)	* 12.34	* Hydr. Depth (ft)	* 2.90	* 9.18	* 2.41 *
* Conv. Total (cfs)	*859171.8	* Conv. (cfs)	* 4772.7	*852799.9	* 1599.2 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 22.78	* 572.70	* 11.56 *
* Min Ch El (ft)	* 2330.35	* Shear (lb/sq ft)	* 0.08	* 0.25	* 0.06 *
* Alpha	* 1.01	* Stream Power (lb/ft s)	* 202.62	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 8.17	* 158.87	* 0.68 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 1.88	* 24.54	* 0.20 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-428.52	2355	-421.43	2350	-414.37	2345	-402.5	2340	-400	2339.33
-398.75	2339	-395.04	2338.24	-394.02	2338	-386.55	2337	-382.6	2336.74
-381.6	2336.67	-373.77	2336.15	-372.54	2336.07	-371.54	2336	-352.76	2336
-341.81	2335.78	-327.44	2335.72	-325.26	2335.73	-324.88	2335.73	-322.38	2335.69
-316.39	2335.52	-312.28	2335.37	-311.63	2335.35	-301.86	2335.01	-301.37	2335
-297.91	2335	-282.32	2334.06	-281.86	2334.03	-281.73	2334.03	-281.57	2334.02
-281.09	2334.01	-280.19	2334.02	-248.5	2334.46	-234.82	2334.12	-220.41	2334.05
-212.93	2334	-209.12	2334	-168.38	2333.34	-168.08	2333.34	-153.75	2333.14
-152.46	2333.12	-143.58	2333	-142.24	2333	-129.78	2332.84	-129.32	2332.84
-129.15	2332.83	-125.37	2332.7	-124.77	2332.67	-124.67	2332.67	-122.75	2332.61
-110.21	2332.19	-104.87	2331.07	-104.65	2331.34	-102.8	2330.96	-101.39	2330.99
-100.02	2332	-95.31	2331.75	-94.7	2331.71	-94.62	2331.71	-88.46	2331.74
-88.45	2331.56	-76.99	2331.36	-7.04	2330.43	1.12	2330	12.32	2330
13.68	2329.33	22.59	2329.74	23.16	2330	26.94	2330.3	49	2332
50.2	2332	168.48	2334	169.57	2335.93	169.62	2336	169.66	2336.07
170.91	2338	171.91	2339.45	172.22	2340	172.75	2341.11	173.42	2342
174.52	2343.45	174.89	2344	176.22	2345.7	176.44	2346	176.46	2346.03
177.91	2348	179.33	2349.76	179.54	2350	179.87	2350.31	181.6	2352
185.78	2353.53	186.34	2354						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-428.52	.04	-394.02	.04	170.91	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-394.02	170.91	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.88	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2337.82	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2642.22	* *
* E.G. Slope (ft/ft)	*0.000336	* Area (sq ft)	*	* 2642.22	* *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	* *
* Top Width (ft)	* 563.47	* Top Width (ft)	*	* 563.47	* *
* Vel Total (ft/s)	* 1.90	* Avg. Vel. (ft/s)	*	* 1.90	* *
* Max Chl Dpth (ft)	* 8.49	* Hydr. Depth (ft)	*	* 4.69	* *
* Conv. Total (cfs)	*273866.0	* Conv. (cfs)	*	*273866.0	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 566.92	* *
* Min Ch El (ft)	* 2329.33	* Shear (lb/sq ft)	*	* 0.10	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 186.34	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 2.59	* 88.35	* 0.14 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.64	* 22.44	* 0.05 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2342.85	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.17	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2342.68	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *

* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 40.15	* 5386.47	* 6.92	*
* E.G. Slope (ft/ft)	*0.000394	* Area (sq ft)	* 40.15	* 5386.47	* 6.92	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 55.59	*17793.53	* 5.89	*
* Top Width (ft)	* 582.79	* Top Width (ft)	* 14.84	* 564.93	* 3.02	*
* Vel Total (ft/s)	* 3.29	* Avg. Vel. (ft/s)	* 1.38	* 3.30	* 0.85	*
* Max Chl Dpth (ft)	* 13.35	* Hydr. Depth (ft)	* 2.71	* 9.53	* 2.29	*
* Conv. Total (cfs)	*899073.4	* Conv. (cfs)	* 2799.0	*895977.9	* 296.6	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 15.62	* 568.48	* 5.59	*
* Min Ch El (ft)	* 2329.33	* Shear (lb/sq ft)	* 0.06	* 0.23	* 0.03	*
* Alpha	* 1.01	* Stream Power (lb/ft s)	* 186.34	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 8.11	* 152.76	* 0.67	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 1.86	* 23.89	* 0.19	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 116

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-432.1	2355	-423.64	2350	-414.84	2345	-400	2339.72	-396.82	2339.29
-396.44	2339.24	-394.93	2339	-393.45	2338.83	-393.1	2338.8	-390.61	2338.6
-385.84	2338.1	-385.14	2338.05	-384.75	2338	-383.1	2337.86	-374.48	2337
-374.25	2336.99	-369.14	2336.7	-364.93	2336.45	-358.18	2336	-355.25	2335.83
-339.38	2335	-319.36	2335	-306.11	2334.83	-305.94	2334.83	-299.93	2334.76
-297.67	2334.73	-272.56	2334	-270.8	2334	-267.64	2334.01	-259.2	2334.39
-258.68	2334.37	-255.71	2334.24	-250	2334	-247.04	2334.12	-246.98	2334.12
-243.54	2334	-225.83	2334	-204.33	2333.69	-188.6	2333.36	-183.09	2333.3
-181.6	2333.25	-181.13	2333.24	-181.02	2333.24	-171.4	2333	-168.51	2333
-160.88	2332.73	-150.68	2332.55	-149.1	2332.53	-136.43	2332	-131.23	2332
-109.73	2331.59	-107.68	2331.56	-65.28	2331	-40.42	2331.18	-36.7	2331.01
-32.21	2331	-25.19	2331.25	-24.36	2331.27	-24.31	2331.27	-24	2331.26
-23.64	2331.26	-22.18	2331.15	-21.93	2331.15	-21.26	2331.13	-21.01	2331.11
-19.89	2331.12	-19.03	2331.09	-11.4	2331	-1.89	2331	-.83	2331.29
0	2331.36	5.29	2331.79	10.76	2330.97	11.47	2330.85	13.51	2330.5
16.71	2329.39	19.13	2329	20.26	2328.93	20.86	2328.79	22.47	2328.97
22.94	2328.99	23.07	2329	24.6	2329.4	25.99	2329.76	27.05	2330
30.73	2330.96	30.98	2331	35.37	2331.51	35.79	2331.57	39.08	2332
55.89	2332	85.48	2332.52	109.37	2333	118.16	2333	118.25	2332.95
128.25	2333	139.01	2333.71	153.5	2334	153.63	2334.51	154.05	2336
154.22	2336.73	154.61	2338	154.85	2338.92	155.2	2340	155.7	2341.97
155.71	2342	155.74	2342.08	156.35	2344	156.87	2345.4	157.09	2346
157.32	2346.59	158.03	2348	158.32	2348.33	159.31	2350	161.65	2351.59
162.22	2352								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-432.1	.04	-384.75	.04	154.61	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-384.75	154.61	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.86	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2337.80	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2610.14	* *
* E.G. Slope (ft/ft)	*0.000329	* Area (sq ft)	*	* 2610.14	* *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5019.00	* *
* Top Width (ft)	* 537.07	* Top Width (ft)	*	* 537.07	* *
* Vel Total (ft/s)	* 1.92	* Avg. Vel. (ft/s)	*	* 1.92	* *
* Max Chl Dpth (ft)	* 9.01	* Hydr. Depth (ft)	*	* 4.86	* *
* Conv. Total (cfs)	*276877.1	* Conv. (cfs)	*	*276877.1	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 540.92	* *
* Min Ch El (ft)	* 2328.79	* Shear (lb/sq ft)	*	* 0.10	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 162.22	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	* 2.59	* 85.34	* 0.14 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.64	* 21.81	* 0.05 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2342.83	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.18	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2342.65	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 70.86	* 5223.61	* 3.03 *
* E.G. Slope (ft/ft)	*0.000409	* Area (sq ft)	* 70.86	* 5223.61	* 3.03 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 109.31	*17744.02	* 1.67 *
* Top Width (ft)	* 564.15	* Top Width (ft)	* 23.48	* 539.36	* 1.31 *
* Vel Total (ft/s)	* 3.37	* Avg. Vel. (ft/s)	* 1.54	* 3.40	* 0.55 *
* Max Chl Dpth (ft)	* 13.86	* Hydr. Depth (ft)	* 3.02	* 9.68	* 2.31 *
* Conv. Total (cfs)	*882812.6	* Conv. (cfs)	* 5404.7	*877325.4	* 82.4 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 24.09	* 543.36	* 4.83 *
* Min Ch El (ft)	* 2328.79	* Shear (lb/sq ft)	* 0.08	* 0.25	* 0.02 *
* Alpha	* 1.01	* Stream Power (lb/ft s)	* 162.22	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 8.05	* 146.68	* 0.66 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 1.84	* 23.26	* 0.19 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 160

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2353.67	-399.99	2353.67	-399.1	2353.48	-398.68	2353.37	-397.36	2353
-393.9	2352.06	-393.78	2352.02	-393.72	2352	-393.64	2351.95	-393.61	2351.93
-392.02	2351	-390.92	2350.37	-390.32	2350	-389.16	2349.33	-388.65	2349
-387.56	2348.36	-386.98	2348	-385.58	2347.23	-385.06	2347	-384.55	2346.67
-383.5	2346	-382.71	2345.48	-381.95	2345	-380.77	2344.2	-380.75	2344.19
-380.66	2344.15	-380.36	2344	-380.03	2343.87	-377.64	2343	-376.75	2342.59
-375.26	2342	-367.02	2341	-365.76	2340.7	-362.45	2340	-362.09	2339.92
-361.45	2339.76	-358.96	2339	-356.01	2338.01	-355.93	2337.99	-355.76	2337.97
-349.09	2337	-346.59	2336.71	-345.42	2336.54	-342.13	2336	-337.95	2335.65
-331.35	2335	-311.57	2334.53	-299.76	2334.26	-295.27	2334.17	-289.15	2334
-288.46	2334	-274.2	2334.27	-267.4	2334.38	-265.93	2334.4	-264.06	2334.42
-263.56	2334.42	-262.94	2334.43	-250.06	2334.12	-249.76	2334.12	-194.2	2333.14
-190.47	2333.08	-190.31	2333.08	-186	2333	-178.52	2333	-169.04	2332.68
-167.96	2332.67	-167.89	2332.66	-167.66	2332.66	-166.63	2332.62	-145.9	2332
-142.76	2332	-135.26	2331.96	-134.02	2331.95	-124.97	2331.9	-115.08	2331.88
-91.57	2331.34	-91.43	2331.34	-90.97	2331.33	-90.45	2331.32	-81.94	2331.07
-81.5	2331.06	-80.23	2331.04	-79.18	2331.04	-75.22	2331.79	-74.68	2331.76
-74.59	2331.76	-74.45	2331.59	-66.55	2331.31	-65.56	2331.18	-65.3	2331.16
-62.82	2331.04	-62.4	2331	-62.17	2331	-56.94	2330.82	-53.75	2330.63
-52.08	2330.55	-42.5	2330	-21.64	2330	-16.67	2330	-9.27	2330.56
-2.6	2331	-1.9	2331	0	2330.6	1.05	2330.37	2.92	2330
13.14	2330	21.43	2329.91	24.33	2329.2	26.79	2329	28.99	2329
31.42	2328.66	33.15	2329	34.15	2329.7	34.65	2330	35.89	2330.83
36.19	2331	38.62	2331.07	38.72	2331.07	47.97	2331.35	80.57	2332
85.38	2332	85.88	2332.01	148.28	2333.07	148.47	2333.07	152.33	2333
152.35	2333.42	152.43	2334	152.47	2334.41	152.55	2335	152.56	2335.42
152.64	2337.07	152.7	2336.78	152.71	2337	152.75	2337.29	152.79	2337.63
152.84	2338.11	152.92	2338.74	152.94	2340	152.96	2340.37	153.05	2341
153.14	2341.69	153.16	2342	153.26	2342.72	153.27	2343	153.38	2343.77
153.4	2344	153.41	2344.62	153.47	2345	153.56	2345.52	153.6	2346
153.71	2346.68	153.74	2347	153.81	2347.34	154.11	2348	154.78	2348.78
154.96	2349	155.04	2349.1	155.8	2350	155.86	2350.08	156.67	2351

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-349.09	.04	152.71	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-349.09	152.71	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.84	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2337.79	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 2.15	* 2719.22	* 0.04 *
* E.G. Slope (ft/ft)	*0.000263	* Area (sq ft)	* 2.15	* 2719.22	* 0.04 *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	* 0.69	* 5018.30	* 0.00 *
* Top Width (ft)	* 507.33	* Top Width (ft)	* 5.44	* 501.80	* 0.10 *
* Vel Total (ft/s)	* 1.84	* Avg. Vel. (ft/s)	* 0.32	* 1.85	* 0.08 *

* Max Chl Dpth (ft)	*	9.13	* Hydr. Depth (ft)	*	0.40	*	5.42	*	0.42	*
* Conv. Total (cfs)	*	309425.9	* Conv. (cfs)	*	42.7	*	309383.0	*	0.2	*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*	5.49	*	507.31	*	0.80	*
* Min Ch El (ft)	*	2328.66	* Shear (lb/sq ft)	*	0.01	*	0.09	*	0.00	*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	156.67	*	0.00	*	0.00	*
* Frctn Loss (ft)	*	0.01	* Cum Volume (acre-ft)	*	2.59	*	82.28	*	0.14	*
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	0.64	*	21.22	*	0.05	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2342.81	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	0.18	* Wt. n-Val.	*	0.040	*	0.040	*	0.040	*
* W.S. Elev (ft)	*	2342.62	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*	77.87	*	5143.69	*	1.44	*
* E.G. Slope (ft/ft)	*	0.000393	* Area (sq ft)	*	77.87	*	5143.69	*	1.44	*
* Q Total (cfs)	*	17855.00	* Flow (cfs)	*	112.33	*	17742.24	*	0.43	*
* Top Width (ft)	*	530.07	* Top Width (ft)	*	27.73	*	501.80	*	0.54	*
* Vel Total (ft/s)	*	3.42	* Avg. Vel. (ft/s)	*	1.44	*	3.45	*	0.30	*
* Max Chl Dpth (ft)	*	13.96	* Hydr. Depth (ft)	*	2.81	*	10.25	*	2.69	*
* Conv. Total (cfs)	*	900806.2	* Conv. (cfs)	*	5667.2	*	895117.4	*	21.6	*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*	28.40	*	507.31	*	5.65	*
* Min Ch El (ft)	*	2328.66	* Shear (lb/sq ft)	*	0.07	*	0.25	*	0.01	*
* Alpha	*	1.01	* Stream Power (lb/ft s)	*	156.67	*	0.00	*	0.00	*
* Frctn Loss (ft)	*	0.02	* Cum Volume (acre-ft)	*	7.96	*	140.73	*	0.66	*
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	1.81	*	22.66	*	0.19	*

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-371.62	2350	-371.15	2349.87	-367.78	2349	-366.53	2348.65	-364.59	2348
-361.54	2347.07	-361.34	2347	-359.25	2346.4	-358.13	2346	-355.51	2345.48
-355.18	2345.41	-354.09	2345.1	-353.94	2345.06	-353.78	2345	-351.41	2344
-350.46	2343.62	-348.98	2343	-347.54	2342.43	-346.49	2342	-343.95	2341.07
-343.76	2341	-343.27	2340.82	-341.23	2340	-340.88	2339.87	-340.51	2339.73
-338.75	2339	-337.9	2338.69	-336.06	2338	-334.25	2337.52	-332.48	2337
-328.59	2336	-324.89	2335.41	-322.86	2335	-312.15	2334.4	-304.61	2334
-293.59	2334	-262.75	2334.34	-259.99	2334.46	-256.99	2334.38	-247.2	2333.38
-247.08	2334.12	-235.34	2333.3	-234.84	2333.3	-214.17	2333	-193.69	2333
-191.08	2332.71	-181.67	2332.25	-163.33	2331.97	-162.76	2331.98	-160.66	2332
-160.17	2331.91	-159.94	2331.89	-159.19	2331.86	-159.07	2331.85	-158.78	2331.84
-158.7	2331.84	-158.4	2331.83	-155.78	2331.79	-151.52	2331.92	-150.96	2331.92
-139	2331.61	-136.62	2331.59	-134.94	2331.57	-132.85	2331.54	-124.17	2331.37
-119.71	2331.26	-117.82	2331.22	-110.05	2331.1	-106.7	2331	-74.11	2331
-73.74	2330.85	-69.45	2329.73	-48.47	2329.63	-44.66	2330	-18.46	2330
-18.23	2329.91	-15.63	2329	-14.48	2329	-12.75	2329.83	-12.42	2330
8.46	2330	10.33	2329.62	14.9	2329	15.33	2329	16.35	2328.72
18.99	2328	23.06	2328	24.28	2328.75	24.83	2329	25.6	2329.32
27.28	2330	35.21	2330.59	41.44	2331	74.42	2331	79.91	2331.31
87.31	2331.66	91.5	2331.87	94.36	2332	101.7	2329.26	103.05	2328.74
105.55	2327.77	106.09	2327.58	106.85	2327.33	108.42	2326.92	109.7	2327.3
109.77	2327.31	112.03	2327.75	128.81	2332	135.75	2332	146.14	2332.62
150.01	2332.98	150.24	2332.98	152.69	2333	152.71	2334.17	152.73	2333.43
152.93	2334.57	152.97	2335	153.03	2335.32	153.19	2336.63	153.26	2337
153.36	2337.65	153.42	2338	153.52	2338.68	153.57	2339	153.68	2339.71
153.74	2340	153.78	2340.2	153.89	2341	154.08	2341.96	154.24	2343
154.29	2343.31	154.38	2344	154.41	2344.24	154.51	2345	154.57	2345.45
154.6	2346	154.61	2346.11	154.71	2347	154.72	2347.14	154.81	2348
154.82	2348.18	154.91	2349.22	155	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-371.62	.04	-332.48	.04	153.26	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-332.48	153.26	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.83	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2337.79	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 1.06	* 2965.95	* 0.05 *
* E.G. Slope (ft/ft)	*0.000190	* Area (sq ft)	* 1.06	* 2965.95	* 0.05 *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	* 0.28	* 5018.72	* 0.00 *
* Top Width (ft)	* 488.63	* Top Width (ft)	* 2.77	* 485.74	* 0.12 *
* Vel Total (ft/s)	* 1.69	* Avg. Vel. (ft/s)	* 0.26	* 1.69	* 0.08 *
* Max Chl Dpth (ft)	* 10.87	* Hydr. Depth (ft)	* 0.38	* 6.11	* 0.39 *
* Conv. Total (cfs)	*363690.6	* Conv. (cfs)	* 20.3	*363670.0	* 0.3 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 2.88	* 494.59	* 0.80 *
* Min Ch El (ft)	* 2326.92	* Shear (lb/sq ft)	* 0.00	* 0.07	* 0.00 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 155.00	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	* 2.59	* 79.01	* 0.14 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.63	* 20.65	* 0.05 *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2342.79	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.17	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2342.61	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 45.80	* 5309.86	* 2.52 *
* E.G. Slope (ft/ft)	*0.000344	* Area (sq ft)	* 45.80	* 5309.86	* 2.52 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 62.25	*17791.74	* 1.01 *
* Top Width (ft)	* 502.18	* Top Width (ft)	* 15.52	* 485.74	* 0.92 *
* Vel Total (ft/s)	* 3.33	* Avg. Vel. (ft/s)	* 1.36	* 3.35	* 0.40 *
* Max Chl Dpth (ft)	* 15.69	* Hydr. Depth (ft)	* 2.95	* 10.93	* 2.74 *
* Conv. Total (cfs)	*963344.1	* Conv. (cfs)	* 3358.5	*959931.1	* 54.6 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 16.52	* 494.59	* 5.69 *
* Min Ch El (ft)	* 2326.92	* Shear (lb/sq ft)	* 0.06	* 0.23	* 0.01 *
* Alpha	* 1.01	* Stream Power (lb/ft s)	* 155.00	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	* 7.89	* 134.73	* 0.66 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 1.78	* 22.09	* 0.19 *

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 162

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-348.89	2350	-348.79	2349.93	-347.66	2349	-347.38	2348.76	-346.44	2348
-346.08	2347.76	-345.07	2347	-343.61	2346.08	-343.46	2346	-343.27	2345.88
-341.9	2345	-341.75	2344.92	-340.37	2344	-340.04	2343.81	-338.78	2343
-338.61	2342.9	-337.3	2342	-336.2	2341.45	-335.32	2341	-333.92	2340.43
-332.84	2340	-332.34	2339.8	-330.4	2339	-328.38	2338.15	-328	2338
-325.78	2337.06	-325.62	2337	-324.97	2336.85	-323.34	2336.43	-321.56	2336
-317.87	2335.13	-317.34	2335	-311.77	2334.42	-308.25	2334	-294.25	2333
-272.54	2333	-262.4	2334.02	-261.86	2334.08	-259.64	2334.31	-259.29	2334.34
-259.23	2334.35	-258.32	2334.46	-251.02	2333.15	-243.44	2333.04	-243.36	2332.99
-242.69	2331.92	-242.54	2331.92	-241.39	2331.79	-240.43	2332.18	-235.7	2333
-220.84	2333	-214.92	2332.92	-213.96	2332.89	-208.92	2332.82	-205.96	2332.77
-205.89	2332.77	-205.17	2332.76	-196.86	2332.58	-178.35	2332.23	-169.82	2332
-158.13	2331.62	-157.44	2331.6	-154.19	2331.5	-141.68	2331.14	-141.35	2331.13
-137.73	2331	-127.4	2331	-105.82	2330.77	-99.03	2330.68	-90.27	2330.54
-67.57	2330.36	-67.28	2330.36	-56.34	2330.02	-56.2	2330.02	-55.49	2330
-54.87	2330	-54.71	2329.99	-53.73	2329.87	-49.8	2329.55	-44.47	2330
-26.94	2330	-14.86	2329.65	-12.86	2329.48	-10.45	2329.52	-9.28	2329.36
-8.81	2329.35	-6.72	2329.04	-6.49	2329	-1.8	2329	-1.24	2329.1
-.74	2329.16	0	2329.27	.96	2329.41	1.3	2329.36	1.59	2329.4
7.09	2329.44	9.27	2329.57	10.56	2329.63	11.21	2329.62	20.57	2330.32
20.74	2330.33	21.12	2330.32	21.35	2330.32	22.6	2330.27	23.43	2330.27
25.61	2329.38	26.71	2329	29.05	2328	30.53	2328.79	32.19	2328.2
32.62	2328	34.49	2328.74	34.98	2329	36.01	2329.45	37.33	2330
42.91	2330	51.38	2330.37	75.93	2330.7	87.59	2331	87.94	2331
116.65	2330.94	116.8	2331.02	129.12	2331.57	138.03	2332	138.14	2332.03
141.85	2333	141.99	2333.04	143.02	2333.4	143.5	2333.57	144.63	2334
145.61	2334.49	146.74	2335	146.94	2335.17	147.12	2336	147.14	2336.19
147.38	2337	147.41	2337.4	147.56	2338	147.6	2338.59	147.69	2339
147.8	2339.67	147.85	2340	147.95	2340.68	148.07	2340.77	148.11	2341
148.14	2341.22	148.29	2342	148.32	2342.22	148.48	2343	148.51	2343.22
148.81	2344.78	148.84	2345	148.85	2345.27	149.08	2346	149.26	2346.89
149.28	2347	149.45	2347.89	149.47	2348	149.65	2348.89	149.67	2349

149.76 2349.78 149.8 2350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-348.89	.04	-325.62	.04	147.38	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-325.62	147.38	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-348.89	-320.86	2338.5	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2337.78	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2332.54	Flow Area (sq ft)		2989.08	0.04
E.G. Slope (ft/ft)	*0.000175	Area (sq ft)	0.73	2995.57	0.04
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	0.00
Top Width (ft)	474.98	Top Width (ft)	1.85	473.00	0.12
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)		1.68	0.06
Max Chl Dpth (ft)	9.78	Hydr. Depth (ft)		6.38	0.28
Conv. Total (cfs)	*379609.9	Conv. (cfs)		*379609.8	0.2
Length Wtd. (ft)	50.00	Wetted Per. (ft)		472.87	0.79
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.07	0.00
Alpha	1.00	Stream Power (lb/ft s)	149.80	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2.59	75.59	0.14
C & E Loss (ft)	0.00	Cum SA (acres)	0.63	20.10	0.04

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2342.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.59	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2334.95	Flow Area (sq ft)	37.09	5272.46	2.64
E.G. Slope (ft/ft)	*0.000336	Area (sq ft)	37.09	5272.46	2.64
Q Total (cfs)	*17855.00	Flow (cfs)	48.95	*17804.98	1.07
Top Width (ft)	486.56	Top Width (ft)	12.54	473.00	1.02
Vel Total (ft/s)	3.36	Avg. Vel. (ft/s)	1.32	3.38	0.41
Max Chl Dpth (ft)	14.59	Hydr. Depth (ft)	2.96	11.15	2.60
Conv. Total (cfs)	*973562.1	Conv. (cfs)	2668.9	*970834.7	58.6
Length Wtd. (ft)	50.00	Wetted Per. (ft)	13.75	477.77	5.73
Min Ch El (ft)	2328.00	Shear (lb/sq ft)	0.06	0.23	0.01
Alpha	1.01	Stream Power (lb/ft s)	149.80	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	7.84	128.65	0.65
C & E Loss (ft)	0.00	Cum SA (acres)	1.77	21.54	0.19

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: -2050

INPUT
Description:
Station Elevation Data num= 135

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-353.66	2350	-352.29	2349.15	-351.96	2349	-351.73	2348.77	-350.95	2348
-350.64	2347.61	-350.07	2347	-349.4	2346.64	-348.22	2346	-346.92	2345.44
-345.98	2345	-344.17	2344.2	-343.72	2344	-343.14	2343.71	-341.38	2343
-340.62	2342.67	-339.17	2342	-338.01	2341.53	-336.8	2341	-335.12	2340.36
-334.19	2340	-333.15	2339.57	-331.68	2339	-329.9	2338.27	-329.14	2338
-327.27	2337.26	-326.57	2337	-323.01	2336.07	-322.71	2336	-322.38	2335.93
-317.15	2335	-312.86	2334.31	-311	2334	-303.32	2333.25	-300.66	2333
-282.4	2333	-265.69	2333.61	-264.79	2333.63	-262.69	2333.71	-254.98	2334.46
-248.06	2334.33	-232.94	2334.12	-212.53	2333.1	-193.69	2332	-193.09	2332
-187.98	2331.86	-163.39	2331.27	-162.9	2331.26	-155.62	2331	-149.79	2331
-57.74	2330	-55.81	2330	-55.65	2329.96	-28.71	2328.75	-28.13	2328.77

-26.34	2328.84	-21.97	2329	18.21	2329	20.4	2329.65	20.91	2329.7
21.02	2329.7	21.07	2329.37	21.15	2329.3	21.7	2329.28	21.85	2329.36
21.9	2329.54	22.62	2328	24.45	2328.25	29.25	2328.95	31.73	2329.52
32.72	2329.52	33.07	2328.68	33.36	2328	33.65	2328.09	35.92	2328.79
35.95	2328.24	37.08	2328.56	39.57	2328	39.72	2328.05	45.22	2329
45.62	2329	50.96	2329.21	51.5	2329.23	61.51	2329.47	61.61	2329.47
66.3	2329.45	76.1	2329.78	76.49	2329.82	76.59	2329.82	78.94	2330
81.28	2329.35	105.89	2329.74	106.86	2330	107.67	2330	109.85	2330.31
112.94	2330.77	114.02	2331	117.35	2331.69	118.95	2332	123.36	2332.9
123.83	2333	125.97	2333.48	128.12	2334	129.64	2334.59	130.76	2335
131.99	2335.55	132.13	2335.65	132.29	2336	132.38	2336.95	132.4	2337.04
132.57	2338	132.72	2338.78	132.77	2339	132.9	2339.7	132.98	2340
133.11	2340.63	133.21	2341	133.32	2341.56	133.44	2342	133.54	2342.49
133.69	2343	133.78	2343.43	134.04	2344	134.15	2344.39	134.29	2345
134.41	2345.44	134.55	2346	134.69	2346.5	134.81	2347	134.97	2347.56
135.11	2348	135.3	2348.66	135.37	2349	135.58	2349.72	135.64	2350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-353.66	.04	-326.57	.04	132.38	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-326.57	132.38	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-353.66	-270.86	2338.5	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2337.76	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.98	Flow Area (sq ft)		2816.01	0.06
E.G. Slope (ft/ft)	*0.000176	Area (sq ft)	0.76	3037.13	0.06
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	0.01
Top Width (ft)	461.07	Top Width (ft)	1.97	458.95	0.15
Vel Total (ft/s)	1.78	Avg. Vel. (ft/s)		1.78	0.09
Max Chl Dpth (ft)	9.76	Hydr. Depth (ft)		6.98	0.42
Conv. Total (cfs)	*378666.1	Conv. (cfs)		*378665.7	0.4
Length Wtd. (ft)	50.00	Wetted Per. (ft)		408.89	0.83
Min Ch El (ft)	2328.00	Shear (lb/sq ft)		0.08	0.00
Alpha	1.00	Stream Power (lb/ft s)	135.64	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2.59	72.13	0.14
C & E Loss (ft)	0.00	Cum SA (acres)	0.63	19.57	0.04

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2342.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.57	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2334.70	Flow Area (sq ft)	39.44	5244.59	3.16
E.G. Slope (ft/ft)	*0.000330	Area (sq ft)	39.44	5244.59	3.16
Q Total (cfs)	*17855.00	Flow (cfs)	50.88	*17802.70	1.43
Top Width (ft)	473.97	Top Width (ft)	13.84	458.95	1.18
Vel Total (ft/s)	3.38	Avg. Vel. (ft/s)	1.29	3.39	0.45
Max Chl Dpth (ft)	14.57	Hydr. Depth (ft)	2.85	11.43	2.67
Conv. Total (cfs)	*982784.3	Conv. (cfs)	2800.3	*979905.3	78.7
Length Wtd. (ft)	50.00	Wetted Per. (ft)	14.92	464.95	5.75
Min Ch El (ft)	2328.00	Shear (lb/sq ft)	0.05	0.23	0.01
Alpha	1.01	Stream Power (lb/ft s)	135.64	0.00	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	7.80	122.62	0.65
C & E Loss (ft)	0.00	Cum SA (acres)	1.75	21.01	0.18

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: -2100

INPUT

Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-348.79	2350	-348.7	2349.78	-347.57	2349	-347.37	2348.6	-347.15	2348
-346.9	2347.47	-346.7	2347	-346.48	2346.5	-346.28	2346	-346.01	2345.38
-345.86	2345	-345.43	2344.46	-345.14	2344	-344.49	2343.54	-343.08	2342.6
-342.57	2342.18	-342.3	2342	-341.83	2341.77	-341.64	2341.6	-341.35	2341.4
-340.57	2341	-339.26	2340.39	-338.44	2340	-337.33	2339.5	-336.3	2339
-334.07	2338.09	-333.91	2338	-333.83	2337.96	-331.81	2337	-328.73	2336.11
-328.39	2336	-327.81	2335.86	-324.12	2335	-322.73	2334.67	-319.78	2334
-311.17	2333.2	-309.17	2333	-306.6	2332.78	-299.48	2332.27	-296.77	2332.08
-296.69	2332.07	-296.26	2332.04	-239.89	2332	-229.48	2330.81	-229.36	2330.4
-229.07	2330.82	-228.12	2330.87	-226.93	2330.4	-217.73	2330.4	-212.52	2331.78
-204.77	2334.12	-198.49	2333.67	-198.37	2333.67	-157.13	2331.02	-156.4	2331
-155.92	2331	-130.55	2330.62	-129.98	2330.62	-69	2330	-65.35	2330
-49.34	2328.74	-47.92	2328.63	-43.86	2328.3	-39.85	2328.01	-39.31	2327.97
-38.68	2327.88	-37.66	2327.93	-37.53	2327.94	-19.76	2329	25.72	2329
26.43	2328.52	27.37	2328	28.05	2327.55	29.01	2327	30.24	2326.23
30.61	2326	35.85	2328	41.45	2328.76	43.56	2329	44.64	2329
47.95	2329.15	53.33	2329.47	53.78	2329.46	53.97	2329.47	54.22	2329.46
54.34	2329.47	55.86	2329.22	56.07	2329.2	68.02	2328.54	68.11	2328.53
76.4	2328.25	80.31	2328.28	80.4	2328.29	86.09	2327.09	86.23	2327.08
86.55	2327.05	87.36	2327	87.42	2326.92	87.96	2327.18	88.94	2327.44
91.22	2328.2	93.7	2329	102.75	2329.96	103.17	2330	103.69	2330.07
110	2330.94	110.39	2331	110.57	2331.05	114.03	2332	114.11	2332.41
114.37	2333	114.55	2333.68	114.62	2334	114.87	2334.72	114.93	2335
115.18	2335.82	115.22	2336	115.5	2336.86	115.54	2337	115.84	2337.9
115.87	2338	116.19	2338.94	116.21	2339	116.55	2339.98	116.7	2340.4
116.95	2341	116.98	2341.07	117.36	2342	117.44	2342.17	117.79	2343
117.91	2343.26	118.22	2344	118.37	2344.34	118.65	2345	118.97	2345.66
119.13	2346	119.3	2346.37	119.78	2347.45	120.03	2348	120.27	2348.52
120.48	2349	120.75	2349.58	120.94	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-348.79	.04	-331.81	.04	115.54	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-331.81	115.54	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-348.79	-220.86	2338.5	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.80	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2337.75	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	* 2331.57	* Flow Area (sq ft)	*	* 2617.50	* 0.09 *
* E.G. Slope (ft/ft)	*0.000177	* Area (sq ft)	* 0.58	* 3209.29	* 0.09 *
* Q Total (cfs)	* 5019.00	* Flow (cfs)	*	* 5018.99	* 0.01 *
* Top Width (ft)	* 449.17	* Top Width (ft)	* 1.57	* 447.35	* 0.25 *
* Vel Total (ft/s)	* 1.92	* Avg. Vel. (ft/s)	*	* 1.92	* 0.12 *
* Max Chl Dpth (ft)	* 11.74	* Hydr. Depth (ft)	*	* 7.78	* 0.37 *
* Conv. Total (cfs)	*376903.6	* Conv. (cfs)	*	*376902.8	* 0.8 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 342.99	* 0.79 *
* Min Ch El (ft)	* 2326.00	* Shear (lb/sq ft)	*	* 0.08	* 0.00 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 120.94	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	* 2.59	* 68.54	* 0.14 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.63	* 19.04	* 0.04 *

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2342.73	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.17	* Wt. n-Val.	* 0.040	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2342.56	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	* 2334.41	* Flow Area (sq ft)	* 33.30	* 5364.02	* 5.42 *
* E.G. Slope (ft/ft)	*0.000298	* Area (sq ft)	* 33.30	* 5364.02	* 5.42 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	* 40.88	*17810.84	* 3.28 *
* Top Width (ft)	* 460.64	* Top Width (ft)	* 11.22	* 447.35	* 2.07 *
* Vel Total (ft/s)	* 3.30	* Avg. Vel. (ft/s)	* 1.23	* 3.32	* 0.60 *
* Max Chl Dpth (ft)	* 16.56	* Hydr. Depth (ft)	* 2.97	* 11.99	* 2.63 *
* Conv. Total (cfs)	*1034594.0	* Conv. (cfs)	* 2368.8	*1032036.0	* 189.8 *

* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*	12.57	*	455.08	*	5.94	*
* Min Ch El (ft)	*	2326.00	* Shear (lb/sq ft)	*	0.05	*	0.22	*	0.02	*
* Alpha	*	1.01	* Stream Power (lb/ft s)	*	120.94	*	0.00	*	0.00	*
* Frctn Loss (ft)	*	0.01	* Cum Volume (acre-ft)	*	7.76	*	116.53	*	0.64	*
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	1.74	*	20.49	*	0.18	*

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: -2150

INPUT
Description:
Station Elevation Data num= 206

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-580.78	2350	-535.81	2345	-513.8	2341.5	-506.18	2340	-489.96	2335
-484.66	2334	-428.15	2333	-400	2332.58	-397.73	2332.51	-397.57	2332.5
-395.27	2332.31	-393.06	2332.1	-387.5	2331.55	-385.89	2331.5	-380.23	2330.73
-378.09	2331.15	-377.57	2331.2	-370.96	2332.51	-370.5	2332.51	-369.07	2332.49
-368.76	2332.49	-359.75	2332.78	-358.95	2332.8	-358.3	2332.81	-357.88	2332.82
-357.78	2332.82	-357.31	2332.81	-354.35	2332.91	-354.3	2332.91	-354.12	2332.91
-352.57	2332.96	-352.54	2332.96	-350.25	2333	-347.61	2333.15	-347.01	2333.16
-346.92	2333.16	-343.44	2333.09	-343.28	2333.09	-343.23	2333.08	-342.52	2333.05
-342.39	2333.04	-341.89	2333	-336.29	2332.82	-336.2	2332.82	-335.64	2332.75
-332.64	2332.35	-331.32	2332.22	-331.02	2332.19	-329.61	2332	-329.56	2332
-329.22	2332	-328.7	2332	-327.85	2332	-320.49	2332	-319.67	2332
-316.46	2332.3	-314.74	2332.5	-313.76	2332.59	-310.92	2332.89	-309.48	2333
-304.5	2333	-304.31	2333	-304.21	2332.99	-303.74	2332.94	-302.41	2332.71
-300.99	2332.79	-298.6	2332.63	-298.45	2332.63	-289.49	2333.53	-263.98	2334.46
-258.3	2333.58	-257.96	2333.56	-255.5	2333.45	-240.72	2332	-231.06	2332
-219.85	2331.02	-208.62	2330.4	-179.99	2330.4	-172.87	2330.87	-172.28	2331
-157.07	2331.69	-155.94	2331.71	-155.86	2331.72	-155.59	2331.75	-112.44	2331.01
-99.89	2330	-92.39	2330	-61.13	2329.36	-48.38	2329.12	-46.51	2329.08
-42.27	2329	-36.07	2328.42	-31.77	2327.88	-21.11	2328.15	-15.98	2328.82
-14.56	2328.81	-12.45	2329	7.35	2329	10.94	2328.36	14.36	2328.17
16.46	2328.44	16.72	2328.33	18.1	2328	19.67	2328	21.19	2327.91
21.51	2327.9	26.13	2328	27.53	2328.2	27.75	2328.25	28.35	2328.26
28.73	2328.19	29.67	2328	31.63	2327.84	31.81	2327.82	32.62	2327.65
32.9	2327.63	33.79	2327.94	39.63	2327.7	40.12	2327	40.52	2327
81.16	2326.92	83.57	2327.8	84.3	2327.89	84.66	2327.94	84.96	2328
85.23	2328.17	85.42	2328.24	85.94	2328.36	86.73	2328.59	87.26	2328.6
87.4	2328.6	91.74	2328.63	101.46	2329	104.67	2329.66	104.99	2329.72
105.76	2329.72	105.99	2329.73	107.7	2329.88	109.97	2330	112.6	2330.58
114.24	2331	115.96	2331.54	117.08	2332	118.04	2332.56	118.87	2333
119.13	2333.14	120.48	2334	120.82	2334.19	122.11	2335	122.6	2335.32
123.68	2336	124.91	2336.74	125.25	2337	125.6	2337.27	126.61	2338
127.29	2338.6	127.8	2339	128.33	2339.44	128.96	2340	129.68	2340.66
130.07	2341	130.41	2341.49	130.78	2342	131.37	2342.8	131.51	2343
131.84	2343.44	132.29	2343.96	132.35	2344.02	133.32	2345	134.49	2345.41
134.5	2345.41	134.52	2345.41	135.3	2345.54	135.31	2345.54	136.1	2345.57
136.61	2345.54	136.81	2345.52	138.28	2345.37	140.97	2345.54	141.16	2345.51
142.2	2345.53	142.34	2345.55	143	2345.75	143.13	2345.78	143.67	2346
145.51	2346.48	146.76	2347	148.31	2347.63	149.21	2348	150.96	2348.7
151.41	2348.9	151.61	2349	153.96	2349.77	154.2	2349.87	154.47	2350
155.95	2350.4	156.33	2350.5	156.39	2350.5	157.33	2350.7	158.28	2350.71
159.99	2350.76	161	2350.64	161.22	2350.61	164.07	2350.91	164.15	2350.91
164.44	2351								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-580.78	.04	-506.18	.04	128.96	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-506.18	128.96	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-580.78	-170.86	2338.5	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2337.79	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.040	*

W.S. Elev (ft)	2337.73	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.18	Flow Area (sq ft)		2474.65	
E.G. Slope (ft/ft)	*0.000179	Area (sq ft)		4145.54	
Q Total (cfs)	5019.00	Flow (cfs)		5019.00	
Top Width (ft)	625.05	Top Width (ft)		625.05	
Vel Total (ft/s)	2.03	Avg. Vel. (ft/s)		2.03	
Max Chl Dpth (ft)	10.81	Hydr. Depth (ft)		8.33	
Conv. Total (cfs)	*375103.8	Conv. (cfs)		*375103.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		300.23	
Min Ch El (ft)	2326.92	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)	164.44	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2.59	64.32	0.14
C & E Loss (ft)	0.00	Cum SA (acres)	0.62	18.43	0.04

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

			Left OB	Channel	Right OB
E.G. Elev (ft)	2342.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.60	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2334.18	Flow Area (sq ft)	17.96	7230.61	3.24
E.G. Slope (ft/ft)	*0.000174	Area (sq ft)	17.96	7230.61	3.24
Q Total (cfs)	*17855.00	Flow (cfs)	10.02	*17843.46	1.52
Top Width (ft)	651.97	Top Width (ft)	14.56	635.14	2.27
Vel Total (ft/s)	2.46	Avg. Vel. (ft/s)	0.56	2.47	0.47
Max Chl Dpth (ft)	15.68	Hydr. Depth (ft)	1.23	11.38	1.43
Conv. Total (cfs)	*1352319.0	Conv. (cfs)	759.0	*1351445.0	115.1
Length Wtd. (ft)	50.00	Wetted Per. (ft)	14.79	640.68	3.47
Min Ch El (ft)	2326.92	Shear (lb/sq ft)	0.01	0.12	0.01
Alpha	1.00	Stream Power (lb/ft s)	164.44	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	7.73	109.30	0.64
C & E Loss (ft)	0.00	Cum SA (acres)	1.72	19.87	0.18

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: -2200

INPUT
Description:
Station Elevation Data num= 197

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-537.46	2350	-528.77	2345	-525	2340	-523.61	2339.58	-404.38	2334
-400	2333.85	-359.96	2332.47	-324.94	2332.27	-317.93	2331.74	-317.18	2331
-298.19	2331	-278.01	2331	-277.34	2331.08	-277.17	2331.02	-277.06	2331.02
-274.21	2331.07	-273.63	2331.07	-273.32	2331.08	-273.22	2331.08	-265.31	2331.15
-264.85	2331.16	-262.65	2331.2	-262.44	2331.19	-258	2331.24	-257.55	2331.24
-253.11	2331.26	-252.96	2331.25	-252.39	2331.23	-243.21	2331.28	-238.71	2331.19
-236.05	2331.18	-231.79	2331.18	-229.27	2331.19	-214.5	2331.14	-214.37	2331.14
-211.87	2331.12	-208.16	2330.92	-206.12	2330.89	-202.93	2330.82	-202.03	2330.82
-195.22	2330.78	-192.73	2330.77	-187.48	2330.63	-186.48	2330.63	-185.15	2330.64
-181.14	2330.78	-177.68	2330.4	-176.95	2330.44	-173.28	2331	-171.34	2330.78
-170.38	2330.83	-165.92	2330.72	-165.17	2330.72	-161.27	2330.73	-153.22	2330.82
-140.89	2330.48	-139.51	2330.4	-138.63	2330.62	-109.55	2330	-82.06	2330
-77.27	2329.89	-76.58	2329.87	-41.76	2329	-40.12	2329	-39.89	2328.97
-22.17	2327.88	-10.14	2327.97	-3.38	2328.13	-2.3	2328.14	-2.06	2328.14
-.8	2328.16	0	2328.16	.32	2328.17	7.75	2328.42	8.68	2328.44
12.72	2328.4	13.52	2328.42	16.99	2328.4	17.08	2328.4	17.11	2328.48
23.54	2328.64	24.21	2328.59	24.35	2328.59	24.73	2328.57	24.99	2328.57
25.17	2328.6	25.57	2328.64	25.84	2328.63	28.06	2328.63	30.81	2328.51
36.77	2328.23	42.17	2328	42.82	2328.18	43.19	2328.26	43.85	2328.47
44.1	2328.47	44.59	2328.37	44.99	2328.22	45.92	2327.83	46.33	2327.59
48.08	2327	52.42	2327.18	53.64	2327	53.97	2328.09	54.44	2328.14
54.61	2328.24	54.68	2328.24	54.8	2328.32	55.27	2328.31	55.57	2328.31
56.21	2328.22	56.83	2328.07	57.78	2328	59.5	2328.01	59.93	2328
60.69	2328.01	62.33	2327.99	67.07	2328.04	71.67	2327.97	71.95	2327.97
72.22	2327.98	72.68	2327.97	73.53	2327.97	78.54	2328	81.97	2327.39
82.41	2327.32	87.91	2328.01	88.54	2328.13	88.63	2328.15	89.68	2328.15
96.15	2328.06	97.82	2328.03	97.92	2328.03	98.12	2328.01	98.55	2328.01
98.66	2328.02	98.77	2328.01	98.97	2328.02	101.27	2328.02	102.35	2328.01

102.98	2328.01	103.07	2327.95	103.45	2327.94	104.44	2327.94	105.23	2328
105.96	2328.38	108.71	2329.2	109.47	2329.2	109.74	2329.16	109.96	2329.27
110.23	2329.24	111.8	2329.81	112.65	2330	113.4	2330.41	114.32	2331
114.71	2331.18	115.56	2331.53	116.6	2331.93	116.66	2331.96	116.79	2332
119.63	2332.65	121.04	2333	121.33	2333.35	121.73	2334	121.84	2334.24
122.23	2334.94	122.32	2335.12	122.79	2336	122.95	2336.29	123.33	2337
123.6	2337.51	123.87	2338	124.28	2338.76	124.82	2339.76	124.98	2340
125.05	2340.11	125.6	2341	125.96	2341.56	126.24	2342	126.86	2342.96
126.88	2343	126.94	2343.09	127.39	2344	127.55	2344.33	127.83	2345
127.86	2345.08	128.24	2346	128.31	2346.18	128.65	2347	128.75	2347.27
129.05	2348	129.17	2348.34	129.44	2349	129.59	2349.41	129.92	2350
130.18	2350.48	130.41	2351						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-537.46	.04	-400	.04	121.73	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	121.73	74.86	74.86	.3	.5

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-537.46	-120.86	2338.5	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2337.70	Reach Len. (ft)	74.86	74.86	74.86
Crit W.S. (ft)	2331.16	Flow Area (sq ft)		2149.81	3.62
E.G. Slope (ft/ft)	*0.000219	Area (sq ft)	162.46	3894.52	3.62
Q Total (cfs)	5019.00	Flow (cfs)		5017.19	1.81
Top Width (ft)	607.06	Top Width (ft)	83.35	521.73	1.97
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)		2.33	0.50
Max Chl Dpth (ft)	10.70	Hydr. Depth (ft)		8.86	1.84
Conv. Total (cfs)	*339317.3	Conv. (cfs)		*339195.1	122.2
Length Wtd. (ft)	74.86	Wetted Per. (ft)		245.60	4.19
Min Ch El (ft)	2327.00	Shear (lb/sq ft)		0.12	0.01
Alpha	1.00	Stream Power (lb/ft s)	130.41	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2.49	59.71	0.13
C & E Loss (ft)	0.03	Cum SA (acres)	0.58	17.77	0.04

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is 1ess 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 OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2342.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2342.59	Reach Len. (ft)	74.86	74.86	74.86
Crit W.S. (ft)	2334.37	Flow Area (sq ft)	735.82	6447.50	20.13
E.G. Slope (ft/ft)	*0.000172	Area (sq ft)	735.82	6447.50	20.13
Q Total (cfs)	*17855.00	Flow (cfs)	1146.24	*16693.02	15.73
Top Width (ft)	653.57	Top Width (ft)	126.95	521.73	4.89
Vel Total (ft/s)	2.48	Avg. Vel. (ft/s)	1.56	2.59	0.78
Max Chl Dpth (ft)	15.59	Hydr. Depth (ft)	5.80	12.36	4.12
Conv. Total (cfs)	*1363253.0	Conv. (cfs)	87517.1	*1274534.0	1201.4
Length Wtd. (ft)	74.86	Wetted Per. (ft)	128.44	525.24	9.89
Min Ch El (ft)	2327.00	Shear (lb/sq ft)	0.06	0.13	0.02
Alpha	1.05	Stream Power (lb/ft s)	130.41	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	7.29	101.45	0.63
C & E Loss (ft)	0.00	Cum SA (acres)	1.64	19.20	0.18

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: -2274.86

INPUT
Description:

Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-522.46	2350	-513.77	2345	-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	
110	2340	121.52	2345	132.46	2350				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-522.46	.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	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-522.46	-46	2337.13	F
50	132.46	2337.13	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2337.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.040	0.037	0.040
W.S. Elev (ft)	2337.72	Reach Len. (ft)	13.17	13.17	13.17
Crit W.S. (ft)	2332.41	Flow Area (sq ft)	2095.03	1902.90	110.68
E.G. Slope (ft/ft)	*0.000071	Area (sq ft)	2095.03	1902.90	110.68
Q Total (cfs)	5019.00	Flow (cfs)	2160.68	2777.25	81.07
Top Width (ft)	589.34	Top Width (ft)	350.03	209.29	30.02
Vel Total (ft/s)	1.22	Avg. Vel. (ft/s)	1.03	1.46	0.73
Max Chl Dpth (ft)	9.74	Hydr. Depth (ft)	5.99	9.09	3.69
Conv. Total (cfs)	*595680.2	Conv. (cfs)	*256440.2	*329618.4	9621.5
Length Wtd. (ft)	13.17	Wetted Per. (ft)	350.27	209.45	30.91
Min Ch El (ft)	2327.98	Shear (lb/sq ft)	0.03	0.04	0.02
Alpha	1.10	Stream Power (lb/ft s)	132.46	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	0.55	54.73	0.04
C & E Loss (ft)		Cum SA (acres)	0.20	17.14	0.02

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2342.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.040	0.038	0.040
W.S. Elev (ft)	2342.57	Reach Len. (ft)	13.17	13.17	13.17
Crit W.S. (ft)	2337.14	Flow Area (sq ft)	3878.40	2918.59	298.49
E.G. Slope (ft/ft)	*0.000165	Area (sq ft)	3878.40	2918.59	298.49
Q Total (cfs)	*17855.00	Flow (cfs)	8772.84	8593.98	488.18
Top Width (ft)	627.86	Top Width (ft)	373.33	209.29	45.24
Vel Total (ft/s)	2.52	Avg. Vel. (ft/s)	2.26	2.94	1.64
Max Chl Dpth (ft)	14.59	Hydr. Depth (ft)	10.39	13.95	6.60
Conv. Total (cfs)	*1391945.0	Conv. (cfs)	*683915.4	*669972.0	38057.5
Length Wtd. (ft)	13.17	Wetted Per. (ft)	375.00	209.45	46.94
Min Ch El (ft)	2327.98	Shear (lb/sq ft)	0.11	0.14	0.07
Alpha	1.07	Stream Power (lb/ft s)	132.46	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	3.33	93.40	0.35
C & E Loss (ft)		Cum SA (acres)	1.21	18.58	0.13

BRIDGE

RIVER: Las Vegas Wash
REACH: Upper RS: -2327.86

INPUT
Description:
Distance from Upstream XS = 13.17
Deck/Roadway Width = 88.03
Weir Coefficient = 2.5
Upstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-522.46	2343.43		-508	2342.5		-200	2338.4	
-34.89	2338.4	2335.92	38.779	2338.64	2335.92	110	2340	

```
Upstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -550    2350 -522.46 2343.43 -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     110    2340
  121.52    2345  132.46    2350

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************************************
    -550     .04 -138.61     .04  -38.61    .013   51.39     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
       -138.61   70.68            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -550     -46 2337.13       F
      50  132.46 2337.13       F

Downstream  Deck/Roadway Coordinates
    num=       5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*********************************************************************************
 -586.47 2338.74            -200  2338.4          -34.89  2338.4 2335.63
  38.779 2338.64 2335.63  123.53 2338.41

Downstream Bridge Cross Section Data
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
 -646.47 2354.31 -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    .013   53.53     .04   93.53     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
       -336.47   93.53            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 -646.47     -60    2333       F
      63  133.53    2333       F

Upstream Embankment side slope             =       2 horiz. to 1.0 vertical
Downstream Embankment side slope           =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins        =
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 energy grade line

BRIDGE OUTPUT  Profile #100-yr FIS Flow
*************************************************************************************
* E.G. US. (ft)          *    2337.74  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    2337.72  * E.G. Elev (ft)         *    2337.74  *    2335.60  *
* Q Total (cfs)          *    5019.00  * W.S. Elev (ft)         *    2335.92  *    2334.13  *
* Q Bridge (cfs)         *    5019.00  * Crit W.S. (ft)         *    2333.30  *    2332.96  *
* Q Weir (cfs)           *             * Max Chl Dpth (ft)      *       7.94  *       6.50  *
* Weir Sta Lft (ft)      *             * Vel Total (ft/s)       *       8.74  *      10.69  *
* Weir Sta Rgt (ft)      *             * Flow Area (sq ft)      *     573.98  *     469.50  *
* Weir Submerg           *             * Froude # Chl           *       0.55  *       0.74  *
* Weir Max Depth (ft)    *             * Specif Force (cu ft)   *    3644.59  *    3191.03  *
* Min El Weir Flow (ft)  *    2338.41  * Hydr Depth (ft)        *  288247.90  *       6.51  *
* Min El Prs (ft)        *    2335.92  * W.P. Total (ft)        *     192.18  *     111.53  *
* Delta EG (ft)          *       3.39  * Conv. Total (cfs)      *  136061.5   *  139905.2   *
* Delta WS (ft)          *       3.59  * Top Width (ft)         *             *      72.12  *
* BR Open Area (sq ft)   *     573.98  * Frctn Loss (ft)        *             *             *
* BR Open Vel (ft/s)     *       8.74  * C & E Loss (ft)        *             *             *
* Coef of Q              *             * Shear Total (lb/sq ft) *       0.25  *       0.34  *
* Br Sel Method          * Press Only  * Power Total (lb/ft s)  *    -550.00  *    -646.47  *
*************************************************************************************

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.
Note:    Momentum answer is not valid if the water surface is above the low chord or if there is weir
flow.  The momentum
         answer has been disregarded.
Note:    The downstream water surface is below the minimum elevation for pressure flow.  The sluice gate
equations were used
         for pressure flow.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
water surface was used.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
water surface was used.

BRIDGE OUTPUT  Profile #500-yr FIS Flow
*************************************************************************************
* E.G. US. (ft)          *    2342.68  * Element                *Inside BR US *Inside BR DS *
* W.S. US. (ft)          *    2342.57  * E.G. Elev (ft)         *    2342.68  *    2342.23  *
* Q Total (cfs)          *   17855.00  * W.S. Elev (ft)         *    2342.57  *    2340.72  *
* Q Bridge (cfs)         *    8964.43  * Crit W.S. (ft)         *    2341.83  *    2340.72  *
* Q Weir (cfs)           *    8890.57  * Max Chl Dpth (ft)      *      14.59  *      13.09  *
* Weir Sta Lft (ft)      *    -510.72  * Vel Total (ft/s)       *       7.09  *       4.98  *
* Weir Sta Rgt (ft)      *     116.16  * Flow Area (sq ft)      *    2518.57  *    3583.50  *
* Weir Submerg           *       0.00  * Froude # Chl           *       0.45  *       0.48  *
* Weir Max Depth (ft)    *       4.27  * Specif Force (cu ft)   *   14622.38  *   12320.82  *
* Min El Weir Flow (ft)  *    2338.41  * Hydr Depth (ft)        *       4.03  *       4.95  *
* Min El Prs (ft)        *    2335.92  * W.P. Total (ft)        *     817.81  *     917.73  *
* Delta EG (ft)          *       5.61  * Conv. Total (cfs)      *             *             *
* Delta WS (ft)          *       5.82  * Top Width (ft)         *     625.01  *     724.54  *
* BR Open Area (sq ft)   *     573.98  * Frctn Loss (ft)        *             *             *
* BR Open Vel (ft/s)     *      15.62  * C & E Loss (ft)        *             *             *
* Coef of Q              *             * Shear Total (lb/sq ft) *             *             *
```

* Br Sel Method	* Press/Weir	* Power Total (lb/ft s)	* -550.00	* -646.47	*

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: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2406.83

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	43.17	43.17	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-646.47	-60	2333	F
63	133.53	2333	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2334.35	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.22	* Wt. n-Val.	* 0.040	* 0.042	* 0.040 *
* W.S. Elev (ft)	* 2334.13	* Reach Len. (ft)	* 43.17	* 43.17	* 43.17 *
* Crit W.S. (ft)	* 2333.01	* Flow Area (sq ft)	* 280.08	* 2056.41	* 22.23 *
* E.G. Slope (ft/ft)	*0.001413	* Area (sq ft)	* 280.08	* 2056.41	* 22.23 *
* Q Total (cfs)	* 8537.00	* Flow (cfs)	* 527.94	* 7965.97	* 43.10 *
* Top Width (ft)	* 621.74	* Top Width (ft)	* 178.56	* 430.00	* 13.19 *
* Vel Total (ft/s)	* 3.62	* Avg. Vel. (ft/s)	* 1.88	* 3.87	* 1.94 *
* Max Chl Dpth (ft)	* 6.50	* Hydr. Depth (ft)	* 1.57	* 4.78	* 1.69 *
* Conv. Total (cfs)	*227105.3	* Conv. (cfs)	* 14044.4	*211914.4	* 1146.5 *
* Length Wtd. (ft)	* 43.17	* Wetted Per. (ft)	* 178.59	* 430.24	* 13.58 *
* Min Ch El (ft)	* 2327.63	* Shear (lb/sq ft)	* 0.14	* 0.42	* 0.14 *
* Alpha	* 1.09	* Stream Power (lb/ft s)	* 133.53	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.14	* Cum Volume (acre-ft)	* 0.14	* 52.41	* 0.01 *
* C & E Loss (ft)	* 0.58	* Cum SA (acres)	* 0.09	* 16.86	* 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.
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 OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2337.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.040	0.042	0.040
W.S. Elev (ft)	2336.75	Reach Len. (ft)	43.17	43.17	43.17
Crit W.S. (ft)	2333.27	Flow Area (sq ft)	818.50	3183.90	69.04
E.G. Slope (ft/ft)	*0.001208	Area (sq ft)	818.50	3183.90	69.04
Q Total (cfs)	*17855.00	Flow (cfs)	2505.84	*15167.09	182.07
Top Width (ft)	677.00	Top Width (ft)	224.09	430.00	22.91
Vel Total (ft/s)	4.39	Avg. Vel. (ft/s)	3.06	4.76	2.64
Max Chl Dpth (ft)	9.12	Hydr. Depth (ft)	3.65	7.40	3.01
Conv. Total (cfs)	*513661.1	Conv. (cfs)	72089.1	*436334.0	5238.0
Length Wtd. (ft)	43.17	Wetted Per. (ft)	224.21	430.24	23.65
Min Ch El (ft)	2327.63	Shear (lb/sq ft)	0.28	0.56	0.22
Alpha	1.07	Stream Power (lb/ft s)	133.53	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	0.68	88.07	0.04
C & E Loss (ft)	0.03	Cum SA (acres)	0.29	17.56	0.02

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 124

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-734.6	2345	-711	2340	-482.1	2335	-400	2334.08	-395.88	2333.51
-388.18	2332.46	-383.37	2332	-371.95	2331.62	-367.87	2331.49	-363.77	2331.37
-345.06	2331	-344.42	2331	-340.66	2330.91	-331.78	2330.74	-300.05	2330
-242.01	2329	-241.18	2329	-190.78	2328.11	-188.8	2328.08	-188.2	2328.07
-184.6	2328	-184.38	2328	-150.18	2327.35	-142.86	2327.24	-142.52	2327.24
-136.77	2327.18	-135.42	2327.17	-135.32	2327.17	-130.23	2326.79	-129.9	2326.79
-125.09	2326.65	-123.62	2326.64	-115.55	2326.64	-113.64	2326.67	-106.48	2326.05
-106.39	2326.05	-106.32	2326.05	-100.42	2326.94	-100.04	2327	-87.95	2327
-78.21	2326.8	-51.77	2326.3	-44.47	2326.3	-43.04	2326.28	-38.65	2326.19
-35.52	2326.1	-35.26	2326.1	-34.64	2326.11	-34.15	2326.1	-33.51	2326.11
-30.93	2326.09	-30.08	2326.09	-29.66	2326.08	-26.13	2326.13	-25.87	2326.12
-18.58	2326	-6.57	2326	0	2325.43	1.54	2325.3	6.01	2325
7.95	2324.51	9.68	2324.09	10	2324	10.25	2324.22	10.61	2324.4
11.17	2325.55	11.97	2324.96	12.6	2324	12.99	2324.1	17.27	2325
18.55	2325.53	19.51	2326	22.11	2326.79	22.47	2326.84	23.68	2327
26.13	2327.16	30.66	2327.44	32.68	2327.57	37.77	2327.87	40.08	2328
45.35	2328.45	51.47	2328.92	52.58	2329	53.15	2329.03	70.99	2330
76.73	2330.58	83.18	2331	83.66	2331.06	84.28	2331.14	85.85	2331.35
86.12	2331.39	90.18	2332	92.53	2332.31	94.23	2332.5	95.08	2332.61
98.13	2333	102.08	2333.47	104.29	2333.75	106.38	2334	115.16	2334.81
117.08	2335	117.64	2335.05	122.22	2335.49	127.17	2335.73	127.62	2335.76
130.52	2336	132.18	2336	136.65	2336.42	138	2336.56	138.12	2336.58
141.16	2336.91	141.31	2336.93	141.81	2337	142.15	2337	142.43	2337.03
145.75	2337.26	146.13	2337.28	148.14	2337.39	148.32	2337.41	151.59	2337.52
152.49	2337.63	153.43	2337.68	154.07	2337.75	158.14	2338		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-734.6	.04	-400	.04	141.81	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	141.81	50	50	50	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-734.6	-81.59	2335	F
84.585	158.14	2335	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2333.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	2331.47	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.47	Flow Area (sq ft)		724.78	
E.G. Slope (ft/ft)	*0.014373	Area (sq ft)		1505.87	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	453.96	Top Width (ft)		453.96	
Vel Total (ft/s)	11.78	Avg. Vel. (ft/s)		11.78	
Max Chl Dpth (ft)	7.47	Hydr. Depth (ft)		4.36	
Conv. Total (cfs)	71208.3	Conv. (cfs)		71208.3	

* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	168.51	*		*	
* Min Ch El (ft)	*	2324.00	* Shear (lb/sq ft)	*		*	3.86	*		*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	158.14	*	0.00	*	0.00	*	
* Frctn Loss (ft)	*	0.73	* Cum Volume (acre-ft)	*		*	50.64	*		*	
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*		*	16.42	*		*	

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2337.00	* Element	*	Left OB	*	Channel	*	Right OB	*	
* Vel Head (ft)	*	0.27	* Wt. n-Val.	*	0.040	*	0.040	*		*	
* W.S. Elev (ft)	*	2336.73	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*	
* Crit W.S. (ft)	*	2334.24	* Flow Area (sq ft)	*	248.65	*	4158.29	*		*	
* E.G. Slope (ft/ft)	*	0.000849	* Area (sq ft)	*	248.65	*	4158.29	*		*	
* Q Total (cfs)	*	17855.00	* Flow (cfs)	*	358.93	*	17496.07	*		*	
* Top Width (ft)	*	700.92	* Top Width (ft)	*	161.40	*	539.52	*		*	
* Vel Total (ft/s)	*	4.05	* Avg. Vel. (ft/s)	*	1.44	*	4.21	*		*	
* Max Chl Dpth (ft)	*	12.73	* Hydr. Depth (ft)	*	1.54	*	7.71	*		*	
* Conv. Total (cfs)	*	612867.9	* Conv. (cfs)	*	12320.2	*	600547.7	*		*	
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*	161.42	*	542.46	*		*	
* Min Ch El (ft)	*	2324.00	* Shear (lb/sq ft)	*	0.08	*	0.41	*		*	
* Alpha	*	1.06	* Stream Power (lb/ft s)	*	158.14	*	0.00	*	0.00	*	
* Frctn Loss (ft)	*	0.11	* Cum Volume (acre-ft)	*	0.15	*	84.43	*	0.00	*	
* C & E Loss (ft)	*	0.32	* Cum SA (acres)	*	0.10	*	17.08	*	0.00	*	

Warning: Multiple water surfaces were found that could balance the energy equation. The program selected the water surface
whose main channel velocity head was the closest to the previously computed cross section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Note: 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: -2500

INPUT
Description:
Station Elevation Data num= 111

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-426.72	2338	-400	2333.29	-397.61	2333	-390.05	2332.06	-389.58	2332
-376.46	2331.05	-375.15	2331	-372.05	2331	-367.09	2330.71	-353.03	2330.21
-350.08	2330.08	-349.51	2330.07	-346.34	2330	-333.42	2329.91	-331.23	2329.88
-305.64	2329.61	-256.53	2329.07	-191.05	2328	-150.43	2327.22	-130.99	2327
-129.14	2327	-111.13	2326.48	-97.07	2326.04	-77.5	2326	-64.85	2326
-63.21	2326.02	-61.86	2326.04	-61.5	2325.23	-61.41	2325.13	-61.33	2325.1
-61.31	2325	-61.13	2325	-60.32	2325.84	-57.62	2325.7	-56.14	2325.72
-54.14	2326.11	-53.87	2326.11	-53.78	2325.96	-53.66	2325.92	-52.97	2325.92
-52.68	2325.96	-52.42	2325.92	-51.94	2325.92	-50.8	2325.93	-44.89	2325.34
-32.78	2325	-31.34	2324.92	-31.2	2324.92	-27.23	2324.65	-21.53	2325.08
-21.52	2325.55	-18.26	2325.42	-17.9	2325.42	-17.61	2325.41	-16.16	2325.35
-15.82	2325.33	-14.28	2325.26	-13.74	2325.23	-9.97	2325	-9.93	2324.9
-9.69	2323.33	-9.07	2324.74	-7.56	2324.5	-5.01	2325.22	-4.24	2325.27
-3.48	2325.31	-3.3	2325.32	-.92	2325.5	-.07	2325.51	0	2325.51
1.47	2325.63	3.39	2325.72	9.65	2325.17	9.75	2325.17	11.73	2325.31
11.84	2325.32	12.52	2325.35	12.79	2325.36	14.74	2325.41	25.7	2325.79
28.56	2325.95	29.67	2326	35.67	2326.4	37.75	2326.58	37.87	2326.59

41.97	2327	45.31	2327.44	46.38	2327.6	48.06	2327.81	49.16	2328
50.87	2328.41	53.36	2329	56.23	2329.7	57.38	2330	59.68	2330.78
60.05	2330.91	60.16	2330.95	60.34	2331	61.61	2331.5	62.84	2331.98
62.9	2332	63.06	2332.07	65.57	2333	66.25	2333.25	68.22	2334
69.36	2334.55	70.14	2335	71.48	2335.64	72.19	2336	74.01	2336.85
74.32	2337								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-426.72	.04	-400	.04	70.14	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-400	70.14	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-426.72	-106.59	2335	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2332.48	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 2.18	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2330.30	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	* 2330.30	* Flow Area (sq ft)	*	* 720.33	*
* E.G. Slope (ft/ft)	*0.014782	* Area (sq ft)	*	* 1163.01	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*
* Top Width (ft)	* 413.79	* Top Width (ft)	*	* 413.79	*
* Vel Total (ft/s)	* 11.85	* Avg. Vel. (ft/s)	*	* 11.85	*
* Max Chl Dpth (ft)	* 6.97	* Hydr. Depth (ft)	*	* 4.37	*
* Conv. Total (cfs)	* 70217.2	* Conv. (cfs)	*	* 70217.2	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 169.46	*
* Min Ch El (ft)	* 2323.33	* Shear (lb/sq ft)	*	* 3.92	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 74.32	* 0.00	* 0.00
* Frctn Loss (ft)	* 0.64	* Cum Volume (acre-ft)	*	* 49.11	*
* C & E Loss (ft)	* 0.18	* Cum SA (acres)	*	* 15.93	*

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2336.58	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 3.44	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2333.14	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	* 2333.14	* Flow Area (sq ft)	*	* 1200.40	*
* E.G. Slope (ft/ft)	*0.012552	* Area (sq ft)	*	* 2429.01	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*
* Top Width (ft)	* 464.75	* Top Width (ft)	*	* 464.75	*
* Vel Total (ft/s)	* 14.87	* Avg. Vel. (ft/s)	*	* 14.87	*
* Max Chl Dpth (ft)	* 9.81	* Hydr. Depth (ft)	*	* 6.96	*
* Conv. Total (cfs)	*159367.7	* Conv. (cfs)	*	*159367.7	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 177.67	*
* Min Ch El (ft)	* 2323.33	* Shear (lb/sq ft)	*	* 5.29	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 74.32	* 0.00	* 0.00
* Frctn Loss (ft)	* 0.64	* Cum Volume (acre-ft)	* 0.00	* 80.65	* 0.00
* C & E Loss (ft)	* 0.11	* Cum SA (acres)	* 0.01	* 16.51	* 0.00

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

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program
defaulted to critical depth.
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: -2550

INPUT
Description:
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-420.58	2335	-400	2331.82	-397.37	2331.53	-394.11	2331.18	-392.49	2331
-387.02	2330.41	-383.3	2330	-378.95	2330	-348.26	2329.49	-317.4	2329.14
-314.44	2329.11	-312.95	2329.1	-276.62	2328.76	-270.05	2328.71	-263.83	2328.61
-259.25	2328.56	-251.08	2328.44	-211.26	2328	-208.97	2327.97	-208.6	2327.96
-196.06	2327.8	-178.22	2327.61	-136.81	2327	-128.82	2327	-121.88	2326.88
-113.61	2326.72	-81.14	2326	-65.23	2325.33	-56.39	2325	-54.27	2324.17
-53.7	2324	-53.3	2324.33	-52.18	2325.55	-43.63	2324.14	-42.98	2324
-42.73	2324.05	-29.54	2325	-24.13	2325	-16.77	2323.37	-16.64	2323.36
-16.57	2323.35	-12.86	2325	-10.75	2325.47	-10.38	2325.51	-9.6	2325.7
-8.74	2325.78	-8.31	2325.79	-7.18	2325.8	-5.99	2325.64	-5.68	2325.66
-5.33	2325.64	-4.17	2325.77	-3.82	2325.73	-3.43	2325.76	0	2325.02
.09	2325	34.81	2325	35.49	2324.87	42.32	2324.91	43.18	2324.76
44.7	2325.04	45.09	2325	45.93	2325.08	57.71	2326	61.12	2326.73
62.46	2327	63.21	2327.22	66.02	2328	68.44	2329	68.66	2329.09
70.84	2330	71.78	2330.39	73.27	2331	74.78	2331.7	75.53	2332
76.44	2332.36	77.67	2333	78.81	2333.47	79.82	2334	82.21	2334.99
82.55	2335.12	83.37	2335.46	84.65	2335.98	84.74	2336.02	87.08	2337
89.56	2337.81	90.09	2338						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-420.58	.04	-392.49	.04	73.27	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-392.49	73.27	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-420.58	-131.59	2335	F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2331.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.59	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.75	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2329.38	Flow Area (sq ft)		844.23	
E.G. Slope (ft/ft)	*0.011173	Area (sq ft)		1163.30	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	434.38	Top Width (ft)		434.38	
Vel Total (ft/s)	10.11	Avg. Vel. (ft/s)		10.11	
Max Chl Dpth (ft)	6.40	Hydr. Depth (ft)		4.18	
Conv. Total (cfs)	80765.5	Conv. (cfs)		80765.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		204.27	
Min Ch El (ft)	2323.35	Shear (lb/sq ft)		2.88	
Alpha	1.00	Stream Power (lb/ft s)	90.09	0.00	0.00
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)		47.77	
C & E Loss (ft)	0.10	Cum SA (acres)		15.44	

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

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2334.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.08	Wt. n-Val.		0.040	0.040
W.S. Elev (ft)	2331.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2331.83	Flow Area (sq ft)		1267.71	0.75
E.G. Slope (ft/ft)	*0.012872	Area (sq ft)	3.16	2118.74	0.75
Q Total (cfs)	*17855.00	Flow (cfs)		*17853.38	1.62

* Top Width (ft)	* 475.17	* Top Width (ft)	*	7.57	*	465.76	*	1.84	*		
* Vel Total (ft/s)	* 14.08	* Avg. Vel. (ft/s)	*		*	14.08	*	2.17	*		
* Max Chl Dpth (ft)	* 8.48	* Hydr. Depth (ft)	*		*	6.19	*	0.41	*		
* Conv. Total (cfs)	*157376.3	* Conv. (cfs)	*		*157362.0	*	14.3	*			
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		*	207.54	*	2.01	*		
* Min Ch El (ft)	* 2323.35	* Shear (lb/sq ft)	*		*	4.91	*	0.30	*		
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	90.09	*	0.00	*	0.00	*		
* Frctn Loss (ft)	* 0.61	* Cum Volume (acre-ft)	*	0.00	*	78.04	*	0.00	*		
* C & E Loss (ft)	* 0.18	* Cum SA (acres)	*	0.00	*	15.97	*	0.00	*		

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

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-417.46	2335	-400	2332.47	-398.01	2332.14	-397.15	2332	-396.14	2331.86
-389.83	2331	-388.97	2330.88	-382.88	2330.05	-382.49	2330	-380.81	2329.92
-365.64	2329.35	-362.1	2329.35	-348.05	2329	-329.18	2329	-298.5	2328.37
-231.43	2327.7	-195.58	2327.07	-193.09	2327.03	-192.84	2327.02	-191.15	2327
-176.64	2326.8	-162.52	2326.66	-150.76	2326.51	-142.93	2326.43	-116.62	2326.11
-108.48	2326	-84.29	2325.57	-56.16	2324.73	-27.1	2324.43	-25.87	2324.54
-25.22	2324.61	-24.22	2324.2	-22.44	2324.65	-22.19	2324.74	-21.36	2325
21.31	2325	21.51	2324.94	25.13	2323.68	25.47	2324.14	25.61	2324.2
26.07	2324.33	26.34	2324.39	26.79	2324.45	29.82	2325.12	30.09	2325.19
30.28	2325.19	30.46	2325.17	38.16	2325	40.34	2325	43.85	2325.2
43.89	2324.98	44.61	2325.29	45.06	2325.32	49.13	2325.2	49.25	2325.21
49.51	2325.24	49.56	2325.24	50.11	2325.23	50.18	2325.23	57.01	2325.93
57.33	2325.92	57.42	2325.92	59.37	2326	68.6	2326	69.25	2326.09
69.36	2326.13	71.47	2326.53	73.46	2327	73.98	2327	77.88	2327.85
78.5	2328	82.12	2328.88	82.61	2329	83.53	2329.2	85	2329.59
85.05	2329.61	86.53	2330	90.95	2330.91	91.34	2331	94.71	2331.73
96.02	2332	97.86	2332.41	99.77	2332.77	100.82	2333		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-417.46	.04	-397.15	.04	91.34	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-397.15	91.34	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-417.46	-156.59		F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2330.73	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.24	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2329.49	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 955.97	* *
* E.G. Slope (ft/ft)	*0.009290	* Area (sq ft)	*	* 1272.37	* *
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	* *
* Top Width (ft)	* 453.96	* Top Width (ft)	*	* 453.96	* *
* Vel Total (ft/s)	* 8.93	* Avg. Vel. (ft/s)	*	* 8.93	* *
* Max Chl Dpth (ft)	* 5.81	* Hydr. Depth (ft)	*	* 3.96	* *
* Conv. Total (cfs)	* 88571.6	* Conv. (cfs)	*	* 88571.6	* *

* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	242.70	*		*	
* Min Ch El (ft)	*	2323.68	* Shear (lb/sq ft)	*		*	2.28	*		*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	100.82	*	0.00	*	0.00	*	
* Frctn Loss (ft)	*	0.46	* Cum Volume (acre-ft)	*		*	46.38	*		*	
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*		*	14.93	*		*	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2333.83	* Element	*	Left OB	*	Channel	*	Right OB	*	
* Vel Head (ft)	*	2.48	* Wt. n-Val.	*		*	0.040	*	0.040	*	
* W.S. Elev (ft)	*	2331.35	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*	
* Crit W.S. (ft)	*	2331.10	* Flow Area (sq ft)	*		*	1412.78	*	0.29	*	
* E.G. Slope (ft/ft)	*	0.011473	* Area (sq ft)	*		*	2153.74	*	0.29	*	
* Q Total (cfs)	*	17855.00	* Flow (cfs)	*		*	17854.64	*	0.35	*	
* Top Width (ft)	*	485.39	* Top Width (ft)	*		*	483.76	*	1.63	*	
* Vel Total (ft/s)	*	12.64	* Avg. Vel. (ft/s)	*		*	12.64	*	1.23	*	
* Max Chl Dpth (ft)	*	7.67	* Hydr. Depth (ft)	*		*	5.70	*	0.18	*	
* Conv. Total (cfs)	*	166691.8	* Conv. (cfs)	*		*	166688.5	*	3.3	*	
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	249.59	*	1.67	*	
* Min Ch El (ft)	*	2323.68	* Shear (lb/sq ft)	*		*	4.05	*	0.12	*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	100.82	*	0.00	*	0.00	*	
* Frctn Loss (ft)	*	0.58	* Cum Volume (acre-ft)	*	0.00	*	75.59	*	0.00	*	
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*	0.00	*	15.43	*	0.00	*	

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 104

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2334.1	-399.49	2334.04	-399.28	2334	-399.17	2333.98	-390.4	2332.36
-384.48	2331.33	-381.42	2331	-372.26	2330	-357.91	2329.06	-340.65	2328
-321.81	2328	-278.26	2327.69	-248.74	2327.26	-237.75	2327.07	-236.32	2327.06
-233.6	2327.03	-230.21	2327	-221.97	2327	-208.77	2326.84	-206	2326.78
-173.79	2326.2	-170.05	2326.14	-162.5	2326	-139.49	2325.71	-125.13	2325.6
-115.82	2325.5	-95.8	2325.23	-84.59	2325.11	-77.98	2325	-65.03	2325
-24.42	2324.77	-22.89	2324.75	-17.88	2324.76	-14.85	2324.74	-13.84	2324.74
-12.35	2324.72	14.27	2324	15.43	2323.76	18.01	2324	25.81	2324.75
27.57	2324.76	32.22	2324.82	33.64	2324.82	35.2	2324.86	36.74	2324.88
37.17	2324.89	40.19	2324.97	40.77	2324.98	41.33	2325	45.67	2325
46.14	2325.05	46.35	2325.05	46.96	2325.11	48.85	2325.23	49.27	2325.23
49.46	2325:24	49.6	2325.23	49.85	2325.24	50.09	2325.2	50.71	2325.1
50.97	2325.11	51.27	2325.2	53	2325.33	53.17	2325.33	53.32	2325.32
54.14	2325.32	54.44	2325.31	60.54	2325.01	60.66	2325	63.22	2325.47
65.73	2326	65.81	2326.19	65.93	2326.25	66.97	2326.26	67.04	2326.26
67.86	2327	69.98	2327.88	70.23	2328	70.9	2328.31	72.45	2329
73.98	2329.67	74.76	2330	77.13	2330.98	79.43	2332	81.01	2332.8
81.47	2333	83.83	2333.79	84.43	2334	84.7	2334.13	85.29	2334.43
86.19	2334.89	86.43	2335	86.59	2335.08	88.3	2336	89.25	2336.55
90.1	2337	90.91	2337.44	91.88	2338	92.75	2338.46	93.67	2339
94.71	2339.54	95.49	2340	96.55	2340.61	97.34	2341		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-381.42	.04	81.47	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-381.42	81.47	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-400	-181.59		F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	*	2330.25	* Element	*	Left OB	*	Channel	*	Right OB	*	
* Vel Head (ft)	*	1.16	* Wt. n-Val.	*		*	0.040	*		*	
* W.S. Elev (ft)	*	2329.09	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*	
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	986.82	*		*	
* E.G. Slope (ft/ft)	*	0.008942	* Area (sq ft)	*		*	1269.22	*		*	
* Q Total (cfs)	*	8537.00	* Flow (cfs)	*		*	8537.00	*		*	
* Top Width (ft)	*	430.99	* Top Width (ft)	*		*	430.99	*		*	

* Vel Total (ft/s)	* 8.65	* Avg. Vel. (ft/s)	*		* 8.65	*			
* Max Chl Dpth (ft)	* 5.33	* Hydr. Depth (ft)	*		* 3.88	*			
* Conv. Total (cfs)	* 90278.8	* Conv. (cfs)	*		* 90278.8	*			
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 255.34	*			
* Min Ch El (ft)	* 2323.76	* Shear (lb/sq ft)	*		* 2.16	*			
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	97.34	* 0.00	*	0.00	*	
* Frctn Loss (ft)	* 0.39	* Cum Volume (acre-ft)	*		* 44.92	*			
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	*		* 14.42	*			

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2333.24	* Element	*	Left OB	* Channel	*	Right OB	*	
* Vel Head (ft)	* 2.41	* Wt. n-Val.	*		* 0.040	*			
* W.S. Elev (ft)	* 2330.83	* Reach Len. (ft)	*	50.00	* 50.00	*	50.00	*	
* Crit W.S. (ft)	* 2330.59	* Flow Area (sq ft)	*		* 1433.05	*			
* E.G. Slope (ft/ft)	*0.011543	* Area (sq ft)	*		* 2044.25	*			
* Q Total (cfs)	*17855.00	* Flow (cfs)	*		*17855.00	*			
* Top Width (ft)	* 456.63	* Top Width (ft)	*		* 456.63	*			
* Vel Total (ft/s)	* 12.46	* Avg. Vel. (ft/s)	*		* 12.46	*			
* Max Chl Dpth (ft)	* 7.07	* Hydr. Depth (ft)	*		* 5.55	*			
* Conv. Total (cfs)	*166187.3	* Conv. (cfs)	*		*166187.3	*			
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 259.81	*			
* Min Ch El (ft)	* 2323.76	* Shear (lb/sq ft)	*		* 3.97	*			
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	97.34	* 0.00	*	0.00	*	
* Frctn Loss (ft)	* 0.49	* Cum Volume (acre-ft)	*	0.00	* 73.18	*	0.00	*	
* C & E Loss (ft)	* 0.17	* Cum SA (acres)	*	0.00	* 14.89	*	0.00	*	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2336.14	-398.97	2336.01	-398.85	2336	-392.5	2335.34	-389.26	2335.01
-386.48	2334.51	-385.08	2334.25	-383.77	2334	-374.82	2332.74	-370.5	2332.18
-369.58	2332	-368.02	2331.79	-357.05	2330.28	-354.81	2330	-352.13	2329.66
-340.71	2328.24	-338.82	2328	-338.28	2328	-267.26	2327.2	-253.31	2327.1
-86.48	2324.69	-85.3	2324.68	-84.01	2324.66	-68.5	2324.49	-31.14	2324
22.59	2324	28.07	2324.07	49.51	2324.69	59.17	2325	60.54	2325.14
60.89	2325.2	66.61	2326	69.46	2326.91	69.84	2327	71.29	2327.43
73.02	2328	73.97	2328.33	75.51	2329	77.42	2329.69	78.67	2330
80.04	2330.59	80.93	2330.85	81.03	2330.88	81.36	2331	82.95	2331.62
83.85	2332	85.35	2333	86.11	2333.43	87.49	2334	89.04	2334.67
89.81	2335	91.27	2335.63	92.14	2336	93.35	2336.52	94.5	2337
95.06	2337.25	96.82	2338	97.28	2338.2	99.15	2339	99.49	2339.15
101.48	2340								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-369.58	.04	87.49	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-369.58	87.49	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-400	-206.59		F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2329.79	* Element	*	Left OB	* Channel	*	Right OB	*	
* Vel Head (ft)	* 0.92	* Wt. n-Val.	*		* 0.040	*			
* W.S. Elev (ft)	* 2328.86	* Reach Len. (ft)	*	50.00	* 50.00	*	50.00	*	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 1106.64	*			
* E.G. Slope (ft/ft)	*0.006979	* Area (sq ft)	*		* 1321.54	*			
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*		* 8537.00	*			
* Top Width (ft)	* 420.90	* Top Width (ft)	*		* 420.90	*			
* Vel Total (ft/s)	* 7.71	* Avg. Vel. (ft/s)	*		* 7.71	*			
* Max Chl Dpth (ft)	* 4.86	* Hydr. Depth (ft)	*		* 3.93	*			

* Conv. Total (cfs)	*102192.7	* Conv. (cfs)	*	*102192.7	*						
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 282.35	*						
* Min Ch El (ft)	* 2324.00	* Shear (lb/sq ft)	*	* 1.71	*						
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	101.48	*	0.00	*	0.00	*		
* Frctn Loss (ft)	* 0.40	* Cum Volume (acre-ft)	*	* 43.43	*						
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 13.93	*						

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2332.58	* Element	*	Left OB	*	Channel	*	Right OB	*		
* Vel Head (ft)	* 1.84	* Wt. n-Val.	*		*	0.040	*				
* W.S. Elev (ft)	* 2330.73	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*		
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		*	1638.64	*				
* E.G. Slope (ft/ft)	*0.008471	* Area (sq ft)	*		*	2127.66	*				
* Q Total (cfs)	*17855.00	* Flow (cfs)	*		*	17855.00	*				
* Top Width (ft)	* 440.85	* Top Width (ft)	*		*	440.85	*				
* Vel Total (ft/s)	* 10.90	* Avg. Vel. (ft/s)	*		*	10.90	*				
* Max Chl Dpth (ft)	* 6.73	* Hydr. Depth (ft)	*		*	5.71	*				
* Conv. Total (cfs)	*193997.8	* Conv. (cfs)	*		*	193997.8	*				
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		*	288.01	*				
* Min Ch El (ft)	* 2324.00	* Shear (lb/sq ft)	*		*	3.01	*				
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	101.48	*	0.00	*	0.00	*		
* Frctn Loss (ft)	* 0.44	* Cum Volume (acre-ft)	*	0.00	*	70.79	*	0.00	*		
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	0.00	*	14.37	*	0.00	*		

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2750

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2341	-394.81	2341	-389.64	2340.62	-383.96	2339.52	-379.03	2338.6
-368.71	2336.39	-364.44	2335.47	-362.21	2335	-358.41	2334.18	-357.56	2334
-356.28	2333.72	-353.04	2333	-349.54	2332.23	-348.48	2332	-347.33	2331.74
-343.98	2331	-340.31	2330.18	-339.48	2330	-338.87	2329.87	-336.88	2329.42
-334.94	2329	-333.74	2328.73	-330.42	2328	-322.13	2327.63	-316.16	2327.38
-310.92	2327	-307.9	2327	-304.64	2326.8	-303.41	2326.8	-240.06	2326.15
-239.02	2326.11	-225.44	2326	-179.66	2325.79	-178.06	2325.77	-171.32	2325.67
-137.09	2325	-136.94	2325	-133.74	2324.93	-66.59	2324	26.59	2324
45.63	2325.24	56.2	2326	58.25	2326.28	70.27	2327.95	70.43	2328
70.7	2328.08	73.55	2329	74.22	2329.21	76.68	2330	77.88	2330.39
79.8	2331	80	2331.06	82.92	2332	84.8	2332.6	86.04	2333
88.54	2333.8	89.16	2334	91.19	2334.65	92.15	2335	94.21	2335.76
94.88	2336	96.32	2336.31	100.49	2337.55	101.99	2338	107.39	2338.99
107.44	2339								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-343.98	.04	79.8	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-343.98	79.8	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-400	-231.59		F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2329.37	* Element	*	Left OB	*	Channel	*	Right OB	*		
* Vel Head (ft)	* 1.04	* Wt. n-Val.	*		*	0.040	*				
* W.S. Elev (ft)	* 2328.33	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*		
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		*	1043.78	*				
* E.G. Slope (ft/ft)	*0.009332	* Area (sq ft)	*		*	1206.63	*				
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*		*	8537.00	*				
* Top Width (ft)	* 403.42	* Top Width (ft)	*		*	403.42	*				
* Vel Total (ft/s)	* 8.18	* Avg. Vel. (ft/s)	*		*	8.18	*				
* Max Chl Dpth (ft)	* 4.33	* Hydr. Depth (ft)	*		*	3.44	*				
* Conv. Total (cfs)	* 88373.5	* Conv. (cfs)	*		*	88373.5	*				
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		*	303.35	*				
* Min Ch El (ft)	* 2324.00	* Shear (lb/sq ft)	*		*	2.00	*				
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	107.44	*	0.00	*	0.00	*		

* Frctn Loss (ft)	*	0.47	* Cum Volume (acre-ft)	*		*	41.98	*	
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*		*	13.46	*	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2332.13	* Element	*	Left OB	*	Channel	*	Right OB
* Vel Head (ft)	*	1.82	* Wt. n-Val.	*		*	0.040	*	
* W.S. Elev (ft)	*	2330.31	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	1648.84	*	
* E.G. Slope (ft/ft)	*	0.009145	* Area (sq ft)	*		*	2018.85	*	
* Q Total (cfs)	*	17855.00	* Flow (cfs)	*		*	17855.00	*	
* Top Width (ft)	*	418.52	* Top Width (ft)	*		*	418.52	*	
* Vel Total (ft/s)	*	10.83	* Avg. Vel. (ft/s)	*		*	10.83	*	
* Max Chl Dpth (ft)	*	6.31	* Hydr. Depth (ft)	*		*	5.33	*	
* Conv. Total (cfs)	*	186710.4	* Conv. (cfs)	*		*	186710.4	*	
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	309.81	*	
* Min Ch El (ft)	*	2324.00	* Shear (lb/sq ft)	*		*	3.04	*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	107.44	*	0.00	*	0.00
* Frctn Loss (ft)	*	0.41	* Cum Volume (acre-ft)	*	0.00	*	68.41	*	0.00
* C & E Loss (ft)	*	0.09	* Cum SA (acres)	*	0.00	*	13.88	*	0.00

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2341	-373.57	2341	-367.4	2340.03	-367.23	2340	-367.15	2339.99
-366.94	2339.95	-356.18	2338	-352.63	2337.12	-352.02	2337	-351.7	2336.94
-346.96	2336	-343.36	2335.07	-343.06	2335	-342.5	2334.86	-336.26	2333.25
-332.46	2332.28	-331.17	2332	-330.23	2331.8	-321.3	2330	-314.94	2329.08
-314.22	2329	-313.57	2328.93	-300.22	2327.39	-272.87	2326	-265.4	2326
-162.23	2325	-156.11	2324.87	-153.98	2324.83	-148.16	2324.73	-144.18	2324.65
-107.91	2324	-91.71	2323.92	47.56	2324	50.65	2324.57	52.78	2325
52.98	2325	54.83	2325.34	59.11	2325.9	59.9	2326	70.06	2327.79
71.22	2328	71.77	2328.16	77.98	2330	82.78	2331.94	82.93	2332
83.02	2332.04	85.4	2333	85.55	2333.06	87.87	2334	88.11	2334.1
90.34	2335	92.81	2336	93.38	2336.23	97.75	2338	99.57	2338.74
100.22	2339	106.28	2339						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.04	-321.3	.04	77.98	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-321.3	77.98	50	50	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-400	-256.59		F

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	*	2328.89	* Element	*	Left OB	*	Channel	*	Right OB
* Vel Head (ft)	*	0.98	* Wt. n-Val.	*		*	0.040	*	
* W.S. Elev (ft)	*	2327.91	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	1076.68	*	
* E.G. Slope (ft/ft)	*	0.009326	* Area (sq ft)	*		*	1142.57	*	
* Q Total (cfs)	*	8537.00	* Flow (cfs)	*		*	8537.00	*	
* Top Width (ft)	*	375.46	* Top Width (ft)	*		*	375.46	*	
* Vel Total (ft/s)	*	7.93	* Avg. Vel. (ft/s)	*		*	7.93	*	
* Max Chl Dpth (ft)	*	3.99	* Hydr. Depth (ft)	*		*	3.29	*	
* Conv. Total (cfs)	*	88401.3	* Conv. (cfs)	*		*	88401.3	*	
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	327.67	*	
* Min Ch El (ft)	*	2323.92	* Shear (lb/sq ft)	*		*	1.91	*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	106.28	*	0.00	*	0.00
* Frctn Loss (ft)	*	0.32	* Cum Volume (acre-ft)	*		*	40.63	*	
* C & E Loss (ft)	*	0.13	* Cum SA (acres)	*		*	13.01	*	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2331.63	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.52	* Wt. n-Val.	*	* 0.040	* 0.040 *
* W.S. Elev (ft)	* 2330.11	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1803.62	* 0.01 *
* E.G. Slope (ft/ft)	*0.007532	* Area (sq ft)	* 0.03	* 1995.18	* 0.01 *
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17854.99	* 0.01 *
* Top Width (ft)	* 400.06	* Top Width (ft)	* 0.52	* 399.28	* 0.26 *
* Vel Total (ft/s)	* 9.90	* Avg. Vel. (ft/s)	*	* 9.90	* 0.43 *
* Max Chl Dpth (ft)	* 6.19	* Hydr. Depth (ft)	*	* 5.39	* 0.05 *
* Conv. Total (cfs)	*205728.0	* Conv. (cfs)	*	*205728.0	* 0.1 *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 335.22	* 0.28 *
* Min Ch El (ft)	* 2323.92	* Shear (lb/sq ft)	*	* 2.53	* 0.02 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 106.28	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.25	* Cum Volume (acre-ft)	* 0.00	* 66.10	* 0.00 *
* C & E Loss (ft)	* 0.22	* Cum SA (acres)	* 0.00	* 13.41	* 0.00 *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2850

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-327.91	2340	-325.03	2339.35	-323.51	2339	-319.74	2338.14	-319.11	2338
-318.27	2337.81	-313.93	2336.55	-312.02	2336	-310.18	2335.46	-308.7	2335
-305.44	2334.09	-305.24	2334.03	-305.12	2334	-304.94	2333.95	-304.47	2333.81
-299.73	2332.37	-298.52	2332	-295.32	2331.03	-295.23	2331	-294.92	2330.9
-291.95	2330	-289.86	2329.36	-288.51	2329	-281.93	2327.23	-277.37	2326
-273.23	2325.31	-272.18	2325	-270.8	2324.6	-261.59	2324.53	-260.2	2324.49
-253.58	2324.69	-251.39	2324.77	-247.7	2325	-184.27	2325	-177.87	2324.83
-161.73	2324.44	-150.01	2324.13	-148.58	2324.09	-144.58	2324	-144.17	2324
-109.93	2323.76	-95.31	2323.75	-65.3	2323.6	26.66	2323.67	63.31	2323.89
76.42	2324	100.03	2325.59	104.83	2326	106.95	2326.34	107.95	2326.3
108.92	2326.25	110.78	2326.05	111.12	2326	114.15	2326	123.74	2326.9
135.32	2327.84	136.17	2327.9	136.22	2327.91	136.7	2328	137.16	2328.09
151.59	2330.86	152.34	2331	152.4	2331.01	157.84	2332	158.84	2332.2
166.02	2333.61	167.52	2334	168.21	2334.16	171.71	2335	173.34	2335.38
176.09	2336	184.67	2338						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-327.91	.04	-295.23	.04	157.84	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-295.23	157.84	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2328.43	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.53	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2327.90	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1457.27	* *
* E.G. Slope (ft/ft)	*0.004752	* Area (sq ft)	*	* 1457.27	* *
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	* *
* Top Width (ft)	* 420.51	* Top Width (ft)	*	* 420.51	* *
* Vel Total (ft/s)	* 5.86	* Avg. Vel. (ft/s)	*	* 5.86	* *
* Max Chl Dpth (ft)	* 4.30	* Hydr. Depth (ft)	*	* 3.47	* *
* Conv. Total (cfs)	*123845.7	* Conv. (cfs)	*	*123845.7	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 421.15	* *
* Min Ch El (ft)	* 2323.60	* Shear (lb/sq ft)	*	* 1.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 184.67	* 0.00	* 0.00 *
* Frctn Loss (ft)	* 0.26	* Cum Volume (acre-ft)	*	* 39.14	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 12.55	* *

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2331.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.		0.040	
W.S. Elev (ft)	2330.38	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		2529.08	
E.G. Slope (ft/ft)	0.003545	Area (sq ft)		2529.08	
Q Total (cfs)	17855.00	Flow (cfs)		17855.00	
Top Width (ft)	442.29	Top Width (ft)		442.29	
Vel Total (ft/s)	7.06	Avg. Vel. (ft/s)		7.06	
Max Chl Dpth (ft)	6.78	Hydr. Depth (ft)		5.72	
Conv. Total (cfs)	299877.5	Conv. (cfs)		299877.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		443.50	
Min Ch El (ft)	2323.60	Shear (lb/sq ft)		1.26	
Alpha	1.00	Stream Power (lb/ft s)	184.67	0.00	0.00
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)		63.51	
C & E Loss (ft)	0.02	Cum SA (acres)		12.93	

CROSS SECTION

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

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-285.23	2338.49	-284.09	2338	-283.46	2337.72	-281.79	2337	-281.3	2336.78
-278.47	2335.56	-277.19	2335	-274.97	2334.04	-274.83	2333.97	-274.67	2333.9
-271.52	2333	-265.61	2331.3	-264.55	2331	-263.94	2330.82	-261.07	2330
-258.22	2329.48	-255.65	2329	-254.51	2328.79	-250.67	2328	-243.04	2327.03
-242.83	2327	-242.43	2326.95	-232.03	2326	-209.99	2325.3	-201.81	2325
-181.68	2324.31	-173.43	2324.08	-169.34	2324	-129.23	2323.7	-127.45	2323.7
-111.87	2323.54	-90.5	2323.38	-53.11	2323.35	-38.88	2323.29	0	2323.31
4.73	2323.32	22.1	2323.42	39.32	2323.57	62.32	2323.54	76.35	2323.71
91.63	2324	104.06	2324	113.22	2324.65	120.9	2325.32	124.17	2326
125.37	2326.32	126.63	2326.67	127.86	2327	128.51	2327.18	134.85	2328.9
135.23	2329	135.64	2329.11	138.93	2330	141.21	2330.59	142.83	2331
146.18	2331.88	146.63	2332	146.84	2332.05	150.53	2333	151.81	2333.32
154.49	2334	157.14	2334.68	158.38	2335	161.98	2335.91	162.32	2336
163.54	2336.31	169.25	2337.82	169.99	2338	171.27	2338.3	174.47	2339
176.64	2339.46	179.12	2340						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-285.23	.04	-271.52	.04	142.83	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-271.52	142.83	21.44	21.44	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2328.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.49	Reach Len. (ft)	21.44	21.44	21.44
Crit W.S. (ft)		Flow Area (sq ft)		1307.18	
E.G. Slope (ft/ft)	0.005884	Area (sq ft)		1307.18	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	376.30	Top Width (ft)		376.30	
Vel Total (ft/s)	6.53	Avg. Vel. (ft/s)		6.53	
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)		3.47	
Conv. Total (cfs)	111292.2	Conv. (cfs)		111292.2	
Length Wtd. (ft)	21.44	Wetted Per. (ft)		376.74	
Min Ch El (ft)	2323.29	Shear (lb/sq ft)		1.27	
Alpha	1.00	Stream Power (lb/ft s)	179.12	0.00	0.00
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		37.55	
C & E Loss (ft)	0.01	Cum SA (acres)		12.10	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2330.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.		0.040	
W.S. Elev (ft)	2329.98	Reach Len. (ft)	21.44	21.44	21.44
Crit W.S. (ft)		Flow Area (sq ft)		2275.57	
E.G. Slope (ft/ft)	0.004405	Area (sq ft)		2275.57	
Q Total (cfs)	17855.00	Flow (cfs)		17855.00	

* Top Width (ft)	*	399.83	* Top Width (ft)	*		*	399.83	*		*
* Vel Total (ft/s)	*	7.85	* Avg. Vel. (ft/s)	*		*	7.85	*		*
* Max Chl Dpth (ft)	*	6.69	* Hydr. Depth (ft)	*		*	5.69	*		*
* Conv. Total (cfs)	*	269018.1	* Conv. (cfs)	*		*	269018.1	*		*
* Length Wtd. (ft)	*	21.44	* Wetted Per. (ft)	*		*	400.83	*		*
* Min Ch El (ft)	*	2323.29	* Shear (lb/sq ft)	*		*	1.56	*		*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	179.12	*	0.00	*	0.00	*
* Frctn Loss (ft)	*	0.10	* Cum Volume (acre-ft)	*		*	60.75	*		*
* C & E Loss (ft)	*	0.02	* Cum SA (acres)	*		*	12.44	*		*

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -2950

INPUT
Description:
Station Elevation Data num= 67

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-256.57	2340	-255.64	2339.56	-254.44	2339	-252.44	2338.06	-252.32	2338
-252.05	2337.89	-249.45	2337	-248.84	2336.79	-246.53	2336	-244.38	2335.26
-243.62	2335	-242.9	2334.75	-238.99	2333.41	-237.8	2333	-234.88	2332
-234.16	2331.75	-231.97	2331	-231.86	2330.96	-231.54	2330.85	-228.62	2330
-226.99	2329.52	-225.19	2329	-223.8	2328.59	-221.75	2328.19	-220.79	2328
-206.14	2326.71	-199.92	2326	-190.04	2325.41	-179.54	2324.71	-171.18	2324
-78.82	2323.04	-71.26	2323	-21.57	2323	-14.02	2322.94	-13.46	2322.94
-5.97	2323	52.56	2323	106.88	2324	115.56	2324.85	117.04	2325
120.39	2326	122.24	2326.56	123.72	2327	127.05	2328	128.34	2328.39
132.45	2329.62	133.3	2330	133.58	2330.12	135.56	2331	136.77	2331.54
137.82	2332	139.14	2332.59	140.07	2333	140.69	2333.28	144.34	2334.88
144.62	2335	144.86	2335.11	146.92	2336	148.88	2336.81	149.33	2337
149.94	2337.26	151.73	2338	153.25	2338.64	154.13	2339	155.43	2339.54
161.14	2341.92	161.37	2341.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-256.57	.04	-237.8	.04	154.13	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-237.8	154.13	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	*	2328.01	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	0.78	* Wt. n-Val.	*		*	0.040	*		*
* W.S. Elev (ft)	*	2327.23	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	1204.95	*		*
* E.G. Slope (ft/ft)	*	0.006653	* Area (sq ft)	*		*	1204.95	*		*
* Q Total (cfs)	*	8537.00	* Flow (cfs)	*		*	8537.00	*		*
* Top Width (ft)	*	336.47	* Top Width (ft)	*		*	336.47	*		*
* Vel Total (ft/s)	*	7.08	* Avg. Vel. (ft/s)	*		*	7.08	*		*
* Max Chl Dpth (ft)	*	4.29	* Hydr. Depth (ft)	*		*	3.58	*		*
* Conv. Total (cfs)	*	104664.2	* Conv. (cfs)	*		*	104664.2	*		*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	337.00	*		*
* Min Ch El (ft)	*	2322.94	* Shear (lb/sq ft)	*		*	1.49	*		*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	161.37	*	0.00	*	0.00	*
* Frctn Loss (ft)	*	0.40	* Cum Volume (acre-ft)	*		*	36.94	*		*
* C & E Loss (ft)	*	0.03	* Cum SA (acres)	*		*	11.92	*		*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	*	2330.81	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	1.18	* Wt. n-Val.	*		*	0.040	*		*
* W.S. Elev (ft)	*	2329.63	* Reach Len. (ft)	*	50.00	*	50.00	*	50.00	*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	2046.89	*		*
* E.G. Slope (ft/ft)	*	0.005453	* Area (sq ft)	*		*	2046.89	*		*
* Q Total (cfs)	*	17855.00	* Flow (cfs)	*		*	17855.00	*		*
* Top Width (ft)	*	359.83	* Top Width (ft)	*		*	359.83	*		*
* Vel Total (ft/s)	*	8.72	* Avg. Vel. (ft/s)	*		*	8.72	*		*
* Max Chl Dpth (ft)	*	6.69	* Hydr. Depth (ft)	*		*	5.69	*		*
* Conv. Total (cfs)	*	241801.3	* Conv. (cfs)	*		*	241801.3	*		*
* Length Wtd. (ft)	*	50.00	* Wetted Per. (ft)	*		*	360.95	*		*
* Min Ch El (ft)	*	2322.94	* Shear (lb/sq ft)	*		*	1.93	*		*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	161.37	*	0.00	*	0.00	*

```
* Frctn Loss (ft)        *    0.41  * Cum Volume (acre-ft)   *          *   59.69  *          *
* C & E Loss (ft)        *    0.12  * Cum SA (acres)         *          *   12.26  *          *
*********************************************************************************************
```

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 1ess 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: -3000

INPUT
Description:
Station Elevation Data num= 94

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-232.96	2340	-229.83	2339.12	-229.36	2339	-226.27	2338.14	-225.74	2338
-224.86	2337.75	-222.14	2337	-219.17	2336.17	-218.13	2336	-217.43	2335.88
-212.24	2335	-208.17	2334.31	-206.36	2334	-204.82	2333.74	-204.09	2333.61
-200.49	2333	-197.3	2332.46	-194.62	2332	-192.24	2331.57	-190.13	2331.19
-189.3	2331	-188.96	2330.92	-185.04	2330	-181.89	2329.26	-180.78	2329
-179.77	2328.76	-176.51	2328	-174.75	2327.59	-172.25	2327	-171.31	2326.78
-169.07	2326.25	-168.45	2326.07	-168.19	2326	-167.78	2325.88	-164.73	2325
-162.36	2324.31	-161.22	2324.12	-160.51	2324	-152.36	2323.8	-121.49	2323.2
-105.05	2323	-92.1	2323	-83.5	2323	-79.25	2322.91	-68.04	2322.84
-3.51	2322.32	0	2322.3	2.84	2322.29	33.22	2322.55	49.87	2322.4
62	2322.26	66.78	2322.22	83.52	2323	84.09	2323	90.21	2323.31
98.62	2323.65	102.27	2323.76	105.23	2323.62	109.19	2324	115.79	2324.64
119.5	2325	121.69	2325.21	123.88	2326	124.7	2326.29	125.74	2326.67
126.66	2327	127.5	2327.3	129.43	2328	131.52	2328.75	132.21	2329
132.86	2329.24	134.99	2330	136.71	2330.62	137.77	2331	138.78	2331.36
140.55	2332	141.11	2332.2	142.92	2332.85	143.26	2333	145.19	2333.82
145.62	2334	146.09	2334.2	147.97	2335	150.09	2335.9	150.38	2336
150.66	2336.1	153.37	2337	155.45	2337.75	156.18	2338	156.79	2338.21
158.73	2338.88	159.2	2339	159.37	2339.05	163.04	2340		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-232.96	.04	-200.49	.04	140.55	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-200.49	140.55	5.67	5.67	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2327.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	2326.48	Reach Len. (ft)	5.67	5.67	5.67
Crit W.S. (ft)		Flow Area (sq ft)		1016.19	
E.G. Slope (ft/ft)	*0.009871	Area (sq ft)		1016.19	
Q Total (cfs)	8537.00	Flow (cfs)		8537.00	
Top Width (ft)	295.24	Top Width (ft)		295.24	
Vel Total (ft/s)	8.40	Avg. Vel. (ft/s)		8.40	
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)		3.44	
Conv. Total (cfs)	85924.5	Conv. (cfs)		85924.5	
Length Wtd. (ft)	5.67	Wetted Per. (ft)		295.92	
Min Ch El (ft)	2322.22	Shear (lb/sq ft)		2.12	
Alpha	1.00	Stream Power (lb/ft s)	163.04	0.00	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		35.66	
C & E Loss (ft)	0.02	Cum SA (acres)		11.56	

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2330.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.39	Wt. n-Val.		0.040	
W.S. Elev (ft)	2327.89	Reach Len. (ft)	5.67	5.67	5.67
Crit W.S. (ft)	2327.89	Flow Area (sq ft)		1440.17	
E.G. Slope (ft/ft)	*0.014137	Area (sq ft)		1440.17	
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00	
Top Width (ft)	305.16	Top Width (ft)		305.16	
Vel Total (ft/s)	12.40	Avg. Vel. (ft/s)		12.40	
Max Chl Dpth (ft)	5.67	Hydr. Depth (ft)		4.72	

* Conv. Total (cfs)	*150168.5	* Conv. (cfs)	*		*150168.5	*		*	
* Length Wtd. (ft)	* 5.67	* Wetted Per. (ft)	*		* 306.25	*		*	
* Min Ch El (ft)	* 2322.22	* Shear (lb/sq ft)	*		* 4.15	*		*	
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	163.04	* 0.00	*	0.00	*	
* Frctn Loss (ft)	* 0.08	* Cum Volume (acre-ft)	*		* 57.68	*		*	
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*		* 11.87	*		*	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the 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: -3005.67

INPUT
Description: Compare to FEMA Section 54519
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-228.7	2340	-227.93	2339.78	-224.93	2339	-223.93	2338.72	-221.19	2338
-218.65	2337.29	-216.88	2337	-216.12	2336.87	-210.86	2336	-205.65	2335.11
-204.97	2335	-204.45	2334.91	-199.1	2334	-194.56	2333.23	-193.23	2333
-190.24	2332.49	-188.15	2332	-184.52	2331.15	-183.89	2331	-181.06	2330.34
-179.62	2330	-177.7	2329.55	-175.36	2329	-173.78	2328.63	-172.2	2328.17
-171.61	2328	-170.11	2327.57	-168.15	2327	-167.32	2326.76	-164.69	2326
-161.84	2325.18	-160.8	2325	-157.55	2324.45	-154.89	2324	-124.39	2323.27
-114.21	2323.07	-108.79	2323	-104.52	2323	-85.97	2323	-76.81	2322.82
-52.63	2322.65	-2.32	2322.25	0	2322.24	4.69	2322.22	27.38	2322.41
49.13	2322.21	64.98	2322.04	65.69	2322.03	69.18	2322.2	82.41	2322.72
89.43	2323	91.22	2323.07	100.8	2323.37	108.38	2323	108.54	2322.99
108.62	2323	108.98	2323.03	118.94	2324	120.67	2324.17	122.22	2324.32
124.11	2325	125.06	2325.34	126.89	2326	128.64	2326.63	129.66	2327
130.86	2327.43	132.44	2328	133.91	2328.53	135.22	2329	137.89	2329.96
138	2330	138.21	2330.08	140.39	2331	141.94	2331.66	142.74	2332
143.78	2332.44	145.09	2333	145.99	2333.38	147.44	2334	149.07	2334.69
149.8	2335	150.62	2335.35	152.51	2336	154.41	2336.66	155.45	2337
156.24	2337.29	158.31	2338	160.04	2338.59	161.21	2339	163.46	2339.77
164.12	2340								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-228.7	.04	-188.15	.04	140.39	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-188.15	140.39	1336	1336	.1	.3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

* E.G. Elev (ft)	* 2327.50	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 1.04	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 2326.47	* Reach Len. (ft)	* 1336.00	* 1336.00	* 1336.00	*
* Crit W.S. (ft)	* 2325.86	* Flow Area (sq ft)	*	* 1045.52	*	*
* E.G. Slope (ft/ft)	*0.008952	* Area (sq ft)	*	* 1045.52	*	*
* Q Total (cfs)	* 8537.00	* Flow (cfs)	*	* 8537.00	*	*
* Top Width (ft)	* 294.49	* Top Width (ft)	*	* 294.49	*	*
* Vel Total (ft/s)	* 8.17	* Avg. Vel. (ft/s)	*	* 8.17	*	*
* Max Chl Dpth (ft)	* 4.44	* Hydr. Depth (ft)	*	* 3.55	*	*
* Conv. Total (cfs)	* 90231.1	* Conv. (cfs)	*	* 90231.1	*	*
* Length Wtd. (ft)	* 1336.00	* Wetted Per. (ft)	*	* 295.26	*	*
* Min Ch El (ft)	* 2322.03	* Shear (lb/sq ft)	*	* 1.98	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 164.12	* 0.00	* 0.00	*
* Frctn Loss (ft)	* 11.61	* Cum Volume (acre-ft)	*	* 35.53	*	*
* C & E Loss (ft)	* 0.10	* Cum SA (acres)	*	* 11.52	*	*

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the
need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

E.G. Elev (ft)	2330.17	Element	Left OB	Channel	Right OB	
Vel Head (ft)	2.40	Wt. n-Val.		0.040		
W.S. Elev (ft)	2327.78	Reach Len. (ft)	1336.00	1336.00	1336.00	
Crit W.S. (ft)	2327.78	Flow Area (sq ft)		1436.59		
E.G. Slope (ft/ft)	*0.014106	Area (sq ft)		1436.59		
Q Total (cfs)	*17855.00	Flow (cfs)		*17855.00		
Top Width (ft)	302.65	Top Width (ft)		302.65		
Vel Total (ft/s)	12.43	Avg. Vel. (ft/s)		12.43		
Max Chl Dpth (ft)	5.75	Hydr. Depth (ft)		4.75		
Conv. Total (cfs)	*150336.7	Conv. (cfs)		*150336.7		
Length Wtd. (ft)	1336.00	Wetted Per. (ft)		303.83		
Min Ch El (ft)	2322.03	Shear (lb/sq ft)		4.16		
Alpha	1.00	Stream Power (lb/ft s)	164.12	0.00	0.00	
Frctn Loss (ft)	10.77	Cum Volume (acre-ft)		57.50		
C & E Loss (ft)	0.44	Cum SA (acres)		11.84		

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

CROSS SECTION

RIVER: Las Vegas Wash
REACH: Upper RS: -4341.67

INPUT
Description: Copy of FEMA Section 53183
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	2338.27	1009.35	2323.57	1023.46	2326.97	1030.59	2319.97	1051.21	2313.87
1063.56	2312.97	1069.39	2313.47	1083.59	2312.27	1090.73	2313.17	1111.32	2312.77
1118.92	2311.57	1128.82	2313.67	1174.74	2313.67	1246.96	2313.27	1311.05	2312.07
1343.78	2311.57	1377.97	2311.37	1382.06	2308.87	1387.2	2311.87	1398.02	2312.07
1410.17	2308.07	1422.56	2309.67	1435.3	2310.87	1459.21	2311.17	1488.67	2311.07
1499.24	2312.87	1510.35	2318.17	1542.44	2327.37	1557.17	2331.77	1572.24	2334.67
1584.75	2338.57	1606.24	2339.57	1626.09	2339.77	1659.02	2339.27		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.04	1023.46	.04	1584.75	.04

Bank Sta: Left Right Coeff Contr. Expan.
1023.46 1584.75 .1 .3

CROSS SECTION OUTPUT Profile #100-yr FIS Flow

E.G. Elev (ft)	2315.79	Element	Left OB	Channel	Right OB	
Vel Head (ft)	0.70	Wt. n-Val.		0.040		
W.S. Elev (ft)	2315.09	Reach Len. (ft)				
Crit W.S. (ft)	2314.49	Flow Area (sq ft)		1271.14		
E.G. Slope (ft/ft)	*0.008440	Area (sq ft)		1271.14		
Q Total (cfs)	8537.00	Flow (cfs)		8537.00		
Top Width (ft)	456.81	Top Width (ft)		456.81		
Vel Total (ft/s)	6.72	Avg. Vel. (ft/s)		6.72		
Max Chl Dpth (ft)	7.02	Hydr. Depth (ft)		2.78		
Conv. Total (cfs)	92924.8	Conv. (cfs)		92924.8		
Length Wtd. (ft)		Wetted Per. (ft)		460.45		
Min Ch El (ft)	2308.07	Shear (lb/sq ft)		1.45		
Alpha	1.00	Stream Power (lb/ft s)	1659.02	0.00	0.00	
Frctn Loss (ft)		Cum Volume (acre-ft)				

* C & E Loss (ft)	*	* Cum SA (acres)	*	*	*	*

CROSS SECTION OUTPUT Profile #500-yr FIS Flow

* E.G. Elev (ft)	* 2318.27	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.93	* Wt. n-Val.	*	* 0.040	*
* W.S. Elev (ft)	* 2317.34	* Reach Len. (ft)	*	*	*
* Crit W.S. (ft)	* 2315.89	* Flow Area (sq ft)	*	* 2312.82	*
* E.G. Slope (ft/ft)	*0.005213	* Area (sq ft)	*	* 2312.82	*
* Q Total (cfs)	*17855.00	* Flow (cfs)	*	*17855.00	*
* Top Width (ft)	* 469.13	* Top Width (ft)	*	* 469.13	*
* Vel Total (ft/s)	* 7.72	* Avg. Vel. (ft/s)	*	* 7.72	*
* Max Chl Dpth (ft)	* 9.27	* Hydr. Depth (ft)	*	* 4.93	*
* Conv. Total (cfs)	*247299.0	* Conv. (cfs)	*	*247299.0	*
* Length Wtd. (ft)	*	* Wetted Per. (ft)	*	* 473.61	*
* Min Ch El (ft)	* 2308.07	* Shear (lb/sq ft)	*	* 1.59	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 1659.02	* 0.00	* 0.00 *
* Frctn Loss (ft)	*	* Cum Volume (acre-ft)	*	*	*
* C & E Loss (ft)	*	* Cum SA (acres)	*	*	*

SUMMARY OF MANNING'S N VALUES

River:Las Vegas Wash

* Reach	* River Sta.	* n1	* n2	* n3	* n4	* n5
*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	* -2274.86	* .04*	.04*	.035*	.04*	*
*Upper	* -2327.86	*Bridge *	*	*	*	*
*Upper	* -2406.83	* .04*	.04*	.045*	.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	* -2950	* .04*	.04*	.04*	*	*
*Upper	* -3000	* .04*	.04*	.04*	*	*
*Upper	* -3005.67	* .04*	.04*	.04*	*	*
*Upper	* -4341.67	* .04*	.04*	.04*	*	*

SUMMARY OF REACH LENGTHS

River: Las Vegas Wash

* Reach	* River Sta.	* Left	* Channel	* Right *

*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	* 74.86*	74.86*	74.86*
*Upper	*	-2274.86	* 131.97*	131.97*	131.97*
*Upper	*	-2327.86	*Bridge *	*	*
*Upper	*	-2406.83	* 43.17*	43.17*	43.17*
*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	*	-2950	* 50*	50*	50*
*Upper	*	-3000	* 5.67*	5.67*	5.67*
*Upper	*	-3005.67	* 1336*	1336*	1336*
*Upper	*	-4341.67	* *	*	*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Las Vegas Wash

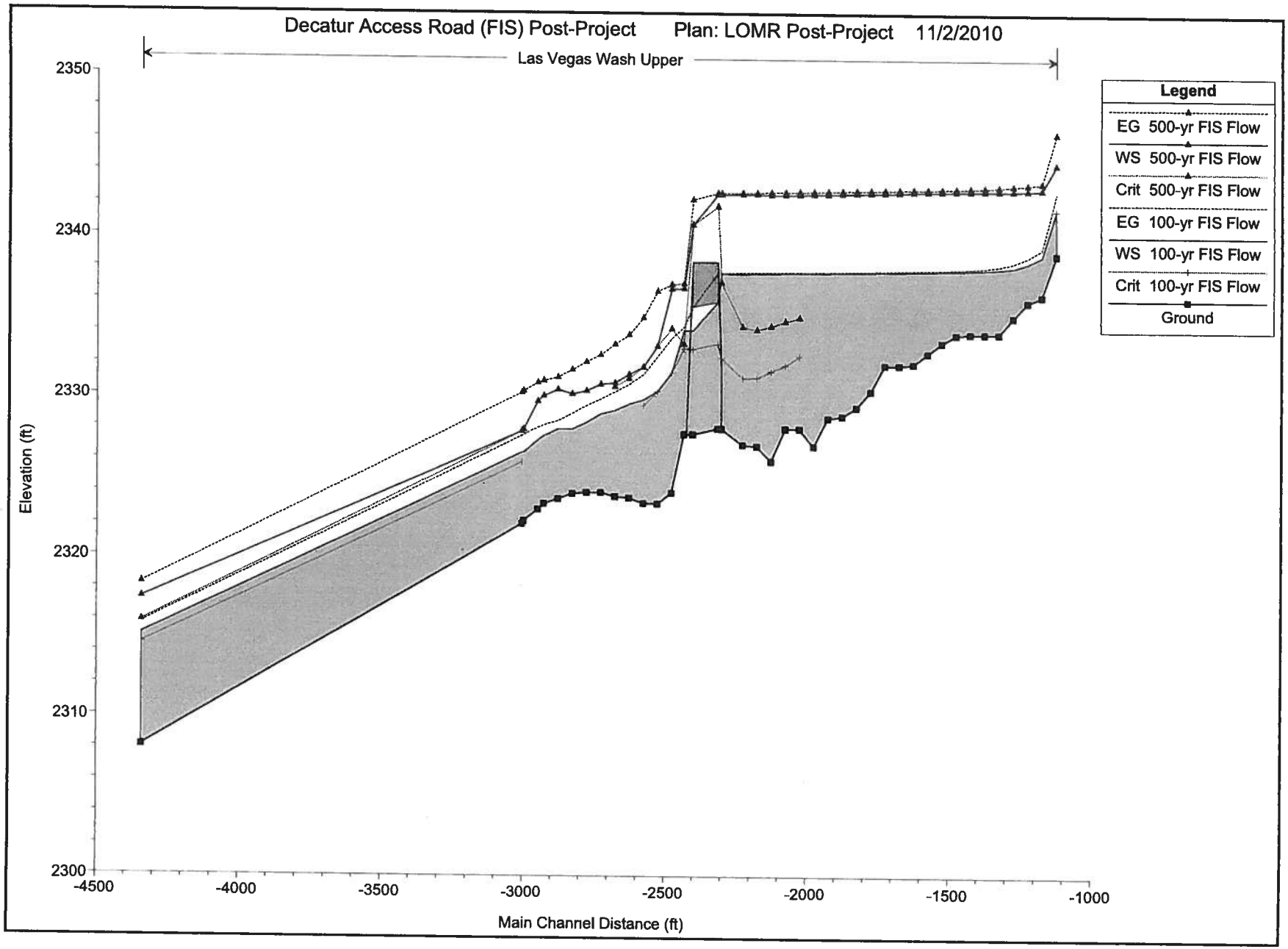
Reach	River Sta.	Contr.	Expan.
*Upper	* -1100	* .1*	.3*
*Upper	* -1150	* .1*	.3*
*Upper	* -1200	* .1*	.3*
*Upper	* -1250	* .1*	.3*
*Upper	* -1300	* .1*	.3*
*Upper	* -1350	* .1*	.3*
*Upper	* -1400	* .1*	.3*
*Upper	* -1450	* .1*	.3*
*Upper	* -1500	* .1*	.3*
*Upper	* -1550	* .1*	.3*
*Upper	* -1600	* .1*	.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	* .3*	.5*
*Upper	* -2274.86	* .3*	.5*
*Upper	* -2327.86	*Bridge *	*
*Upper	* -2406.83	* .3*	.5*
*Upper	* -2450	* .1*	.3*
*Upper	* -2500	* .1*	.3*

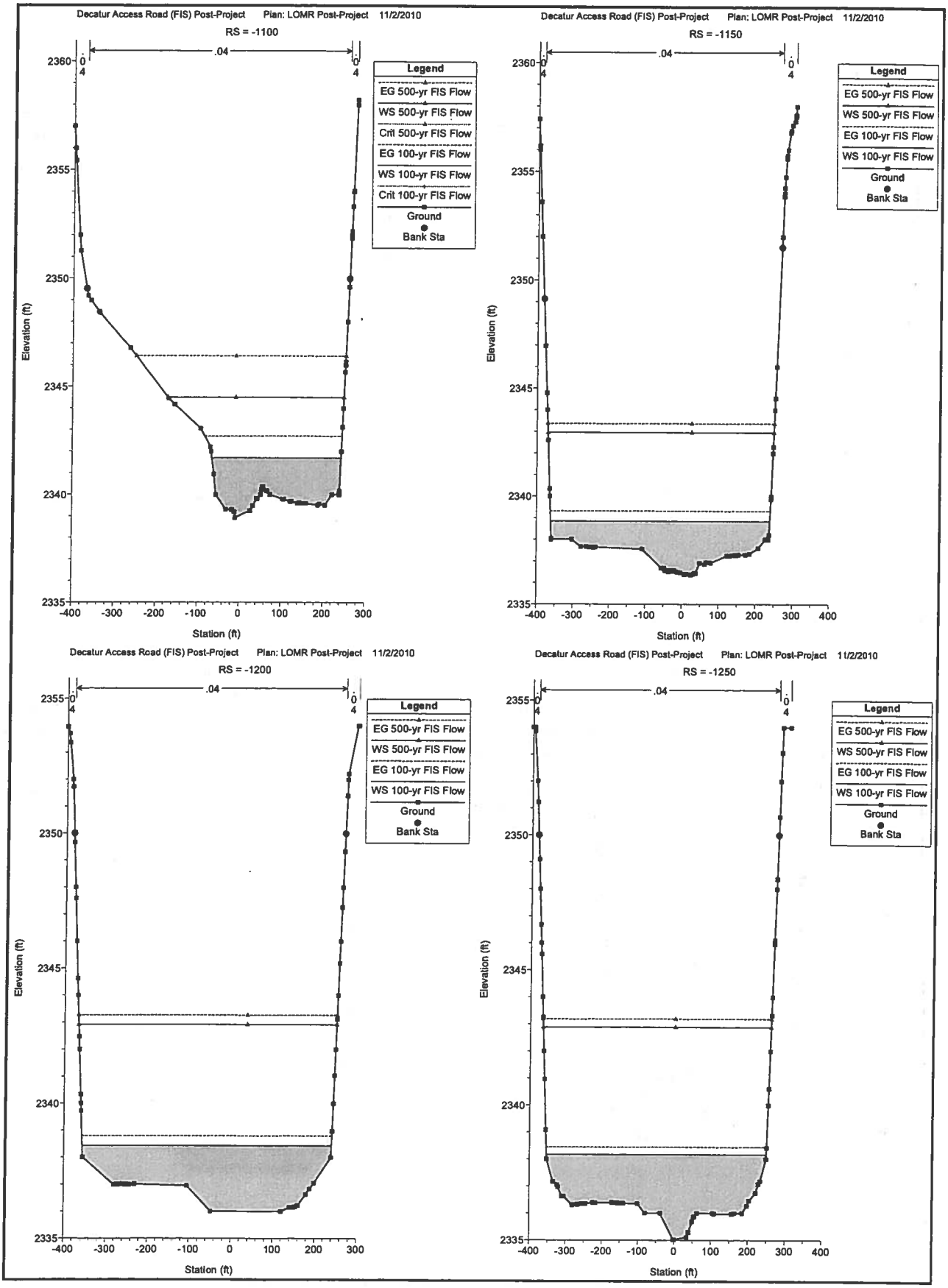
```
*Upper           *    -2550   *       .1*       .3*
*Upper           *    -2600   *       .1*       .3*
*Upper           *    -2650   *       .1*       .3*
*Upper           *    -2700   *       .1*       .3*
*Upper           *    -2750   *       .1*       .3*
*Upper           *    -2800   *       .1*       .3*
*Upper           *    -2850   *       .1*       .3*
*Upper           *    -2900   *       .1*       .3*
*Upper           *    -2950   *       .1*       .3*
*Upper           *    -3000   *       .1*       .3*
*Upper           *   -3005.67*       .1*       .3*
*Upper           *   -4341.67*       .1*       .3*
**************************************************
```

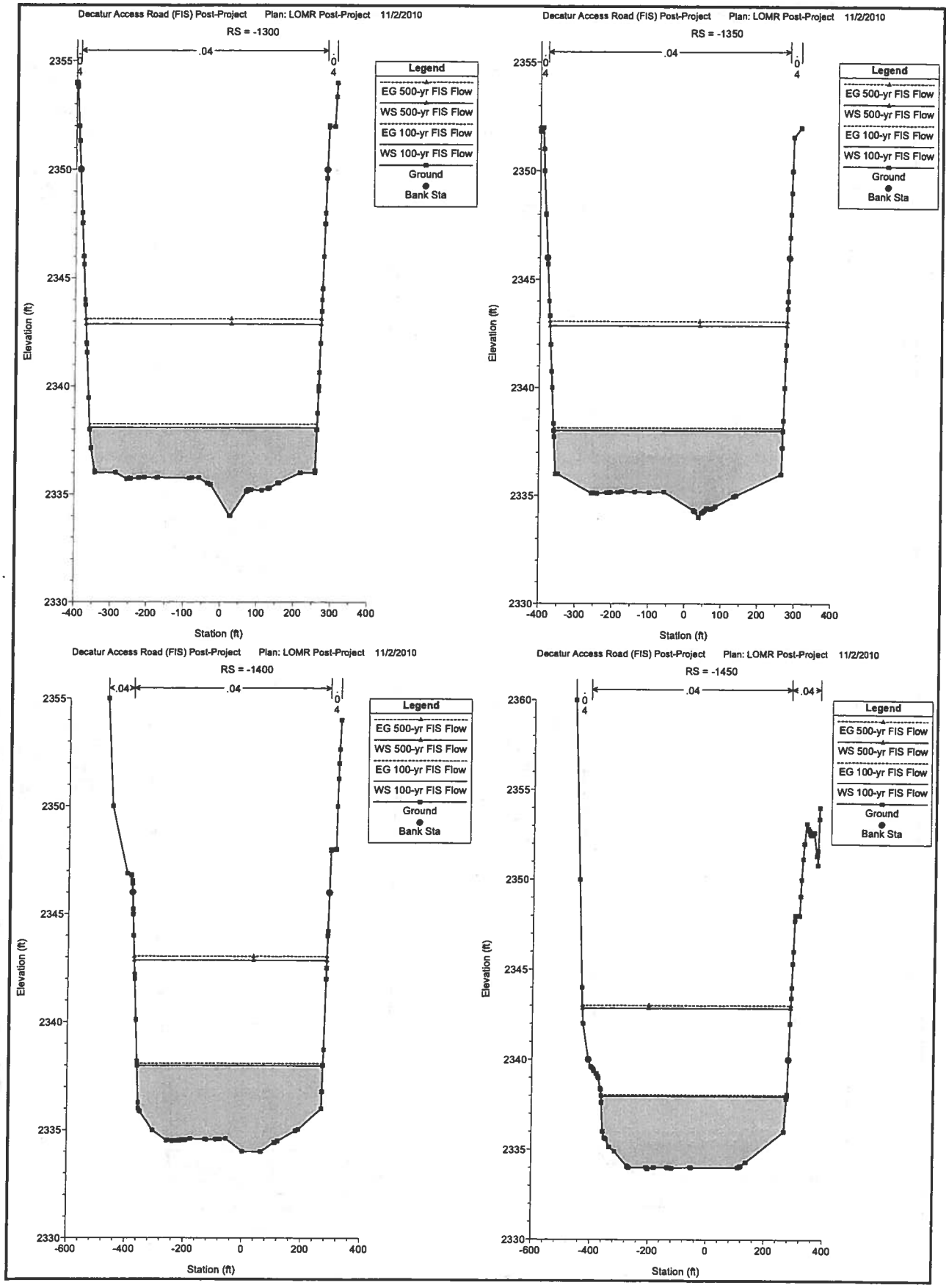
Profile Output Table - CHECKRAS

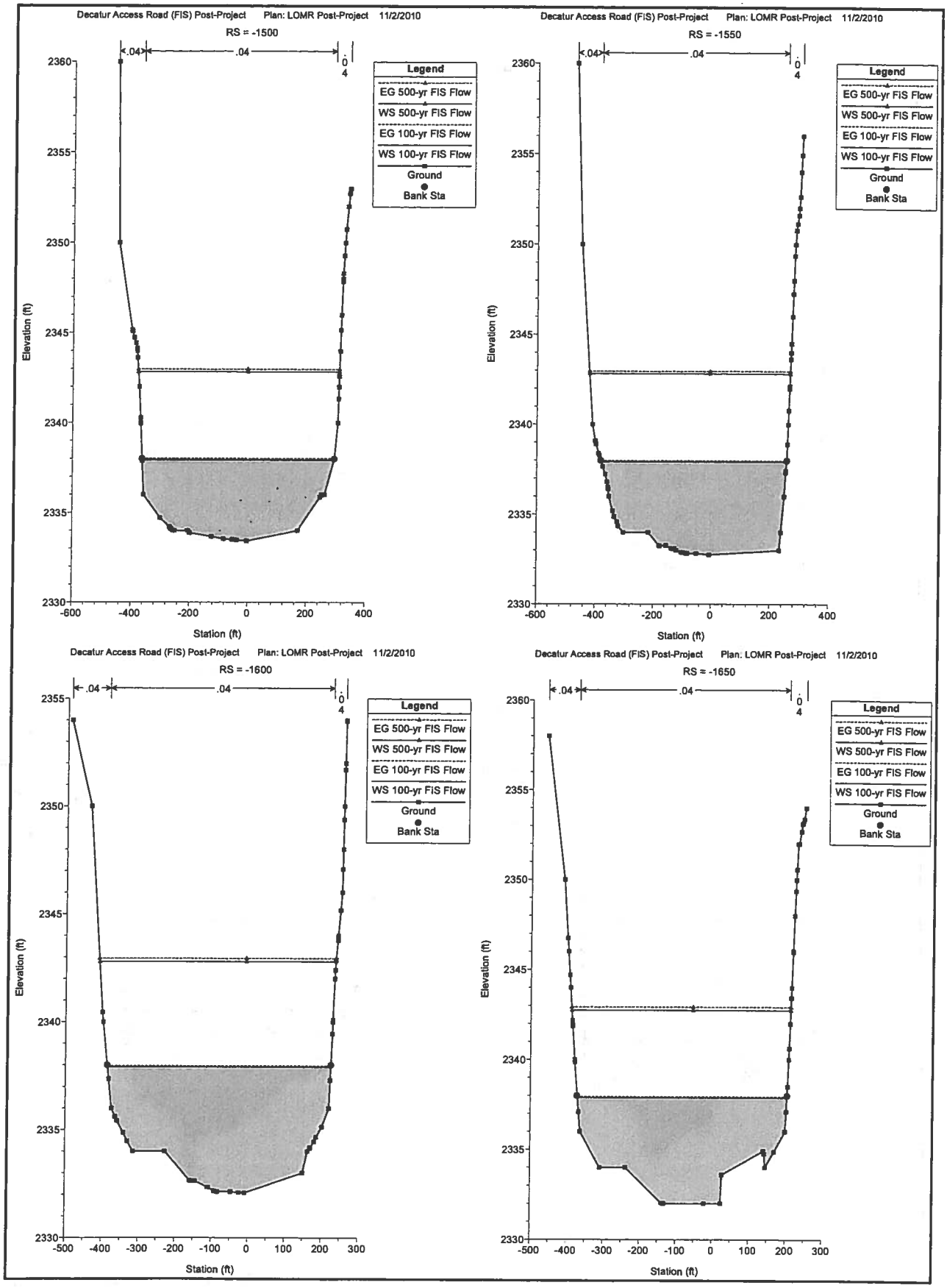
Reach	River Sta	Froude # Chl	Top Wdth Act (ft)	Conv. Total (cfs)	Prof Delta WS (ft)	Left Sta Eff (ft)	Enc Sta L (ft)	Center Station (ft)	Enc Sta R (ft)	Rght Sta Eff (ft)	Min Ch El (ft)	Left Stagn (ft)	Right Stagn (ft)
Upper	-1100	1.01	309.46	36557.9		-66.35		-53.37		243.11	2338.93		
Upper	-1100	1.00	420.58	145510.6	2.80	-171.48		-53.37		249.10	2338.93		
Upper	-1150	0.78	600.63	44907.8		-361.61		-57.89		239.02	2336.36		
Upper	-1150	0.39	618.77	395059.3	4.10	-370.08		-57.89		248.70	2336.36		
Upper	-1200	0.64	596.20	56139.4		-356.49		-58.19		239.71	2336.00		
Upper	-1200	0.34	616.25	465067.0	4.48	-366.46		-58.19		249.78	2336.00		
Upper	-1250	0.54	603.38	68517.5		-354.16		-53.81		249.22	2335.02		
Upper	-1250	0.30	624.90	528306.1	4.72	-365.39		-53.81		259.51	2335.02		
Upper	-1300	0.36	620.22	105609.9		-357.59		-50.40		262.63	2334.00		
Upper	-1300	0.26	641.67	628280.0	4.80	-369.51		-50.40		272.16	2334.00		
Upper	-1350	0.29	628.36	135059.6		-359.89		-48.07		268.48	2334.00		
Upper	-1350	0.23	648.95	697336.6	4.84	-371.61		-48.07		277.35	2334.00		
Upper	-1400	0.24	632.85	169288.4		-360.91		-46.45		271.94	2334.00		
Upper	-1400	0.21	655.11	767059.6	4.86	-373.31		-46.45		281.80	2334.00		
Upper	-1450	0.21	638.24	194402.2		-363.52		-64.44		274.72	2333.93		
Upper	-1450	0.20	714.83	831498.4	4.88	-429.52		-64.44		285.31	2333.93		
Upper	-1500	0.19	655.94	211801.7		-362.47		-34.05		293.47	2333.42		
Upper	-1500	0.19	687.60	877134.6	4.89	-376.99		-34.05		310.61	2333.42		
Upper	-1550	0.15	636.56	280123.3		-379.26		-61.44		257.30	2332.75		
Upper	-1550	0.17	687.82	984510.7	4.89	-420.15		-61.44		267.67	2332.75		
Upper	-1600	0.15	610.31	282908.1		-385.22		-80.23		225.09	2332.08		
Upper	-1600	0.18	644.80	959517.3	4.88	-408.57		-80.23		236.22	2332.08		
Upper	-1650	0.17	575.18	244004.9		-371.14		-83.70		204.04	2332.00		
Upper	-1650	0.20	600.43	862393.4	4.86	-387.57		-83.70		212.86	2332.00		
Upper	-1700	0.16	570.63	257248.5		-389.43		-105.40		181.20	2332.00		
Upper	-1700	0.19	594.32	880893.8	4.86	-404.41		-105.40		189.91	2332.00		
Upper	-1750	0.17	569.15	243259.9		-392.83		-109.10		176.32	2330.35		
Upper	-1750	0.20	604.34	859171.8	4.86	-417.08		-109.10		187.26	2330.35		
Upper	-1800	0.15	563.47	273866.0		-392.68		-111.56		170.79	2329.33		
Upper	-1800	0.19	582.79	899073.4	4.86	-408.86		-111.56		173.93	2329.33		
Upper	-1850	0.15	537.07	276877.1		-382.52		-115.07		154.55	2328.79		
Upper	-1850	0.19	564.15	882812.6	4.85	-408.23		-115.07		155.92	2328.79		
Upper	-1900	0.14	507.33	309425.9		-354.53		-98.19		152.81	2328.66		
Upper	-1900	0.19	530.07	900806.2	4.83	-376.82		-98.19		153.25	2328.66		
Upper	-1950	0.12	488.63	363690.6		-335.25		-89.61		153.38	2326.92		
Upper	-1950	0.18	502.18	963344.1	4.83	-348.00		-89.61		154.18	2326.92		
Upper	-2000	0.12	468.36	379609.9		-320.86		-89.12		147.50	2328.00		
Upper	-2000	0.18	486.56	973562.1	4.81	-338.16		-89.12		148.40	2328.00		
Upper	-2050	0.12	403.39	378666.1		-270.86		-97.10		132.53	2328.00		
Upper	-2050	0.18	473.97	982784.3	4.81	-340.41		-97.10		133.56	2328.00		
Upper	-2100	0.12	336.65	376903.6		-220.86		-108.14		115.79	2326.00		
Upper	-2100	0.17	460.64	1034594.0	4.82	-343.03		-108.14		117.61	2326.00		
Upper	-2150	0.12	297.09	375103.8		-498.81		-188.61		126.23	2326.92		
Upper	-2150	0.13	651.97	1352319.0	4.88	-520.74		-188.61		131.23	2326.92		
Upper	-2200	0.14	244.56	339317.3		-120.86		-139.14		123.70	2327.00		
Upper	-2200	0.13	653.57	1363253.0	4.89	-526.95		-139.14		126.62	2327.00		
Upper	-2274.86	0.09	589.34	595680.2		-488.64		-33.97		100.70	2327.98		
Upper	-2274.86	0.14	627.86	1391945.0	4.85	-511.94		-33.97		115.92	2327.98		
Upper	-2327.86BR U	0.55		136061.5		-35.28		-33.97		38.95	2327.98		
Upper	-2327.86BR U	0.45	625.01		6.65	-509.09		-33.97		115.92	2327.98		

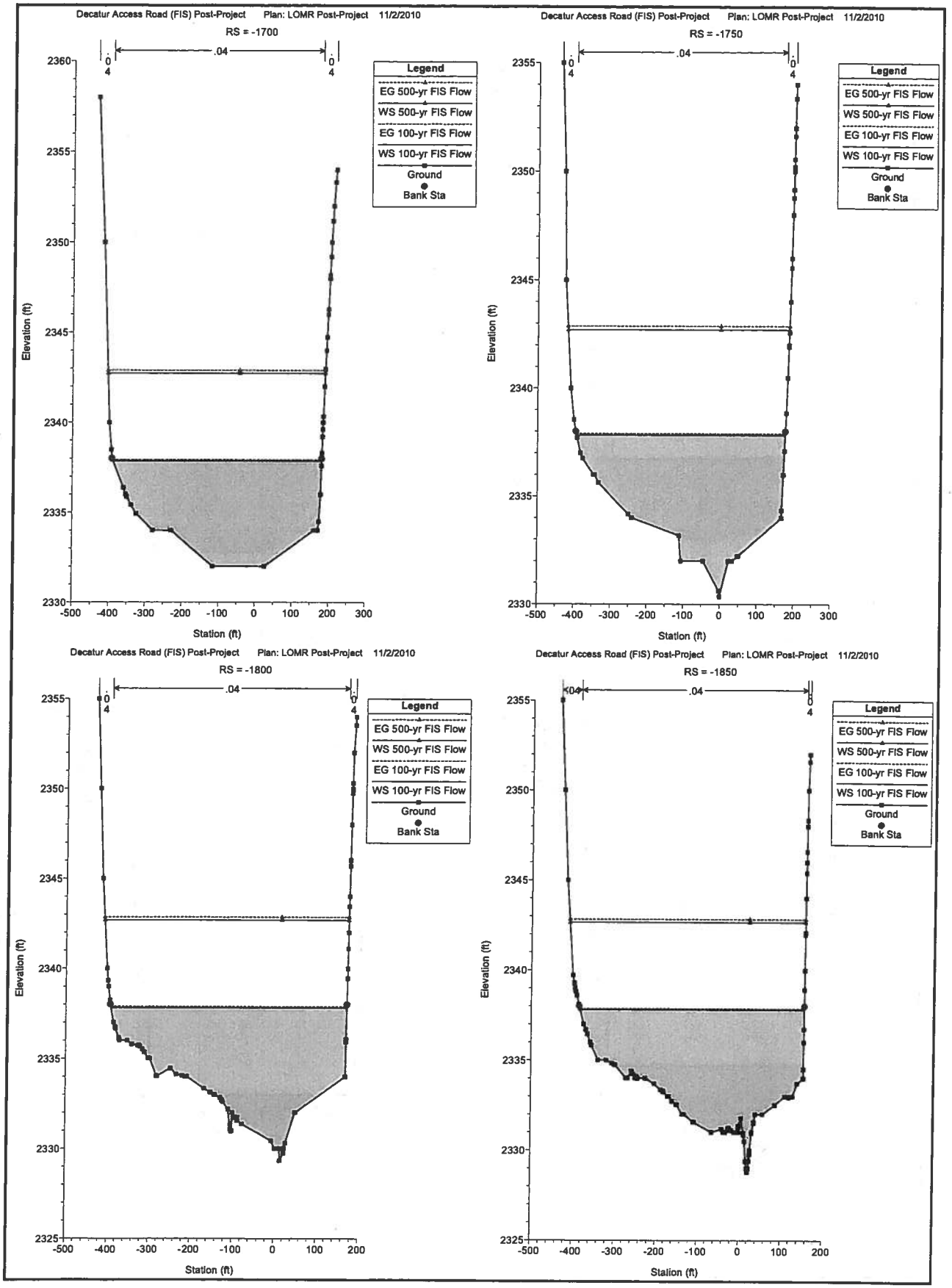
Upper	-2327.86BR D	0.74	72.12	139905.2		-35.29		-121.47		38.98	2327.63		
Upper	-2327.86BR D	0.48	724.54		6.59	-594.11		-121.47		130.43	2327.63		
Upper	-2406.83	0.31	621.74	227105.3		-515.03		-121.47		106.72	2327.63		
Upper	-2406.83	0.31	677.00	513661.1	2.62	-560.56		-121.47		116.44	2327.63		
Upper	-2450	0.99	166.18	71208.3		-81.59		-129.10		84.59	2324.00		
Upper	-2450	0.27	700.92	612867.9	5.26	-561.40		-129.10		139.52	2324.00		
Upper	-2500	1.00	164.85	70217.2		-355.53		-164.93		58.26	2323.33		
Upper	-2500	0.99	172.55	159367.7	2.84	-398.79		-164.93		65.96	2323.33		
Upper	-2550	0.87	201.84	80765.5		-364.13		-159.61		70.25	2323.35		
Upper	-2550	1.00	206.70	157376.3	2.08	-131.59		-159.61		75.11	2323.35		
Upper	-2600	0.79	241.21	88571.6		-369.34		-152.91		84.62	2323.68		
Upper	-2600	0.93	249.56	166691.8	1.86	-156.59		-152.91		92.97	2323.68		
Upper	-2650	0.77	254.24	90278.8		-358.34		-149.98		72.65	2323.76		
Upper	-2650	0.93	258.36	166187.3	1.74	-379.86		-149.98		76.77	2323.76		
Upper	-2700	0.69	281.78	102192.7		-345.71		-141.05		75.19	2324.00		
Upper	-2700	0.80	287.11	193997.8	1.87	-360.33		-141.05		80.52	2324.00		
Upper	-2750	0.78	303.08	88373.5		-331.94		-132.09		71.49	2324.00		
Upper	-2750	0.83	309.22	186710.4	1.98	-340.89		-132.09		77.63	2324.00		
Upper	-2800	0.77	327.32	88401.3		-304.73		-121.66		70.72	2323.92		
Upper	-2800	0.75	334.83	205728.0	2.19	-256.59		-121.66		78.24	2323.92		
Upper	-2850	0.55	420.51	123845.7		-284.40		-68.70		136.11	2323.60		
Upper	-2850	0.52	442.29	299877.5	2.48	-293.20		-68.70		149.08	2323.60		
Upper	-2900	0.62	376.30	111292.2		-246.65		-64.34		129.65	2323.29		
Upper	-2900	0.58	399.83	269018.1	2.49	-260.97		-64.34		138.86	2323.29		
Upper	-2950	0.66	336.47	104664.2		-212.00		-41.84		124.47	2322.94		
Upper	-2950	0.64	359.83	241801.3	2.40	-227.36		-41.84		132.47	2322.94		
Upper	-3000	0.80	295.24	85924.5		-170.03		-29.97		125.21	2322.22		
Upper	-3000	1.01	305.16	150168.5	1.41	-176.03		-29.97		129.12	2322.22		
Upper	-3005.67	0.76	294.49	90231.1		-166.30		-23.88		128.18	2322.03		
Upper	-3005.67	1.01	302.65	150336.7	1.31	-170.83		-23.88		131.82	2322.03		
Upper	-4341.67	0.71	456.81	92924.8		1047.09		1304.11		1503.89	2308.07		
Upper	-4341.67	0.61	469.13	247299.0	2.25	1039.48		1304.11		1508.61	2308.07		

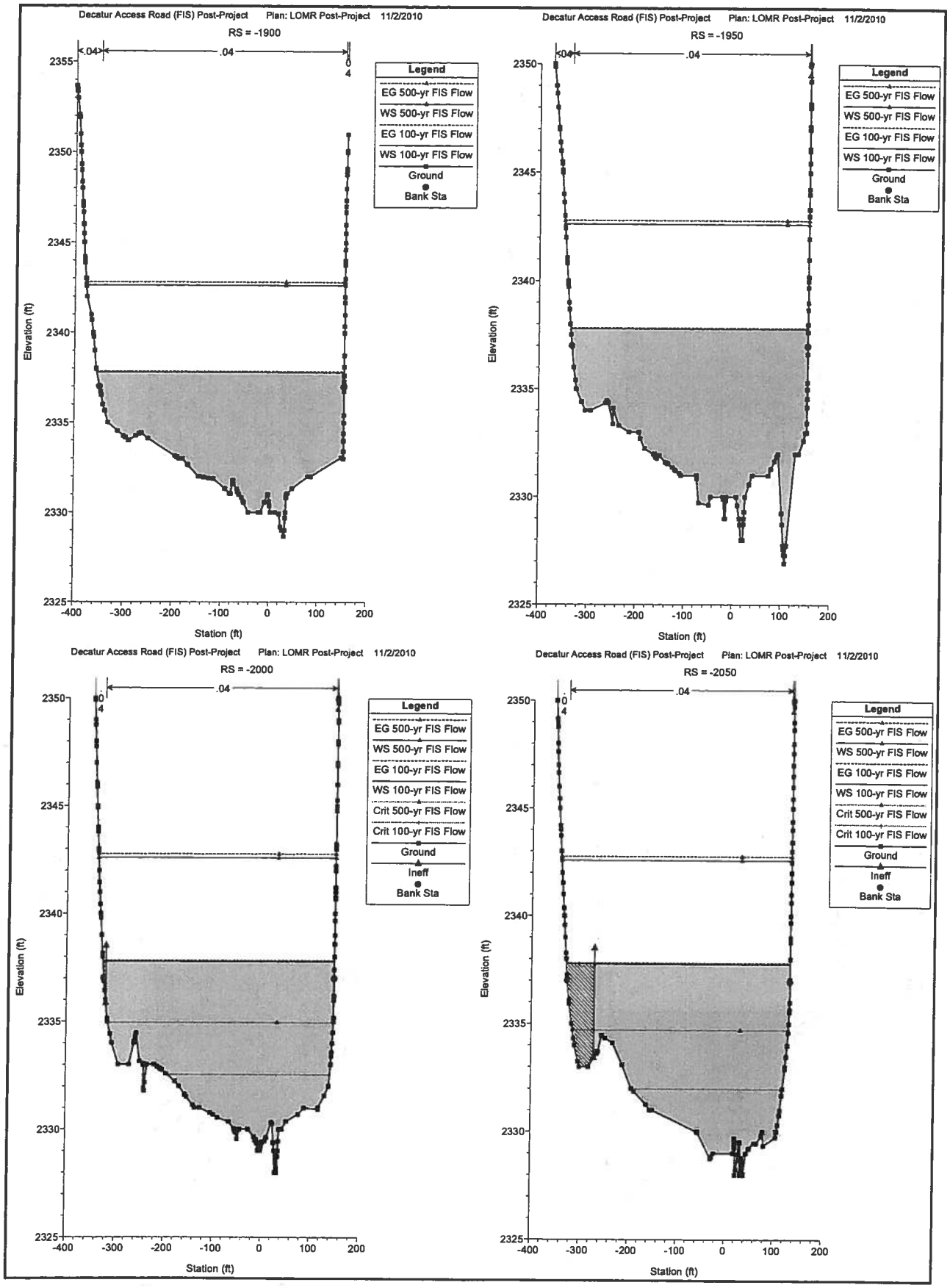

Decatur Access Road (FIS) Post-Project
Plan: LOMR Post-Project 11/2/2010
Las Vegas Wash Upper
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Elevation (ft)
2350
2340
2330
2320
2310
2300
-4500
-4000
-3500
-3000
-2500
-2000
-1500
-1000
Main Channel Distance (ft)

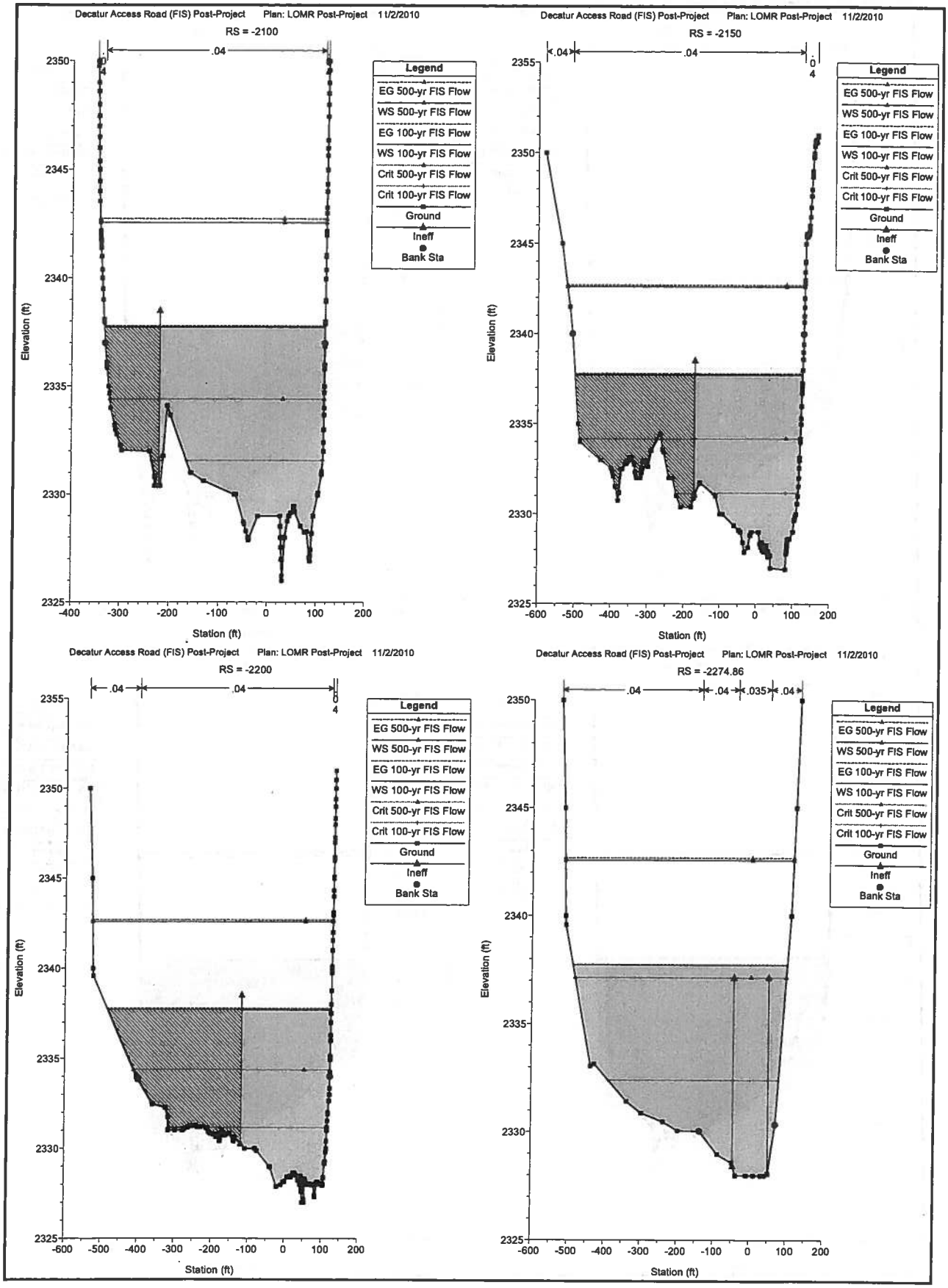

Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1100
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1150
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1200
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1250
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

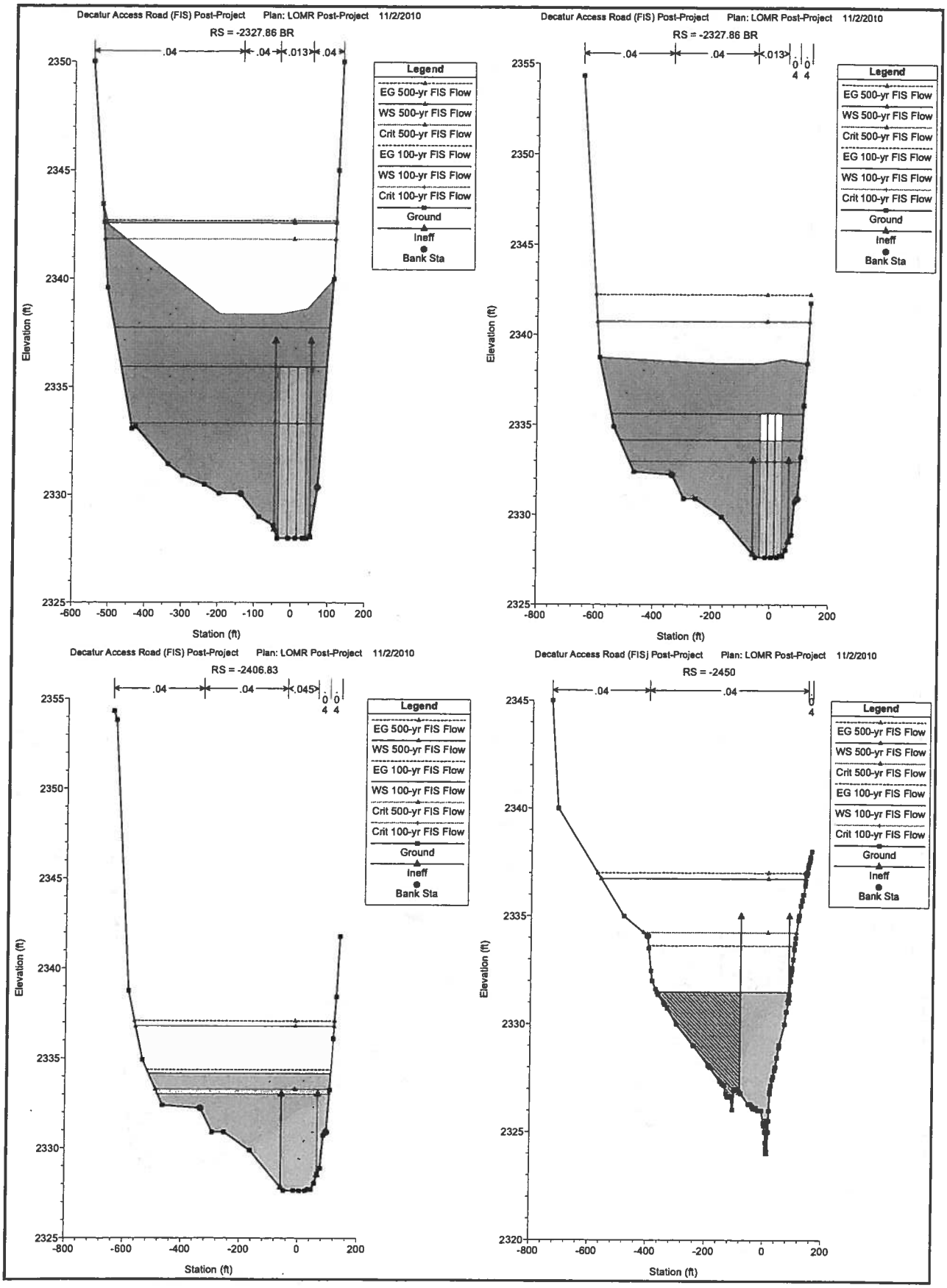

Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1300
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1350
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1400
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1450
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

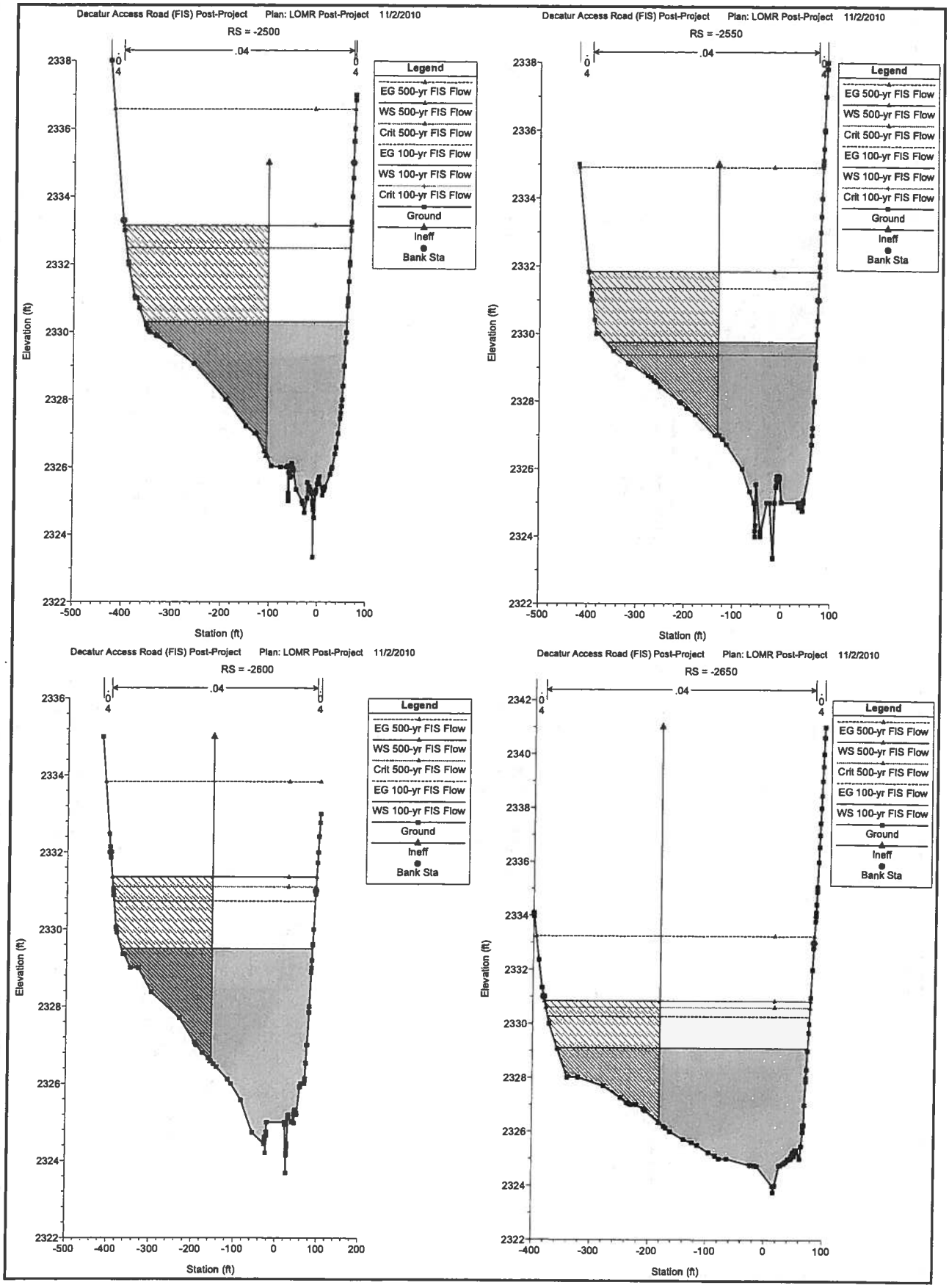

Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1500
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1550
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1600
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1650

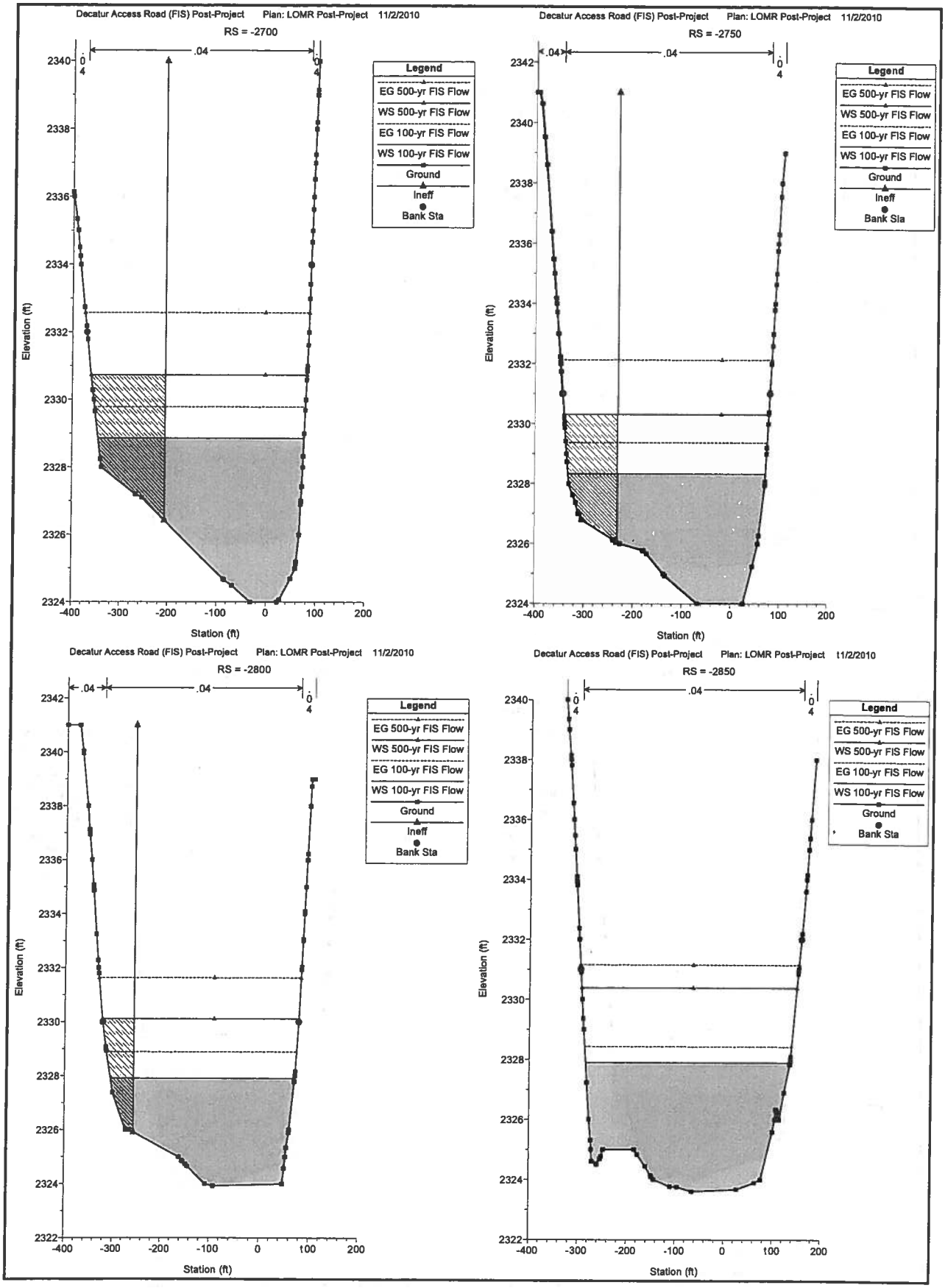

Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1700
.04
0.4
0.4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1750
.04
0.4
0.4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1800
.04
0.4
0.4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1850
.04
0.4
0.4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)

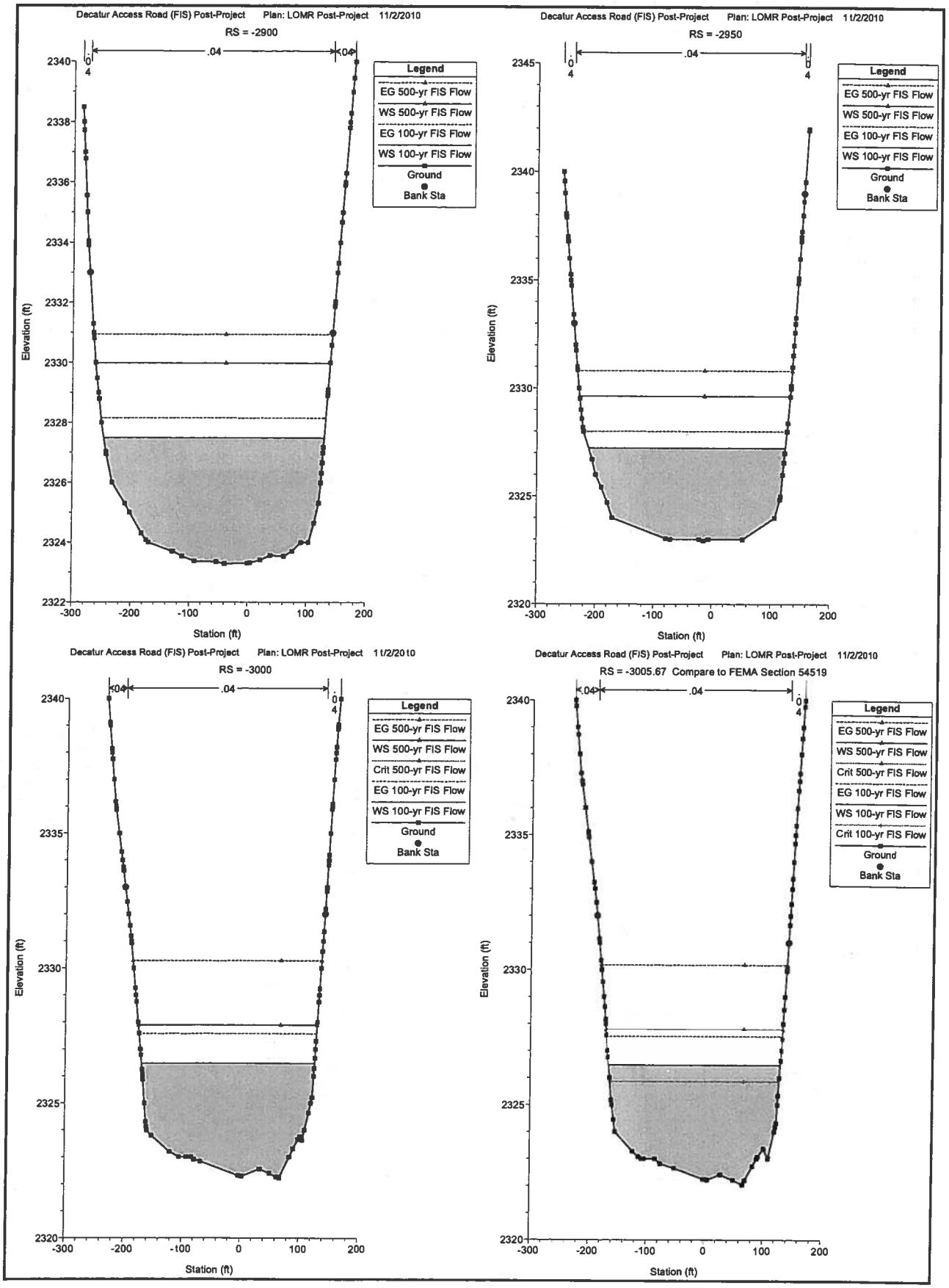

Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1900
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -1950
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2000
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2050
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

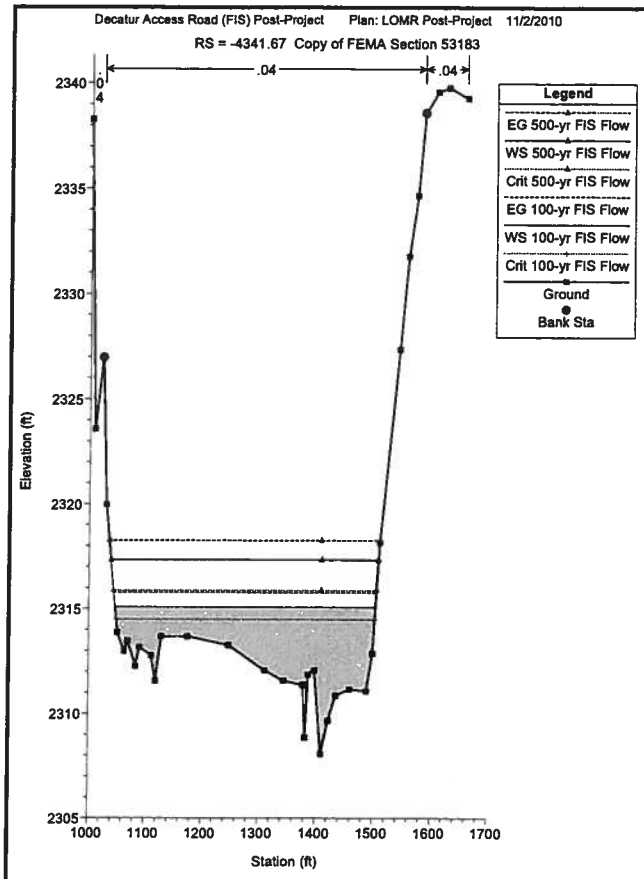

Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2100
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2150
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2200
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2274.86
.04
.04
.035
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2327.86 BR
.04 .04 .013 .04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2327.86 BR
.04 .04 .013
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2406.83
.04 .04 .045
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 500-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2450
.04 .04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2500
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2550
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2600
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2650
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2700
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2750
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2800
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2850
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)


Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2900
.04
.04
0
4
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2340
2338
2336
2334
2332
2330
2328
2326
2324
2322
-300
-200
-100
0
100
200
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -2950
.04
.04
0
4
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2345
2340
2335
2330
2325
2320
-300
-200
-100
0
100
200
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -3000
.04
.04
0
4
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2340
2335
2330
2325
2320
-300
-200
-100
0
100
200
Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -3005.67 Compare to FEMA Section 54519
.04
.04
0
4
0
4
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
Station (ft)
2340
2335
2330
2325
2320
-300
-200
-100
0
100
200


Decatur Access Road (FIS) Post-Project Plan: LOMR Post-Project 11/2/2010
RS = -4341.67 Copy of FEMA Section 53183
.04
.04
.04
Legend
EG 500-yr FIS Flow
WS 500-yr FIS Flow
Crit 500-yr FIS Flow
EG 100-yr FIS Flow
WS 100-yr FIS Flow
Crit 100-yr FIS Flow
Ground
Bank Sta
Elevation (ft)
2340
2335
2330
2325
2320
2315
2310
2305
1000
1100
1200
1300
1400
1500
1600
1700
Station (ft)

DECATUR BOULEVARD ACCESS ROAD
POST-PROJECT CONDITION: CHECK-RAS OUTPUT

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.f02
Report File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.nt
Selected profiles: 100-yr FIS Flow
Date: 11/2/2010
Time: 12:43:47 PM

SECNO STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
Las Vegas Wash,Upper					
-1100	0.04	0.04	0.04	0.1	0.3
-1150	0.04	0.04	0.04	0.1	0.3
-1200	0.04	0.04	0.04	0.1	0.3
-1250	0.04	0.04	0.04	0.1	0.3
-1300	0.04	0.04	0.04	0.1	0.3
-1350	0.04	0.04	0.04	0.1	0.3
-1400	0.04	0.04	0.04	0.1	0.3
-1450	0.04	0.04	0.04	0.1	0.3
-1500	0.04	0.04	0.04	0.1	0.3
-1550	0.04	0.04	0.04	0.1	0.3
-1600	0.04	0.04	0.04	0.1	0.3
-1650	0.04	0.04	0.04	0.1	0.3
-1700	0.04	0.04	0.04	0.1	0.3
-1750	0.04	0.04	0.04	0.1	0.3
-1800	0.04	0.04	0.04	0.1	0.3
-1850	0.04	0.04	0.04	0.1	0.3
-1900	0.04	0.04	0.04	0.1	0.3
-1950	0.04	0.04	0.04	0.1	0.3
-2000	0.04	0.04	0.04	0.1	0.3
-2050	0.04	0.04	0.04	0.1	0.3
-2100	0.04	0.04	0.04	0.1	0.3
-2150	0.04	0.04	0.04	0.1	0.3
-2200	0.04	0.04	0.04	0.3	0.5
-2274.86	0.04	0.04	-----	0.3	0.5
	-----	0.035	-----		
	-----	0.04	-----		
-2327.86Bridge-Up	0.04	0.04	-----	0.3	0.5
	-----	0.013	-----		
	-----	0.04	-----		
-2327.86Bridge-Dn	0.04	0.04	0.04	0.3	0.5
	-----	0.013	-----		
	-----	0.04	-----		
-2406.83	0.04	0.04	0.04	0.3	0.5
	-----	0.045	-----		
	-----	0.04	-----		
-2450	0.04	0.04	0.04	0.1	0.3
-2500	0.04	0.04	0.04	0.1	0.3
-2550	0.04	0.04	0.04	0.1	0.3
-2600	0.04	0.04	0.04	0.1	0.3
-2650	0.04	0.04	0.04	0.1	0.3
-2700	0.04	0.04	0.04	0.1	0.3
-2750	0.04	0.04	0.04	0.1	0.3
-2800	0.04	0.04	0.04	0.1	0.3
-2850	0.04	0.04	0.04	0.1	0.3
-2900	0.04	0.04	0.04	0.1	0.3
-2950	0.04	0.04	0.04	0.1	0.3
-3000	0.04	0.04	0.04	0.1	0.3
-3005.67	0.04	0.04	0.04	0.1	0.3
-4341.67	0.04	0.04	0.04	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.04	0.04
Right Overbank n Value:	0.04	0.04

Channel n Value:	0.013	0.045
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK

RS: -1100
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1150
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1200
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1250
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1300
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1350
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1400
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1450
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1500
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1550
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1600
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1650
NT RC 05 The left overbank n value of 0.04 and the right overbank n value of 0.04 are less than or equal to the channel n value of 0.04 The overbank n values should be reevaluated.

RS: -1700
NT RC 05 The left overbank n value of 0.04 and the right overbank n value

of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1750
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1800
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1850
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1900
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -1950
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2000
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2050
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2100
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2150
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2200
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2406.83
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2450
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2500
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04
The overbank n values should be reevaluated.

RS: -2550
NT RC 05 The left overbank n value of 0.04 and the right overbank n value
of 0.04 are less than or equal to the channel n value of 0.04

```
          The overbank n values should be reevaluated.

 RS:      -2600
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2650
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2700
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2750
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2800
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2850
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2900
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -2950
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -3000
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 RS:      -3005.67
 NT RC 05 The left overbank n value of 0.04 and the right overbank n value
          of 0.04 are less than or equal to the channel n value of 0.04
          The overbank n values should be reevaluated.

 TRANSITION LOSS COEFFICIENT CHECK
 ---------------------------------

 ROUGHNESS COEFFICIENT AT STRUCTURES
 -----------------------------------

 ---END---
```

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.f02
Report File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.xs
Selected profiles: 100-yr FIS Flow
Date: 11/2/2010
Time: 12:43:47 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
Las Vegas Wash,Upper						
-1100	50	50	50	309.46	5019	C
-1150	50	50	50	600.63	5019	
-1200	50	50	50	596.2	5019	
-1250	50	50	50	603.38	5019	
-1300	50	50	50	620.22	5019	
-1350	50	50	50	628.36	5019	
-1400	50	50	50	632.85	5019	
-1450	50	50	50	638.24	5019	
-1500	50	50	50	655.94	5019	
-1550	50	50	50	636.56	5019	
-1600	50	50	50	610.31	5019	
-1650	50	50	50	575.18	5019	
-1700	50	50	50	570.63	5019	
-1750	50	50	50	569.15	5019	
-1800	50	50	50	563.47	5019	
-1850	50	50	50	537.07	5019	
-1900	50	50	50	507.33	5019	
-1950	50	50	50	488.63	5019	
-2000	50	50	50	468.36	5019	
-2050	50	50	50	403.39	5019	
-2100	50	50	50	336.65	5019	
-2150	50	50	50	297.09	5019	D
-2200	74.86	74.86	74.86	244.56	5019	
-2274.86	131.97	131.97	131.97	589.34	5019	
-2327.86	Bridge #1-Up					
-2327.86	Bridge #1-Dn					
-2406.83	43.17	43.17	43.17	621.74	8537	
-2450	50	50	50	166.18	8537	C
-2500	50	50	50	164.85	8537	D,C
-2550	50	50	50	201.84	8537	D
-2600	50	50	50	241.21	8537	D
-2650	50	50	50	254.24	8537	D
-2700	50	50	50	281.78	8537	D
-2750	50	50	50	303.08	8537	D
-2800	50	50	50	327.32	8537	D
-2850	50	50	50	420.51	8537	
-2900	21.44	21.44	21.44	376.3	8537	
-2950	50	50	50	336.47	8537	
-3000	5.67	5.67	5.67	295.24	8537	
-3005.67	1336	1336	1336	294.49	8537	
-4341.67	0	0	0	456.81	8537	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: -2406.83
XS DC 03 Discharge is different between the upstream side and downstream side of the structure

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is Las Vegas Wash,Upper
Known WS = 2315.09 is specified as the downstream boundary
for profile 100-yr FIS Flow

XS BC 03 Maximum number of iterations is 0
It should not be less than 20.

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: Structure Check

Project File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.f02
Report File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.br
Selected profiles: 100-yr FIS Flow
Date: 11/2/2010
Time: 12:43:48 PM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
Las Vegas Wash,Upper						
-1100			2342.71	2341.7	2338.93	
-1150			2339.32	2338.85	2336.36	
-1200			2338.79	2338.43	2336	
-1250			2338.44	2338.16	2335.02	
-1300			2338.24	2338.08	2334	
-1350			2338.14	2338.02	2334	
-1400			2338.08	2337.99	2334	
-1450			2338.04	2337.96	2333.93	
-1500			2338	2337.93	2333.42	
-1550			2337.98	2337.93	2332.75	
-1600			2337.96	2337.91	2332.08	
-1650			2337.94	2337.88	2332	
-1700			2337.92	2337.86	2332	
-1750			2337.9	2337.83	2330.35	
-1800			2337.88	2337.82	2329.33	
-1850			2337.86	2337.8	2328.79	
-1900			2337.84	2337.79	2328.66	
-1950			2337.83	2337.79	2326.92	
-2000			2337.82	2337.78	2328	
-2050			2337.81	2337.76	2328	
-2100			2337.8	2337.75	2326	
-2150			2337.79	2337.73	2326.92	
-2200			2337.78	2337.7	2327	
-2274.86			2337.74	2337.72	2327.98	
-2327.86						
	2335.92	2338.4	2337.74	2335.92	2327.98	Bridge #1-Up
-2327.86						
	2335.63	2338.4	2335.6	2334.13	2327.63	Bridge #1-Dn
-2406.83			2334.35	2334.13	2327.63	
-2450			2333.63	2331.47	2324	
-2500			2332.48	2330.3	2323.33	
-2550			2331.34	2329.75	2323.35	
-2600			2330.73	2329.49	2323.68	
-2650			2330.25	2329.09	2323.76	
-2700			2329.79	2328.86	2324	
-2750			2329.37	2328.33	2324	
-2800			2328.89	2327.91	2323.92	
-2850			2328.43	2327.9	2323.6	
-2900			2328.15	2327.49	2323.29	
-2950			2328.01	2327.23	2322.94	
-3000			2327.57	2326.48	2322.22	
-3005.67			2327.5	2326.47	2322.03	
-4341.67			2315.79	2315.09	2308.07	

RIVER/REACH: Las Vegas Wash, Upper
RIVER STATION: -2327.86
TYPE OF STRUCTURE: Bridge

Description:
Distance from Upstream XS: 13.17
Deck/Roadway Width: 88.03
Weir Coefficient: 2.5
Maximum allowable submergence for weir flow: 0.98

```
Elevation at which weir flow begins:              0
Weir crest shape:                                 Broad Crested
-------------------------------------------------------------------------------

Sec  River     Length   WSEL      Surch.    EGEL      TopWidth
     Station   Channel                                Actual
-------------------------------------------------------------------------------
 4   -2200      74.86   2337.7              2337.78   244.56
 3   -2274.86   131.97  2337.72             2337.74   589.34
     -2327.86   88.03   2335.92             2337.74   0         Bridge #1-Up
     -2327.86   30.77   2334.13             2335.6    72.12     Bridge #1-Dn
 2   -2406.83   43.17   2334.13             2334.35   621.74
 1   -2450      50.00   2331.47             2333.63   166.18
-------------------------------------------------------------------------------

          Ineffective Flow, Section 3              Ineffective Flow, Section 2
          Sta L      Sta R      Elev               Sta L      Sta R      Elev
-------------------------------------------------------------------------------
 1       -522.46    -46        2337.13            -646.47    -60        2333
 2        50         132.46    2337.13             63         133.53    2333
-------------------------------------------------------------------------------

BRIDGE:
Bridge Name:     Bridge #1
LowFlowMethod:   Highest Energy Answer
Momentum Cd:      1.5
HighFlowMethod: Pressure and Weir flow
SluiceGate Cd: 0         Submerged Cd:   0.8

-------------------------------------------------------------------------------
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 energy grade line
-------------------------------------------------------------------------------

-------------------------------------------------------------------------------
MaxLowChord:   2335.92  MinTopRd:  2338.41       MinElPrs:       2335.92

Opening Type      StagStaL    StagStaR  EncStaL   EncStaR   LIfStaS   RIfStaS
-------------------------------------------------------------------------------
Bridge                                                                50      U
                                                                0         63      D

                  LAbutSt     RAbutSt   LMnTpRd   RMnTpRd   MnTpRd    MxLoCd
-------------------------------------------------------------------------------
Bridge #1         -38.61      39.02     2338.40   2338.40   2338.40   2335.92 U
                  -50.47      39.07     2338.40   2338.40   2338.40   2335.63 D

Name          Q Total.  Q Struc   Q Weir    Selected Method     Flow Type
-------------------------------------------------------------------------------
Bridge #1     5019      5019      0         Press Only          Sluicegate Pressure Flow
-------------------------------------------------------------------------------

GEOMETRIC CHECK
-----------------

TYPE OF FLOW CHECK
------------------

RS:       -2327.86 This is Bridge #1
BR PF 01  Type of flow is sluicegate pressure flow because,
          1. EGEL 3 of 2337.74 is equal to or less than MinTopRd of 2338.41.
          2. EGEL 3 of 2337.74 is equal to or greater than MxLoCdU of 2335.92.
```

3. WSEL 2 of 2334.13 is less than MxLoCdD of 2335.63.

DISTANCE CHECK

INEFFECTIVE FLOW CHECK

RS: -2406.83 This is Section 2
ST IF 01 Pressure or low flow occurs at Bridge
However, left ineffective flow station was not considered at Section 2.
The ineffective flow station(s) and elevations should be inserted.

RS: -2200 This is Section 4
ST IF 07 Ineffective flow option was considered at this section.
However, it should be a fully expanded cross section.
Ineffective flow stations and elevations should be cleared from
this section, unless the areas beyond the ineffective flow stations
are not within the flow path of the stream.
This message should be ignored if this section is Section 2 of
the upstream structure.

RS: -2450 This is Section 1
ST IF 07 Ineffective flow option was considered at this section.
However, it should be a fully expanded cross section.
Ineffective flow stations and elevations should be cleared from
this section, unless the ares beyond the ineffective flow stations
are not within the flow path of the stream.
This message should be ignored if this section is Section 3 of the downstream
structure.

---END

CHECK-RAS Program: MULTIPLE PROFILE Check

Project File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.prj
Plan File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.p01
Geometry File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.g01
Flow File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.f02
Report File: C:\Documents and Settings\Mike\Desktop\Post-Project\DAR_post.mp
Selected profiles: #100-yr FIS Flow,#500-yr FIS Flow
Date: 11/2/2010
Time: 1:45:56 PM

River Station	WSEL	Q Total	Top Wdth Act	Vel Head	Profile Number
Las Vegas Wash,Upper					
-1100	2341.7	5019	309.46	1.02	1
-1100	2344.5	17855	420.58	1.92	2
-1150	2338.85	5019	600.63	0.47	1
-1150	2342.95	17855	618.77	0.42	2
-1200	2338.43	5019	596.2	0.36	1
-1200	2342.91	17855	616.25	0.35	2
-1250	2338.16	5019	603.38	0.28	1
-1250	2342.88	17855	624.9	0.3	2
-1300	2338.08	5019	620.22	0.16	1
-1300	2342.88	17855	641.67	0.24	2
-1350	2338.02	5019	628.36	0.12	1
-1350	2342.86	17855	648.95	0.21	2
-1400	2337.99	5019	632.85	0.09	1
-1400	2342.85	17855	655.11	0.18	2
-1450	2337.96	5019	638.24	0.08	1
-1450	2342.84	17855	714.83	0.16	2
-1500	2337.93	5019	655.94	0.07	1
-1500	2342.82	17855	687.6	0.15	2
-1550	2337.93	5019	636.56	0.05	1
-1550	2342.82	17855	687.82	0.14	2
-1600	2337.91	5019	610.31	0.05	1
-1600	2342.79	17855	644.8	0.15	2
-1650	2337.88	5019	575.18	0.06	1
-1650	2342.74	17855	600.43	0.18	2
-1700	2337.86	5019	570.63	0.06	1
-1700	2342.72	17855	594.32	0.17	2
-1750	2337.83	5019	569.15	0.06	1
-1750	2342.69	17855	604.34	0.18	2
-1800	2337.82	5019	563.47	0.06	1
-1800	2342.68	17855	582.79	0.17	2
-1850	2337.8	5019	537.07	0.06	1
-1850	2342.65	17855	564.15	0.18	2
-1900	2337.79	5019	507.33	0.05	1
-1900	2342.62	17855	530.07	0.18	2
-1950	2337.79	5019	488.63	0.04	1
-1950	2342.61	17855	502.18	0.17	2
-2000	2337.78	5019	468.36	0.04	1
-2000	2342.59	17855	486.56	0.18	2
-2050	2337.76	5019	403.39	0.05	1
-2050	2342.57	17855	473.97	0.18	2
-2100	2337.75	5019	336.65	0.06	1
-2100	2342.56	17855	460.64	0.17	2
-2150	2337.73	5019	297.09	0.06	1
-2150	2342.6	17855	651.97	0.09	2
-2200	2337.7	5019	244.56	0.08	1
-2200	2342.59	17855	653.57	0.1	2
-2274.86	2337.72	5019	589.34	0.03	1
-2274.86	2342.57	17855	627.86	0.1	2
-2327.86 Bridge #1					
-2406.83	2334.13	8537	621.74	0.22	1
-2406.83	2336.75	17855	677	0.32	2
-2450	2331.47	8537	166.18	2.15	1
-2450	2336.73	17855	700.92	0.27	2
-2500	2330.3	8537	164.85	2.18	1
-2500	2333.14	17855	172.55	3.44	2
-2550	2329.75	8537	201.84	1.59	1

-2550	2331.83	17855	206.7	3.08	2
-2600	2329.49	8537	241.21	1.24	1
-2600	2331.35	17855	249.56	2.48	2
-2650	2329.09	8537	254.24	1.16	1
-2650	2330.83	17855	258.36	2.41	2
-2700	2328.86	8537	281.78	0.92	1
-2700	2330.73	17855	287.11	1.84	2
-2750	2328.33	8537	303.08	1.04	1
-2750	2330.31	17855	309.22	1.82	2
-2800	2327.91	8537	327.32	0.98	1
-2800	2330.11	17855	334.83	1.52	2
-2850	2327.9	8537	420.51	0.53	1
-2850	2330.38	17855	442.29	0.77	2
-2900	2327.49	8537	376.3	0.66	1
-2900	2329.98	17855	399.83	0.96	2
-2950	2327.23	8537	336.47	0.78	1
-2950	2329.63	17855	359.83	1.18	2
-3000	2326.48	8537	295.24	1.1	1
-3000	2327.89	17855	305.16	2.39	2
-3005.67	2326.47	8537	294.49	1.04	1
-3005.67	2327.78	17855	302.65	2.4	2
-4341.67	2315.09	8537	456.81	0.7	1
-4341.67	2317.34	17855	469.13	0.93	2

Boundary Condition Check

MP SW 01 The name of the stream is Las Vegas Wash,Upper
(Known WS = 2315.09) is specified as the downstream boundary
for profile 100-yr FIS Flow

MP SW 01 The name of the stream is Las Vegas Wash,Upper
(Known WS = 2317.34) is specified as the downstream boundary
for profile 500-yr FIS Flow

Discharge Check

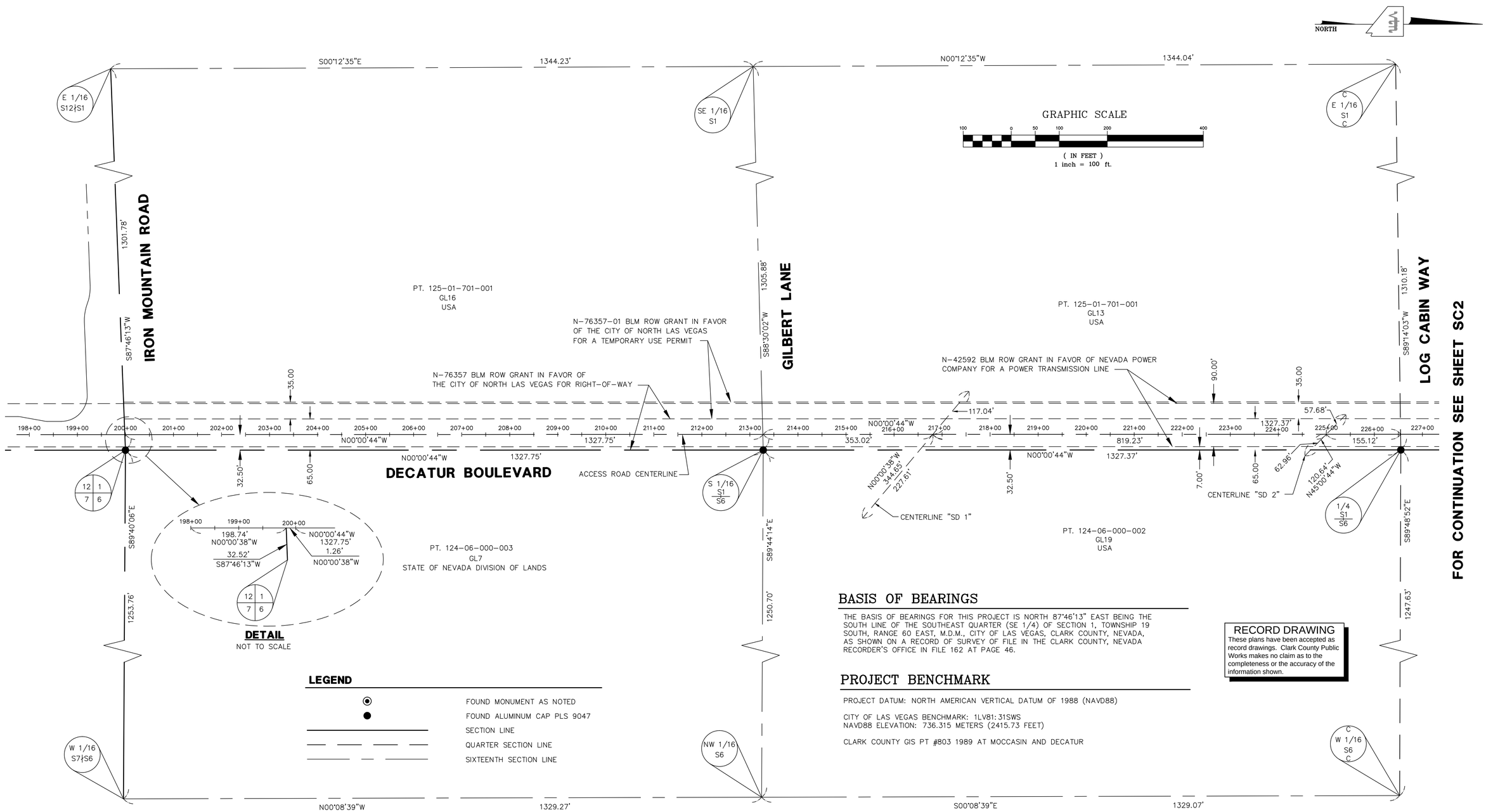
Water Surface Elevation Check

Topwidth Check

---END---

Appendix D
Reference Material

CLARK COUNTY SHOOTING PARK-DECATUR BOULEVARD ACCESS ROAD AS-BUILTS



LEGEND

- FOUND MONUMENT AS NOTED
- FOUND ALUMINUM CAP PLS 9047
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE

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

RECORD DRAWING
These plans have been accepted as record drawings. Clark County Public Works makes no claim as to the completeness or the accuracy of the information shown.

CLARK COUNTY SHOOTING PARK - DECATUR BOULEVARD ACCESS ROAD FROM IRON MOUNTAIN ROAD TO MOCCASIN ROAD

G:\6722\6722CTRL.DWG(BR-SC1)

REV No	DATE	DESCRIPTION	APPROVED
	5/25/10	AS BUILT DRAWING	RSM

CLARK COUNTY SHOOTING PARK - DECATUR BOULEVARD ACCESS ROAD

IRON MOUNTAIN ROAD TO MOCCASIN ROAD

HORIZONTAL CONTROL PLAN-1

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

JASON C. FACKRELL
EXP. 6-30-09
PROFESSIONAL LAND SURVEYOR - STATE OF NEVADA
No. 17893

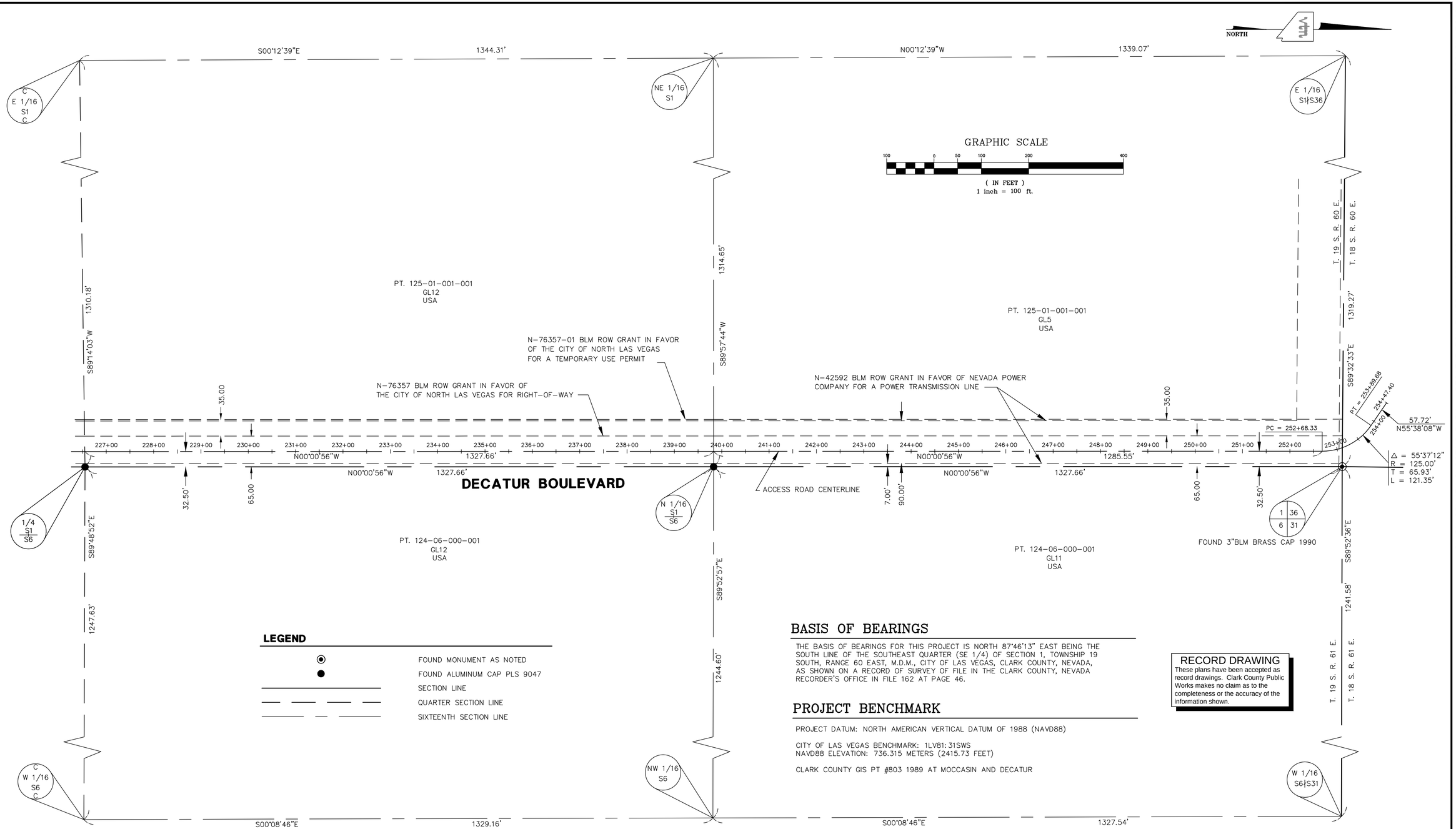
VTN nevada
CONSULTING ENGINEERS
PLANNERS
LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PHONE (702) 873-7500 FAX (702) 362-2597

DESIGNED BY:	
DRAWN BY:	JCF
CHECKED BY:	MSC
DATE:	1/21/08
SCALE	
HORIZ:	1" = 100'
VERT:	N/A
FIELD BOOK	NONE
PROJECT #	T05CC23

SHEET No
SC1
3 OF 29
L-1820

FOR CONTINUATION SEE SHEET SC1

CLARK COUNTY SHOOTING PARK – DECATUR BOULEVARD ACCESS ROAD FROM IRON MOUNTAIN ROAD TO MOCCASIN ROAD



LEGEND

- FOUND MONUMENT AS NOTED
- FOUND ALUMINUM CAP PLS 9047
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE

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

RECORD DRAWING
These plans have been accepted as record drawings. Clark County Public Works makes no claim as to the completeness or the accuracy of the information shown.

G:\6722\6722CTRL.DWG(BR-SC2)

REV No	DATE	DESCRIPTION	APPROVED
	5/25/10	AS BUILT DRAWING	RSM

CLARK COUNTY SHOOTING PARK - DECATUR BOULEVARD ACCESS ROAD

IRON MOUNTAIN ROAD TO MOCCASIN ROAD

HORIZONTAL CONTROL PLAN-2

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

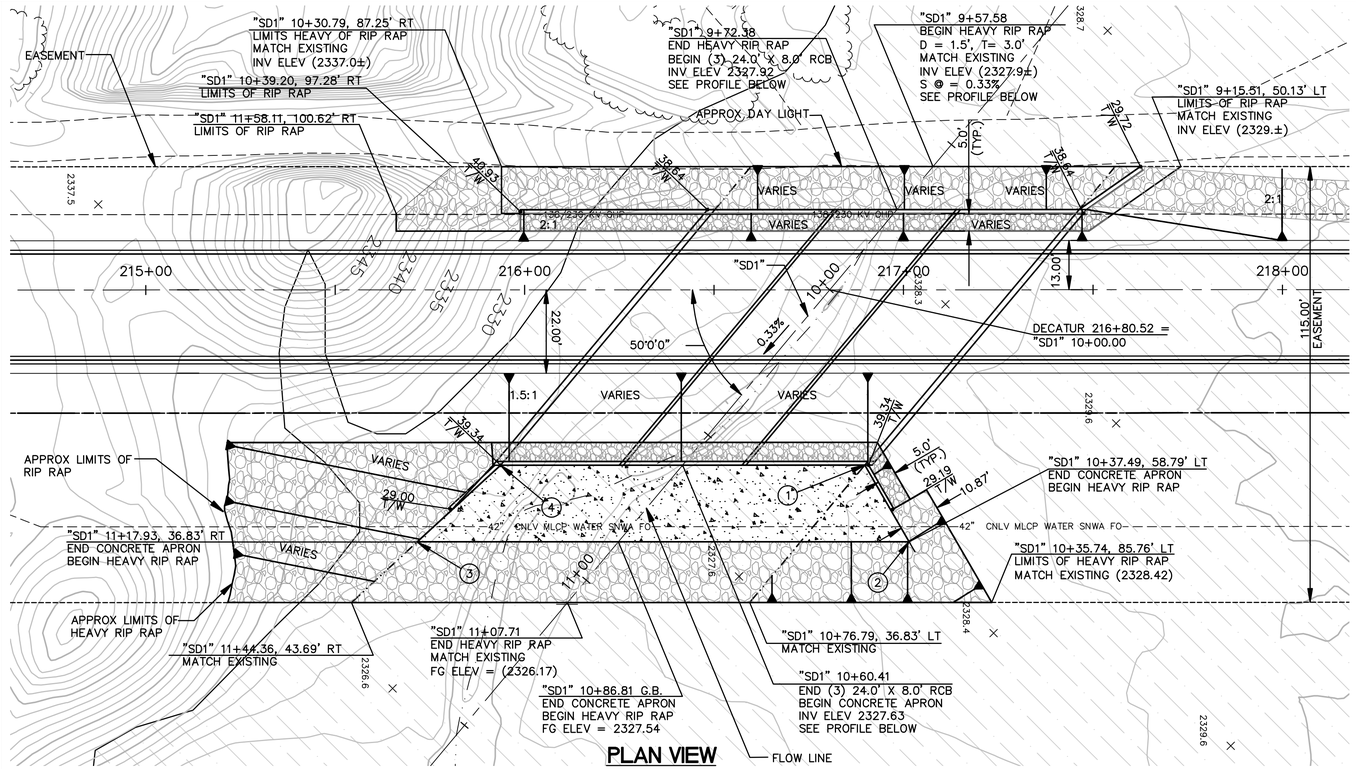
PROFESSIONAL LAND SURVEYOR - STATE OF NEVADA
JASON C. FACKRELL
EXP. 6-30-09
No. 17833

DESIGNED BY:	
DRAWN BY:	JCF
CHECKED BY:	MSC
DATE:	1/21/08

vtn nevada
CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PHONE (702) 873-7500 FAX (702) 362-2597

SCALE	
HORIZ:	1" = 100'
VERT:	N/A
FIELD BOOK	NONE
PROJECT #	T05CC23

SHEET No
SC2
4 OF 29
L-1820



PLAN VIEW

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

NORTH

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.
(VERIFY SCALE – PLANS MAY HAVE BEEN REDUCED)

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

BASIS OF BEARINGS

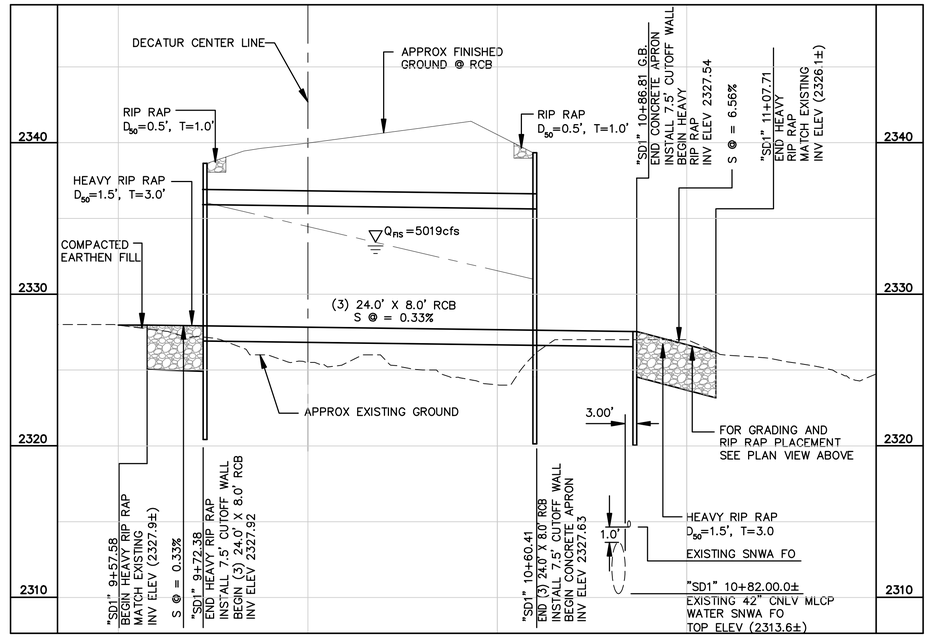
THE BASIS OF BEARINGS FOR THIS PROJECT IS NORTH 87°46'13" EAST BEING THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 60 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, AS SHOWN ON A RECORD OF SURVEY OF FILE IN THE CLARK COUNTY, NEVADA RECORDER'S OFFICE IN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

PROJECT BENCHMARK

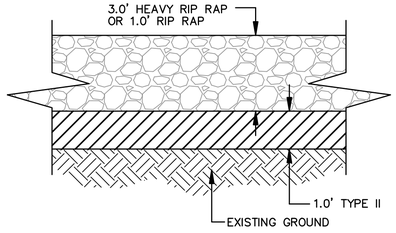
PROJECT DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

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



PROFILE VIEW



RIP RAP DETAIL

SNWA CONSTRUCTION NOTES:

CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADES AT CONTRACTORS EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AT THE CONTRACTORS EXPENSE. CONTRACTOR TO **NOTIFY SOUTHERN NEVADA WATER AUTHORITY, DEVELOPMENT PLAN REVIEW**, AT (702) 862–3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

SOUTHERN NEVADA WATER AUTHORITY DATE

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

RECORD DRAWING
These plans have been accepted as record drawings. Clark County Public Works makes no claim as to the completeness or the accuracy of the information shown.

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	6/14/10	AS BUILT DRAWING	TMM

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:	1-09-08

VTN nevada — CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146–5148
PHONE (702) 873–7500 FAX (702) 362–2597

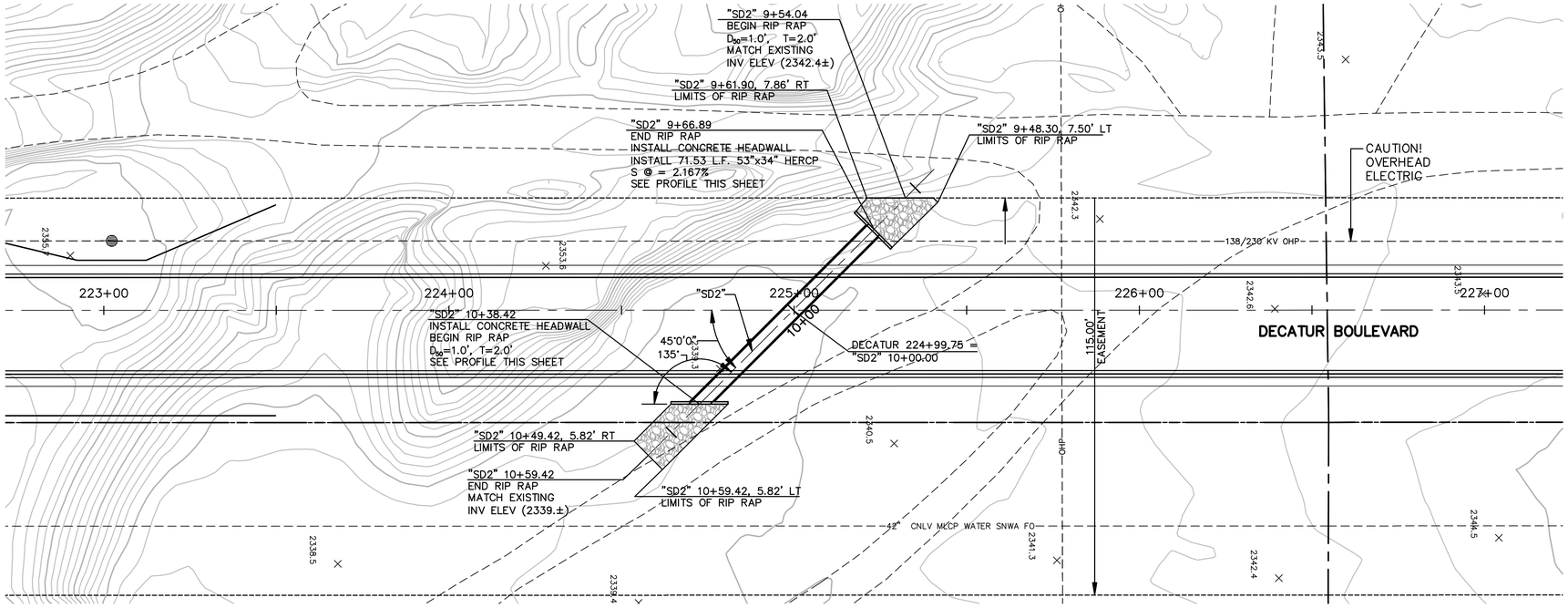
SCALE	
HORIZ:	1" = 20'
VERT:	1" = 5'
FIELD BOOK	NONE
SS	

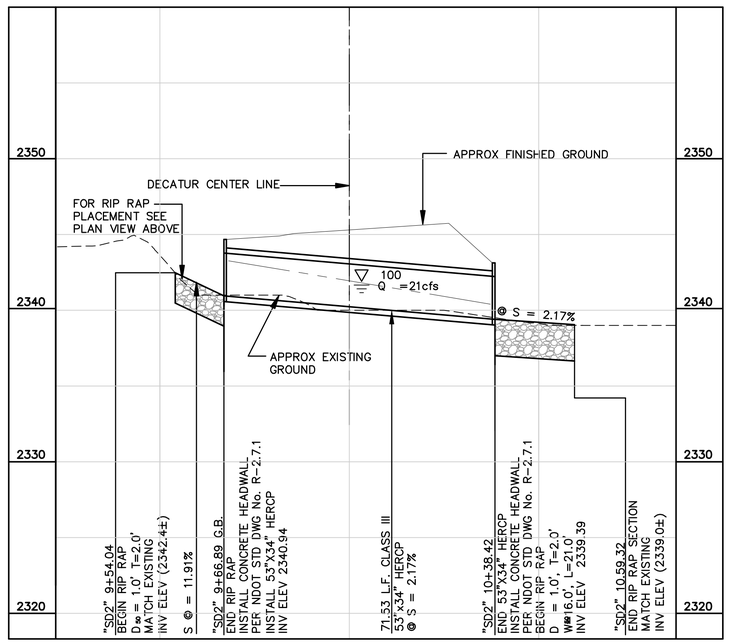
SHEET No **SD-1**

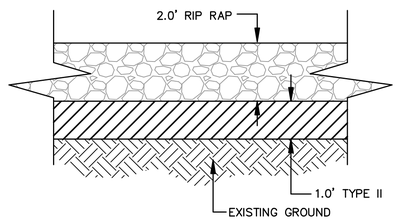
16 of 29

L-1826

CLARK COUNTY SHOOTING PARK-DECATUR BOULEVARD ACCESS ROAD







RIP RAP DETAIL



GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.
(VERIFY SCALE – PLANS MAY HAVE BEEN REDUCED)

LEGEND

RIP RAP SECTION

SNWA CONSTRUCTION NOTES:

CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADES AT CONTRACTORS EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AT THE CONTRACTORS EXPENSE. CONTRACTOR TO **NOTIFY SOUTHERN NEVADA WATER AUTHORITY, DEVELOPMENT PLAN REVIEW**, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

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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

RECORD DRAWING
These plans have been accepted as record drawings. Clark County Public Works makes no claim as to the completeness or the accuracy of the information shown.

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	6/14/10	AS BUILT DRAWING	TMM

CLARK COUNTY SHOOTING PARK-DECATUR BOULEVARD ACCESS ROAD

IRON MOUNTAIN ROAD TO MOCCASIN ROAD
STORM DRAIN PLAN AND PROFILE

CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

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

VTN nevada
CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PHONE (702) 873-7550 FAX (702) 362-2597

DESIGNED BY:	DAB
DRAWN BY:	BAH
CHECKED BY:	DB
DATE:	1-9-08

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

SHEET No
SD-2
17 of 29
L-1826

CLARK COUNTY SHOOTING PARK-DECATUR BOULEVARD ACCESS ROAD

Appendix E
Data CD

2727 South Rainbow Boulevard
Las Vegas, Nevada 89146-5148
702.873.7550 • Fax 702.362.2597
www.vtnnv.com

11-09-0799P

RFCD

2011 MAY 19 PM 2:39

May 2011

1st Addendum to the Request for Letter of Map Revision (LOMR)

Decatur Boulevard Access Road

from Iron Mountain Road to Moccasin Road

LOMR Case №: 11-09-0799P
CLOMR Case №: 07-09-1939R – Approved 6/23/08

Prepared for:

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS

500 S. Grand Central Parkway, Ste. 2001
Las Vegas, NV 89155-4000

PROFESSIONAL ENGINEER STATE OF NEVADA
MICHAEL V. WARNICK
Exp. 6-30-12
CIVIL
No. 20023

5-19-11

Prepared by:

VTN NEVADA

2727 S. Rainbow Boulevard
Las Vegas, NV 89146-5148

(702) 247-4020

PROVIDING QUALITY PROFESSIONAL
SERVICES SINCE 1960

May 19, 2011
File: 6722-LOMR

RFCD
2011 MAY 19 PM 2:40

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

LOMC Clearinghouse
7390 Coca Cola Drive, Suite 204
Hanover, MD 21076

Reference: Case No.: 11-09-0799P (Decatur Boulevard Access Road LOMR)
Community: Cities of Las Vegas and North Las Vegas
Community Nos.: 325276 and 320007

Dear Mr. Qayum:

The enclosed addendum #1 is being provided in response to the comment letter dated February 22, 2011 for the Decatur Boulevard Access Road LOMR; Case No.: 11-09-0799P. The comments that you provided for the specified project are addressed within the following response summary:

RESPONSE TO COMMENTS

Comment 1: The existing condition HEC-RAS hydraulic model location for the discharge is at River Station -1100, 100-year flow rate of 8,537 cfs and 500-year flow rate of 17,855 cfs. The proposed condition HEC-RAS hydraulic model location for the discharge is at River Stations -1100, 100-year flow rate of 5,019 cfs and 500-year flow rate of 17,855 cfs, and -2406.83, 100-year flow rate of 8,537 cfs and 500-year flow rate of 17,855 cfs. As explained in the LOMR the proximity of Decatur Boulevard to the Upper Las Vegas Wash Detention Basin led to the analysis of the flow rate for the detention basin outflow, 5,019 cfs, to be used for the post project model upstream of the RCBC facility. The flow was added downstream of the facility to model the wash and determine the tie-in location. These flow rates

Corporate Office • 2727 South Rainbow Blvd, Las Vegas, NV 89146-5148 • Office 702.873.7550 • fax 702.362.2597 • www.vtnnv.com
consulting engineers • planners • surveyors

and discharge locations are in agreement with the submitted hydraulic models in the approved CLOMR. The hydraulic models are provided on the data CD in the Appendix.

Comment 2: The requested information has been added to Figure 5.3 "Decatur Boulevard Access Road LOMR Post-Project Condition Work Map" and provided in the Appendix. An updated electronic map has also been provided on the data CD in the Appendix.

If you have any questions or require additional information, do not hesitate to contact me.

Sincerely,

Michael Warnick, P.E.
VTN Nevada
2727 South Rainbow Boulevard
Las Vegas, NV 89146
(702) 253-2463

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

February 22, 2011

2011 MAY 19 PM 2:40 RFCD

Mr. Michael Warnick, P.E.
VTN Nevada
2727 South Rainbow Boulevard
Las Vegas, NV 89146

IN REPLY REFER TO:
Case No.: 11-09-0799P
Communities: Cities of Las Vegas
and North Las Vegas
Community Nos.: 325276 and 320007

316-AD

Dear Mr. Warnick:

This responds to your request dated November 2010, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Decatur Boulevard Access Road
Flooding Source:	Las Vegas Wash
FIRM Panel(s) Affected:	32003C1754 E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register,* is available on the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact your case reviewer, Mr. James Lindsay, by e-mail at JGLindsay@mbakercorp.com or by telephone at 720-514-1122, or the Revisions Coordinator for your request, Mrs. Jaclyn Bloor, CFM, at jbloor@mbakercorp.com or at (720) 479-3160.

Sincerely,

Syed Qayum

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

Enclosures

cc: Mr. Randy Fultz, P.E.
Assistant City Engineer
City of Las Vegas

Ms. Jennifer Doody, P.E., CFM
Manager of Development and Flood Control Division
City of North Las Vegas

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

Summary of Additional Data Required to Support a
Letter of Map Revision (LOMR)

Case No.: 11-09-0799P

Requester: Mr. Michael Warnick, P.E.

Communities: Cities of Las Vegas
and North Las Vegas

Community Nos.: 325276 and 320007

The issues listed below must be addressed before we can continue the review of your request.

1. The submitted existing and proposed conditions HEC-RAS hydraulic models have different locations for the discharges than those in the approved CLOMR. Please provide all relevant hydrologic back-up data and calculations used to determine the location of discharges for the base (1-percent-annual-chance) flood found in the submitted existing and proposed HEC-RAS hydraulic model or explain why this is unnecessary.

2. The submitted topographic work map entitled, "Decatur Boulevard Access Road, LOMR Post-Project Condition Work Map," prepared by VTN, dated November 2010, does not provide essential information required to complete our detailed review of this request. Please provide the following information, which was omitted from the submitted topographic work map.

   (a) Referenced Vertical Datum
   (b) Flow line used in the hydraulic model

Please send the required data and/or fee directly to us at the address shown at the bottom of this page. For identification purposes, please include the case number referenced above on all correspondence.

Appendix A

DECATUR BOULEVARD ACCESS ROAD LOMR
POST-PROJECT CONDITION WORK MAP
- FIGURE 5.3

GRAPHIC SCALE

80 0 40 80 160

(IN FEET)

1 inch = 80 ft.

(VERIFY SCALE – PLANS MAY HAVE BEEN REDUCED)

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

NORTH

UPPER LAS VEGAS WASH DETENTION BASIN SPILLWAY

UPPER LAS VEGAS WASH

DECATUR BLVD. ACCESS ROAD

-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+00 -30+00 -30+05.67 -31+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 -27+74.86 -24+00 -25+00 -26+00 -27+00 -28+00 -29+00

LEGEND

-28+00 HEC–RAS CROSS SECTION CENTERLINE

EXISTING FEMA FLOOD ZONE AE

EXISTING FEMA FLOOD ZONE X

POST–PROJECT 100–YR FLOOD ZONE

POST–PROJECT 500–YR FLOOD ZONE

-28+00 POST–PROJECT HEC–RAS STATION

PROFESSIONAL ENGINEER STATE OF NEVADA
MICHAEL V. WARNICK
Exp. 6-30-12
CIVIL
NO. 20023
11-21-5

vtn

FIGURE 5.3
DECATUR BLVD. ACCESS ROAD LOMR POST-PROJECT CONDITION WORK MAP

MAY 2011

11-09-0779P

RFCD

2011 AUG 15 PM 2:28

August 2011

2nd Addendum to the Request for Letter of Map Revision (LOMR)

Decatur Boulevard Access Road

from Iron Mountain Road to Moccasin Road

LOMR Case №: 11-09-0799P
CLOMR Case №: 07-09-1939R – Approved 6/23/08

Prepared for:

CLARK COUNTY DEPARTMENT OF PUBLIC WORKS

500 S. Grand Central Parkway, Ste. 2001
Las Vegas, NV 89155-4000

PROFESSIONAL ENGINEER-STATE OF NEVADA
MICHAEL V. WARNICK
Exp. 6-30-12
CIVIL
No. 20023
8-15-11

Prepared by:

VTN NEVADA

2727 S. Rainbow Boulevard
Las Vegas, NV 89146-5148

(702) 247-4020

PROVIDING QUALITY PROFESSIONAL
SERVICES SINCE 1960

RFCD

2011 AUG 15 PM 2:26

August 15, 2011
File: 6722-LOMR

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

LOMC Clearinghouse
7390 Coca Cola Drive, Suite 204
Hanover, MD 21076

Reference: Case No.: 11-09-0799P (Decatur Boulevard Access Road LOMR)
Community: Cities of Las Vegas and North Las Vegas
Community Nos.: 325276 and 320007

Dear Mr. Qayum:

The enclosed addendum #2 is being provided in response to the comment letter dated May 27, 2011 for the Decatur Boulevard Access Road LOMR; Case No.: 11-09-0799P. The required documentation of individual legal notices sent to Bureau of Land Management, APN 124-06-000-002, and State of Nevada Division of Lands, APN 124-06-000-003, have been included, as well as the copy of the return receipts.

If you have any questions or require additional information, do not hesitate to contact me.

Sincerely,

Michael Warnick, P.E.
VTN Nevada
2727 South Rainbow Boulevard
Las Vegas, NV 89146
(702) 253-2463

Addendum #2: LOMR for Case No.: 11-09-0799P (Decatur Boulevard Access Road)

RFCD
2011 AUG 15 PM 2:26

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

May 27, 2011

Mr. Michael Warnick, P.E.
VTN Nevada
2727 South Rainbow Boulevard
Las Vegas, NV 89146

IN REPLY REFER TO:
Case No.: 11-09-0799P
Communities: Cities of Las Vegas
and North Las Vegas
Community Nos.: 325276 and 320007

316-AD

Dear Mr. Warnick:

This responds to your submittal dated May 19, 2011, concerning a November 2010, request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Decatur Boulevard Access Road
Flooding Source:	Las Vegas Wash
FIRM Panel(s) Affected:	32003C1754 E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register,* is available on the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact your case reviewer, Mr. James Lindsay, by e-mail at JGLindsay@mbakercorp.com or by telephone at 720-514-1122, or the Revisions Coordinator for your request, Mrs. Jaclyn Bloor, CFM, at jbloor@mbakercorp.com or at (720) 479-3160.

Sincerely,

Syed Qayum

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

Enclosures

cc: Mr. Randy Fultz, P.E.
Assistant City Engineer
City of Las Vegas

Ms. Jennifer Doody, P.E., CFM
Manager of Development and Flood Control Division
City of North Las Vegas

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

Summary of Additional Data Required to Support a
Letter of Map Revision (LOMR)

Case No.: 11-09-0799P

Requester: Mr. Michael Warnick, P.E.

Communities: Cities of Las Vegas
and North Las Vegas

Community Nos.: 325276 and 320007

The issues listed below must be addressed before we can continue the review of your request.

Please submit documentation of individual legal notices that were sent to property owners who are adversely impacted by any increases in and/or shifting of the base (1-percent-annual-chance) floodplain and/or increase of the base flood elevations (BFE) of Las Vegas Wash.

Please send the required data and/or fee directly to us at the address shown at the bottom of this page. For identification purposes, please include the case number referenced above on all correspondence.

Mayor
Shari L. Buck

Council Members
Robert L. Eliason
Anita G. Wood
Pamela A. Goynes-Brown
Wade W. Wagner

CITY OF
NORTH LAS VEGAS

Your Community of Choice

Acting City Manager
Maryann Ustick

PUBLIC WORKS – REAL PROPERTY SERVICES
2266 Civic Center Drive, Suite 225 • North Las Vegas, Nevada 89030-6307
Telephone: (702) 633-1200 • Fax: (702) 649-4696 • TDD: (800) 326-6868
www.cityofnorthlasvegas.com

August 3, 2011

91 7108 2133 3931 8681 3643

Shonna Dooman
Assistant Field Manager
Non-Renewable Resources
Bureau of Land Management, Las Vegas Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130-2130

Subject: DECATUR BOULEVARD ACCESS ROAD LETTER OF MAP REVISION

Dear Ms. Dooman:

The City of North Las Vegas has worked with Clark County to build an access roadway for the Clark County Shooting Park that crosses the Upper Las Vegas Wash at Decatur Boulevard (see attached vicinity map). The access road is elevated as it crosses the wash, and it includes a drainage culvert to pass the rainfall runoff under the roadway. The elevated roadway and the culvert have caused slight changes in the base flood elevations and flood zone widths that traverse your property (APN 124-06-000-002). An exhibit showing the existing and future flood zone width is attached to this letter for your information.

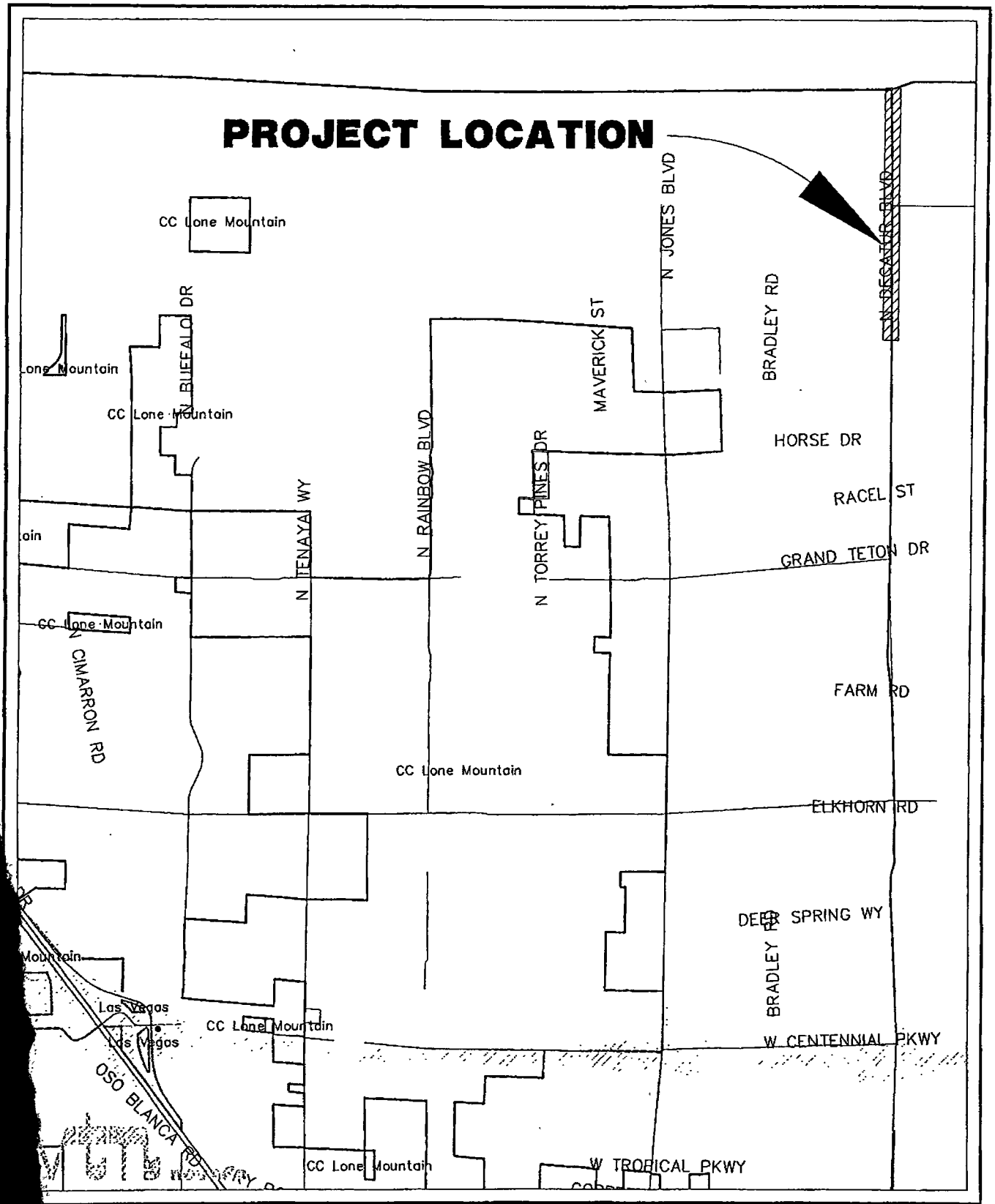
The County is processing a Letter of Map Revision through FEMA to update the flood zone mapping. Legal notification to all property owners affected by the proposed action is required. This letter shall be considered your legal notification of the proposed changes.

If you have any questions or require additional information, do not hesitate to contact me.

Sincerely,

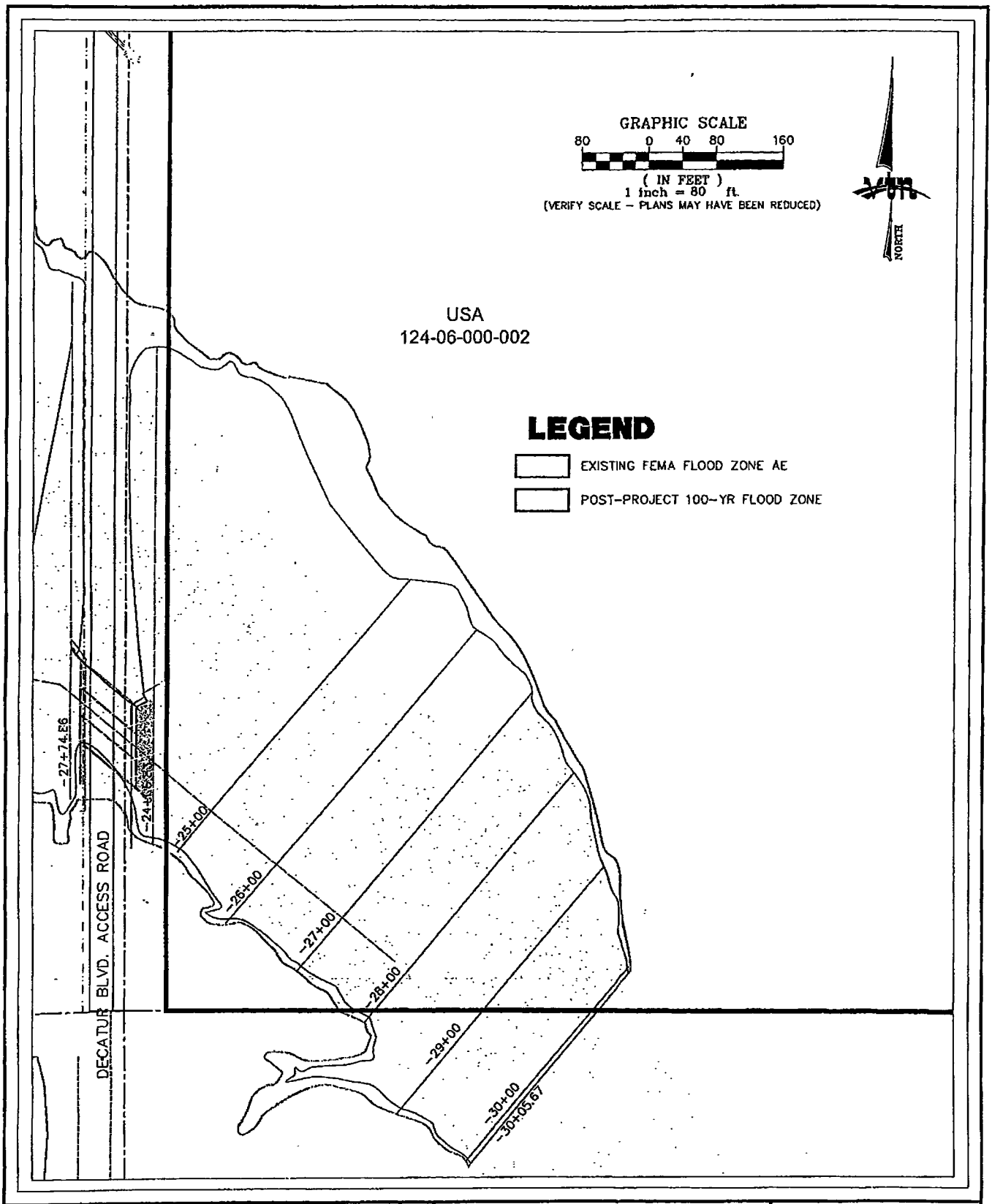
Lorena Candelario

Lorena Candelario, SR/WA
Real Property Coordinator



VICINITY MAP
DECATUR BOULEVARD ACCESS ROAD

FIGURE 1



DECATUR BOULEVARD ACCESS ROAD POST-PROJECT FLOOD ZONE

FIGURE 2

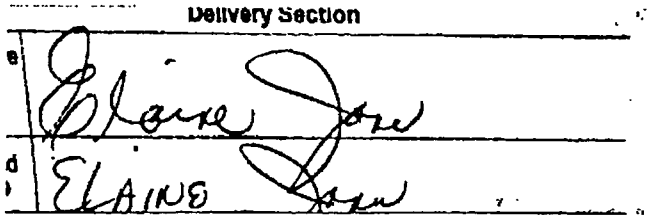
UNITED STATES POSTAL SERVICE.

Date: 08/09/2011

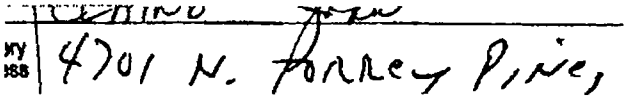
PATTI DWYER:

The following is in response to your 08/09/2011 request for delivery information on your Certified Mail(TM) item number 7108 2133 3931 8681 3643. The delivery record shows that this item was delivered on 08/05/2011 at 10:21 AM in LAS VEGAS, NV 89130. The scanned image of the recipient information is provided below.

Signature of Recipient:



Address of Recipient:



Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,

United States Postal Service

Mayor
Shari L. Buck

Council Members
Robert L. Eliason
Anita G. Wood
Pamela A. Goynes-Brown
Wade W. Wagner

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NORTH LAS VEGAS

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August 3, 2011

91 7108 2133 3931 8681 3636

James R. Lawrence
State Lands Administrator
901 South Stewart Street, Suite 5003
Carson City, NV 89701-5246

Subject: DECATUR BOULEVARD ACCESS ROAD LETTER OF MAP REVISION

Dear Mr. Lawrence:

The City of North Las Vegas has worked with Clark County to build an access roadway for the Clark County Shooting Park that crosses the Upper Las Vegas Wash at Decatur Boulevard (see attached vicinity map). The access road is elevated as it crosses the wash, and it includes a drainage culvert to pass the rainfall runoff under the roadway. The elevated roadway and the culvert have caused slight changes in the base flood elevations and flood zone widths that traverse your property (APN 124-06-000-003). An exhibit showing the existing and future flood zone width is attached to this letter for your information.

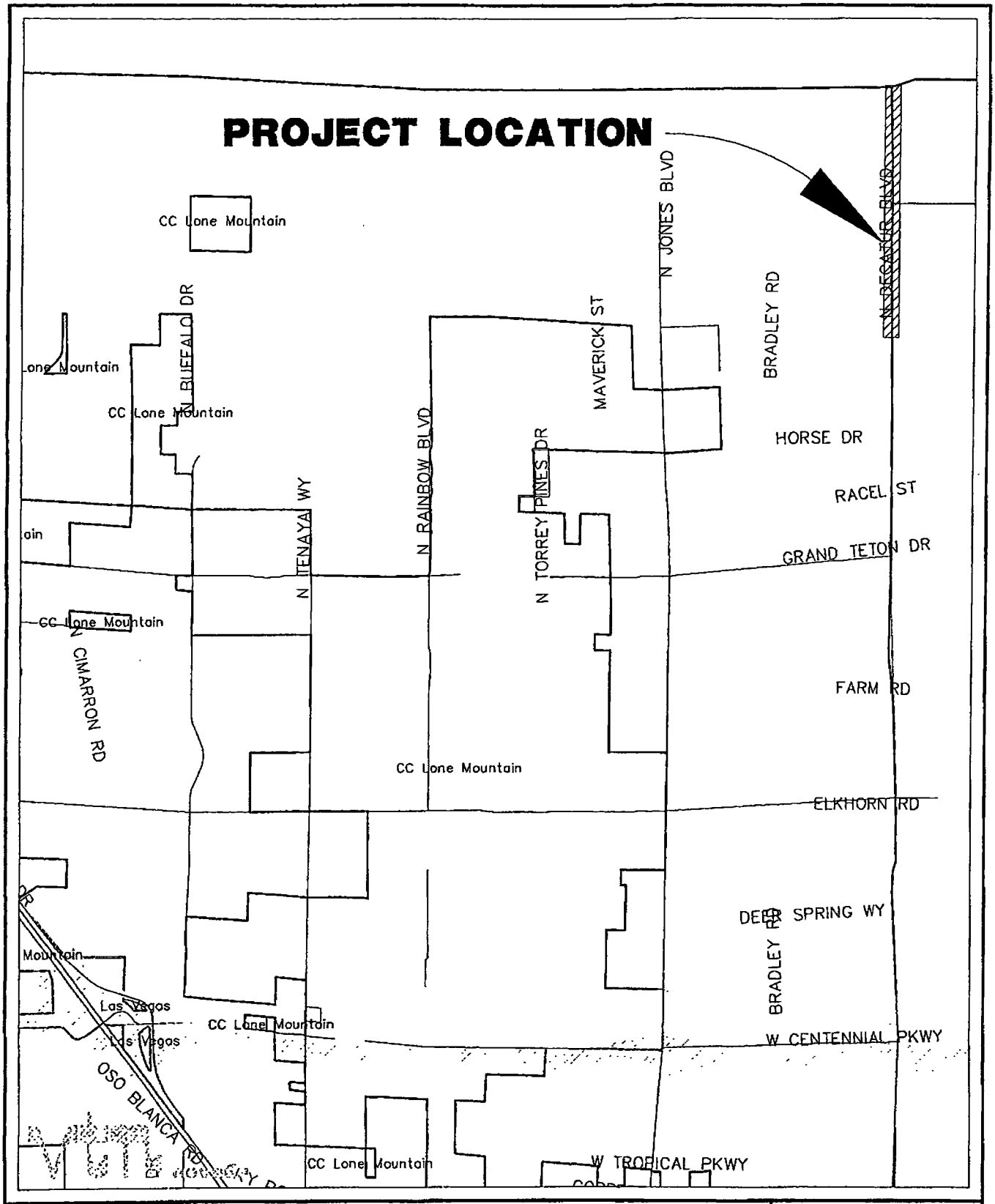
The County is processing a Letter of Map Revision through FEMA to update the flood zone mapping. Legal notification to all property owners affected by the proposed action is required. This letter shall be considered your legal notification of the proposed changes.

If you have any questions or require additional information, do not hesitate to contact me.

Sincerely,

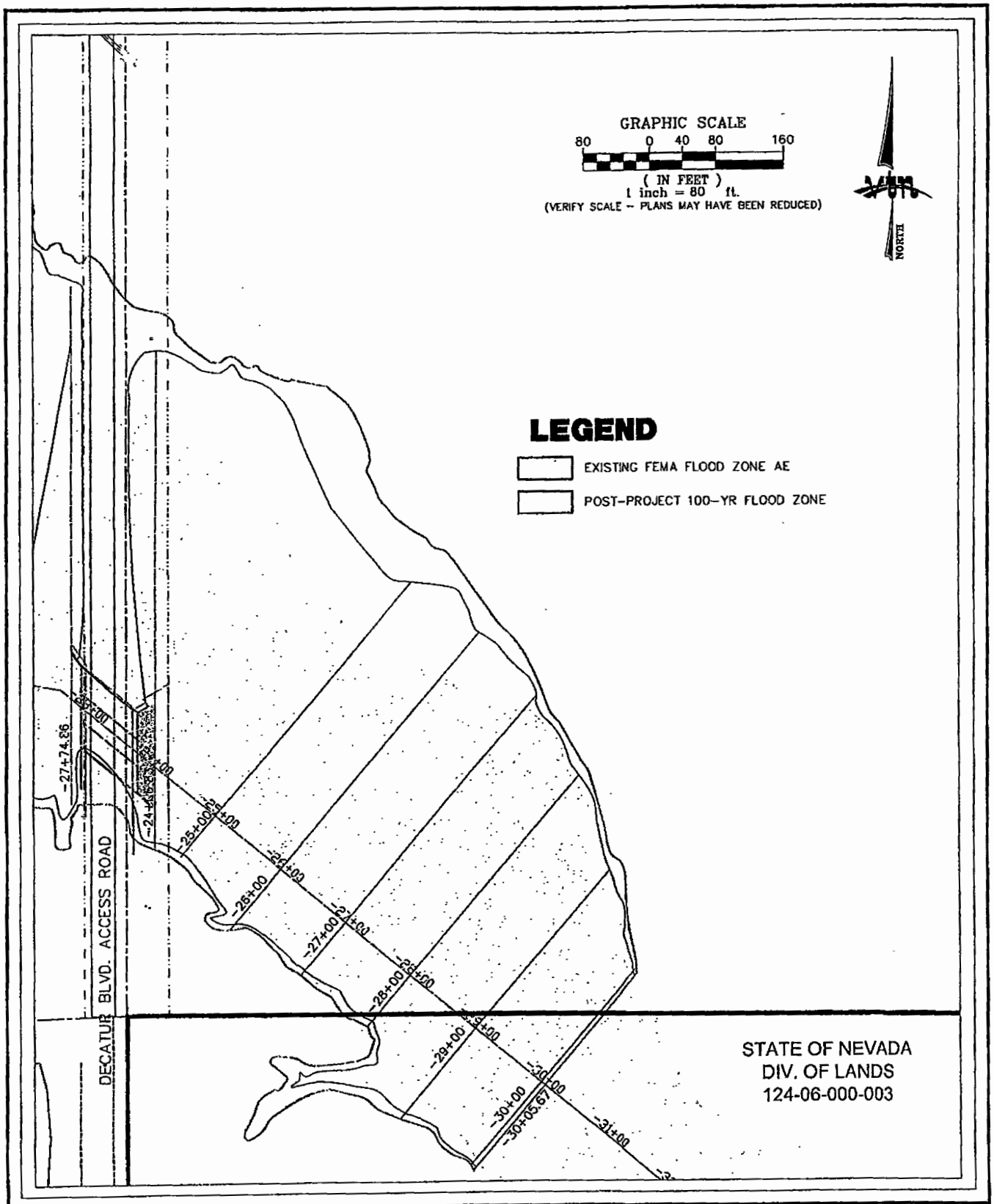
Lorena Candelario

Lorena Candelario, SR/WA
Real Property Coordinator



VICINITY MAP
DECATUR BOULEVARD ACCESS ROAD

FIGURE 1



DECATUR BOULEVARD ACCESS ROAD POST-PROJECT FLOOD ZONE

FIGURE 2

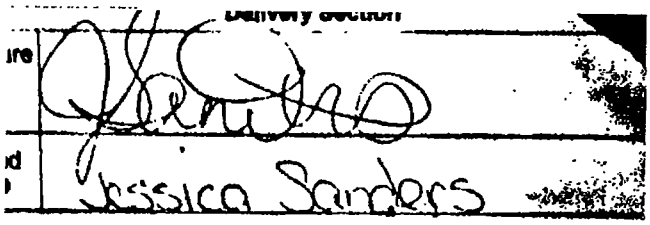
UNITED STATES POSTAL SERVICE

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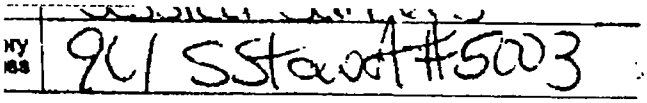
PATTI DWYER:

The following is in response to your 08/09/2011 request for delivery information on your Certified Mail(TM) item number 7108 2133 3931 8681 3636. The delivery record shows that this item was delivered on 08/08/2011 at 11:48 AM in CARSON CITY, NV 89701. The scanned image of the recipient information is provided below.

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Sincerely,

United States Postal Service