

Appendix D – Reference Materials

- *Technical Drainage Study for Area 15 Event Lot*; July 2020. (DS-5288).
- *Central Neighborhood Flood Control Master Plan Study for City of Las Vegas*; March 2005.
- *The Palms Business Centre North Grading Plans*; April 1987 (107V-1470).



**Addendum to the
Technical Drainage Study
for**

Area 15 Event Parking Lot

Date Prepared:
July 2020

Prepared for:
Area 15 Las Vegas, LLC
229 Park Avenue
New York, NY 10171
212.940.6262

Prepared by:
Kimley-Horn and Associates, Inc.
6671 Las Vegas Boulevard South, Suite 320
Las Vegas, NV 89119
702.862.3600

Kimley»Horn

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		September 23, 2020
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:	
	Area 15 Event Parking Lot	
Cross Streets:	NWC of Rancho Drive & Sirius Avenue	
File Number:	F:\Depot\DSMemos\DS5288C.doc	
Parcel Number:	162-08-702-002	
Zoning Action:	SDR-78709 & VAR-78074	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X
COPIES TO:		Kimley-Horn and Associates, Inc.
		Area 15 Las Vegas, LLC
		Bart Anderson, P.E., DevCo
		CCRFC
		NDOT

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal (Paid on 6/1/2020)	6/1/2020	6/18/2020	Not Approved	\$400.00	3866352: \$400
2 nd Submittal (Paid on 7/20/2020)	7/6/2020	7/21/2020	Conditional Approval	\$400.00	3921044: \$400
CCRFC	9/10/2020	9/23/2020	Concurrence Recv'd	N/C	N/C
			TOTAL FEES (LDDRS):	\$800.00	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

- The project proposes to construct facilities and/or increase flows within *Nevada Department of Transportation* (NDOT) right-of-way (the existing channel between *Rancho Road* and I-15). The engineer must contact NDOT for encroachment permit or concurrence for the proposed project.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

END OF REMARKS
ays

T/R/S: T21S/R61E/08
AREA R-08



STEVE SISOLAK
Governor

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

1263 S. Stewart Street
Carson City, Nevada 89712

Kristina L. Swallow, P.E., Director

In Reply Refer to:

June 9, 2021

C019

Rachael R. Dennis, P.E.
Kimley-Horn & Associates
6671 Las Vegas Blvd South #320
Las Vegas, NV 89119

TECHNICAL DRAINAGE STUDY
AREA 15 EVENT PARKING LOT
DRAINAGE STUDY
Clark County

Dear Ms. Dennis:

The Nevada Department of Transportation (NDOT) Hydraulics Section has received and reviewed the following document(s) for the above-referenced project.

Document:	Dated:
Area 15 TDS	05-2020
Area 15 TDS Addendum	07-2020
Area 15 TDS CLV Approval	07-2020
NDOT Drainage Form	07-2020

The drainage design information presented in the reviewed document(s):

X	is acceptable in concept. Final Hydraulic Section approval will be based on review of final design documents submitted with the NDOT Right-Of-Way Occupancy Permit application that must be submitted for this project.
	is acceptable in concept. Final Hydraulic Section approval will be based on review of final design documents submitted with the NDOT Right-Of-Way Occupancy Permit application that must be submitted for this project. The following comments should be addressed with the permit application:
	must be supplemented or modified to satisfy the following comment(s) before preliminary Hydraulic Section approval can be granted:

All submittals regarding this project must be forwarded through (or copied to) the local NDOT District permitting office. All pertinent drainage design documents (including those previously submitted for preliminary review) must be submitted to the

local NDOT District permitting office with the Right-Of-Way Occupancy Permit Application. All plans and reports must be signed and stamped by a Nevada registered civil engineer.

No liability is assumed by the Department in performing this review. Verification and acceptance of all background information, design data and conclusions is the responsibility of the consulting engineer.

DUE TO THE CURRENT HEALTH SITUATION, WE WILL ONLY BE SENDING EMAIL VERSIONS OF TECHNICAL DRAINAGE STUDY APPROVALS/DENIALS. PLEASE CONSIDER THIS LETTER AS FORMAL ACCEPTANCE/DENIAL OF THE TECHNICAL DRAINAGE STUDY. WHEN THE CURRENT HEALTH SITUATION IS RESOLVED, WE WILL CONTINUE SENDING BOTH ELECTRONIC AND HARD COPIES OF CORRESPONDENCE REGARDING TECHNICAL DRAINAGE STUDIES.

Please email me at Renerio@dot.nv.gov should you have any questions.

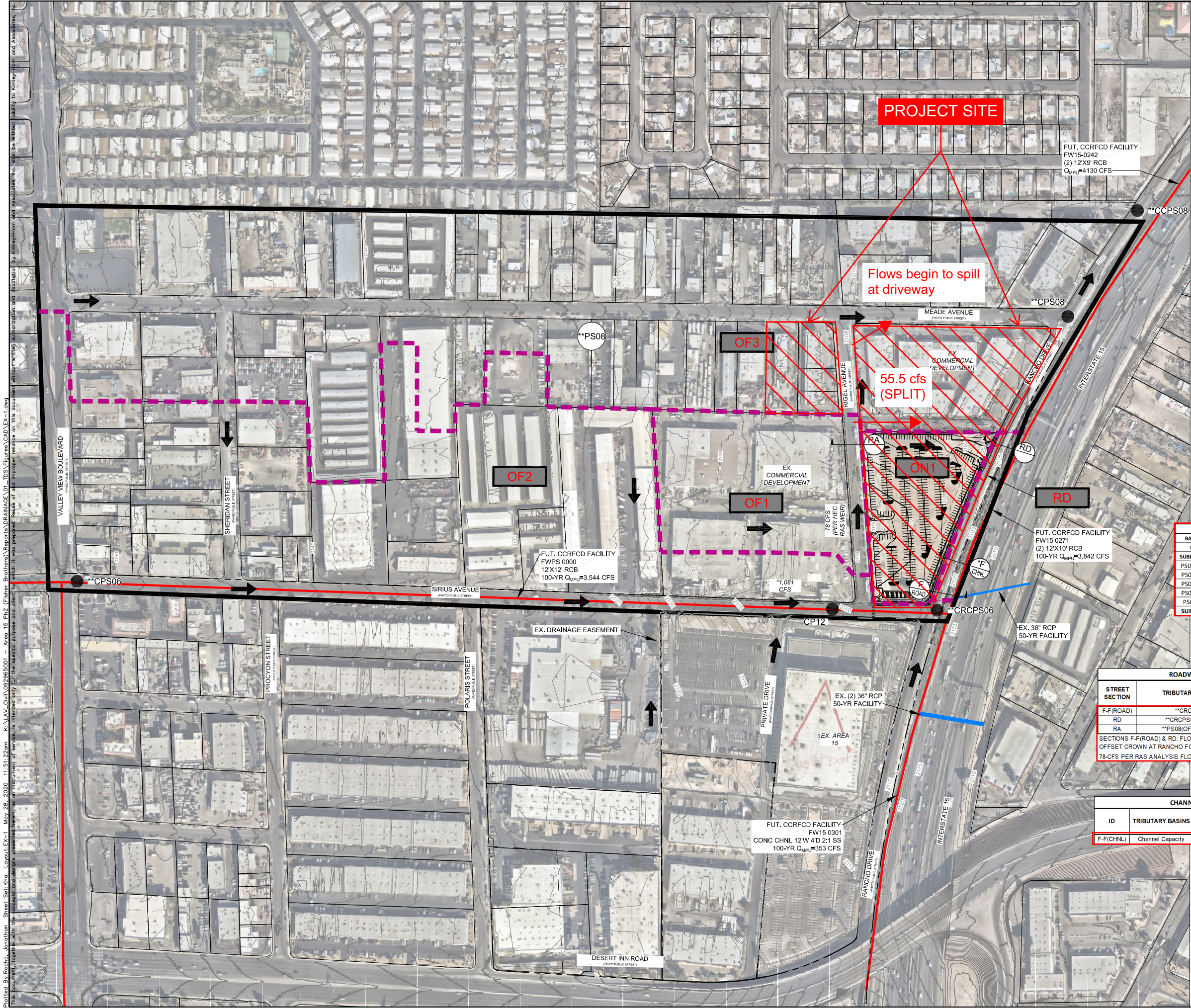
Sincerely,

DocuSigned by:

5B04D634E049436
Raymond Enerio, P.E.
Senior Hydraulic Engineer

cc: Mario Gomez, P.E., District I Engineer
Charles Molisee, District I Permits
Mike Alameda, Headquarters Right-of-Way
Shatese Penter, District I Permits
Linda Olguin, District I Permits
Michael Yates, P.E., District I Assistant District Engineer
Rachael R. Dennis (EMAIL: Rachael.Dennis@kimley-horn.com)

Plotted By: Rocha, Jonathan Sheet Set: KHA - Layout: EX-1 May 28, 2020 11:51:22am K:\AV_Civil\09265001 - Area 15 Ph2 (Eiser, Brothers)\Reports\DRAINAGE\01_IDS\Figures\CAD\EX-1.dwg
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GRAPHIC SCALE IN FEET
0 75 150 300

NORTH

LEGEND

- XXX BASIN ID
- XXXX PRORATED BASIN ID
- BASIN BOUNDARY
- PRORATED BASIN BOUNDARY
- FUTURE CCRFCD REGIONAL FACILITY
- EXITING DRAINAGE FACILITY
- FLOW ARROW
- CPX CONCENTRATION POINT
- SECTION ID

* REFERENCED FROM AREA 15 STUDY (DS-4921)
** REFERENCED FROM CITY OF LAS VEGAS CENTRAL NEIGHBORHOOD STUDY

NOTE:
1,081-CFS REFERENCED FOR FLOWRATE AT INTERSECTION OF PRIVATE DRIVEWAY & SIRIUS AVENUE. REFER TO APPENDIX D FOR REFERENCE Q.

Existing / Proposed Condition Flow Summary				
Basin ID / Comb Pt	Area / Tributary Area (ac)	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)	
**CPS06	N/A	1045	405	
*CP05	N/A	31	18	
*EX10	N/A	7	4	
CP12	N/A	1158	459	
Q _i = 1081-CFS + **PS08(OF2)	N/A	2538	873	
**CRCP506	N/A	235	100	
**PS08	N/A	2582	917	
**CCPS08	N/A	3762	1226	

Prorated Flow Summary					
BASIN ID	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)	AREA (ac)	Q ₁₀₀ (cfs/ac)	Q ₁₀ (cfs/ac)
PS08	235	100	114.6	2.05	0.87
SUBBASIN ID	Q ₁₀₀ (cfs)	Q ₁₀ (cfs)	AREA (ac)	Q ₁₀₀ (cfs/ac)	Q ₁₀ (cfs/ac)
PS08(ON1)	9	4	4.4	2.05	0.87
PS08(OF1)	16	7	8.0	2.05	0.87
PS08(OF2)	77	33	37.5	2.05	0.87
PS08(OF3)	130	55	63.5	2.05	0.87
PS08(RD)	2	1	1.1	2.05	0.87
SUBTOTAL	235	100	114.6	-	-

ROADWAY HYDRAULIC SECTIONS SUMMARY TABLE						
STREET SECTION	TRIBUTARY BASINS	CHANNEL SLOPE %	Q ₁₀₀ (cfs)	FLOW DEPTH (ft)	VELOCITY (ft/s)	D ^{1/2} /s
F-F(ROAD)	**CRCP506	0.70	2,538	3.58	10.46	37.45
RD	**CRCP506 + ON1	0.60	2,547	7.25	9.26	67.14
RA	**PS08(OF1) + 78-cfs	0.30	100	0.93	3.22	2.99

SECTIONS F-F(ROAD) & RD: FLOW DEPTH TAKEN FROM CHANNEL FLOWLINE
OFFSET CROWN AT RANCHO FOR SECTION F-F
78-CFS PER RAS ANALYSIS FLOWS NORTH IN RIGEL AVENUE

CHANNEL HYDRAULIC SECTIONS SUMMARY TABLE						
ID	TRIBUTARY BASINS	CHANNEL SLOPE %	Q ₁₀₀ (cfs)	FLOW DEPTH (ft)	VELOCITY (ft/s)	D ^{1/2} /s
F-F(CHNL)	Channel Capacity	0.70	270	3.00	6.43	19.29

Kimley»Horn

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PHONE: 702-862-3600
WWW.KIMLEY-HORN.COM

KHA PROJECT
09265001

DATE
MAY 2020

SCALE
AS SHOWN

DESIGNED BY
JR

DRAWN BY
JR

CHECKED BY
RJD

EXISTING/PROPOSED
CONDITION
DRAINAGE MAP

AREA 15
EVENT PARKING LOT
PREPARED FOR
AREA 15 LAS VEGAS, LLC.
CITY OF LAS VEGAS
NEVADA

FIGURE
PRO-1

No.

REVISIONS

DATE

BY

Plotted By:Recho, Jonathan_Sheet Set:Kha_Layout:EX-1 June 26, 2020 11:33:50am. K:\NAV Civil\092965001 - Area 15 Ph2 (Fiber Brothers)\Reports\Drainage\Event Parking Lot\02_ADD\Figures\CAD\RAS-1.dwg
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RAS Standard Table 1												
Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)
SIRIUS	1916	100-yr	ExCond-EL	1,158	2120.70	2122.54	2122.54	2122.93	0.008613	5.04	229.67	297.48
SIRIUS	1916	100-yr	PropCond-EL	1,158	2120.70	2122.55	2122.55	2122.93	0.008145	4.96	233.59	297.67
SIRIUS	1750	100-yr	ExCond-EL	1,158	2116.50	2118.22	2118.93	2120.80	0.016139	14.29	94.55	97.00
SIRIUS	1750	100-yr	PropCond-EL	1,158	2116.50	2118.23	2118.93	2120.74	0.015487	14.09	95.80	97.00
SIRIUS	1533	100-yr	ExCond-EL	1,158	2112.00	2113.72	2114.66	2117.09	0.017332	15.04	79.52	83.09
SIRIUS	1533	100-yr	PropCond-EL	1,158	2112.00	2113.71	2114.66	2117.09	0.017377	15.05	79.46	83.06
SIRIUS	1245		Lat Struct									
SIRIUS	1215	100-yr	ExCond-EL	1,097	2109.25	2110.67	2111.04	2111.90	0.011877	10.31	129.16	184.50
SIRIUS	1215	100-yr	PropCond-EL	1,096	2109.25	2110.68	2111.04	2111.89	0.011742	10.27	129.87	184.50
SIRIUS	1170	100-yr	ExCond-EL									
SIRIUS	1170	100-yr	PropCond-EL	1,081	2108.93	2109.81	2110.26	2111.25	0.015895	9.87	117.28	187.90
SIRIUS	1036	100-yr	ExCond-EL	1,083	2108.20	2110.53	2110.53	2111.59	0.002776	8.42	132.48	62.20
SIRIUS	1036	100-yr	PropCond-EL	1,081	2108.20	2110.52	2110.52	2111.58	0.002806	8.44	131.93	62.20

Revised
PropCond
XS 1170 and
XS 1036

PROJECT SITE

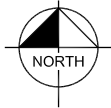
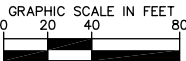
LATERAL WEIR STRUCTURE
STA 1245
60-FT LENGTH

RIGEL AVENUE
(PAVED PUBLIC STREET)

SIRIUS AVENUE
(PAVED PUBLIC STREET)

PRIVATE DRIVE
(PAVED PRIVATE STREET)

RANCHO DRIVE
(PAVED PUBLIC STREET)



LEGEND

- 1036 HEC-RAS CROSS SECTION & ID
- 2-FT CONTOURS
- 1-FT CONTOURS
- PROPOSED CONTOURS
- EXISTING 100-YR INUNDATION LIMITS
- PROPOSED 100-YR INUNDATION LIMITS

AREA 15
EVENT PARKING LOT
PREPARED FOR
AREA 15 LAS VEGAS, LLC.
CITY OF LAS VEGAS

FIGURE
RAS-1

SIRIUS AVENUE
HEC-RAS EXHIBIT

KHA PROJECT
092965001
DATE
JUNE 2020
SCALE
AS SHOWN
DESIGNED BY
DRAWN BY
CHECKED BY

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6671 LAS VEGAS BOULEVARD S., SUITE 320, LAS VEGAS, NV 89119
PHONE: 702-862-3600
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REVISIONS

No.

DATE

BY

Worksheet for RA - Rigel 100-Yr

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.30 %
Discharge	100.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	1.60
0+00.00	0.60
0+05.00	0.50
0+05.00	0.50
0+05.50	0.48
0+05.50	0.00
0+07.00	0.13
0+07.00	0.17
0+30.00	0.63
0+30.00	0.63
0+53.00	0.17
0+53.00	0.13
0+54.50	0.00
0+54.50	0.48
0+55.00	0.50
0+55.00	0.50
0+55.00	0.50
0+60.00	0.60
0+60.00	1.60

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 1.60)	(0+60.00, 1.60)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.93 ft
Elevation Range	0.00 to 1.60 ft

Worksheet for RA - Rigel 100-Yr

Results

Flow Area	31.1 ft ²
Wetted Perimeter	61.72 ft
Hydraulic Radius	0.50 ft
Top Width	60.00 ft
Normal Depth	0.93 ft
Critical Depth	0.85 ft
Critical Slope	0.51 %
Velocity	3.22 ft/s
Velocity Head	0.16 ft
Specific Energy	1.09 ft
Froude Number	0.789
Flow Type	Subcritical

GVF Input Data

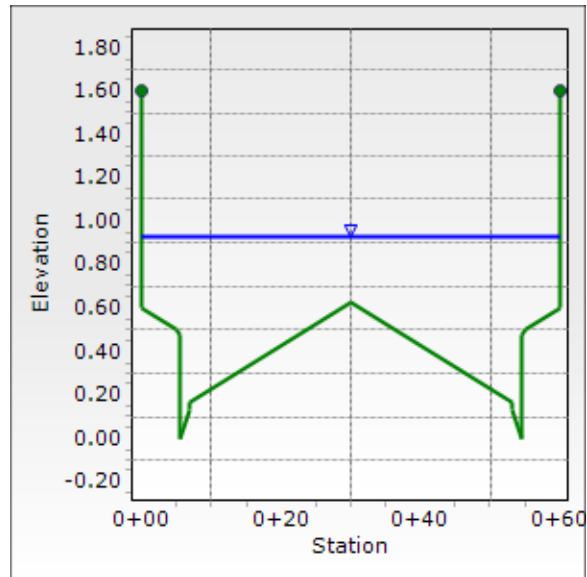
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.93 ft
Critical Depth	0.85 ft
Channel Slope	0.30 %
Critical Slope	0.51 %

Cross Section for RA - Rigel 100-Yr

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.30 %
Normal Depth	0.93 ft
Discharge	100.00 cfs



Worksheet for RD - Rancho 100-Yr

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Channel Slope	0.60 %
Discharge	2,582.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	2,108.58
0+00.00	2,104.88
0+00.97	2,104.88
0+05.93	2,104.84
0+06.35	2,104.83
0+06.41	2,104.82
0+06.43	2,104.47
0+06.43	2,104.41
0+06.56	2,104.41
0+07.56	2,104.50
0+07.59	2,104.50
0+07.76	2,104.51
0+23.43	2,104.94
0+25.97	2,105.00
0+28.83	2,104.93
0+45.63	2,104.51
0+46.93	2,104.37
0+47.10	2,104.36
0+47.10	2,104.36
0+47.12	2,104.77
0+47.12	2,104.84
0+47.19	2,104.84
0+47.60	2,104.86
0+50.51	2,105.10
0+51.00	2,105.14
0+63.02	2,100.04
0+63.46	2,099.85
0+63.61	2,099.86
0+68.17	2,100.09
0+69.57	2,100.74
0+77.46	2,104.36
0+93.46	2,107.36
1+15.46	2,107.36

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 2,108.58)	(0+07.56, 2,104.50)	0.013

Worksheet for RD - Rancho 100-Yr Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+07.56, 2,104.50)	(0+45.63, 2,104.51)	0.016
(0+45.63, 2,104.51)	(0+51.00, 2,105.14)	0.013
(0+51.00, 2,105.14)	(0+68.17, 2,100.09)	0.025
(0+68.17, 2,100.09)	(1+15.46, 2,107.36)	0.038

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	7.28 ft
Elevation Range	2,099.85 to 2,108.58 ft
Flow Area	277.8 ft ²
Wetted Perimeter	97.66 ft
Hydraulic Radius	2.84 ft
Top Width	92.24 ft
Normal Depth	7.28 ft
Critical Depth	7.16 ft
Critical Slope	0.68 %
Velocity	9.30 ft/s
Velocity Head	1.34 ft
Specific Energy	8.62 ft
Froude Number	0.944
Flow Type	Subcritical

GVF Input Data

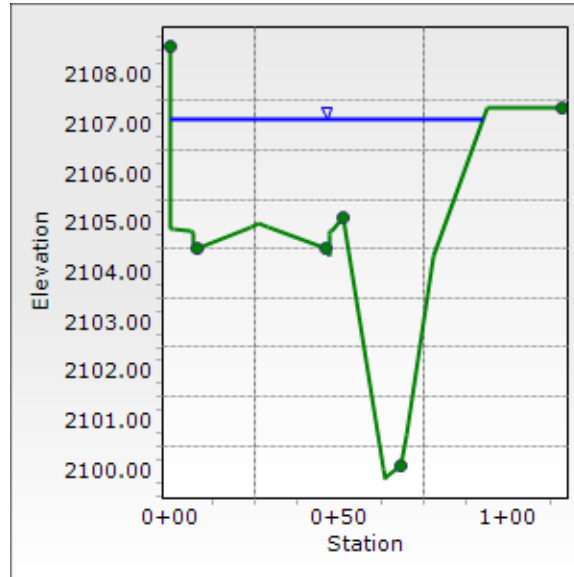
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.28 ft
Critical Depth	7.16 ft
Channel Slope	0.60 %
Critical Slope	0.68 %

Cross Section for RD - Rancho 100-Yr

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.60 %
Normal Depth	7.28 ft
Discharge	2,582.00 cfs



Worksheet for F-F(ROAD) Rancho 100-yr

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.70 %
Discharge	2,538.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+50.00	2,112.00
0+50.00	2,107.75
0+97.00	2,107.00
1+05.00	2,107.00
1+12.00	2,107.00
1+20.00	2,108.00
1+36.00	2,112.00
1+58.00	2,112.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+50.00, 2,112.00)	(0+50.00, 2,107.75)	0.013
(0+50.00, 2,107.75)	(0+97.00, 2,107.00)	0.016
(0+97.00, 2,107.00)	(1+12.00, 2,107.00)	0.025
(1+12.00, 2,107.00)	(1+58.00, 2,112.00)	0.038

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.58 ft
Elevation Range	2,107.00 to 2,112.00 ft
Flow Area	242.7 ft ²
Wetted Perimeter	83.56 ft
Hydraulic Radius	2.90 ft
Top Width	80.34 ft
Normal Depth	3.58 ft
Critical Depth	3.71 ft
Critical Slope	0.62 %
Velocity	10.46 ft/s

Worksheet for F-F(ROAD) Rancho 100-yr

Results

Velocity Head	1.70 ft
Specific Energy	5.28 ft
Froude Number	1.061
Flow Type	Supercritical

GVF Input Data

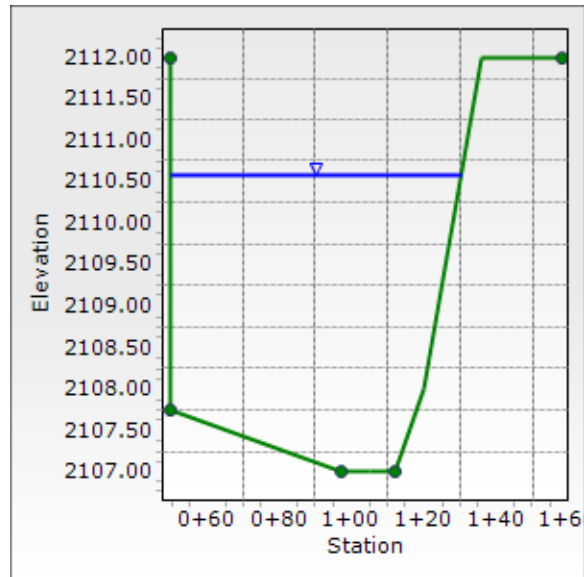
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.58 ft
Critical Depth	3.71 ft
Channel Slope	0.70 %
Critical Slope	0.62 %

Cross Section for F-F(ROAD) Rancho 100-yr

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Channel Slope	0.70 %
Normal Depth	3.58 ft
Discharge	2,538.00 cfs



Worksheet for F-F(CHNL) Rancho 100-yr

Project Description	
Friction Method	Manning
Solve For	Formula
	Discharge
Input Data	
Channel Slope	0.70 %
Normal Depth	3.00 ft

Section Definitions

Station (ft)	Elevation (ft)
0+50.00	2,112.00
0+50.00	2,107.75
0+97.00	2,107.00
1+05.00	2,104.00
1+12.00	2,104.00
1+20.00	2,108.00
1+36.00	2,112.00
1+58.00	2,112.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+50.00, 2,112.00)	(0+50.00, 2,107.75)	0.013
(0+50.00, 2,107.75)	(0+97.00, 2,107.00)	0.016
(0+97.00, 2,107.00)	(1+12.00, 2,104.00)	0.025
(1+12.00, 2,104.00)	(1+58.00, 2,112.00)	0.038

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	270.07 cfs
Elevation Range	2,104.00 to 2,112.00 ft
Flow Area	42.0 ft ²
Wetted Perimeter	22.25 ft
Hydraulic Radius	1.89 ft
Top Width	21.00 ft
Normal Depth	3.00 ft
Critical Depth	2.67 ft
Critical Slope	1.12 %
Velocity	6.43 ft/s

Worksheet for F-F(CHNL) Rancho 100-yr

Results

Velocity Head	0.64 ft
Specific Energy	3.64 ft
Froude Number	0.802
Flow Type	Subcritical

GVF Input Data

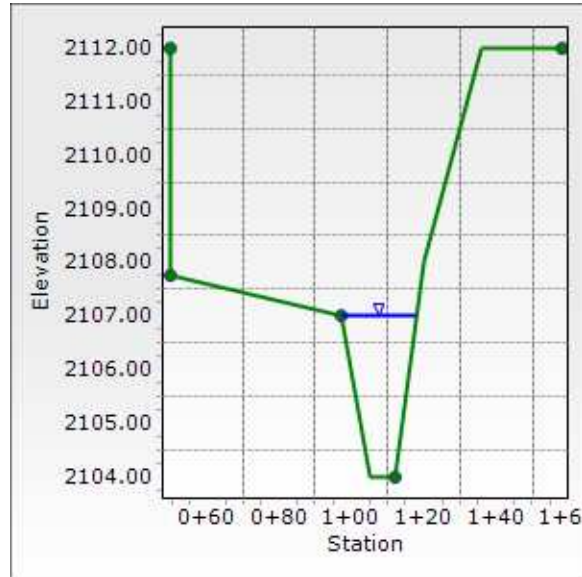
Downstream Depth	0.00 ft
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 ft
Profile Description	
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.00 ft
Critical Depth	2.67 ft
Channel Slope	0.70 %
Critical Slope	1.12 %

Cross Section for F-F(CHNL) Rancho 100-yr

Project Description	
Friction Method	Manning
	Formula
Solve For	Discharge
Input Data	
Channel Slope	0.70 %
Normal Depth	3.00 ft
Discharge	270.07 cfs



HEC-RAS River: SIRIUS AVE Reach: SIRIUS Profile: 100-yr

Reach	River Sta	Profile	Plan	Q US	Q Leaving Total	Q DS	Q Weir	Q Gates	Wt Top Wdth	Weir Max Depth	Weir Avg Depth	Min El Weir Flow	E.G. US.	W.S. US.	E.G. DS	W.S. DS
				(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
SIRIUS	1245	100-yr	ExCond-EL	1158.00	100.38	1059.21	100.38		60.00	1.16	0.66	2109.80	2112.39	2110.96	2111.84	2110.64
SIRIUS	1245	100-yr	PropCond-EL	1158.00	77.88	1081.27	77.88		60.00	1.17	0.53	2109.80	2112.39	2110.97	2111.46	2110.10

Existing WEIR Flow @
Rigel Ave

HEC-RAS River: SIRIUS AVE Reach: SIRIUS Profile: 100-yr

Reach	River Sta	Profile	Plan	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
SIRIUS	1916	100-yr	ExCond-EL	2122.93	2122.54	0.40	1.92	0.22		1158.00		297.48
SIRIUS	1916	100-yr	PropCond-EL	2122.93	2122.55	0.38	1.97	0.21		1158.00		297.67
SIRIUS	1750	100-yr	ExCond-EL	2120.80	2118.22	2.58	3.63	0.08	360.00	741.54	56.47	97.00
SIRIUS	1750	100-yr	PropCond-EL	2120.74	2118.23	2.51	3.56	0.09	363.23	738.22	56.55	97.00
SIRIUS	1533	100-yr	ExCond-EL	2117.09	2113.72	3.37	4.55	0.64	54.29	1056.84	46.87	83.09
SIRIUS	1533	100-yr	PropCond-EL	2117.09	2113.71	3.38	4.54	0.65	54.26	1056.92	46.82	83.06
SIRIUS	1245			Lat Struct								
SIRIUS	1215	100-yr	ExCond-EL	2111.90	2110.67	1.22			526.59	523.03	46.96	184.50
SIRIUS	1215	100-yr	PropCond-EL	2111.89	2110.68	1.21	0.62	0.02	537.28	526.30	31.93	184.50
SIRIUS	1170	100-yr	PropCond-EL	2111.25	2109.81	1.44	0.89	0.11	53.57	1006.72	20.98	187.90
SIRIUS	1036	100-yr	ExCond-EL	2111.54	2110.50	1.04			63.72	944.39	51.10	62.20
SIRIUS	1036	100-yr	PropCond-EL	2111.58	2110.52	1.06			65.29	963.74	52.24	62.20

HEC-RAS HEC-RAS 5.0.7 March 2019
 U.S. Army Corps of Engineers
 Hydrologic Engineering Center
 609 Second Street
 Davis, California

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X    X  XXXXX  XXXX    XXXX    XX    XXXX
X    X  X      X    X    X  X    X  X    X
X    X  X      X      X  X    X  X    X
XXXXXXXX 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: Sirius Avenue
 Project File : SiriusAve.prj
 Run Date and Time: 5/28/2020 9:36:07 AM

Project in English units

PLAN DATA

Plan Title: Proposed Conditions_EventLots
 Plan File : k:\LAV_Civil\092965001 - Area 15 Ph2 (Fisher
 Brothers)\Reports\DRainage\01_TDS\Calculations\HEC-RAS\SiriusAve.p06

Geometry Title: Proposed Conditions Geom_EventLots
 Geometry File : k:\LAV_Civil\092965001 - Area 15 Ph2 (Fisher
 Brothers)\Reports\DRainage\01_TDS\Calculations\HEC-RAS\SiriusAve.g10

Flow Title : Sirius_EventLots
 Flow File : k:\LAV_Civil\092965001 - Area 15 Ph2 (Fisher
 Brothers)\Reports\DRainage\01_TDS\Calculations\HEC-RAS\SiriusAve.f02

Plan Summary Information:

Number of:	Cross Sections =	6	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	1

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 at all cross sections
 Conveyance Calculation Method: At breaks in n values only
 Friction Slope Method: Program Selects Appropriate method
 Computational Flow Regime: Supercritical Flow

FLOW DATA

Flow Title: Sirius_EventLots
 Flow File : k:\LAV_Civil\092965001 - Area 15 Ph2 (Fisher
 Brothers)\Reports\DRainage\01_TDS\Calculations\HEC-RAS\SiriusAve.f02

Flow Data (cfs)

SiriusAve.rep

* River	Reach	RS	* 100-yr *
* SIRIUS AVE	SIRIUS	1916	* 1158 *
* SIRIUS AVE	SIRIUS	1215	* 1158 *
* SIRIUS AVE	SIRIUS	1036	* 1158 *

Boundary Conditions

* River	Reach	Profile	* Upstream	Downstream *
* SIRIUS AVE	SIRIUS	100-yr	* Critical	Critical *

GEOMETRY DATA

Geometry Title: Proposed Conditions Geom_EventLots
 Geometry File : k:\LAV_Civil\092965001 - Area 15 Ph2 (Fisher Brothers)\Reports\DRAINAGE\01_TDS\Calculations\HEC-RAS\SiriusAve.g10

CROSS SECTION

RIVER: SIRIUS AVE
 REACH: SIRIUS RS: 1916

INPUT

Description:

Station Elevation Data		num= 42		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2124	45.66	2124	47.74	2123.09	50.09	2122	52.26	2121.54
58.04	2121.25	58.1	2120.75	59.6	2120.86	82.6	2121	105.6	2120.81
107.1	2120.7	107.1	2121.2	112.1	2121.2	115.24	2121.48	115.44	2121.47
116.39	2121.5	117.08	2121.52	124.01	2121.77	127.89	2121.9	128.11	2121.92
128.26	2121.93	216.93	2122	219.4	2121.94	219.67	2121.94	226.29	2121.76
229.79	2121.74	234.52	2121.87	234.72	2121.86	236.6	2121.87	236.67	2121.87
240.82	2122	339.66	2122.04	339.8	2122.02	339.82	2122.02	343.87	2122.35
344.04	2122.35	348.23	2122.68	350.49	2122.83	357.66	2122.9	363.61	2123.1
364.9	2123.14	365.91	2123.19						

Manning's n Values		num= 6		Sta n Val		Sta n Val		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.016	58.04	.013	59.6	.016	105.6	.013	112.1	.025
339.82	.016								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
0	365.91		166.86	166.86	166.86	.1	.3

CROSS SECTION OUTPUT Profile #100-yr

* E.G. Elev (ft)	* 2122.93	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.38	* Wt. n-Val.	* 0.023		
* W.S. Elev (ft)	* 2122.55	* Reach Len. (ft)	* 166.86	* 166.86	* 166.86
* Crit W.S. (ft)	* 2122.55	* Flow Area (sq ft)		* 233.59	
* E.G. Slope (ft/ft)	* 0.008145	* Area (sq ft)		* 233.59	
* Q Total (cfs)	* 1158.00	* Flow (cfs)		* 1158.00	
* Top Width (ft)	* 297.67	* Top Width (ft)		* 297.67	
* Vel Total (ft/s)	* 4.96	* Avg. Vel. (ft/s)		* 4.96	
* Max Chl Dpth (ft)	* 1.85	* Hydr. Depth (ft)		* 0.78	
* Conv. Total (cfs)	* 12831.4	* Conv. (cfs)		* 12831.4	
* Length Wtd. (ft)	* 166.86	* Wetted Per. (ft)		* 298.85	
* Min Ch El (ft)	* 2120.70	* Shear (lb/sq ft)		* 0.40	
* Alpha	* 1.00	* Stream Power (lb/ft s)		* 1.97	
* Frctn Loss (ft)	* 1.97	* Cum Volume (acre-ft)	* 0.55	* 1.71	* 0.13
* C & E Loss (ft)	* 0.21	* Cum SA (acres)	* 0.87	* 1.64	* 0.25

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: SIRIUS AVE

REACH: SIRIUS

RS: 1750

INPUT

Description:

Station Elevation Data		num= 14	
Sta	Elev	Sta	Elev
0	2120.4	0	2118
77.5	2117.2	90.5	2116.66
97	2120	97.5	2120

Manning's n Values		num= 5	
Sta	n Val	Sta	n Val
0	.016	53	.013
53	.016	90.5	.013
97.5	.02		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	53	92		216.84	216.84		.1	.3
Right Levee		Station=	97	Elevation=	2120			

CROSS SECTION OUTPUT Profile #100-yr

* E.G. Elev (ft)	* 2120.74
* Vel Head (ft)	* 2.51
* W.S. Elev (ft)	* 2118.23
* Crit W.S. (ft)	* 2118.93
* E.G. Slope (ft/ft)	* 0.015487
* Q Total (cfs)	* 1158.00
* Top Width (ft)	* 97.00
* Vel Total (ft/s)	* 12.09
* Max Chl Dpth (ft)	* 1.73
* Conv. Total (cfs)	* 9305.1
* Length Wtd. (ft)	* 216.84
* Min Ch El (ft)	* 2116.50
* Alpha	* 1.10
* Frctn Loss (ft)	* 3.56
* C & E Loss (ft)	* 0.09

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

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

Note: Manning's n values were composited to a single value in the main channel.

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

CROSS SECTION

RIVER: SIRIUS AVE

REACH: SIRIUS

RS: 1533

INPUT

Description:

Station Elevation Data		num= 19	
Sta	Elev	Sta	Elev
0	2114.3	0	2112
59	2116	59.5	2120.5
65.5	2112.5	65.5	2112
118	2112.58	118	2113.08

Manning's n Values		num= 7	

SiriusAve.rep

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.016	59	.02	59.5	.016	65.5	.013	67	.016
113	.013	124	.02						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 65.5 118 318.07 318.07 318.07 .1 .3
 Ineffective Flow num= 1
 Sta L Sta R Elev Permanent
 124 150 2115.42 F
 Left Levee Station= 59.5 Elevation= 2116

CROSS SECTION OUTPUT Profile #100-yr

* E.G. Elev (ft)	* 2117.09	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 3.38	* Wt. n-Val.	* 0.016	* 0.016	* 0.013
* W.S. Elev (ft)	* 2113.71	* Reach Len. (ft)	* 318.07	* 318.07	* 318.07
* Crit W.S. (ft)	* 2114.66	* Flow Area (sq ft)	* 5.18	* 70.23	* 4.04
* E.G. Slope (ft/ft)	* 0.017377	* Area (sq ft)	* 5.18	* 70.23	* 10.67
* Q Total (cfs)	* 1158.00	* Flow (cfs)	* 54.26	* 1056.92	* 46.82
* Top Width (ft)	* 83.06	* Top Width (ft)	* 6.00	* 52.50	* 24.56
* Vel Total (ft/s)	* 14.57	* Avg. Vel. (ft/s)	* 10.47	* 15.05	* 11.58
* Max Chl Dpth (ft)	* 2.01	* Hydr. Depth (ft)	* 0.86	* 1.34	* 0.67
* Conv. Total (cfs)	* 8784.7	* Conv. (cfs)	* 411.7	* 8017.8	* 355.2
* Length Wtd. (ft)	* 318.07	* Wetted Per. (ft)	* 6.55	* 53.54	* 6.00
* Min Ch El (ft)	* 2112.00	* Shear (lb/sq ft)	* 0.86	* 1.42	* 0.73
* Alpha	* 1.02	* Stream Power (lb/ft s)	* 8.98	* 21.42	* 8.46
* Frctn Loss (ft)	* 4.54	* Cum Volume (acre-ft)	* 0.36	* 0.86	* 0.08
* C & E Loss (ft)	* 0.65	* Cum SA (acres)	* 0.62	* 0.77	* 0.16

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

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

Note: Manning's n values were composited to a single value in the main channel.

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

LATERAL STRUCTURE

RIVER: SIRIUS AVE
 REACH: SIRIUS RS: 1245

INPUT

Description:

Lateral structure position = Left overbank
 Distance from Upstream XS =
 Deck/Roadway Width = 10
 Weir Coefficient = 3
 Weir Flow Reference = Water Surface
 Weir Embankment Coordinates num = 3

Sta	Elev	Sta	Elev	Sta	Elev
0	2109.8	30	2110.3	60	2109.9

Weir crest shape = Broad Crested

LATERAL STRUCTURE OUTPUT Profile #100-yr Lateral Structure

* E.G. US. (ft)	* 2112.39	* Weir Sta US (ft)	* 0.00
* W.S. US. (ft)	* 2110.97	* Weir Sta DS (ft)	* 60.00
* E.G. DS (ft)	* 2111.46	* Min El Weir Flow (ft)	* 2109.80
* W.S. DS (ft)	* 2110.10	* Wr Top Wdth (ft)	* 60.00
* Q US (cfs)	* 1158.00	* Weir Max Depth (ft)	* 1.17
* Q Leaving Total (cfs)	* 77.88	* Weir Avg Depth (ft)	* 0.53
* Q DS (cfs)	* 1081.27	* Weir Flow Area (sq ft)	* 32.06

```

SiriusAve.rep
* Perc Q Leaving          * 6.63 * Weir Coef (ft^1/2)      * 3.000 *
* Q Weir (cfs)            * 77.88 * Weir Submerg      * 0.00 *
* Q Gates (cfs)           *      * Q Gate Group (cfs) *      *
* Q Culv (cfs)            *      * Gate Open Ht (ft) *      *
* Q Lat RC (cfs)          *      * Gate #Open        *      *
* Q Outlet TS (cfs)       * 0.00 * Gate Area (sq ft) *      *
* Q Breach (cfs)          *      * Gate Submerg      *      *
* Breach Avg Velocity (ft/s) *      * Gate Invert (ft)  *      *
* Breach Flow Area (sq ft) *      * Gate Weir Coef    *      *
* Breach WD (ft)          *      *                   *      *
* Breach Top El (ft)      *      *                   *      *
* Breach Bottom El (ft)   *      *                   *      *
* Breach SSL (ft)         *      *                   *      *
* Breach SSR (ft)         *      *                   *      *
*****

```

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

1.4. This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

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

CROSS SECTION

RIVER: SIRIUS AVE

REACH: SIRIUS

RS: 1215

INPUT

Description:

Station Elevation Data				num=	15
Sta	Elev	Sta	Elev	Sta	Elev
0	2110.3	93	2110	119	2109.5
150	2110	173	2109.8	174.5	2109.69
184.5	2110.26	184.5	2112.68	185	2112.68

Manning's n Values						num=	6
Sta	n Val	Sta	n Val	Sta	n Val		
0	.016	119	.013	127	.016		
184.5	.015	173	.013	179.5	.02		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	119	174.5		45	45	.1	.3
Right Levee	Station=		184.5	Elevation=		2112.68	

CROSS SECTION OUTPUT Profile #100-yr

* E.G. Elev (ft)	* 2111.89	* Element	* Left OB	* Channel	* Right OB	*****	
* Vel Head (ft)	* 1.21	* Wt. n-Val.	* 0.016	* 0.015	* 0.015		
* W.S. Elev (ft)	* 2110.68	* Reach Len. (ft)	* 45.00	* 45.00	* 45.00		
* Crit W.S. (ft)	* 2111.04	* Flow Area (sq ft)	* 73.66	* 51.26	* 4.94		
* E.G. Slope (ft/ft)	* 0.011742	* Area (sq ft)	* 73.66	* 51.26	* 4.94		
* Q Total (cfs)	* 1095.51	* Flow (cfs)	* 537.28	* 526.30	* 31.93		
* Top Width (ft)	* 184.50	* Top Width (ft)	* 119.00	* 55.50	* 10.00		
* Vel Total (ft/s)	* 8.44	* Avg. Vel. (ft/s)	* 7.29	* 10.27	* 6.46		
* Max Chl Dpth (ft)	* 1.43	* Hydr. Depth (ft)	* 0.62	* 0.92	* 0.49		
* Conv. Total (cfs)	* 10109.7	* Conv. (cfs)	* 4958.2	* 4856.9	* 294.7		
* Length Wtd. (ft)	* 45.00	* Wetted Per. (ft)	* 119.39	* 55.95	* 10.42		
* Min Ch El (ft)	* 2109.25	* Shear (lb/sq ft)	* 0.45	* 0.67	* 0.35		
* Alpha	* 1.10	* Stream Power (lb/ft s)	* 3.30	* 6.90	* 2.25		
* Frctn Loss (ft)	* 0.62	* Cum Volume (acre-ft)	* 0.08	* 0.41	* 0.02		
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.16	* 0.38	* 0.04		

Warning: The cross-section end points had to be extended vertically for the computed water surface.

SiriusAve.rep

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

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

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

CROSS SECTION

RIVER: SIRIUS AVE

REACH: SIRIUS

RS: 1170

INPUT

Description:

Station Elevation Data		num= 16	
Sta	Elev	Sta	Elev
0	2110.35	66.05	2110
121.59	2108.95	125.55	2109.06
252.35	2109.43	263.75	2109.53
284.54	2111		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val
0	.02	66.05	.016
121.59	.016		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	121.59	252.35		134	134		.1	.3
Right Levee		Station=	263.75	Elevation=	2111.95			

CROSS SECTION OUTPUT Profile #100-yr

* E.G. Elev (ft)	* 2111.25	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.44	* Wt. n-Val.	* 0.016	* 0.016	* 0.016
* W.S. Elev (ft)	* 2109.81	* Reach Len. (ft)	* 134.00	* 134.00	* 134.00
* Crit W.S. (ft)	* 2110.26	* Flow Area (sq ft)	* 11.49	* 101.99	* 3.79
* E.G. Slope (ft/ft)	* 0.015895	* Area (sq ft)	* 11.49	* 101.99	* 3.79
* Q Total (cfs)	* 1081.27	* Flow (cfs)	* 53.57	* 1006.72	* 20.98
* Top Width (ft)	* 187.90	* Top Width (ft)	* 45.74	* 130.76	* 11.40
* Vel Total (ft/s)	* 9.22	* Avg. Vel. (ft/s)	* 4.66	* 9.87	* 5.53
* Max Chl Dpth (ft)	* 0.88	* Hydr. Depth (ft)	* 0.25	* 0.78	* 0.33
* Conv. Total (cfs)	* 8576.4	* Conv. (cfs)	* 424.9	* 7985.1	* 166.4
* Length Wtd. (ft)	* 134.00	* Wetted Per. (ft)	* 45.74	* 131.76	* 11.68
* Min Ch El (ft)	* 2108.93	* Shear (lb/sq ft)	* 0.25	* 0.77	* 0.32
* Alpha	* 1.09	* Stream Power (lb/ft s)	* 1.16	* 7.58	* 1.78
* Frctn Loss (ft)	* 0.89	* Cum Volume (acre-ft)	* 0.03	* 0.33	* 0.02
* C & E Loss (ft)	* 0.11	* Cum SA (acres)	* 0.08	* 0.28	* 0.03

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

CROSS SECTION

RIVER: SIRIUS AVE

REACH: SIRIUS

RS: 1036

INPUT

Description:

Station Elevation Data		num= 20	
Sta	Elev	Sta	Elev
0	2111	70	2110
226.7	2110.3	227.4	2108.8
233.9	2108.33	256.9	2108.3
288.9	2108.8	288.9	2111.22

SiriusAve.rep

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.02	227.4	.013	233.9	.016	279.9	.013	283.9	.016

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 232.4 283.9 0 0 0 .1 .3
 Left Levee Station= 226.7 Elevation= 2111.22
 Right Levee Station= 288.9 Elevation= 2111.22

CROSS SECTION OUTPUT Profile #100-yr

```

*****
* E.G. Elev (ft)      * 2111.58 * Element          * Left OB * Channel * Right OB *
* Vel Head (ft)      * 1.06  * Wt. n-Val.       * 0.013 * 0.016 * 0.016 *
* W.S. Elev (ft)     * 2110.52 * Reach Len. (ft)  *      *      *      *
* Crit W.S. (ft)     * 2110.52 * Flow Area (sq ft) * 8.95 * 114.15 * 8.84 *
* E.G. Slope (ft/ft) * 0.002806 * Area (sq ft)    * 8.95 * 114.15 * 8.84 *
* Q Total (cfs)      * 1081.27 * Flow (cfs)      * 65.29 * 963.74 * 52.24 *
* Top Width (ft)     * 62.20  * Top Width (ft)  * 5.70 * 51.50 * 5.00 *
* Vel Total (ft/s)   * 8.20   * Avg. Vel. (ft/s) * 7.30 * 8.44 * 5.91 *
* Max Chl Dpth (ft)  * 2.32   * Hydr. Depth (ft) * 1.57 * 2.22 * 1.77 *
* Conv. Total (cfs)  * 20413.1 * Conv. (cfs)     * 1232.6 * 18194.2 * 986.2 *
* Length Wtd. (ft)   *      * Wetted Per. (ft) * 7.42 * 52.51 * 6.72 *
* Min Ch El (ft)     * 2108.20 * Shear (lb/sq ft) * 0.21 * 0.38 * 0.23 *
* Alpha              * 1.02   * Stream Power (lb/ft s) * 1.54 * 3.22 * 1.36 *
* Frctn Loss (ft)    *      * Cum Volume (acre-ft) *      *      *      *
* C & E Loss (ft)    *      * Cum SA (acres)    *      *      *      *
*****

```

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than

1.4. This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

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

SUMMARY OF MANNING'S N VALUES

River: SIRIUS AVE

```

*****
* Reach      * River Sta. * n1 * n2 * n3 * n4 * n5 * n6 * n7 *
*****
*SIRIUS      * 1916      * .016* .013* .016* .013* .025* .016*
*SIRIUS      * 1750      * .016* .013* .016* .013* .02*   *
*SIRIUS      * 1533      * .016* .02*  .016* .013* .016* .013* .02*
*SIRIUS      * 1245      * Lat Struct*      *      *      *      *
*SIRIUS      * 1215      * .016* .013* .016* .013* .02* .015*
*SIRIUS      * 1170      * .02*  .016* .016*      *      *
*SIRIUS      * 1036      * .02*  .013* .016* .013* .016*      *
*****

```

SUMMARY OF REACH LENGTHS

River: SIRIUS AVE

```

*****
* Reach      * River Sta. * Left * Channel * Right *
*****
*SIRIUS      * 1916      * 166.86* 166.86* 166.86*
*SIRIUS      * 1750      * 216.84* 216.84* 216.84*
*SIRIUS      * 1533      * 318.07* 318.07* 318.07*
*SIRIUS      * 1245      * Lat Struct*      *
*SIRIUS      * 1215      * 45*      45*      45*
*SIRIUS      * 1170      * 134*      134*      134*

```

SiriusAve.rep

*SIRIUS * 1036 * 0* 0* 0*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: SIRIUS AVE

* Reach	* River Sta.	* Contr.	* Expan.
*SIRIUS	* 1916	* .1*	* .3*
*SIRIUS	* 1750	* .1*	* .3*
*SIRIUS	* 1533	* .1*	* .3*
*SIRIUS	* 1245	*Lat Struct*	*
*SIRIUS	* 1215	* .1*	* .3*
*SIRIUS	* 1170	* .1*	* .3*
*SIRIUS	* 1036	* .1*	* .3*

Profile Output Table - Standard Table 1

* Reach	* River Sta	* Profile	* Plan	* Q Total	* Min Ch El	* W.S. Elev	* Crit W.S.
E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #	Chl	
(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	(cfs)	(ft)	(ft)
* SIRIUS	* 1916	* 100-yr	* ExCond-EL	* 1158.00	* 2120.70	* 2122.54	* 2122.54
2122.93	* 0.008613	* 5.04	* 229.67	* 297.48	* 1.01	*	*
* SIRIUS	* 1916	* 100-yr	* PropCond-EL	* 1158.00	* 2120.70	* 2122.55	* 2122.55
2122.93	* 0.008145	* 4.96	* 233.59	* 297.67	* 0.99	*	*
* SIRIUS	* 1750	* 100-yr	* ExCond-EL	* 1158.00	* 2116.50	* 2118.22	* 2118.93
2120.80	* 0.016139	* 14.29	* 94.55	* 97.00	* 2.18	*	*
* SIRIUS	* 1750	* 100-yr	* PropCond-EL	* 1158.00	* 2116.50	* 2118.23	* 2118.93
2120.74	* 0.015487	* 14.09	* 95.80	* 97.00	* 2.14	*	*
* SIRIUS	* 1533	* 100-yr	* ExCond-EL	* 1158.00	* 2112.00	* 2113.72	* 2114.66
2117.09	* 0.017332	* 15.04	* 79.52	* 83.09	* 2.29	*	*
* SIRIUS	* 1533	* 100-yr	* PropCond-EL	* 1158.00	* 2112.00	* 2113.71	* 2114.66
2117.09	* 0.017377	* 15.05	* 79.46	* 83.06	* 2.29	*	*
* SIRIUS	* 1245	*	* Lat Struct	*	*	*	*
2111.90	* 0.011877	* 10.31	* 129.16	* 184.50	* 1.90	*	*
* SIRIUS	* 1215	* 100-yr	* PropCond-EL	* 1095.51	* 2109.25	* 2110.68	* 2111.04
2111.89	* 0.011742	* 10.27	* 129.87	* 184.50	* 1.88	*	*
* SIRIUS	* 1170	* 100-yr	* PropCond-EL	* 1081.27	* 2108.93	* 2109.81	* 2110.26
2111.25	* 0.015895	* 9.87	* 117.28	* 187.90	* 1.97	*	*
* SIRIUS	* 1036	* 100-yr	* ExCond-EL	* 1059.21	* 2108.20	* 2110.50	* 2110.50
2111.54	* 0.002772	* 8.34	* 130.76	* 62.20	* 0.99	*	*
* SIRIUS	* 1036	* 100-yr	* PropCond-EL	* 1081.27	* 2108.20	* 2110.52	* 2110.52
2111.58	* 0.002806	* 8.44	* 131.93	* 62.20	* 1.00	*	*

Profile Output Table - Standard Table 2

SiriusAve.rep

* Reach	* River Sta	* Profile	* Plan	* E.G. Elev	* W.S. Elev	* Vel Head	* Frctn Loss	* C
& E Loss	* Q Left	* Q Channel	* Q Right	* Top Width				
(ft)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)

* SIRIUS	* 1916	* 100-yr	* ExCond-EL	* 2122.93	* 2122.54	* 0.40	* 1.92	*
0.22	*	1158.00	* 297.48					
* SIRIUS	* 1916	* 100-yr	* PropCond-EL	* 2122.93	* 2122.55	* 0.38	* 1.97	*
0.21	*	1158.00	* 297.67					

* SIRIUS	* 1750	* 100-yr	* ExCond-EL	* 2120.80	* 2118.22	* 2.58	* 3.63	*
0.08	* 360.00	* 741.54	* 56.47	* 97.00				
* SIRIUS	* 1750	* 100-yr	* PropCond-EL	* 2120.74	* 2118.23	* 2.51	* 3.56	*
0.09	* 363.23	* 738.22	* 56.55	* 97.00				

* SIRIUS	* 1533	* 100-yr	* ExCond-EL	* 2117.09	* 2113.72	* 3.37	* 4.55	*
0.64	* 54.29	* 1056.84	* 46.87	* 83.09				
* SIRIUS	* 1533	* 100-yr	* PropCond-EL	* 2117.09	* 2113.71	* 3.38	* 4.54	*
0.65	* 54.26	* 1056.92	* 46.82	* 83.06				

* SIRIUS	* 1245		* Lat Struct					*
	*							

* SIRIUS	* 1215	* 100-yr	* ExCond-EL	* 2111.90	* 2110.67	* 1.22	*	
	* 526.59	* 523.03	* 46.96	* 184.50				
* SIRIUS	* 1215	* 100-yr	* PropCond-EL	* 2111.89	* 2110.68	* 1.21	* 0.62	*
0.02	* 537.28	* 526.30	* 31.93	* 184.50				

* SIRIUS	* 1170	* 100-yr	* PropCond-EL	* 2111.25	* 2109.81	* 1.44	* 0.89	*
0.11	* 53.57	* 1006.72	* 20.98	* 187.90				

* SIRIUS	* 1036	* 100-yr	* ExCond-EL	* 2111.54	* 2110.50	* 1.04	*	
	* 63.72	* 944.39	* 51.10	* 62.20				
* SIRIUS	* 1036	* 100-yr	* PropCond-EL	* 2111.58	* 2110.52	* 1.06	*	
	* 65.29	* 963.74	* 52.24	* 62.20				

Profile Output Table - Lateral Structures

* Reach	* River Sta	* Profile	* Plan	* Q US	* Q Leaving	* Total	* Q DS	* Q Weir	* Q
Gates	* Wr Top	* Weir Max	* Weir Avg	* Min El	* Weir Flow	* E.G. US.	* W.S. US.	* E.G. DS	* W.S. DS
	(ft)	(ft)	(ft)	(ft)	(cfs)	(ft)	(cfs)	(cfs)	(cfs)

* SIRIUS	* 1245	* 100-yr	* ExCond-EL	* 1158.00	* 100.38	* 1059.21	* 100.38	*	
	* 60.00	* 1.16	* 0.66	* 2109.80	* 2112.39	* 2110.96	* 2111.84	*	
2110.64									
* SIRIUS	* 1245	* 100-yr	* PropCond-EL	* 1158.00	* 77.88	* 1081.27	* 77.88	*	
	* 60.00	* 1.17	* 0.53	* 2109.80	* 2112.39	* 2110.97	* 2111.46	*	
2110.10									

Errors Warnings and Notes for Plan : PropCond-EL

River: SIRIUS AVE Reach: SIRIUS RS: 1916 Profile: 100-yr

Note: Manning's n values were composited to a single value in the main channel.

River: SIRIUS AVE Reach: SIRIUS RS: 1750 Profile: 100-yr

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

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

the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

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

River: SIRIUS AVE Reach: SIRIUS RS: 1533 Profile: 100-yr

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

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

the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

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

River: SIRIUS AVE Reach: SIRIUS RS: 1245 Profile: 100-yr

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

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

River: SIRIUS AVE Reach: SIRIUS RS: 1215 Profile: 100-yr

Warning: The cross-section end points had to be extended vertically for the computed water surface.

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

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

the need for additional cross sections.

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

River: SIRIUS AVE Reach: SIRIUS RS: 1170 Profile: 100-yr

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

River: SIRIUS AVE Reach: SIRIUS RS: 1036 Profile: 100-yr

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

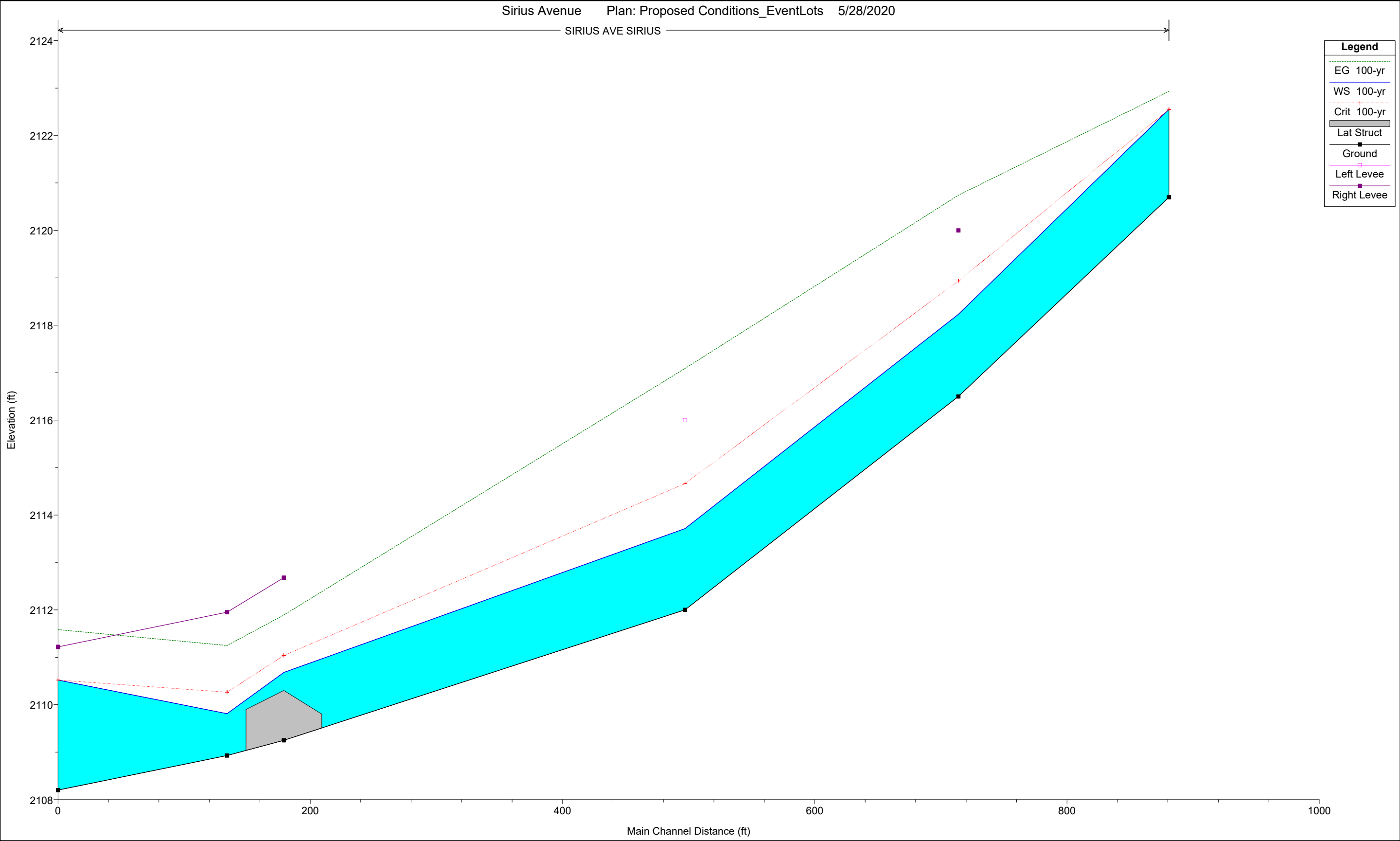
for the water surface and continued on with the calculations.

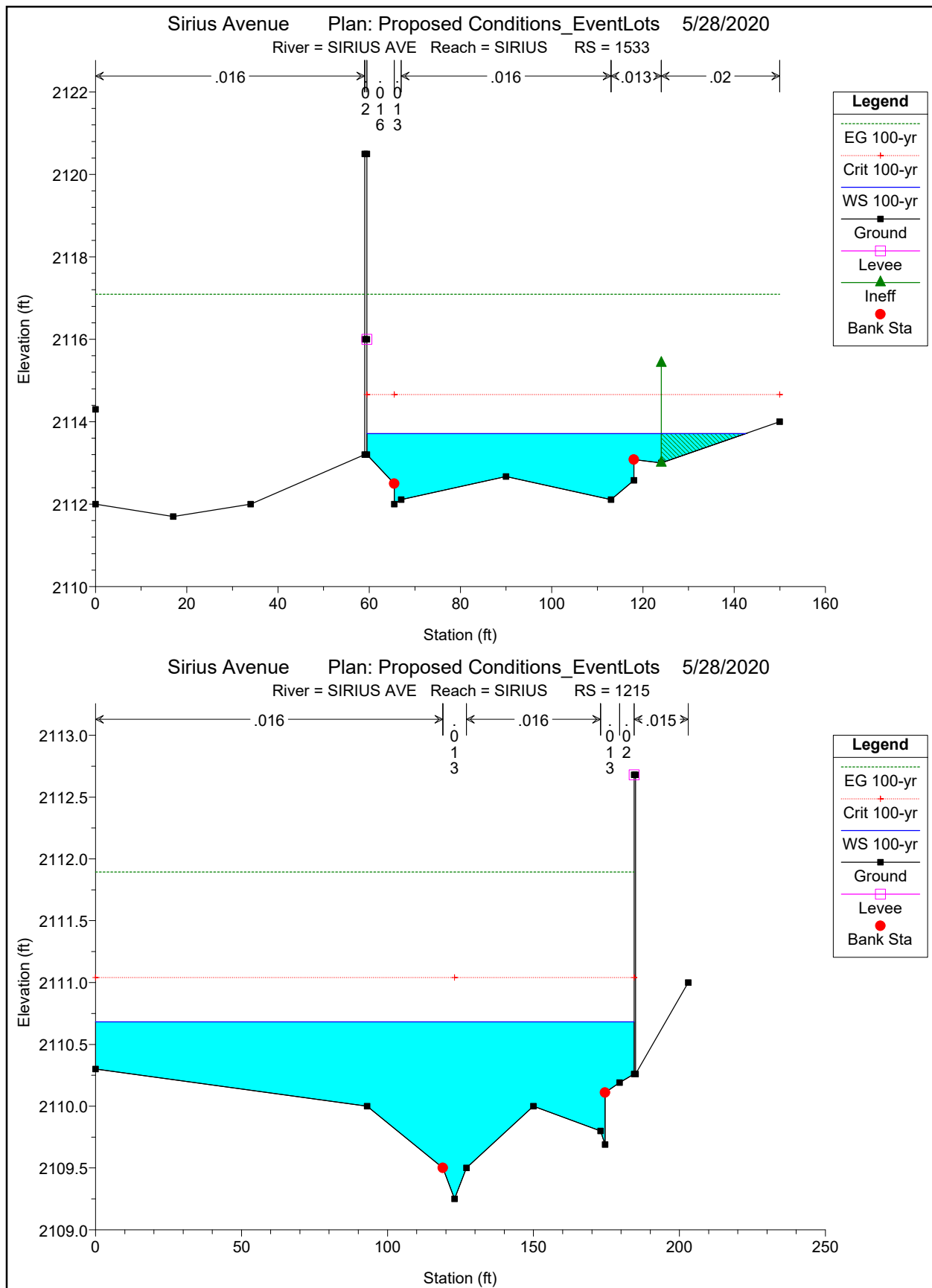
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

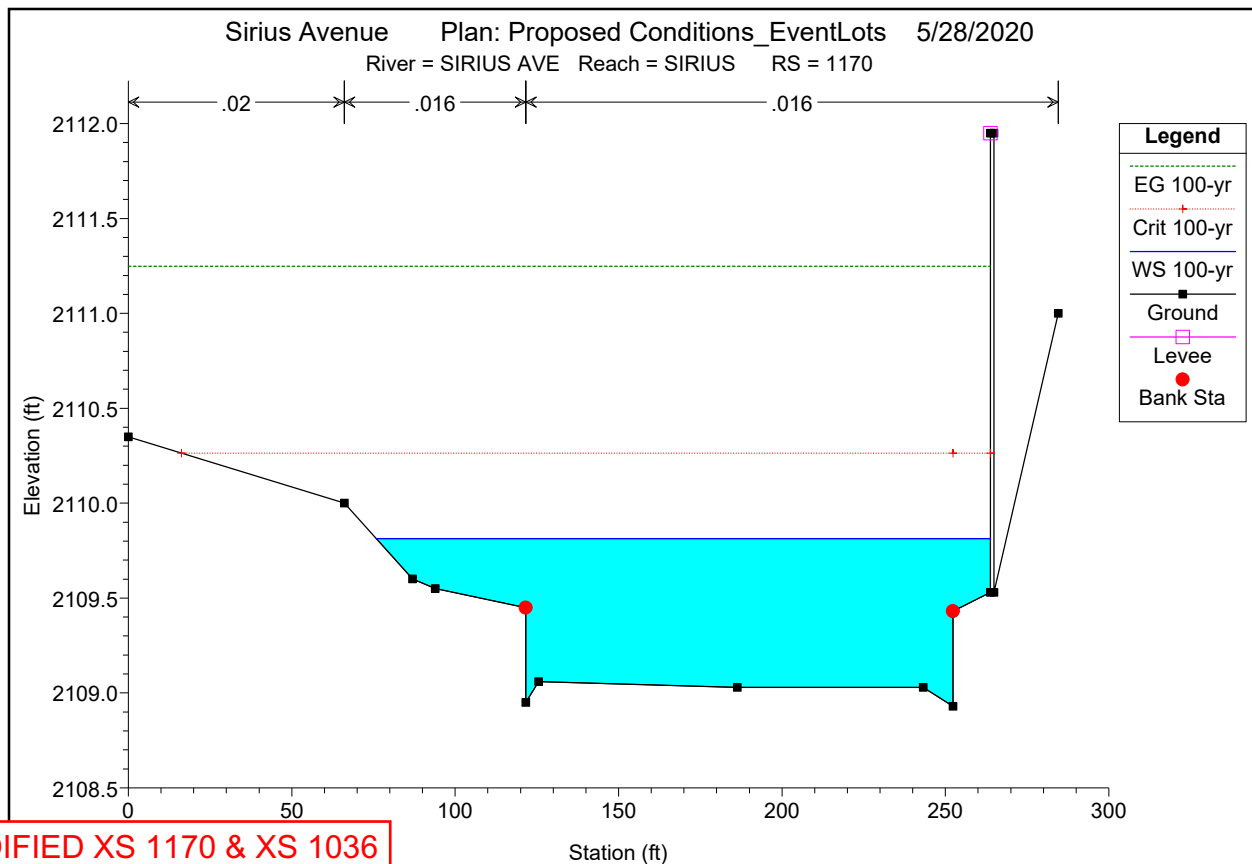
This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

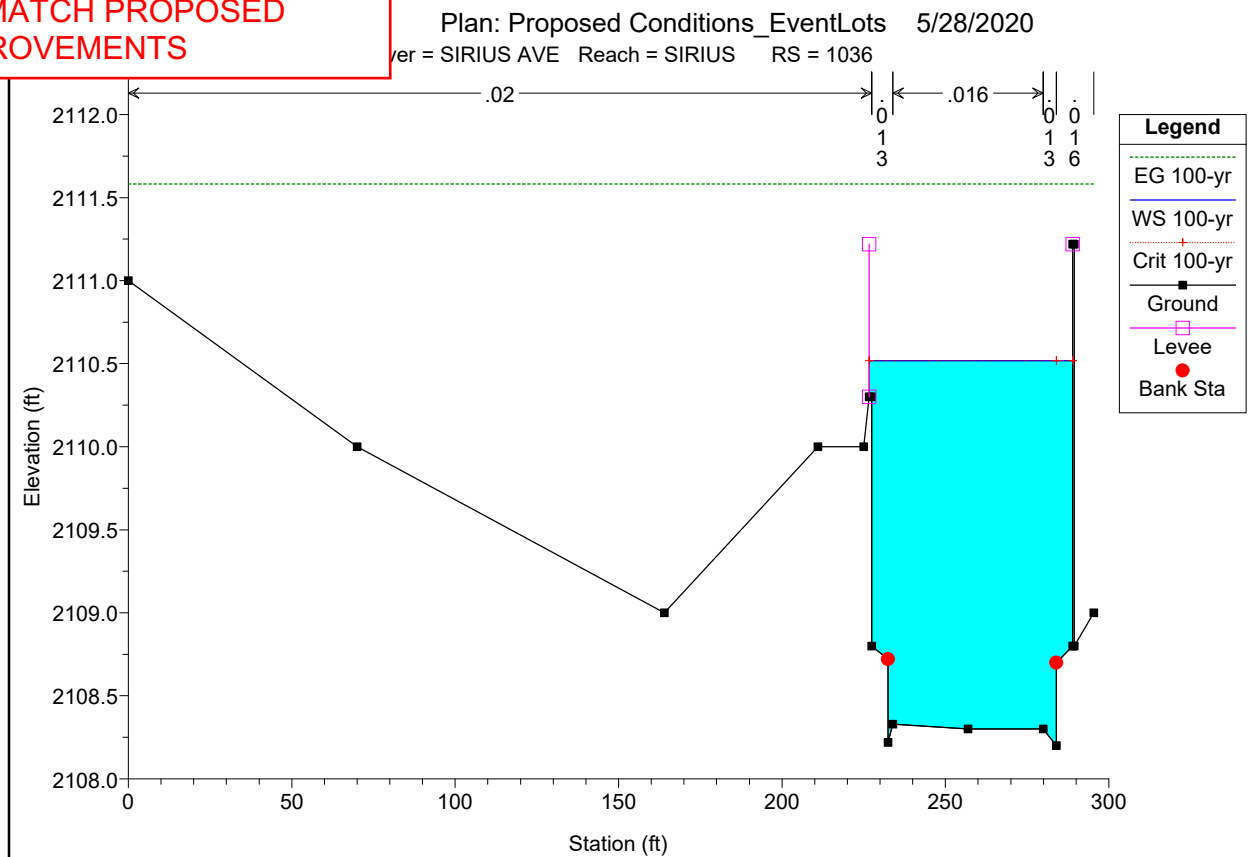
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.







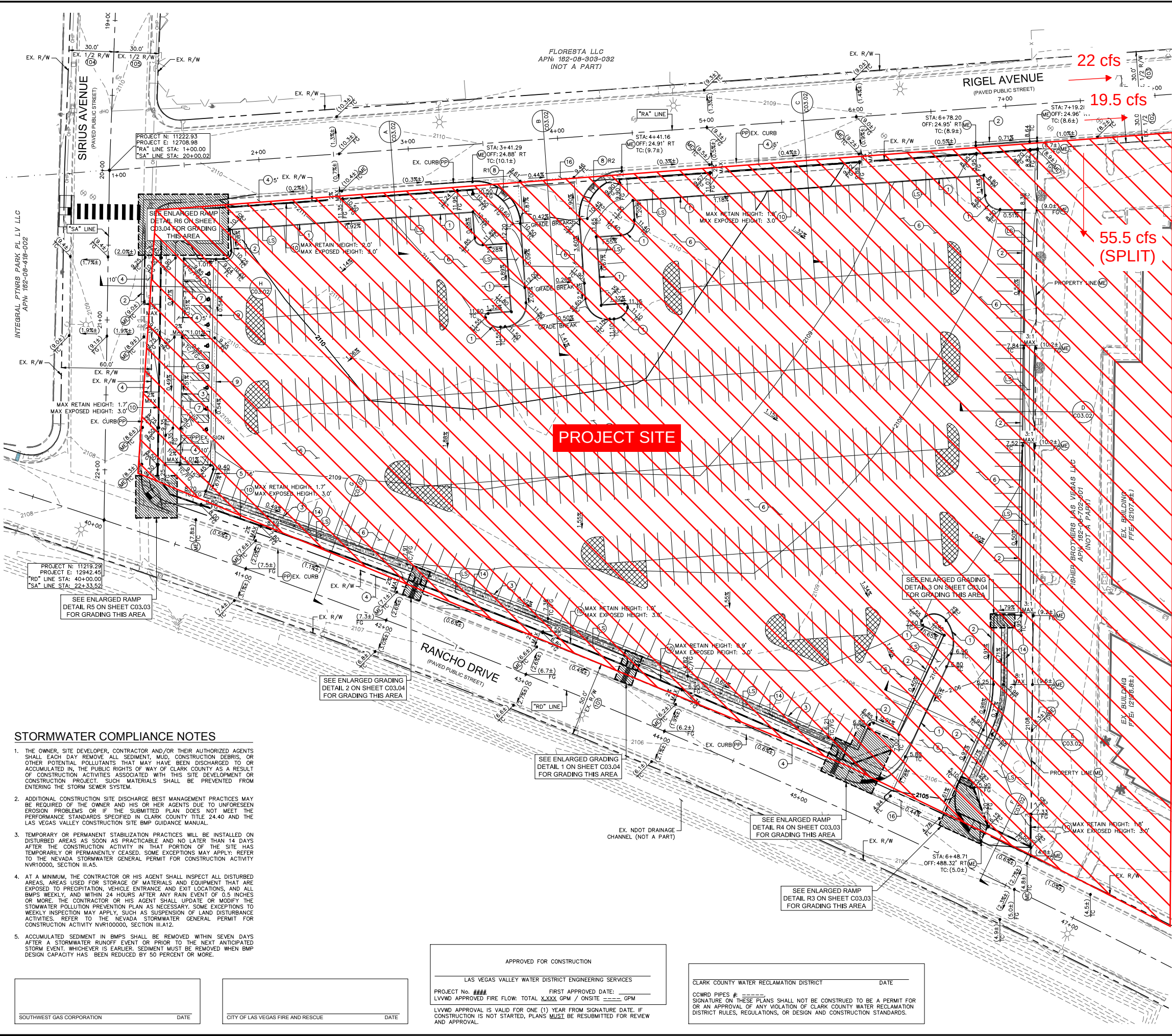
MODIFIED XS 1170 & XS 1036
 TO MATCH PROPOSED
 IMPROVEMENTS



FOR
AREA 15 EVENT PARKING LOT

CITY OF LAS VEGAS, NEVADA

K:\VAV_Civil\092965001 - Area 15 Ph2 (Fisher Brothers)\CAD\PlanSheets\Event\092965001 - G0.dwg
Plotted By: Ackert, Thomas Sheet Set: kha Layout: C03.01 July 06, 2020 09:31:42am
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STORMWATER COMPLIANCE NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR ACCUMULATED IN, THE PUBLIC RIGHTS OF WAY OF CLARK COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN CLARK COUNTY TITLE 24.40 AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS TO WEEKLY INSPECTION MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR10000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTION MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

APPROVED FOR CONSTRUCTION	
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES	
PROJECT No. ###	FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW: TOTAL X,XXX GPM / ONSITE ----- GPM	
LVVWD APPROVAL IS VALID FOR ONE (1) YEAR FROM SIGNATURE DATE. IF CONSTRUCTION IS NOT STARTED, PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL.	
SOUTHWEST GAS CORPORATION	DATE _____
CITY OF LAS VEGAS FIRE AND RESCUE	DATE _____

APPROVED FOR CONSTRUCTION	
CLARK COUNTY WATER RECLAMATION DISTRICT	
PROJECT No. ###	FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW: TOTAL X,XXX GPM / ONSITE ----- GPM	
LVVWD APPROVAL IS VALID FOR ONE (1) YEAR FROM SIGNATURE DATE. IF CONSTRUCTION IS NOT STARTED, PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL.	
CLARK COUNTY WATER RECLAMATION DISTRICT	DATE _____

APPROVED FOR CONSTRUCTION	
CLARK COUNTY WATER RECLAMATION DISTRICT	
PROJECT No. ###	FIRST APPROVED DATE: _____
LVVWD APPROVED FIRE FLOW: TOTAL X,XXX GPM / ONSITE ----- GPM	
LVVWD APPROVAL IS VALID FOR ONE (1) YEAR FROM SIGNATURE DATE. IF CONSTRUCTION IS NOT STARTED, PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL.	
CLARK COUNTY WATER RECLAMATION DISTRICT	DATE _____

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY THE EX. GRADES PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN THESE PLANS AND THE FIELD CONDITION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER.
2. THE CONTRACTOR SHALL VERIFY EX. IMPROVEMENTS SHOWN ON THE PLAN, AND NOTIFY ENGINEER IMMEDIATELY IF DISCREPANCIES EXIST.
3. THE CONTRACTOR SHALL PROTECT IN PLACE EX. IMPROVEMENTS, THAT ARE NOTED TO REMAIN, DURING DEMOLITION AND CONSTRUCTION.
4. THE CONTRACTOR SHALL VERIFY AND LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION AND PROTECT IN PLACE UNLESS OTHERWISE NOTED ON THE PLANS.
5. ANY EXISTING STRUCTURE(S), IMPROVEMENT(S), OR APPURTENANCE(S) TO REMAIN, WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION, SHALL BE IMMEDIATELY REPAIRED OR REPLACED BY THE CONTRACTOR AT THE THEIR EXPENSE.
6. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IS MAINTAINED.
7. ADD 2100.00 FEET TO ALL TRUNCATED ELEVATIONS.
8. REFER TO SHEET C00.02 FOR LEGEND AND ABBREVIATIONS.

GEOTECHNICAL REPORT

ENGINEER: NINYO & MOORE
DATED: 06/01/2020
PROJECT NO.: 304616001

FLOOD ZONE NOTE

THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) INDICATES THAT THE SUBJECT SITE LIES WITHIN ZONE "X" OF FLOOD INSURANCE RATE MAP (FIRM) No. 32003C2170F AS SHOWN ON THE FIRM INDEX, REVISED NOVEMBER 16, 2011. ZONE "X" IS DEFINED BY FEMA AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD FLOODPLAIN".

NDOT RIGHT-OF-WAY NOTES

NO WORK SHALL BE DONE WITHIN NDOT RIGHT-OF-WAY WITHOUT AN ENCROACHMENT PERMIT.

CONSTRUCTION NOTES

1. INSTALL MODIFIED TYPE 'A' CONCRETE CURB PER DETAIL 1 ON SHEET C03.05.
2. INSTALL TYPE 'L' CONCRETE CURB AND GUTTER PER CCAUSD No. 216.
3. INSTALL 0" FACE CURB PER DETAIL 2 ON SHEET C03.05.
4. INSTALL CONCRETE SIDEWALK PER CCAUSD No. 234, WIDTH AS NOTED ON PLANS.
5. INSTALL TRANSITION FROM TYPE 'L' CURB TO 0" FACE CURB, LENGTH AS NOTED ON PLANS.
6. INSTALL ASPHALT PAVING AND BASE MATERIAL PER GEOTECHNICAL REPORT RECOMMENDATIONS.
7. INSTALL CONCRETE PAVING AND BASE MATERIAL PER GEOTECHNICAL REPORT RECOMMENDATIONS.
8. INSTALL ADA SIDEWALK RAMP, I.D. AS NOTED ON PLAN, REFER TO DETAILS ON SHEETS C03.03-C03.04 FOR RAMP I.D., GEOMETRY AND GRADES.
9. INSTALL 3' WIDE ADA VALLEY GUTTER PER DETAIL 4 ON SHEET C03.05.
10. INSTALL 2' RETAINING WALL WITH "OPTIONAL" TYPE FOOTING PER SNBO REGIONAL STANDARD No. B-100-2 WITH GROUTED SCREEN WALL.
14. INSTALL LID RIP-RAP SWALE PER DETAIL 3 ON SHEET C03.05.
16. INSTALL CONCRETE CROSS GUTTER PER CCAUSD No. 228.
- LS REFER TO LANDSCAPE PLANS FOR DETAILS.
- ME MATCH EXISTING
- PP PROTECT IN PLACE

RIGHT-OF-WAY AND EASEMENTS

10. EX. R/W PER DOC #0329:0288327.
102. EX. R/W PER DOC #0452:0364174.
103. EX. R/W PER DOC #0020:0018943.
104. EX. R/W PER DOC #0000.0403623.
105. EX. R/W PER DOC #0000.0403457.

BENCHMARK

CITY OF LAS VEGAS VERTICAL CONTROL
BENCHMARK No. "OLV1185SW"

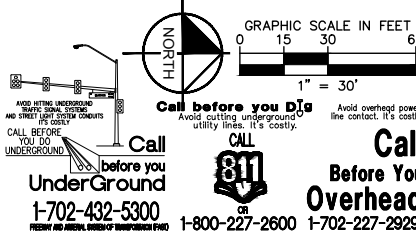
CITY OF LAS VEGAS PIN AND PLATE IN THE TOP OF CURB AT THE NORTHEAST CORNER OF DESERT INN ROAD AND POLARIS AVENUE NEAR THE PC OF DESERT INN ROAD.

ELEVATION = 650.346 METERS

CITY OF LAS VEGAS VERTICAL CONTROL DATUM BASED UPON
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88 V.2018)

BASIS OF BEARING

NORTH 87°51'19" WEST, BEING THE BEARING ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SECTION 8, TOWNSHIP 21 SOUTH, RANGE 61 EAST, M.D.M. AND BEING THE CENTERLINE OF SIRIUS AVENUE AS MEASURED BETWEEN VALLEY VIEW BOULEVARD AND RIGEL AVENUE AS SHOWN IN FILE 196, PAGE 060 OF SURVEYS ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.



KHA PROJECT 092965001		DATE 07/02/2020		SCALE AS SHOWN		DESIGNED BY TEA		DRAWN BY KLS		CHECKED BY TEA	
Kimley»Horn © 2020 KIMLEY-HORN AND ASSOCIATES, INC. 8671 LAS VEGAS BOULEVARD S., SUITE 320, LAS VEGAS, NV 89119 PHONE: 702-862-3600 WWW.KIMLEY-HORN.COM											
PROFESSIONAL ENGINEER THOMAS ACKERT Exp. 12/31/20 CIVIL No. 18592, NV											
07/06/2020											
AREA 15 EVENT PARKING LOT PREPARED FOR AREA 15 LAS VEGAS, LLC. CITY OF LAS VEGAS NEVADA											
## OF XX C03.01											

**CITY OF LAS VEGAS
CENTRAL NEIGHBORHOOD
FLOOD CONTROL MASTER PLAN
VOLUME II**

Prepared for:

City of Las Vegas
400 Stewart Avenue
Las Vegas, NV 89101

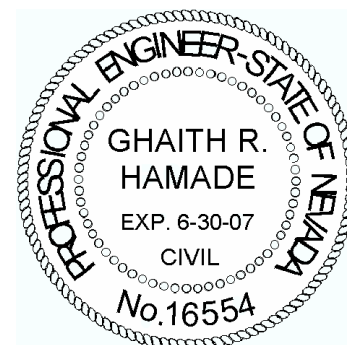
Prepared by:

PBS&J
2270 Corporate Circle, Suite 100
Henderson, Nevada 89074

March 2005



City of Las Vegas



ACKNOWLEDGEMENTS

CITY OF LAS VEGAS

Mayor

Oscar B. Goodman

Council

Lois Tarkanian

Steve Wolfson

Gary Reese

Larry Brown

Lawrence Weekly

Michael Mack

City Manager

Douglas Selby

Director, Department of Public Works

Richard D. Goecke

City Engineer

Charles Kajkowski, P.E.

Assistant City Engineer

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City of Las Vegas

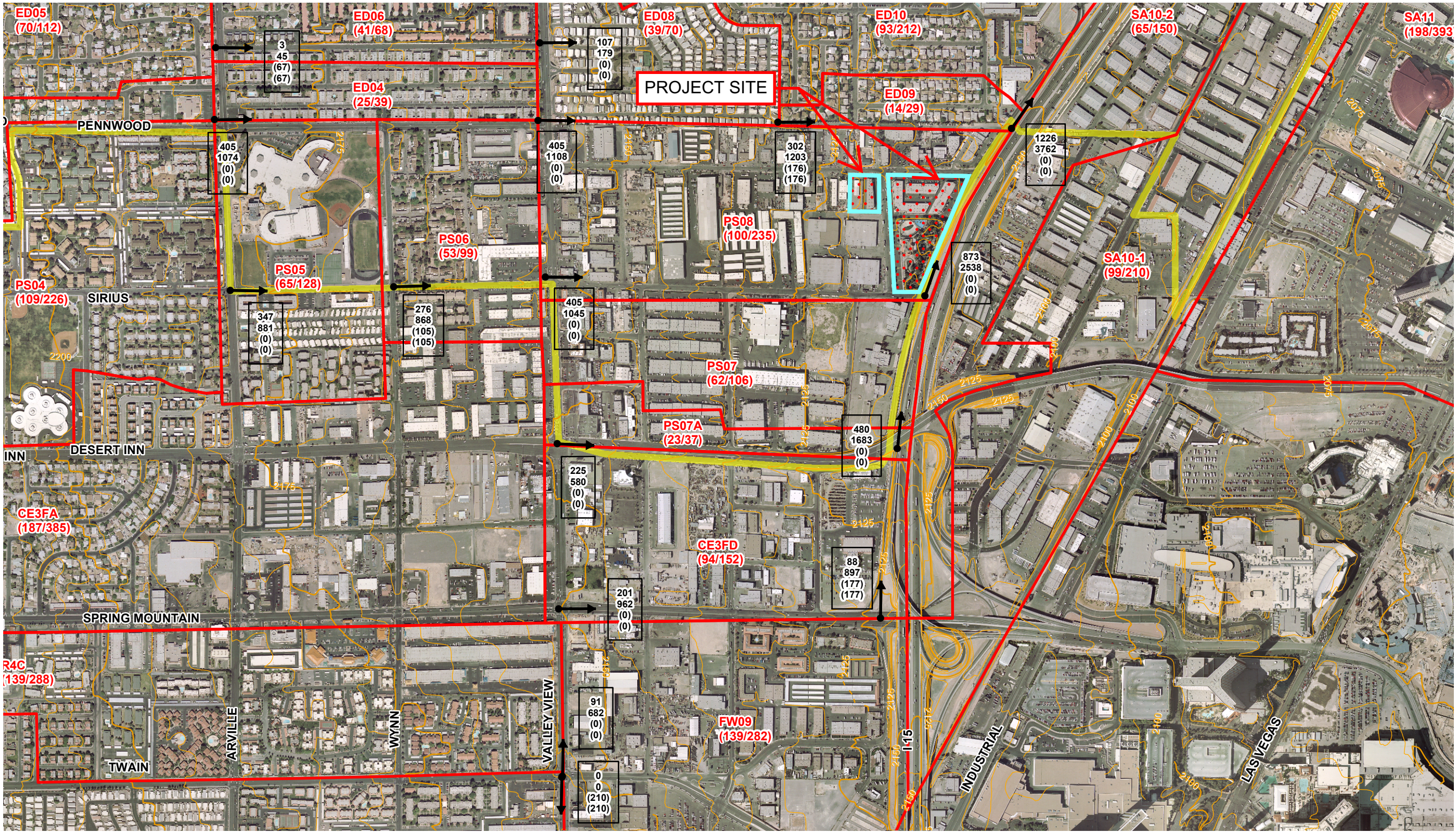
CENTRAL
NEIGHBORHOOD
FLOOD CONTROL
MASTER PLAN

LEGEND

- Sub-basin Boundary
- Basin ID
- (10yr./100yr.) Contributing flow from the basin (cfs)
- Flow Arrow
- 10-Year Street Flow
100-Year Street Flow
10-Year Facility Flow
100-Year Facility Flow
(Flows in CFS)
- Study Area Limit

PHOTO DATE: SPRING 2004

FIGURE E- 19



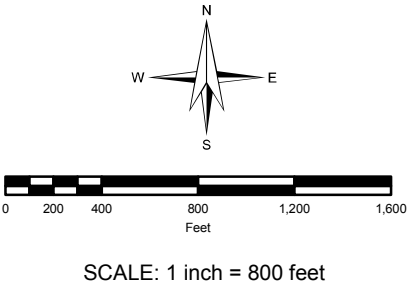
EXISTING DRAINAGE CONDITIONS

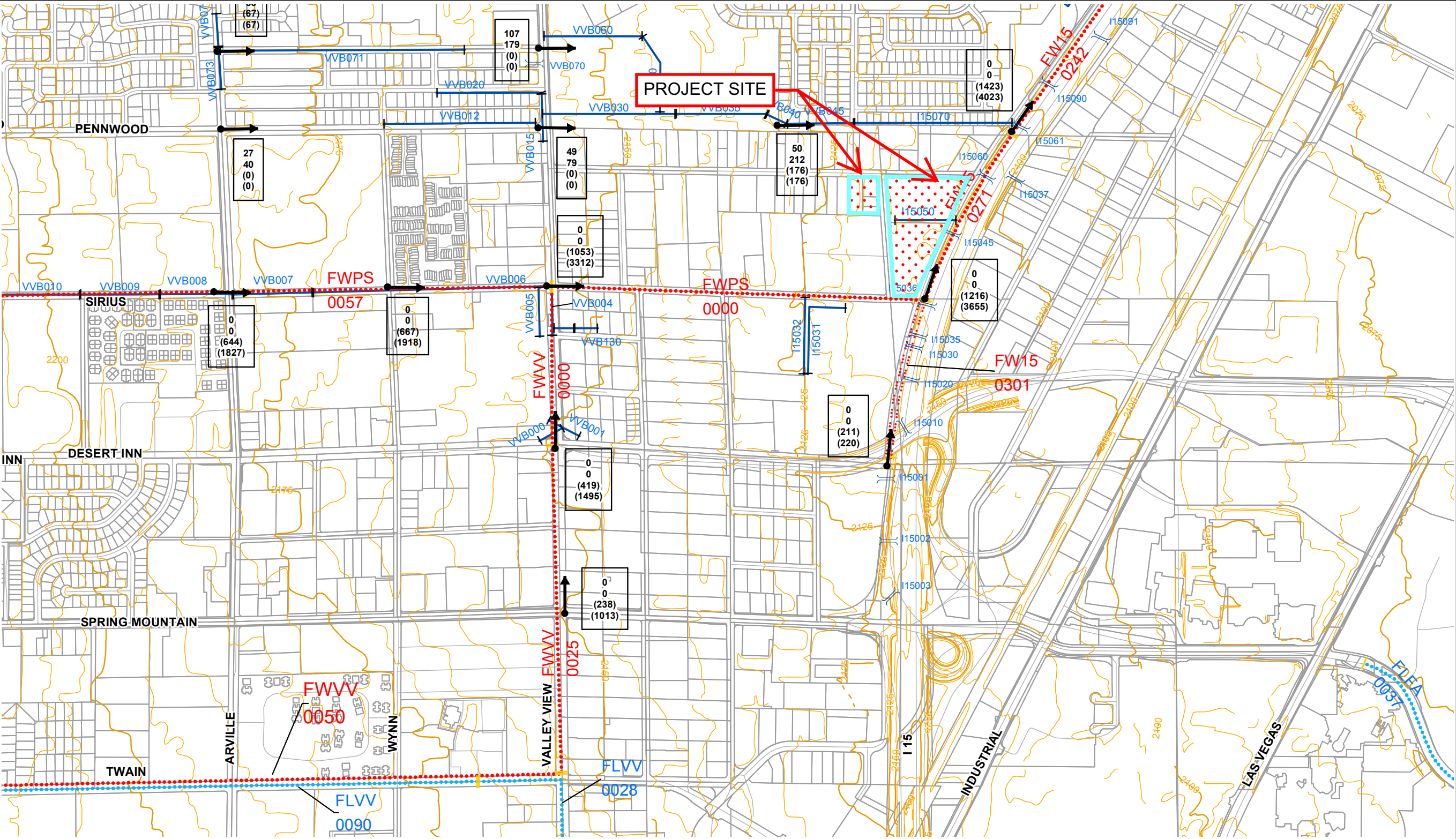
PBS&
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	Durango	Rainbow	Decatur	Tonopah	5th	Pecos	Nellis
Lake Mead				1	2		
Washington				3	4	5	6
Charleston	7	8	9	10	11	12	
Sahara	13	14	15	16	17		
Desert Inn		18	19				

NOTE:
Existing conditions are based on future
Curve Number values with only existing local and
CCRFC facilities in place.

100-Year flows at locations where a 100-Year
subbasin concentration point does not exist in the
hydrology model were based on an area-weighted
ratio of the 100-Year flows from concentration points
upstream and downstream of the location. See
Volume I for a more detailed explanation.







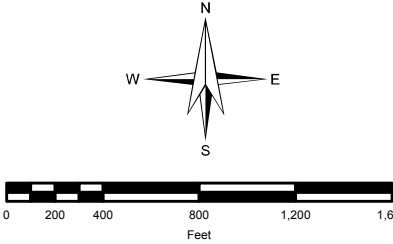
City of Las Vegas

CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN

LEGEND

- Existing Regional Facility
- Category A Proposed Regional Facility (2002 MPU)
- Category B Proposed Regional Facility (2002 MPU)
- Category A Proposed Regional Facility (2004 CNFCMP)
- Existing Local Facility
- Proposed Local Facility
- Regional Culvert
- Regional Bridge
- Regional Pipeline
- Regional Channel
- Regional Levee
- Regional Detention Basin
- Local Storm Drain
- Local Culvert
- Proposed Local Storm Drain
- Regional ID-Mile Separator
- Local Facility Separator

FIGURE F-19



SCALE: 1 inch = 800 feet

Flow Arrow

250	10-Year Street Flow
500	100-Year Street Flow
(300)	10-Year Facility Flow
(800)	100-Year Facility Flow

(Flows in CFS)

NOTE:
Ultimate drainage conditions are based on future Curve Number values with all flood control facilities in place.

100-Year flows at locations where a 100-Year subbasin concentration point does not exist in the hydrology model were based on an area-weighted ratio of the 100-Year flows from concentration points upstream and downstream of the location. See Volume I for a more detailed explanation.

	Durango	Rainbow	Decatur	Tonopah	5th	Pecos	Nellis
Lake Mead				1	2		
Washington				3	4	5	6
Charleston							
Sahara				7	8	9	10
Desert Inn				13	14	15	16
						17	
						18	19

FUTURE DRAINAGE CONDITIONS



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Fax: (702) 263-7200



2004 CITY OF LAS VEGAS
CENTRAL NEIGHBORHOOD
FLOOD CONTROL MASTER PLAN

LEGEND

REGIONAL STREAM NAME DESIGNATOR	AABB
REGIONAL MILE	0000
LOCAL STREAM NAME DESIGNATOR	AAB
LOCAL ID NUMBER	000
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
LEFT SIDE SLOPE H:V	LSS
RIGHT SIDE SLOPE H:V	RSS
CORRUGATED METAL ARCH PIPE CULVERT	CMAP
CORRUGATED METAL PIPE CULVERT	CMP
DUCTILE IRON PIPE	DIP
HIGH DENSITY POLYETHYLENE PIPE	HDPE
HELICAL ELLIPTICAL REINFORCED CONCRETE PIPE	HERCP
PUBLIC DRAINAGE EASEMENT	PDE
POLYVINYL CHLORIDE PIPE	PVC
REINFORCED CONCRETE BOX	RCB
REINFORCED CONCRETE BOX CULVERT	RCBC
REINFORCED CONCRETE ELLIPTICAL PIPE	RCEP
REINFORCED CONCRETE PIPE	RCP
REINFORCED CONCRETE PIPE ARCH	RCPA
REINFORCED CONCRETE PIPE CULVERT	RCPC
STORM SEWER PIPE	SSP
VITRIFIED CLAY PIPE	VCP

NOTES:
FLOW = 100 YEAR HEC-1 FLOW (REGIONAL FACILITIES)
FLOW = FACILITY CAPACITY (LOCAL FACILITIES)

FLOOD CONTROL FACILITIES INVENTORY

SHEET I - 12



ID	MILE	Status	Plan No.	Facility Description	Facility Length L (ft)	Channel Slope S (%)	Flow (cfs)
F-18							
REGIONAL FACILITIES							
FLAMINGO WASH - DARBY STORM DRAIN							
FLDY	0000	E	2002 Master Plan Update	84" RCP	100	0.25	549
FLDY	0002	E	2002 Master Plan Update	10'X3' RCB	50	0.25	549
FLDY	0004	E	2002 Master Plan Update	60" RCP	680	2.80	549
FLAMINGO WASH - LATERAL DRAIN (FLAMINGO/RAINBOW)							
FLLA	0227	E	2002 Master Plan Update	93" RCP	1360	0.40	664
FLLA	0254	E	2002 Master Plan Update	90" RCP	2730	0.40	431
FLLA	0305	E	2002 Master Plan Update	1556 cfs Spillway			1556
FLLA	0306	E	2002 Master Plan Update	30" RCP WITH 18" Orifice Outlet	160	0.43	29
FLLA	0308	E	2002 Master Plan Update	62 ac-ft Desert Inn Detention Basin			734
FLLA	0322	E	2002 Master Plan Update	81" RCP	1370	0.50	
FLLA	0345	E	2002 Master Plan Update	81" RCP	1340	0.50	
FLLA	0369	E	2002 Master Plan Update	72" RCP	670	0.50	
FLAMINGO - VALLEY VIEW							
FLVV	0090	E	2002 Master Plan Update	48" RCP	4180	1.06	229
DECATUR DRAIN							
FWDE	0000	P1	2004 CNFCMP	12' X 8' RCB	1320	0.38	1039
FWDE	0025	P1	2004 CNFCMP	10' X 8' RCB	1325	0.25	632
PALMYRA / SIRIUS DRAIN							
FWPS	0057	P1	2004 CNFCMP	2:84" RCP	5280	1.28	1112
FWPS	0157	P1	2004 CNFCMP	2:66" RCP	5100	1.15	530
VALLEY VIEW DRAIN							
FWVV	0050	P1	2002 Master Plan Update	7' X 6' RCB	9000	1.50	716
LOCAL FACILITIES							
VVB	010	E	107-V604C	18" RCP	650		17
F-19							
REGIONAL FACILITIES							
FLAMINGO - FASHION							
FLFA	0037	E	2002 Master Plan Update	8' X 5' RCB	3060	0.45	527
FLAMINGO - VALLEY VIEW							
FLVV	0028	E	2002 Master Plan Update	48" RCP	3310	0.50	229
FLVV	0090	E	2002 Master Plan Update	48" RCP	4180	1.06	229
FREEWAY CHANNEL FROM DESERT INN TO EXPRESSWAY							
FW15	0242	P1	2002 Master Plan Update	2: 12' X 9' RCB	1500	0.93	4023
FW15	0271	P1	2004 CNFCMP	2: 12' X 10' RCB	1700	0.59	3655
FW15	0301	P1	2002 Master Plan Update	Conc Chnl 12'W 4'D 2:1 SS	1300	0.42	435
PALMYRA / SIRIUS DRAIN							
FWPS	0000	P1	2002 Master Plan Update	12' X 11' RCB	3000	1.50	2399
FWPS	0057	P1	2002 Master Plan Update	2:84" RCP	5280	1.28	1112
VALLEY VIEW DRAIN							
FWVV	0000	P1	2002 Master Plan Update	12' X 11' RCB	1320	0.30	1495
FWVV	0025	P1	2002 Master Plan Update	10' X 10' RCB	1320	0.30	1013
FWVV	0050	P1	2002 Master Plan Update	7' X 6' RCB	9000	1.50	716
LOCAL FACILITIES							
I15	001	E	HWY BK # I-2	36" RCP	150		60
I15	002	E	HWY BK # I-2	24" RCP	150		30
I15	003	E	HWY BK # I-2	24" CMP	150		30
I15	010	E	HWY BK # I-2	2: 36" RCP	152		120
I15	020	E	HWY BK # I-2	36" RCP	234		60
I15	030	E	HWY BK # I-2	2: 36" RCP	234		120
I15	031	E	327-V195	Unlined Chnl 20'W 1'D 1:1 SS	380		167
I15	032	E	327-V195	Unlined Chnl 20'W 2'D 1:1 SS	440		629
I15	035	E	HWY BK # I-2	24" CMP	150		30
I15	036	E	HWY BK # I-2	36" RCP	300		60
I15	037	E	HWY BK # I-2	24" CMP	150		30
I15	045	E	HWY BK # I-2	24" CMP	150		30
I15	050	E	327-V221	48" RCP	1275		47
I15	060	E	HWY BK # I-2	36" RCP	228		60
I15	061	E	HWY BK # I-2	2: 27" X 42" CMAP	220		220
I15	070	E	327-V221	2: 48" CMP	2910		144
I15	090	E	HWY BK # I-2	36" RCP	320		80
I15	091	E	HWY BK # I-2	24" RCP	150		30
VVB	000	E	107-V926	18" RCP	156		11
VVB	001	E	107-V926	19" X 30" RCP	118		23
VVB	002	E	107-V1306	24" RCP	220	0.00003	13

ID	MILE	Status	Plan No.	Facility Description	Facility Length L (ft)	Channel Slope S (%)	Flow (cfs)
F-19							
LOCAL FACILITIES (continued)							
VVB	003	E	107-V1306	24" RCP	199	0.0001	16
VVB	004	E	107-V604C	48" RCP	425		227
VVB	005	E	107-V926	42" RCP	330		45
VVB	006	E	107-V604C	36" RCP	1950		105
VVB	007	E	107-V604C	30" RCP	650		65
VVB	008	E	107-V604C	24" RCP	600		36
VVB	009	E	107-V604C	21" RCP	650		25
VVB	010	E	107-V604C	18" RCP	650		17
VVB	012	E	327-V228	18" RCP	1297		8
VVB	015	E	327-V228	18" RCP	325		11
VVB	020	E	327-V228	18" RCP	897		11
VVB	030	E	327-V224	24" RCP	1019		23
VVB	035	E	327-V224	30" RCP	790		37
VVB	040	E	327-V224	36" RCP	150		80
VVB	045	E	327Y-2153AT	54" RCP	325		176
VVB	050	E	327-V224	24" RCP	752		18
VVB	060	E	327-V224	18" RCP	786		11
VVB	070	E	107-V926	19" X 30" RCP	68		30
VVB	071	E	107V-604C	36" RCP	2660		67
VVB	072	E	107-V604C	24" RCP	514		18
VVB	073	E	107-V604C	30" RCP	659		29
VVB	130	E	107-V1306	24" RCP	200		16

HIGHLIGHTED DENOTES ADJACENT TO
PROJECT SITE

Facility I15 050 Does
not exist.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

PBS&J
File: FORM4.XLS

Central Neighborhood Flood Control Master Plan

CENTRAL WATERSHED

Ultimate Conditions 100-Year Model

BY:
DATE:

SCA
5/27/20

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check	Tag	REMARKS
DESIG:	DEV./EX. (D or E)	CN	K	AREA Ac	AREA Mi^2	INITIAL LENGTH Feet	SLOPE %	Ti Min	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY FPS	V2 VELOCITY FPS	Tt Min	Min	Min	Tag= 0.6Tc/60 Hours	RAINFALL Q100/Q10 Inches
(1)			(2)	(3)		(4)	(5)	(6)	(7)	(8)	(9a)	(9b)	(10)	(13)	(14)		
1-GOLF	D	86.0	0.7452	231.68	0.36	100	1.0	6.4	7200	2.4	3.1	4.8	26.1	32.4	50.6	0.324	
2a-OAK-C	D	86.9	0.7571	201.60	0.32	100	1.0	6.2	5400	1.5	2.5	3.7	25.3	31.5	40.6	0.315	
3a-OAK-C	D	85.4	0.7373	222.08	0.35	100	1.0	6.5	6950	1.7	2.7	4.0	29.9	36.4	49.2	0.364	
3-ELP-C	D	88.2	0.7742	180.48	0.28	100	1.0	5.9	6900	1.7	2.6	4.0	30.2	36.1	48.9	0.361	
3-HOLM-C	D	89.3	0.7888	181.76	0.28	100	1.0	5.6	7500	2.1	3.0	4.5	28.9	34.5	52.2	0.345	
5OAK-C	D	90.3	0.8020	146.56	0.23	100	1.0	5.4	4000	2.6	3.3	5.0	14.3	19.7	32.8	0.197	
A1-C	D	91.4	0.8165	199.04	0.31	100	1.0	5.1	6600	0.9	1.9	2.9	39.8	44.9	47.2	0.449	
A-C	D	93.8	0.8482	212.48	0.33	100	1.0	4.5	4200	1.7	2.6	4.0	18.8	23.3	33.9	0.233	
AL00A-C	D	91.1	0.8125	267.52	0.42	100	1.0	5.2	5400	1.5	2.5	3.7	25.3	30.5	40.6	0.305	
AL01A	D	90.7	0.8072	154.24	0.24	100	1.0	5.3	4100	1.3	2.3	3.5	20.5	25.8	33.3	0.258	
AL01B-C	D	90.5	0.8046	254.72	0.40	100	1.0	5.3	5500	1.9	2.8	4.2	22.7	28.0	41.1	0.280	
AL04-C	D	90.5	0.8046	107.52	0.17	100	1.0	5.3	3200	0.6	1.6	2.4	24.3	29.6	28.3	0.283	
AL05-C	D	90.5	0.8046	67.84	0.11	100	1.0	5.3	3400	1.3	2.3	3.5	17.5	22.8	29.4	0.228	
AL08-C	D	91.4	0.8165	192.00	0.30	100	1.0	5.1	7400	1.1	2.1	3.2	39.8	44.9	51.7	0.449	
AL09-C	D	91.2	0.8138	218.24	0.34	100	1.0	5.2	9600	1.1	2.1	3.2	51.2	56.3	63.9	0.563	
AL10-C	D	91.6	0.8191	99.84	0.16	100	1.0	5.1	5100	1.7	2.6	4.0	22.6	27.6	38.9	0.276	
AL13-C	D	90.0	0.7980	165.12	0.26	100	1.0	5.4	6800	1.1	2.1	3.2	36.6	42.0	48.3	0.420	
AL14-C	D	94.2	0.8534	235.52	0.37	100	1.0	4.4	7500	1.7	2.6	4.0	32.7	37.2	52.2	0.372	
AL16-C	D	92.2	0.8270	112.00	0.18	100	1.0	4.9	5200	1.2	2.2	3.3	27.7	32.6	39.4	0.326	
AL90-C	D	85.3	0.7360	199.68	0.31	100	1.0	6.6	4600	0.5	1.5	2.3	35.9	42.4	36.1	0.361	
AL92	D	86.0	0.7452	155.52	0.24	100	1.0	6.4	5650	0.4	1.3	2.0	48.4	54.8	41.9	0.419	
AL93-C	D	90.9	0.8099	340.48	0.53	100	1.0	5.2	4700	0.6	1.6	2.4	33.8	39.0	36.7	0.367	
AL95-C	D	84.6	0.7267	122.24	0.19	100	1.0	6.7	4500	1.1	2.1	3.2	24.6	31.3	35.6	0.313	
AL96-C	D	94.6	0.8587	115.84	0.18	100	1.0	4.3	4400	0.6	1.5	2.3	33.7	38.0	35.0	0.350	
B1-C	D	93.6	0.8455	175.36	0.27	100	1.0	4.6	7000	0.9	1.9	2.8	42.7	47.3	49.4	0.473	
B3-1	D	92.1	0.8257	195.84	0.31	100	1.0	4.9	7200	1.0	2.1	3.1	39.8	44.7	50.6	0.447	
B3-2	D	92.0	0.8244	78.08	0.12	100	1.0	5.0	4650	0.6	1.6	2.5	33.3	38.2	36.4	0.364	
B-C	D	94.1	0.8521	199.68	0.31	100	1.0	4.5	6650	0.7	1.7	2.6	44.8	49.2	47.5	0.475	
BN03-C	D	89.2	0.7874	265.60	0.42	100	1.0	5.6	7550	2.3	3.0	4.6	28.3	34.0	52.5	0.340	
BN06-C	D	89.6	0.7927	217.60	0.34	100	1.0	5.5	4400	3.1	3.5	5.4	14.5	20.0	35.0	0.200	

100-YR

LVW03	D	85.5	0.7386	187.52	0.29	100	1.0	6.5	5700	0.4	1.2	1.8	54.8	61.3	42.2	0.422
LVW04	D	86.0	0.7452	188.80	0.30	100	1.0	6.4	7100	0.3	1.1	1.6	75.5	81.9	50.0	0.500
M	D	89.7	0.7940	170.88	0.27	100	1.0	5.5	6550	1.0	2.0	3.0	37.2	42.7	46.9	0.427
MEDB	D	84.5	0.7254	192.64	0.30	100	1.0	6.7	3000	1.8	2.7	4.1	13.1	19.8	27.2	0.198
N-C	D	88.5	0.7782	168.96	0.26	100	1.0	5.8	5450	0.6	1.5	2.3	41.9	47.7	40.8	0.408
NEL01-C	D	81.7	0.6884	181.76	0.28	100	1.0	7.4	5500	0.3	1.1	1.7	56.4	63.8	41.1	0.411
NEL04-C	D	87.9	0.7703	378.24	0.59	100	1.0	5.9	11100	0.3	1.1	1.7	110.2	116.1	72.2	0.722
NEL06-C	D	88.5	0.7782	206.72	0.32	100	1.0	5.8	6800	0.4	1.2	1.9	63.4	69.2	48.3	0.483
OA02	D	87.3	0.7624	265.60	0.42	100	1.0	6.1	8100	0.4	1.3	2.0	69.2	75.3	55.6	0.556
OA03-C	D	89.7	0.7940	354.56	0.55	100	1.0	5.5	8700	0.3	1.2	1.8	84.5	90.0	58.9	0.589
OG011A-C	D	85.5	0.7386	282.24	0.44	100	1.0	6.5	7050	1.2	2.2	3.4	36.2	42.8	49.7	0.428
OG02-C	D	90.2	0.8006	203.52	0.32	100	1.0	5.4	6150	1.4	2.4	3.6	29.7	35.1	44.7	0.351
OG03-C	D	87.0	0.7584	208.00	0.33	100	1.0	6.1	6150	1.1	2.2	3.3	32.7	38.9	44.7	0.389
OG04-C	D	90.3	0.8020	184.32	0.29	100	1.0	5.4	5200	1.3	2.3	3.4	26.6	32.0	39.4	0.320
OG05-C	D	90.5	0.8046	170.24	0.27	100	1.0	5.3	5500	0.9	1.9	2.8	33.9	39.2	41.1	0.392
OK03-C	D	91.7	0.8204	230.40	0.36	100	1.0	5.0	7100	1.4	2.4	3.6	33.8	38.8	50.0	0.388
OK04-C	D	86.1	0.7465	122.24	0.19	100	1.0	6.4	6200	1.4	2.4	3.6	30.0	36.4	45.0	0.364
OK06-C	D	91.4	0.8165	110.08	0.17	100	1.0	5.1	4100	1.3	2.3	3.5	20.5	25.6	33.3	0.256
OK07	D	88.0	0.7716	192.00	0.30	100	1.0	5.9	7700	1.3	2.3	3.5	38.0	43.9	53.3	0.439
OK09-C	D	90.6	0.8059	198.40	0.31	100	1.0	5.3	5100	0.8	1.8	2.7	32.9	38.2	38.9	0.382
OK10	D	90.2	0.8006	155.52	0.24	100	1.0	5.4	5350	1.2	2.2	3.4	27.7	33.1	40.3	0.331
OK11	D	90.1	0.7993	222.08	0.35	100	1.0	5.4	7600	0.7	1.7	2.6	50.3	55.7	52.8	0.528
P-C	D	87.2	0.7610	197.76	0.31	100	1.0	6.1	5250	0.5	1.4	2.1	43.5	49.6	39.7	0.397
PD01-C	D	83.8	0.7162	241.28	0.38	100	1.0	6.9	5950	0.8	1.8	2.7	38.9	45.8	43.6	0.436
PD04B-C	D	87.8	0.7690	299.52	0.47	100	1.0	6.0	7800	0.8	1.8	2.7	50.0	56.0	53.9	0.539
PD05A-C	D	93.1	0.8389	87.04	0.14	100	1.0	4.7	5400	0.6	1.6	2.5	38.3	43.0	40.6	0.406
PS01-C	D	85.6	0.7399	264.96	0.41	100	1.0	6.5	7150	1.8	2.7	4.1	29.9	36.4	50.3	0.364
PS03	D	90.4	0.8033	123.52	0.19	100	1.0	5.3	3200	1.2	2.2	3.3	17.3	22.6	28.3	0.226
PS06-C	D	92.3	0.8284	247.68	0.39	100	1.0	4.9	5200	1.3	2.3	3.4	26.6	31.5	39.4	0.315
PS08	D	92.1	0.8257	114.56	0.18	100	1.0	4.9	4000	1.5	2.5	3.7	18.9	23.9	32.8	0.239
Q-C	D	85.8	0.7426	165.12	0.26	100	1.0	6.4	5450	0.5	1.4	2.1	45.9	52.3	40.8	0.408
R2-C	D	93.3	0.8416	350.72	0.55	100	1.0	4.7	6400	1.8	2.7	4.1	27.1	31.7	46.1	0.317
R4C	D	93.4	0.8429	174.08	0.27	100	1.0	4.6	8300	1.6	2.5	3.8	37.2	41.9	56.7	0.419
R-C	D	91.2	0.8138	352.64	0.55	100	1.0	5.2	6700	0.9	1.9	2.9	40.0	45.2	47.8	0.452
S	D	90.0	0.7980	364.16	0.57	100	1.0	5.4	7900	1.7	2.6	4.0	34.0	39.4	54.4	0.394
S1-C	D	88.0	0.7716	300.80	0.47	100	1.0	5.9	9950	1.6	2.6	3.9	43.8	49.8	65.8	0.498
SA01-C	D	93.5	0.8442	200.96	0.31	100	1.0	4.6	7100	1.8	2.7	4.1	29.6	34.2	50.0	0.342
SA05	D	92.1	0.8257	118.40	0.19	100	1.0	4.9	5200	1.2	2.2	3.4	27.1	32.1	39.4	0.321
SA06-C	D	93.8	0.8482	225.92	0.35	100	1.0	4.5	7700	1.0	2.1	3.1	42.5	47.1	53.3	0.471
SA08	D	93.8	0.8482	156.80	0.25	100	1.0	4.5	5000	1.7	2.6	4.0	22.0	26.5	38.3	0.265
SA10-1	D	91.5	0.8178	177.28	0.28	100	1.0	5.1	9100	0.7	1.7	2.6	60.3	65.4	61.1	0.611
SA10-2	D	90.1	0.7993	130.56	0.20	100	1.0	5.4	9500	0.7	1.6	2.5	65.8	71.2	63.3	0.633
SA11	D	94.9	0.8627	253.44	0.40	100	1.0	4.3	7300	0.7	1.7	2.5	49.7	54.0	51.1	0.511

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

PBS&J
File: FORM4.XLS

Central Neighborhood Flood Control Master Plan

CENTRAL WATERSHED

Ultimate Conditions 10-Year Model

BY:

DATE:

SCA

5/27/20

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check	Tlag	REMARKS
DESIG:	DEV./EX. (D or E)	CN	K	AREA Ac	AREA Mi^2	INITIAL LENGTH Feet	SLOPE %	Ti Min	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY FPS	V2 VELOCITY FPS	Tt Min	Min	Min	Tlag= 0.6Tc/60 Hours	RAINFALL Q100/Q10 Inches
(1)			(2)	(3)		(4)	(5)	(6)	(7)	(8)	(9a)	(9b)	(10)	(13)	(14)		
1-GOLF	D	86.0	0.7452	231.68	0.36	100	1.0	6.4	7200	2.4	3.1	4.8	26.1	32.4	50.6	0.324	
2a-OAK-C	D	86.9	0.7571	201.60	0.32	100	1.0	6.2	5400	1.5	2.5	3.7	25.3	31.5	40.6	0.315	
3a-OAK-C	D	85.4	0.7373	222.08	0.35	100	1.0	6.5	6950	1.7	2.7	4.0	29.9	36.4	49.2	0.364	
3-ELP-C	D	88.2	0.7742	180.48	0.28	100	1.0	5.9	6900	1.7	2.6	4.0	30.2	36.1	48.9	0.361	
3-HOLM-C	D	89.3	0.7888	181.76	0.28	100	1.0	5.6	7500	2.1	3.0	4.5	28.9	34.5	52.2	0.345	
5-OAK-C	D	90.3	0.8020	146.56	0.23	100	1.0	5.4	4000	2.6	3.3	5.0	14.3	19.7	32.8	0.197	
A1-C	D	91.4	0.8165	199.04	0.31	100	1.0	5.1	6600	0.9	1.9	2.9	39.8	44.9	47.2	0.449	
A-C	D	93.8	0.8482	212.48	0.33	100	1.0	4.5	4200	1.7	2.6	4.0	18.8	23.3	33.9	0.233	
AL00A	D	90.8	0.8086	83.20	0.13	100	1.0	5.2	4000	1.6	2.6	3.9	18.2	23.4	32.8	0.234	
AL00B	D	90.6	0.8059	60.80	0.10	100	1.0	5.3	3100	1.5	2.4	3.7	15.2	20.5	27.8	0.205	
AL01A	D	90.6	0.8059	41.60	0.07	100	1.0	5.3	4900	1.4	2.4	3.7	23.5	28.8	37.8	0.288	
AL01B	D	90.1	0.7993	95.36	0.15	100	1.0	5.4	4800	1.1	2.1	3.2	26.7	32.1	37.2	0.321	
AL01C	D	90.7	0.8072	51.20	0.08	100	1.0	5.3	3600	1.2	2.2	3.3	19.2	24.5	30.6	0.245	
AL02	D	90.7	0.8072	112.64	0.18	100	1.0	5.3	3900	1.3	2.3	3.5	20.0	25.3	32.2	0.253	
AL03A	D	90.1	0.7993	48.00	0.08	100	1.0	5.4	3000	1.2	2.2	3.4	16.2	21.6	27.2	0.216	
AL03B	D	90.5	0.8046	44.16	0.07	100	1.0	5.3	3500	1.1	2.1	3.1	19.9	25.2	30.0	0.252	
AL03C	D	90.5	0.8046	68.48	0.11	100	1.0	5.3	3400	1.3	2.3	3.5	17.5	22.8	29.4	0.228	
AL04	D	90.5	0.8046	107.52	0.17	100	1.0	5.3	3200	0.6	1.6	2.4	24.3	29.6	28.3	0.283	
AL05	D	91.1	0.8125	62.08	0.10	100	1.0	5.2	3500	0.6	1.5	2.3	27.1	32.2	30.0	0.300	
AL06	D	90.9	0.8099	40.96	0.06	100	1.0	5.2	2300	0.5	1.5	2.2	19.3	24.5	23.3	0.233	
AL07	D	90.8	0.8086	67.84	0.11	100	1.0	5.2	4000	1.2	2.2	3.3	21.4	26.6	32.8	0.266	
AL08	D	92.3	0.8284	62.08	0.10	100	1.0	4.9	3800	1.5	2.5	3.7	18.2	23.1	31.7	0.231	
AL09	D	90.6	0.8059	61.44	0.10	100	1.0	5.3	2800	2.6	3.2	4.9	10.4	15.7	26.1	0.157	
AL10	D	91.6	0.8191	99.84	0.16	100	1.0	5.1	5400	1.7	2.6	4.0	23.6	28.7	40.6	0.287	
AL11	D	94.6	0.8587	35.20	0.06	100	1.0	4.3	2300	1.0	2.0	3.1	13.9	18.3	23.3	0.183	
AL12	D	90.3	0.8020	80.00	0.13	100	1.0	5.4	3700	0.8	1.8	2.7	24.3	29.7	31.1	0.297	
AL13-1	D	86.2	0.7478	24.96	0.04	100	1.0	6.3	2000	0.4	1.3	1.9	19.4	25.8	21.7	0.217	
AL13-2	D	90.6	0.8059	19.20	0.03	100	1.0	5.3	1900	0.8	1.8	2.7	13.2	18.5	21.1	0.185	
AL13-3	D	90.4	0.8033	41.60	0.07	100	1.0	5.3	2600	1.2	2.2	3.3	14.5	19.9	25.0	0.199	
AL14	D	93.2	0.8402	90.88	0.14	100	1.0	4.7	3800	2.0	2.8	4.3	15.7	20.4	31.7	0.204	

10-YR

OG05-C	D	90.5	0.8046	170.24	0.27	100	1.0	5.3	5500	0.9	1.9	2.8	33.9	39.2	41.1	0.392
OK01	D	92.0	0.8244	17.92	0.03	100	1.0	5.0	1900	1.3	2.3	3.5	10.2	15.2	21.1	0.152
OK02	D	92.7	0.8336	77.44	0.12	100	1.0	4.8	3900	1.5	2.4	3.7	18.7	23.5	32.2	0.235
OK03	D	91.0	0.8112	135.04	0.21	100	1.0	5.2	5000	1.0	2.0	3.1	28.6	33.8	38.3	0.338
OK04	D	82.9	0.7043	71.04	0.11	100	1.0	7.1	3300	0.8	1.8	2.7	21.8	29.0	28.9	0.289
OK05	D	90.5	0.8046	51.20	0.08	100	1.0	5.3	3900	1.5	2.5	3.8	18.3	23.6	32.2	0.236
OK06	D	91.4	0.8165	110.08	0.17	100	1.0	5.1	3800	1.3	2.3	3.4	19.7	24.8	31.7	0.248
OK07	D	86.7	0.7544	158.72	0.25	100	1.0	6.2	6500	1.3	2.3	3.4	32.8	39.0	46.7	0.390
OK08	D	94.2	0.8534	33.28	0.05	100	1.0	4.4	2500	0.9	1.9	2.9	16.0	20.4	24.4	0.204
OK09	D	90.6	0.8059	198.40	0.31	100	1.0	5.3	5000	0.6	1.6	2.4	37.0	42.3	38.3	0.383
OK10	D	90.2	0.8006	155.52	0.24	100	1.0	5.4	5350	1.2	2.2	3.4	27.7	33.1	40.3	0.331
OK11	D	90.6	0.8059	106.88	0.17	100	1.0	5.3	4900	0.6	1.6	2.4	35.3	40.6	37.8	0.378
OK12	D	89.7	0.7940	115.20	0.18	100	1.0	5.5	5300	0.7	1.7	2.6	36.2	41.7	40.0	0.400
P	D	86.7	0.7544	158.72	0.25	100	1.0	6.2	5150	0.4	1.3	2.0	45.1	51.3	39.2	0.392
PD01-C	D	83.8	0.7162	241.28	0.38	100	1.0	6.9	5950	0.8	1.8	2.7	38.9	45.8	43.6	0.436
PD04B-C	D	87.8	0.7690	299.52	0.47	100	1.0	6.0	7800	0.8	1.8	2.7	50.0	56.0	53.9	0.539
PD05A-C	D	93.1	0.8389	87.04	0.14	100	1.0	4.7	5400	0.6	1.6	2.5	38.3	43.0	40.6	0.406
PS01-C	D	85.6	0.7399	264.96	0.41	100	1.0	6.5	7150	1.8	2.7	4.1	29.9	36.4	50.3	0.364
PS03	D	90.4	0.8033	123.52	0.19	100	1.0	5.3	3200	1.2	2.2	3.3	17.3	22.6	28.3	0.226
PS04	D	92.3	0.8284	123.52	0.19	100	1.0	4.9	3800	0.8	1.9	2.8	24.1	29.0	31.7	0.290
PS05	D	92.0	0.8244	69.76	0.11	100	1.0	5.0	2640	0.6	1.6	2.4	20.3	25.2	25.2	0.252
PS06	D	92.8	0.8350	53.76	0.08	100	1.0	4.8	2640	0.6	1.6	2.5	19.7	24.4	25.2	0.244
PS07	D	92.3	0.8284	64.64	0.10	100	1.0	4.9	3700	1.2	2.2	3.4	19.5	24.4	31.1	0.244
PS07A	D	92.7	0.8336	22.40	0.04	100	1.0	4.8	3200	1.2	2.2	3.4	17.1	21.9	28.3	0.219
PS08	D	92.1	0.8257	113.92	0.18	100	1.0	4.9	4000	1.5	2.5	3.7	18.9	23.9	32.8	0.239
Q	D	85.4	0.7373	97.92	0.15	100	1.0	6.5	4700	0.4	1.3	2.0	41.4	47.9	36.7	0.367
R_SW	D	89.0	0.7848	67.20	0.11	100	1.0	5.7	4100	0.5	1.4	2.1	34.0	39.7	33.3	0.333
R2-C	D	93.3	0.8416	350.72	0.55	100	1.0	4.7	6400	1.8	2.7	4.1	27.1	31.7	46.1	0.317
R4C	D	93.4	0.8429	174.08	0.27	100	1.0	4.6	8300	1.6	2.5	3.8	37.2	41.9	56.7	0.419
R-C	D	91.2	0.8138	352.64	0.55	100	1.0	5.2	6700	0.9	1.9	2.9	40.0	45.2	47.8	0.452
S	D	90.0	0.7980	364.16	0.57	100	1.0	5.4	7900	1.7	2.6	4.0	34.0	39.4	54.4	0.394
S_SW	D	89.5	0.7914	44.16	0.07	100	1.0	5.6	2750	0.2	0.9	1.4	35.1	40.6	25.8	0.258
S1-C	D	88.0	0.7716	300.80	0.47	100	1.0	5.9	9950	1.6	2.6	3.9	43.8	49.8	65.8	0.498
SA01	D	93.9	0.8495	40.96	0.06	100	1.0	4.5	2000	0.9	1.9	2.8	13.3	17.8	21.7	0.178
SA02	D	93.1	0.8389	89.60	0.14	100	1.0	4.7	4100	1.5	2.4	3.7	19.6	24.3	33.3	0.243
SA04	D	93.7	0.8468	69.76	0.11	100	1.0	4.6	3800	1.3	2.3	3.5	19.3	23.8	31.7	0.238
SA05	D	92.1	0.8257	118.40	0.19	100	1.0	4.9	5200	1.2	2.2	3.4	27.1	32.1	39.4	0.321
SA06	D	94.4	0.8561	163.84	0.26	100	1.0	4.4	4900	1.1	2.2	3.3	26.3	30.7	37.8	0.307
SA07	D	92.3	0.8284	61.44	0.10	100	1.0	4.9	3300	0.8	1.8	2.7	22.3	27.2	28.9	0.272
SA08	D	93.8	0.8482	156.80	0.25	100	1.0	4.5	6300	1.5	2.5	3.7	29.4	33.9	45.6	0.339
SA10-1	D	91.5	0.8178	177.28	0.28	100	1.0	5.1	9100	0.7	1.7	2.6	60.3	65.4	61.1	0.611
SA10-2	D	90.1	0.7993	130.56	0.20	100	1.0	5.4	9500	0.7	1.6	2.5	65.8	71.2	63.3	0.633
SA11	D	94.9	0.8627	253.44	0.40	100	1.0	4.3	7300	0.7	1.7	2.5	49.7	54.0	51.1	0.511

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*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*   JUN 1998
*   VERSION 4.1
*
* RUN DATE 11JUN04 TIME 10:00:16
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*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

1 HEC-1 INPUT PAGE 1

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

*DIAGRAM

*** FREE ***
1 ID CLV CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN 2003
2 ID CENTRAL BASIN (SOUTHWEST, SOUTHEAST, NORTHEAST AREAS)
3 ID EXISTING CONDITIONS = EXISTING FACILITIES, FUTURE LAND USE
4 ID INPUT FILE = ESW3.DAT
5 ID INPUT FILE DATE = OCTOBER, 2003
6 ID DESIGN STORM = 100-YEAR 6-HR STORM
7 ID STORM DISTRIBUTION = SDN #3
8 ID MODELED BY PBS&J (STEPHEN C. ALTMAN P.E.)
9 ID STORM CENTERING
10 ID COMPOSITE CURVE NUMBER RUN
11 ID
12 ID REFERENCED HYDROLOGIC MODELS:
13 ID CITY OF LAS VEGAS CITY WIDE HYDROLOGY ANALYSIS (PBS&J 1997)
14 ID PREDESIGN REPORT FOR I-15 FREEWAY CHANNEL (PARSONS BRINCKERHOFF 1999)
15 ID FINAL CENTRAL BASIN ASSESMENT (CARTER-BURGESS 1998)
16 ID HYDRAULIC DESIGN REPORT FOR I-15 WIDENING (LOUIS BERGER 1999)
17 ID CCRFCD 2002 LAS VEGAS VALLEY MASTER PLAN UPDATE (PBS&J, GCW, LBG)
18 ID
19 ID NOTE: LOCATIONS AND DESCRIPTIONS OF PROPOSED MPU FACILITIES ARE STATED IN
20 ID THE MODEL. HOWEVER, ROUTINGS IN THESE LOCATIONS REFLECT THE EXISTING
21 ID CONDITION.
22 ID
23 ID JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
24 ID
25 ID CONCENTRATION AREA DARF
26 ID POINT SQ. MI.
27 ID 0-0.5 0.99
28 ID 0.5-1 0.975
29 ID 1-2 0.95
30 ID 2-3 0.925
31 ID 3-4 0.915
32 ID 4-5 0.908
33 ID 5-6 0.903
34 ID 6-7 0.895
35 ID 7-8 0.885
36 ID
37 ID JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
38 ID
39 ID 100-YEAR, 6-HOUR STORM, SDN3
40 ID
41 ID IT 5 0 0 300
42 ID IO 5 0 0
43 ID IN 5 0 0
44 ID JR PREC 0.99 0.975 0.95 0.925 0.915 0.908 0.903 0.895 0.885
*
* AREA PREVIOUSLY IN FLAMINGO WATERSHED
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1 HEC-1 INPUT Page 1 PAGE 2

esw3.out

220 KK RPS01-C
 221 KM ROUTE PS01-C TO CPS03
 222 KM FACILITY = PALMYRA/SIRIUS DRAIN
 223 KM FACILITY # = FWPS 0157
 224 KM LINING = RCP
 225 RD 2600 0.0115 0.016 0 TRAP 0 50
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HEC-1 INPUT

PAGE 7

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

226 KK PS03
 227 BA 0.193
 228 PB 2.77
 229 LS 0 90.4
 230 UD 0.226
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231 KK CPS03
 232 KM COMBINE RPS01-C AND PS03
 233 KM DECATUR AND PALMYRA
 234 HC 2
 *

235 KK DCPS03
 236 KM RETRIEVE DPS03
 237 DR DCPS03
 *

238 KK RDPS03
 239 KM ROUTE DPS003 TO CPS03
 240 KM DECATUR
 241 RD 1200 0.0033 0.016 0 TRAP 0 50
 *

242 KK CCPS03
 243 KM COMBINE CPS03 AND RDPS03
 244 KM DECATUR AND PALMYRA
 245 HC 2
 *

246 KK RCPS03
 247 KM ROUTE CCPS03 TO CPS06
 248 KM FACILITY = PALMYRA/SIRIUS DRAIN
 249 KM FACILITY # = FWPS 0057
 250 KM LINING = RCP
 251 RD 5280 0.0128 0.016 0 TRAP 0 50
 *

252 KK PS06-C
 253 BA 0.387
 254 PB 2.77
 255 LS 0 92.3
 256 UD 0.315
 *

257 KK CPS06
 258 KM COMBINE RCPS03 AND PS06-C
 259 KM VALLEY VIEW AND PALMYRA
 260 HC 2
 *

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HEC-1 INPUT

PAGE 8

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

261 KK RCCPS06
 262 KM ROUTE CCPS06 TO RCPS06
 263 KM FACILITY = PALMYRA/SIRIUS DRAIN
 264 KM FACILITY # = FWPS 0000
 265 KM LINING = RCB
 266 RD 3000 0.015 0.016 0 TRAP 0 50
 *

267 KK CRCPS06
 268 KM COMBINE RCCCE3FD AND RCCPS06
 269 KM COMBINATION AT FREEWAY CHANNEL AND PALMYRA
 270 HC 2
 *

271 KKRCRCP06
 272 KM ROUTE CRCPS06 TO CPS08
 273 KM FACILITY = FREEWAY CHANNEL DESERT INN TO I-15
 274 KM FACILITY # = FW15 0271
 275 KM LINING = RCB
 276 RD 1700 0.0059 0.016 0 TRAP 0 50
 *

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277	KK	PS08	
278	BA	0.179	
279	PB	2.77	
280	LS	0	92.1
281	UD	0.239	
	*		

282	KK	CP508	
283	KM	COMBINE RCRCP506 AND PS08	
284	KM	FREEWAY CHANNEL AND SUBBASIN PS08	
285	HC	2	
	*		

286	KK	ED01	
287	BA	0.254	
288	PB	2.77	
289	LS	0	85.9
290	UD	0.379	
	*		

291	KK	RED01	
292	KM	ROUTE ED01 TO CED02	
293	KM	EDNA AVENUE	
294	RD	5100 0.0139 0.016 0 TRAP 0 50	
	*		

295	KK	ED02	
296	BA	0.311	
297	PB	2.77	
298	LS	0	88.8
299	UD	0.407	
	*		

1

HEC-1 INPUT

PAGE 9

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

300	KK	ED11	
301	BA	0.242	
302	PB	2.77	
303	LS	0	85.6
304	UD	0.369	
	*		

305	KK	ED12	
306	BA	0.206	
307	PB	2.77	
308	LS	0	90.7
309	UD	0.336	
	*		

310	KK	CED12	
311	KM	COMBINE ED11 AND ED12	
312	KM	JONES AND ELDORA	
313	HC	2	
	*		

314	KK	RCED12	
315	KM	ROUTE CED12 TO CED13	
316	KM	ELDORA STREET	
317	RD	5100 0.0135 0.016 0 TRAP 0 50	
	*		

318	KK	ED13	
319	BA	0.226	
320	PB	2.77	
321	LS	0	92.1
322	UD	0.381	
	*		

323	KK	CED13	
324	KM	COMBINE RCED12 AND ED13	
325	KM	DECATUR AND ELDORA	
326	HC	2	
	*		

327	KK	RCED13	
328	KM	ROUTE CED13 TO CED02	
329	KM	DECATUR	
330	RD	1300 0.0031 0.016 0 TRAP 0 50	
	*		

331	KK	CED02	
332	KM	COMBINE RED01, ED02, AND RCED13	
333	KM	DECATUR AND EDNA	
334	HC	3	
	*		

1

HEC-1 INPUT

PAGE 10

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LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
335	KK RCED02
336	KM ROUTE CED02 TO CED05-C
337	KM EDNA AVENUE
338	RD 7100 0.0127 0.016 0 TRAP 0 50
	*
339	KK ED05-C
340	BA 0.441
341	PB 2.77
342	LS 0 90.9
343	UD 0.496
	*
344	KK CED05-C
345	KM COMBINE RCED02 AND ED05-C
346	KM EAST OF VALLEY VIEW AND EDNA INTERSECTION
347	HC 2
	*
348	KKRCED05-C
349	KM ROUTE CED05-C TO CCPS08
350	KM EDNA AVENUE
351	RD 1900 0.0158 0.016 0 TRAP 0 50
	*
352	KK CCPS08
353	KM COMBINE CPS08 AND RCED05-C
354	KM EDNA AND FREEWAY CHANNEL
355	HC 2
	*
356	KK RCCPS08
357	KM ROUTE CCPS08 TO CED10-C
358	KM FACILITY = FREEWAY CHANNEL FROM DESERT INN TO I-15
359	KM FACILITY # = FW15 0242
360	KM LINING = RCB
361	RD 1500 0.0093 0.016 0 TRAP 0 50
	*
362	KK ED10-C
363	BA 0.217
364	PB 2.77
365	LS 0 90.2
366	UD 0.295
	*
367	KK CED10-C
368	KM COMBINE RCCPS08 AND ED10-C
369	KM COMBINATION OF FREEWAY CHANNEL AND ED10-C
370	HC 2
	*

1

HEC-1 INPUT

PAGE 11

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
371	KKRCED10-C
372	KM ROUTE CED10-C TO CSA08
373	KM FACILITY = FREEWAY CHANNEL FROM DESERT INN TO I-15
374	KM FACILITY # = FW15 0214
375	KM LINING = RCB
376	RD 1500 0.0073 0.016 0 TRAP 0 50
	*
377	KK SA01-C
378	BA 0.314
379	PB 2.77
380	LS 0 93.5
381	UD 0.342
	*
382	KK RSA01-C
383	KM ROUTE SA01-C TO CSA05
384	KM SAHARA
385	RD 5200 0.0144 0.016 0 TRAP 0 50
	*
386	KK SA05
387	BA 0.185
388	PB 2.77
389	LS 0 92.1
390	UD 0.321
	*
391	KK CSA05
392	KM COMBINE RSA01-C AND SA05

185	.	.	CE3FA	.
190	.	CCE3FA	.	.
	.	V	.	.
	.	V	.	.
194	.	RCCE3FA	.	.
200	.	.	CE3FD-C	.
205	CCE3FD-C	.	.	.
	V	.	.	.
	V	.	.	.
209	RCCE3FD	.	.	.
215	.	PS01-C	.	.
	.	V	.	.
	.	V	.	.
220	.	RP501-C	.	.
226	.	.	PS03	.
	.	.	.	.
231	.	CPS03	.	.
237	.	.	.	DCPS03
235	.	.	DCPS03	.
	.	.	V	.
	.	.	V	.
238	.	.	RDPS03	.
	.	.	.	.
242	.	CCPS03	.	.
	.	V	.	.
	.	V	.	.
246	.	RCPS03	.	.
252	.	.	PS06-C	.
	.	.	.	.
257	.	CPS06	.	.
	.	V	.	.
	.	V	.	.
261	.	RCCPS06	.	.
267	CRCPS06	.	.	.
	V	.	.	.
271	RCRCPS06	.	.	.
277	.	PS08	.	.
282	.	CPS08	.	.
286	.	ED01	.	.
	.	V	.	.
	.	V	.	.
291	.	RED01	.	.
295	.	.	ED02	.
300	.	.	.	ED11
305	.	.	.	ED12
310	.	.	.	.
	.	.	CED12	.
	.	.	V	.
	.	.	V	.
314	.	.	RCED12	.
318	.	.	.	ED13
323	.	.	.	CED13


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      .      .      .      V
      .      .      .      V
327      .      .      .      RCED13
      .      .      .      .
      .      .      .      .
331      .      CED02.....
      .      V
      .      V
335      .      RCED02
      .      .
      .      .      .      ED05-C
      .      .      .      .
344      .      CED05-C.....
      .      V
      .      V
348      .      RCED05-C
      .      .
352      .      CCPS08.....
      .      V
356      .      RCCPS08
      .      .
362      .      ED10-C
      .      .
367      .      CED10-C.....
      .      V
      .      V
371      .      RCED10-C
      .      .
377      .      SA01-C
      .      V
      .      V
382      .      RSA01-C
      .      .
386      .      .      .      SA05
      .      .      .      .
391      .      CSA05.....
      .      V
      .      V
395      .      RCSA05
      .      .
399      .      .      .      SA06-C
      .      .      .      .
404      .      CSA06-C.....
      .      V
      .      V
408      .      RCSA06-C
      .      .
414      .      .      .      SA08
      .      .      .      .
419      .      CSA08.....
      .      .
423      .      CCSA08.....
      .      .
431      .      .      .      DSAHARA
427      .      DCCSA08
      .      V
      .      V
434      .      RCCSA08
      .      .
440      .      OK06-C
      .      V
      .      V
445      .      ROK06
      .      .
449      .      .      .      OK03-C
      .      .      .      V
      .      .      .      V
454      .      .      .      ROK03
      .      .      .      .
458      .      .      .      OK04-C
      .      .      .      .

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HYDROGRAPH AT													
+	PS06-C	.39	1	FLOW	454.	445.	431.	417.	411.	407.	404.	399.	394.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CPS06	.99	1	FLOW	1107.	1083.	1045.	1004.	988.	977.	969.	957.	942.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RCCPS06	.99	1	FLOW	1092.	1079.	1027.	1002.	978.	963.	953.	941.	931.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
2 COMBINED AT													
+	CRCPS06	4.20	1	FLOW	2919.	2847.	2732.	2614.	2571.	2538.	2508.	2468.	2433.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
ROUTED TO													
+	RCRCPS06	4.20	1	FLOW	2892.	2818.	2706.	2589.	2554.	2521.	2489.	2450.	2415.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
HYDROGRAPH AT													
+	PS08	.18	1	FLOW	235.	231.	223.	216.	213.	211.	209.	207.	204.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPS08	4.38	1	FLOW	2959.	2884.	2770.	2651.	2615.	2582.	2550.	2509.	2474.
				TIME	4.17	4.08	4.17	4.17	4.17	4.17	4.17	4.17	4.17
HYDROGRAPH AT													
+	ED01	.25	1	FLOW	210.	205.	197.	188.	185.	183.	181.	179.	176.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RED01	.25	1	FLOW	211.	206.	198.	190.	186.	184.	182.	180.	177.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT													
+	ED02	.31	1	FLOW	281.	275.	265.	255.	251.	248.	246.	243.	239.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	ED11	.24	1	FLOW	199.	194.	187.	179.	176.	174.	172.	170.	167.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	ED12	.21	1	FLOW	222.	217.	210.	202.	199.	197.	196.	193.	190.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CED12	.45	1	FLOW	417.	408.	393.	378.	372.	367.	364.	360.	354.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RCED12	.45	1	FLOW	421.	412.	396.	381.	375.	370.	367.	362.	356.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT													
+	ED13	.23	1	FLOW	239.	234.	227.	219.	216.	214.	212.	210.	207.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
2 COMBINED AT													
+	CED13	.67	1	FLOW	645.	632.	609.	587.	578.	571.	567.	560.	551.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RCED13	.67	1	FLOW	633.	620.	594.	576.	563.	557.	553.	550.	544.
				TIME	3.92	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
3 COMBINED AT													
+	CED02	1.24	1	FLOW	1108.	1076.	1039.	994.	976.	967.	962.	952.	933.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	4.00
ROUTED TO													
+	RCED02	1.24	1	FLOW	1110.	1080.	1043.	996.	980.	970.	964.	954.	938.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.17	4.17
HYDROGRAPH AT													
+	ED05-C	.44	1	FLOW	388.	380.	367.	354.	349.	346.	343.	339.	334.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
2 COMBINED AT													
+	CED05-C	1.68	1	FLOW	1464.	1428.	1379.	1320.	1300.	1287.	1278.	1262.	1237.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
ROUTED TO													
+	RCED05-C	1.68	1	FLOW	1439.	1406.	1363.	1308.	1281.	1267.	1262.	1253.	1223.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17

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2 COMBINED AT													
+	CCPS08	6.06	1	FLOW TIME	4398.4.17	4290.4.17	4133.4.17	3959.4.17	3896.4.17	3849.4.17	3811.4.17	3762.4.17	3697.4.17
ROUTED TO													
+	RCCPS08	6.06	1	FLOW TIME	4394.4.17	4289.4.17	4128.4.17	3949.4.17	3886.4.17	3836.4.17	3795.4.17	3750.4.17	3679.4.17
HYDROGRAPH AT													
+	ED10-C	.22	1	FLOW TIME	241.3.75	236.3.75	228.3.75	220.3.75	217.3.75	214.3.75	213.3.75	210.3.75	207.3.75
2 COMBINED AT													
+	CED10-C	6.28	1	FLOW TIME	4492.4.17	4385.4.17	4220.4.17	4039.4.17	3975.4.17	3923.4.17	3883.4.17	3836.4.17	3764.4.17
ROUTED TO													
+	RCED10-C	6.28	1	FLOW TIME	4457.4.17	4362.4.17	4189.4.17	4005.4.17	3941.4.17	3886.4.17	3843.4.17	3798.4.17	3724.4.17
HYDROGRAPH AT													
+	SA01-C	.31	1	FLOW TIME	370.3.75	363.3.75	352.3.75	341.3.75	336.3.75	333.3.75	331.3.75	327.3.75	323.3.75
ROUTED TO													
+	RSA01-C	.31	1	FLOW TIME	371.3.92	365.3.92	354.3.92	342.3.92	338.3.92	335.3.92	332.3.92	329.3.92	324.3.92
HYDROGRAPH AT													
+	SA05	.19	1	FLOW TIME	214.3.75	210.3.75	203.3.75	196.3.75	193.3.75	192.3.75	190.3.75	188.3.75	185.3.75
2 COMBINED AT													
+	CSA05	.50	1	FLOW TIME	553.3.83	542.3.83	525.3.83	507.3.83	500.3.83	495.3.83	491.3.83	486.3.83	479.3.83
ROUTED TO													
+	RCSA05	.50	1	FLOW TIME	554.4.00	544.4.00	525.4.00	508.4.00	502.4.00	497.4.00	494.4.00	488.4.00	482.4.00
HYDROGRAPH AT													
+	SA06-C	.35	1	FLOW TIME	354.3.92	347.3.92	337.3.92	326.3.92	322.3.92	319.3.92	317.3.92	313.3.92	309.3.92
2 COMBINED AT													
+	CSA06-C	.85	1	FLOW TIME	893.4.00	876.4.00	848.4.00	820.4.00	808.4.00	800.4.00	795.4.00	785.4.00	774.4.00
ROUTED TO													
+	RCSA06-C	.85	1	FLOW TIME	891.4.17	875.4.17	848.4.17	820.4.17	810.4.17	802.4.17	796.4.17	788.4.17	777.4.17
HYDROGRAPH AT													
+	SA08	.25	1	FLOW TIME	327.3.67	322.3.67	312.3.67	302.3.67	298.3.67	295.3.67	293.3.67	290.3.67	286.3.67
2 COMBINED AT													
+	CSA08	1.10	1	FLOW TIME	1014.4.08	993.4.08	959.4.08	924.4.08	911.4.08	901.4.08	894.4.08	883.4.17	871.4.17
2 COMBINED AT													
+	CCSA08	7.38	1	FLOW TIME	5455.4.17	5342.4.17	5139.4.17	4924.4.17	4848.4.17	4785.4.17	4736.4.17	4681.4.17	4595.4.17
DIVERSION TO													
+	DSAHARA	7.38	1	FLOW TIME	2763.4.17	2650.4.17	2447.4.17	2232.4.17	2156.4.17	2093.4.17	2044.4.17	1989.4.17	1903.4.17
HYDROGRAPH AT													
+	DCCSA08	7.38	1	FLOW TIME	2692.3.83	2692.3.83	2692.3.83	2692.3.83	2692.3.83	2692.3.83	2692.3.83	2692.3.83	2692.3.92
ROUTED TO													
+	RCCSA08	7.38	1	FLOW TIME	2692.4.08	2692.4.08	2692.4.08	2692.4.08	2692.4.08	2692.4.08	2692.4.08	2692.4.08	2692.4.08
HYDROGRAPH AT													
+	OK06-C	.17	1	FLOW TIME	215.3.67	211.3.67	204.3.67	197.3.67	194.3.67	192.3.67	190.3.67	188.3.67	185.3.67
ROUTED TO													
+	ROK06	.17	1	FLOW TIME	209.3.83	205.3.83	198.3.83	191.3.83	189.3.83	193.3.83	192.3.83	189.3.83	187.3.83
HYDROGRAPH AT													
+	OK03-C	.36	1	FLOW TIME	372.3.83	365.3.83	353.3.83	341.3.83	336.3.83	333.3.83	331.3.83	327.3.83	322.3.83
ROUTED TO													

EXISTING 10-YR

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1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* JUN 1998 *
* VERSION 4.1 *
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* RUN DATE 11JUN04 TIME 10:07:02 *
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*****
*
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

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HEC-1 INPUT

PAGE 1

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

*DIAGRAM

*** FREE ***
1 ID CLV CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN 2003
2 ID CENTRAL BASIN (SOUTHWEST, SOUTHEAST, NORTHEAST AREAS)
3 ID EXISTING CONDITIONS = EXISTING FACILITIES, FUTURE LAND USE
4 ID INPUT FILE = ESW310.DAT
5 ID INPUT FILE DATE = OCTOBER, 2003
6 ID DESIGN STORM = 10-YEAR 6-HR STORM
7 ID STORM DISTRIBUTION = SDN #3
8 ID MODELED BY PBS&J (STEPHEN C. ALTMAN P.E.)
9 ID STORM CENTERING
10 ID COMPOSITE CURVE NUMBER RUN
11 ID 2002 MPU SUBBASINS USED FOR OFFSITE AREAS EXCEPT WHERE SPECIFIED
12 ID REFERENCED HYDROLOGIC MODELS:
13 ID CITY OF LAS VEGAS CITY WIDE HYDROLOGY ANALYSIS (PBS&J 1997)
14 ID PREDESIGN REPORT FOR I-15 FREEWAY CHANNEL (PARSONS BRINCKERHOFF 1999)
15 ID FINAL CENTRAL BASIN ASSESSMENT (CARTER-BURGESS 1998)
16 ID HYDRAULIC DESIGN REPORT FOR I-15 WIDENING (LOUIS BERGER 1999)
17 ID CCRFCD 2002 LAS VEGAS VALLEY MASTER PLAN UPDATE (PBS&J, GCW, LBG)
18 ID
19 ID NOTE: LOCATIONS AND DESCRIPTIONS OF PROPOSED MPU FACILITIES ARE STATED IN
20 ID THE MODEL. HOWEVER, ROUTINGS IN THESE LOCATIONS REFLECT THE EXISTING
21 ID CONDITION.
22 ID
23 ID
24 ID JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
25 ID
26 ID CONCENTRATION AREA DARF
27 ID POINT SQ. MI.
28 ID 0-0.5 0.564
29 ID 0.5-1 0.556
30 ID 1-2 0.542
31 ID 2-3 0.527
32 ID 3-4 0.522
33 ID 4-5 0.518
34 ID 5-6 0.515
35 ID 6-7 0.51
36 ID 7-8 0.504
37 ID
38 ID JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
39 ID
40 ID 10-YEAR, 6-HOUR STORM, SDN3
41 ID
42 ID IT 5 0 0 300
43 ID IO 5 0 0
44 ID IN 5 0 0
45 ID JR PREC 0.564 0.556 0.542 0.527 0.522 0.518 0.515 0.51 0.504

46 ID KK FW01
47 ID BA 0.324
48 ID PB 2.77
49 ID PC 0.000 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
50 ID PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
51 ID PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
52 ID PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409

HEC-1 INPUT
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1

PAGE 2

esw310.out

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
237	KK CPS03
238	KM COMBINE RPS01-C AND PS03
239	KM DECATUR AND PALMYRA
240	HC 2
	*
241	KK DCPS03
242	KM RETRIEVE DPS03
243	DR DCPS03
	*
244	KK RDPS03
245	KM ROUTE DPS003 TO CPS03
246	KM DECATUR
247	RD 1200 0.0033 0.016 0 TRAP 0 50
	*
248	KK CCPS03
249	KM COMBINE CPS03 AND RDPS03
250	KM DECATUR AND PALMYRA
251	HC 2
	*
252	KK RCPS03
253	KM ROUTE CCPS03 TO CPS04
254	KM FACILITY = PALMYRA/SIRIUS DRAIN
255	KM FACILITY # = FWPS 0057
256	KM LINING = RCP
257	RD 2500 0.012 0.016 0 TRAP 0 50
	*
258	KK PS04
259	BA 0.193
260	PB 2.77
261	LS 0 92.3
262	UD 0.290
	*
263	KK CPS04
264	KM COMBINE PS04 AND RCPS03
265	KM ARVILLE AND SIRIUS
266	HC 2
	*
267	KK RCPS04
268	KM ROUTE CPS04 TO CPS05
269	KM FACILITY = PALMYRA/SIRIUS DRAIN
270	KM FACILITY # = FWPS 0057
271	KM LINING = RCP
272	RD 1300 0.013 0.016 0 TRAP 0 50
	*

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HEC-1 INPUT

PAGE 8

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
273	KK PS05
274	BA 0.109
275	PB 2.77
276	LS 0 92.0
277	UD 0.252
	*
278	KK CPS05
279	KM COMBINE PS05 AND RCPS04
280	KM WYNN AND SIRIUS
281	HC 2
	*
282	KK RCPS05
283	KM ROUTE CPS05 TO CPS06
284	KM FACILITY = PALMYRA/SIRIUS DRAIN
285	KM FACILITY # = FWPS 0057
286	KM LINING = RCP
287	RD 1300 0.01 0.016 0 TRAP 0 50
	*
288	KK PS06
289	BA 0.084
290	PB 2.77
291	LS 0 92.8
292	UD 0.244
	*
293	KK CPS06
294	KM COMBINE RCPS05 AND PS06
295	KM VALLEY VIEW AND PALMYRA
296	HC 2
	*
297	KK RCPS06

esw310.out

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298      KM  ROUTE CPS06 TO CPS07
299      KM  FACILITY = PALMYRA/SIRIUS DRAIN
300      KM  FACILITY # = FWPS 0000
301      KM  LINING = RCB
302      RD    3000  0.015  0.016      0  TRAP      0      50
      *

303      KK   PS07
304      BA   0.101
305      PB   2.77
306      LS      0      92.3
307      UD   0.244
      *

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1

HEC-1 INPUT

PAGE 9

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

308      KK   CPS07
309      KM  COMBINE PS07 AND RCPS06
310      KM  FREEWAY CHANNEL AND DESERT INN
311      HC      2
      *

312      KK  CCPS07
313      KM  COMBINE CPS07 AND RCCE3FD
314      KM  FREEWAY CHANNEL AND DESERT INN
315      HC      2
      *

316      KK  RCCPS07
317      KM  ROUTE CCPS07 TO CPS08
318      KM  FACILITY = FREEWAY CHANNEL DESERT INN TO I-15
319      KM  FACILITY # = FW15 0271
320      KM  LINING = RCB
321      RD    1700  0.0059  0.016      0  TRAP      0      50
      *

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322      KK   PS08
323      BA   0.178
324      PB   2.77
325      LS      0      92.1
326      UD   0.278
      *

327      KK   CPS08
328      KM  COMBINE RCCPS07 AND PS08
329      KM  FREEWAY CHANNEL AND SUBBASIN PS08
330      HC      2
      *

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331      KK   ED01
332      BA   0.254
333      PB   2.77
334      LS      0      85.9
335      UD   0.379
      *

336      KK  RED01
337      KM  ROUTE ED01 TO CED02
338      KM  EDNA AVENUE
339      RD    7150  0.0139  0.016      0  TRAP      0      50
      *

340      KK   ED02
341      BA   0.311
342      PB   2.77
343      LS      0      88.8
344      UD   0.407
      *

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1

HEC-1 INPUT

PAGE 10

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

345      KK   ED11
346      BA   0.242
347      PB   2.77
348      LS      0      85.6
349      UD   0.369
      *

350      KK   ED12
351      BA   0.206
352      PB   2.77
353      LS      0      90.7
354      UD   0.336
      *

355      KK  CED12
356      KM  COMBINE ED11 AND ED12
357      KM  JONES AND ELDORA
358      HC      2
      *

```

esw310.out

418	RD	2650	0.009	0.016	0	TRAP	0	50
	*							
419	KK	ED06						
420	BA	0.077						
421	PB	2.77						
422	LS	0	91.1					
423	UD	0.274						
	*							
424	KK	CED06						
425	KM	COMBINE RED05 AND ED06						
426	KM	VALLEY VIEW AND TARA						
427	HC	2						
	*							
428	KK	RCED06						
429	KM	ROUTE CED06 TO CED08						
430	KM	MOBILE HOME PARK ROAD						
431	RD	2500	0.011	0.016	0	TRAP	0	50
	*							
432	KK	ED07						
433	BA	0.066						
434	PB	2.77						
435	LS	0	90.5					
436	UD	0.248						
	*							
437	KK	RED07						
438	KM	ROUTE ED07 TO CED08						
439	KM	MOBILE HOME PARK ROAD						
440	RD	3100	0.008	0.016	0	TRAP	0	50
	*							
441	KK	ED08						
442	BA	0.080						
443	PB	2.77						
444	LS	0	90.4					
445	UD	0.296						
	*							
446	KK	CED08						
447	KM	COMBINE RCED06, RCED04, RED07 AND ED08						
448	KM	SOUTHEAST CORNER OF MOBILE PARK						
449	HC	4						
	*							

1

HEC-1 INPUT

PAGE 13

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

450	KK	RCED08						
451	KM	ROUTE CED08 TO CED09						
452	KM	EXISTING DITCH						
453	RD	1900	0.0158	0.016	0	TRAP	0	50
	*							
454	KK	ED09						
455	BA	0.026						
456	PB	2.77						
457	LS	0	88.5					
458	UD	0.178						
	*							
459	KK	CCPS08						
460	KM	COMBINE ED09, CPS08 AND RCED08						
461	KM	EDNA AND FREEWAY CHANNEL						
462	HC	3						
	*							
463	KK	RCCPS08						
464	KM	ROUTE CCPS08 TO CED10						
465	KM	FACILITY = FREEWAY CHANNEL FROM DESERT INN TO I-15						
466	KM	FACILITY # = FW15 0242						
467	KM	LINING = RCB						
468	RD	1500	0.0093	0.016	0	TRAP	0	50
	*							
469	KK	ED10						
470	BA	0.191						
471	PB	2.77						
472	LS	0	90.4					
473	UD	0.306						
	*							
474	KK	CED10						
475	KM	COMBINE RCCPS08 AND ED10						
476	KM	COMBINATION OF FREEWAY CHANNEL AND ED10						
477	HC	2						
	*							
478	KK	RCED10-C						
479	KM	ROUTE CED10-C TO CSA08						


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      V
      V
226  . RPS01-C
      .
      .
232  . PS03
      .
      .
237  . CPS03.....
      .
      .
243  . <----- DCPS03
241  . DCPS03
      .
      .
244  . RDPS03
      .
      .
248  . CCPS03.....
      .
      .
252  . RCPS03
      .
      .
258  . PS04
      .
      .
263  . CPS04.....
      .
      .
267  . RCPS04
      .
      .
273  . PS05
      .
      .
278  . CPS05.....
      .
      .
282  . RCPS05
      .
      .
288  . PS06
      .
      .
293  . CPS06.....
      .
      .
297  . RCPS06
      .
      .
303  . PS07
      .
      .
308  . CPS07.....
      .
      .
312  . CCPS07.....
      .
      .
316  . RCCPS07
      .
      .
322  . PS08
      .
      .
327  . CPS08.....
      .
      .
331  . ED01
      .
      .
336  . RED01
      .
      .
340  . ED02
      .
      .
345  . ED11
      .
      .
350  . ED12
      .
      .
355  . CED12.....
      .
      .
359  . RCED12
      .
      .
363  . ED13
      .
      .
368  . CED13.....

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IN 10-YR, CRCPS06
RENAMED TO CCPS07

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.      .      .      V
.      .      .      V
372    .      .      .      RCED13
.      .      .      .
.      .      .      .
376    .      CED02.....
.      V
.      V
380    .      RCED02
.      .
.      .      ED03
.      .      .
389    .      CED03.....
.      V
.      V
393    .      RCED03
.      .
.      .      ED04
.      .      .
.      .      .
402    .      CED04.....
.      V
.      V
406    .      RCED04
.      .
.      .      ED05
.      .      V
.      .      V
415    .      .      RED05
.      .      .
.      .      .      ED06
.      .      .      .
424    .      .      CED06.....
.      .      V
.      .      V
428    .      .      RCED06
.      .      .
.      .      .      ED07
.      .      .      V
.      .      .      V
437    .      .      .      RED07
.      .      .      .
.      .      .      .      ED08
.      .      .      .      .
446    .      .      CED08.....
.      V
.      V
450    .      .      RCED08
.      .      .
.      .      .      ED09
.      .      .      .
459    .      .      CCPS08.....
.      V
.      V
463    .      .      RCCPS08
.      .      .
.      .      .      ED10
.      .      .      .
474    .      .      CED10.....
.      V
.      V
478    .      .      RCED10-C
.      .      .
.      .      .      SA01
.      .      .      V
.      .      .      V
489    .      .      .      RSA01
.      .      .      .
.      .      .      .      SA02
.      .      .      .      .
.      .      .      .      .
498    .      .      .      CSA02.....
.      .      V
.      .      V
502    .      .      .      RCSA02
.      .      .      .
.      .      .      .      SA04
506    .      .      .      .
.      .      .      .

```

esw310.out													
+	CCE3FD-C	3.11	1	FLOW TIME	560. 4.17	538. 4.17	507. 3.92	487. 3.92	480. 3.92	475. 3.92	471. 3.92	464. 3.92	456. 3.92
ROUTED TO													
+	RCCE3FD	3.11	1	FLOW TIME	558. 4.17	537. 4.17	506. 4.00	486. 4.00	479. 4.00	473. 4.00	469. 4.00	463. 4.00	454. 4.00
HYDROGRAPH AT													
+	PS01-C	.41	1	FLOW TIME	126. 3.83	122. 3.83	116. 3.83	109. 3.83	107. 3.83	105. 3.83	104. 3.83	102. 3.83	99. 3.83
ROUTED TO													
+	RPS01-C	.41	1	FLOW TIME	127. 3.92	123. 3.92	116. 3.92	107. 3.92	104. 3.92	103. 3.92	101. 3.92	99. 3.92	98. 3.92
HYDROGRAPH AT													
+	PS03	.19	1	FLOW TIME	107. 3.67	104. 3.67	100. 3.67	95. 3.67	94. 3.67	93. 3.67	92. 3.67	90. 3.67	88. 3.67
2 COMBINED AT													
+	CPS03	.61	1	FLOW TIME	199. 3.83	193. 3.83	183. 3.83	171. 3.83	167. 3.83	165. 3.83	163. 3.83	160. 3.83	157. 3.83
HYDROGRAPH AT													
+	DCPS03	.00	1	FLOW TIME	123. 3.92	120. 3.92	114. 3.92	107. 3.92	105. 3.92	104. 3.92	103. 3.92	101. 3.92	98. 3.92
ROUTED TO													
+	RDPS03	.00	1	FLOW TIME	123. 4.00	120. 4.00	115. 4.00	109. 4.00	107. 4.00	106. 4.00	106. 4.00	103. 4.00	99. 4.00
2 COMBINED AT													
+	CCPS03	.61	1	FLOW TIME	304. 3.92	295. 3.92	279. 3.92	260. 3.92	255. 4.00	252. 4.00	250. 4.00	245. 4.00	238. 4.00
ROUTED TO													
+	RCPS03	.61	1	FLOW TIME	303. 4.00	294. 4.00	279. 4.00	260. 4.00	254. 4.08	251. 4.08	249. 4.08	244. 4.08	237. 4.08
HYDROGRAPH AT													
+	PS04	.19	1	FLOW TIME	109. 3.75	107. 3.75	103. 3.75	98. 3.75	97. 3.75	96. 3.75	95. 3.75	94. 3.75	92. 3.75
2 COMBINED AT													
+	CPS04	.80	1	FLOW TIME	375. 3.92	364. 3.92	347. 3.92	325. 3.92	318. 3.92	314. 3.92	310. 3.92	304. 3.92	299. 3.92
ROUTED TO													
+	RCPS04	.80	1	FLOW TIME	373. 4.00	363. 4.00	345. 4.00	323. 4.00	316. 4.00	312. 4.00	309. 4.00	302. 4.00	297. 4.00
HYDROGRAPH AT													
+	PS05	.11	1	FLOW TIME	65. 3.67	63. 3.67	61. 3.67	58. 3.67	57. 3.67	57. 3.67	56. 3.67	55. 3.67	54. 3.67
2 COMBINED AT													
+	CPS05	.91	1	FLOW TIME	412. 3.92	400. 3.92	381. 3.92	360. 3.92	352. 3.92	347. 3.92	343. 3.92	337. 3.92	330. 3.92
ROUTED TO													
+	RCPS05	.91	1	FLOW TIME	409. 4.00	398. 4.00	379. 4.00	357. 4.00	349. 4.00	344. 4.00	341. 4.00	335. 4.00	327. 4.00
HYDROGRAPH AT													
+	PS06	.08	1	FLOW TIME	53. 3.67	52. 3.67	50. 3.67	48. 3.67	48. 3.67	47. 3.67	47. 3.67	46. 3.67	45. 3.67
2 COMBINED AT													
+	CPS06	.99	1	FLOW TIME	439. 3.92	425. 3.92	405. 3.92	384. 3.92	377. 3.92	371. 3.92	367. 3.92	360. 3.92	353. 3.92
ROUTED TO													
+	RCPS06	.99	1	FLOW TIME	440. 4.00	426. 4.00	406. 4.00	384. 4.00	378. 4.00	372. 4.00	367. 4.00	361. 4.00	353. 4.00
HYDROGRAPH AT													
+	PS07	.10	1	FLOW TIME	62. 3.67	61. 3.67	58. 3.67	56. 3.67	55. 3.67	55. 3.67	54. 3.67	53. 3.67	52. 3.67
2 COMBINED AT													
+	CPS07	1.09	1	FLOW TIME	471. 4.00	457. 4.00	435. 4.00	413. 4.00	406. 4.00	399. 4.00	395. 4.00	388. 4.00	380. 4.00
2 COMBINED AT													
+	CCPS07	4.20	1	FLOW TIME	1013. 4.00	985. 4.00	941. 4.00	898. 4.00	885. 4.00	873. 4.00	864. 4.00	851. 4.00	834. 4.00
ROUTED TO													
+	RCCPS07	4.20	1	FLOW TIME	1009. 4.08	983. 4.08	935. 4.08	891. 4.08	875. 4.08	865. 4.08	858. 4.08	844. 4.08	824. 4.08
HYDROGRAPH AT													
+	PS08	.18	1	FLOW TIME	100. 3.67	98. 3.67	94. 3.67	90. 3.67	89. 3.67	88. 3.67	87. 3.67	86. 3.75	84. 3.75

IN 10-YR,
CRCPS06
RENAMED TO
CCPS07

esw310.out													
2 COMBINED AT													
+	CPS08	4.38	1	FLOW TIME	1058.4.00	1031.4.00	989.4.00	939.4.00	928.4.00	917.4.00	907.4.00	887.4.00	871.4.00
HYDROGRAPH AT													
+	ED01	.25	1	FLOW TIME	78.3.83	75.3.83	72.3.83	67.3.83	66.3.83	65.3.83	64.3.83	63.3.83	61.3.83
ROUTED TO													
+	RED01	.25	1	FLOW TIME	79.4.17	76.4.17	72.4.17	68.4.17	67.4.17	65.4.17	63.4.17	62.4.17	60.4.17
HYDROGRAPH AT													
+	ED02	.31	1	FLOW TIME	115.3.83	113.3.83	108.3.83	102.3.83	100.3.83	99.3.83	98.3.83	96.3.83	94.3.83
HYDROGRAPH AT													
+	ED11	.24	1	FLOW TIME	73.3.83	71.3.83	67.3.83	64.3.83	62.3.83	61.3.83	60.3.83	59.3.83	58.3.83
HYDROGRAPH AT													
+	ED12	.21	1	FLOW TIME	97.3.75	95.3.75	91.3.75	87.3.75	86.3.75	85.3.75	84.3.75	82.3.75	81.3.75
2 COMBINED AT													
+	CED12	.45	1	FLOW TIME	169.3.83	165.3.83	157.3.83	149.3.83	147.3.83	145.3.83	143.3.83	140.3.83	137.3.83
ROUTED TO													
+	RCED12	.45	1	FLOW TIME	171.4.08	167.4.08	159.4.08	151.4.08	148.4.08	146.4.08	144.4.08	141.4.08	138.4.08
HYDROGRAPH AT													
+	ED13	.23	1	FLOW TIME	111.3.83	108.3.83	104.3.83	100.3.83	99.3.83	97.3.83	96.3.83	95.3.83	93.3.83
2 COMBINED AT													
+	CED13	.67	1	FLOW TIME	252.4.00	246.4.00	234.4.08	223.4.08	219.4.08	216.4.08	214.4.08	210.4.08	206.4.08
ROUTED TO													
+	RCED13	.67	1	FLOW TIME	254.4.08	248.4.08	236.4.08	224.4.08	219.4.08	216.4.17	214.4.17	210.4.17	206.4.17
3 COMBINED AT													
+	CED02	1.24	1	FLOW TIME	423.4.08	411.4.08	392.4.08	371.4.08	364.4.08	358.4.08	352.4.08	345.4.08	336.4.08
ROUTED TO													
+	RCED02	1.24	1	FLOW TIME	414.4.17	404.4.17	398.4.17	377.4.17	370.4.17	364.4.17	356.4.17	349.4.17	340.4.17
HYDROGRAPH AT													
+	ED03	.05	1	FLOW TIME	27.3.67	26.3.67	25.3.67	24.3.67	24.3.67	24.3.67	23.3.67	23.3.67	23.3.67
2 COMBINED AT													
+	CED03	1.29	1	FLOW TIME	422.4.17	412.4.17	405.4.17	384.4.17	377.4.17	371.4.17	363.4.17	356.4.17	347.4.17
ROUTED TO													
+	RCED03	1.29	1	FLOW TIME	423.4.25	412.4.25	404.4.25	379.4.25	372.4.33	368.4.33	362.4.33	356.4.33	349.4.33
HYDROGRAPH AT													
+	ED04	.04	1	FLOW TIME	25.3.67	25.3.67	24.3.67	23.3.67	22.3.67	22.3.67	22.3.67	22.3.67	21.3.67
2 COMBINED AT													
+	CED04	1.33	1	FLOW TIME	430.4.25	419.4.25	411.4.25	386.4.25	377.4.33	373.4.33	367.4.33	361.4.33	354.4.33
ROUTED TO													
+	RCED04	1.33	1	FLOW TIME	422.4.33	415.4.33	408.4.33	386.4.33	372.4.33	366.4.33	363.4.33	356.4.33	343.4.42
HYDROGRAPH AT													
+	ED05	.13	1	FLOW TIME	70.3.67	68.3.67	66.3.67	63.3.67	62.3.67	61.3.67	60.3.67	59.3.67	58.3.67
ROUTED TO													
+	RED05	.13	1	FLOW TIME	70.3.83	69.3.83	66.3.83	63.3.83	62.3.83	61.3.83	59.3.83	58.3.83	59.3.83
HYDROGRAPH AT													
+	ED06	.08	1	FLOW TIME	41.3.67	40.3.67	38.3.67	37.3.67	36.3.67	36.3.67	35.3.67	35.3.67	34.3.67
2 COMBINED AT													
+	CED06	.20	1	FLOW TIME	107.3.83	105.3.83	100.3.83	96.3.83	95.3.83	93.3.83	90.3.83	89.3.83	89.3.83
ROUTED TO													

esw310.out													
+	RCED06	.20	1	FLOW TIME	109.3.92	106.3.92	102.3.92	97.3.92	96.3.92	95.3.92	92.3.92	90.3.92	90.3.92
HYDROGRAPH AT													
+	ED07	.07	1	FLOW TIME	35.3.67	35.3.67	33.3.67	32.3.67	31.3.67	31.3.67	30.3.67	30.3.67	29.3.67
ROUTED TO													
+	RED07	.07	1	FLOW TIME	36.3.92	35.3.92	33.3.92	32.3.92	32.3.92	31.3.92	31.3.92	30.3.92	30.3.92
HYDROGRAPH AT													
+	ED08	.08	1	FLOW TIME	39.3.75	38.3.75	37.3.75	35.3.75	35.3.75	34.3.75	34.3.75	33.3.75	33.3.75
4 COMBINED AT													
+	CED08	1.68	1	FLOW TIME	496.4.33	487.4.33	478.4.33	453.4.33	438.4.33	432.4.33	429.4.33	420.4.33	404.4.33
ROUTED TO													
+	RCED08	1.68	1	FLOW TIME	493.4.33	481.4.33	464.4.42	443.4.42	431.4.42	424.4.42	420.4.42	413.4.42	400.4.42
HYDROGRAPH AT													
+	ED09	.03	1	FLOW TIME	14.3.58	13.3.58	13.3.58	12.3.58	12.3.58	12.3.58	12.3.58	11.3.58	11.3.58
3 COMBINED AT	CCPS08	6.09	1	FLOW TIME	1483.4.17	1436.4.17	1367.4.08	1299.4.08	1273.4.08	1258.4.08	1247.4.08	1226.4.08	1197.4.08
ROUTED TO													
+	RCCPS08	6.09	1	FLOW TIME	1483.4.25	1436.4.17	1363.4.17	1293.4.17	1269.4.08	1252.4.08	1240.4.08	1218.4.08	1189.4.08
HYDROGRAPH AT													
+	ED10	.19	1	FLOW TIME	93.3.75	91.3.75	87.3.75	83.3.75	82.3.75	80.3.75	80.3.75	78.3.75	77.3.75
2 COMBINED AT													
+	CED10	6.28	1	FLOW TIME	1522.4.17	1477.4.17	1408.4.08	1339.4.08	1315.4.08	1297.4.08	1285.4.08	1262.4.08	1233.4.08
ROUTED TO													
+	RCED10-C	6.28	1	FLOW TIME	1518.4.17	1478.4.17	1406.4.17	1335.4.17	1307.4.17	1291.4.17	1281.4.17	1255.4.17	1228.4.17
HYDROGRAPH AT													
+	SA01	.06	1	FLOW TIME	49.3.58	48.3.58	47.3.58	45.3.58	44.3.58	44.3.58	43.3.58	43.3.58	42.3.58
ROUTED TO													
+	RSA01	.06	1	FLOW TIME	47.3.75	47.3.75	46.3.75	44.3.75	43.3.75	43.3.75	43.3.75	42.3.75	41.3.75
HYDROGRAPH AT													
+	SA02	.14	1	FLOW TIME	91.3.67	89.3.67	86.3.67	82.3.67	81.3.67	80.3.67	80.3.67	78.3.67	77.3.67
2 COMBINED AT													
+	CSA02	.20	1	FLOW TIME	136.3.67	133.3.67	129.3.67	123.3.67	122.3.67	120.3.67	119.3.67	118.3.67	116.3.67
ROUTED TO													
+	RCSA02	.20	1	FLOW TIME	136.3.75	133.3.75	129.3.75	123.3.75	121.3.75	120.3.75	119.3.75	117.3.75	115.3.75
HYDROGRAPH AT													
+	SA04	.11	1	FLOW TIME	74.3.67	73.3.67	70.3.67	67.3.67	66.3.67	66.3.67	65.3.67	64.3.67	63.3.67
2 COMBINED AT													
+	CSA04	.31	1	FLOW TIME	204.3.75	200.3.75	193.3.75	185.3.75	183.3.75	181.3.75	179.3.75	177.3.75	174.3.75
ROUTED TO													
+	RCSA04	.31	1	FLOW TIME	203.3.92	199.3.92	192.3.92	185.3.92	183.3.92	181.3.92	179.3.92	177.3.92	174.3.92
HYDROGRAPH AT													
+	SA05	.19	1	FLOW TIME	99.3.75	97.3.75	93.3.75	89.3.75	88.3.75	87.3.75	86.3.75	85.3.75	83.3.75
2 COMBINED AT													
+	CSA05	.50	1	FLOW TIME	293.3.83	287.3.83	276.3.83	264.3.83	260.3.83	257.3.83	254.3.83	251.3.83	246.3.83
ROUTED TO													
+	RCSA05	.50	1	FLOW TIME	295.4.00	290.4.00	279.4.00	268.4.00	264.4.00	261.4.00	259.4.00	255.4.00	251.4.00
HYDROGRAPH AT													
+	SA06	.26	1	FLOW TIME	162.3.75	159.3.75	154.3.75	148.3.75	146.3.75	145.3.75	144.3.75	142.3.75	139.3.75

FUTURE 100-YR

fsw3.OUT

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1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 01JUN04 TIME 10:54:23
*
*****
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*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

1

HEC-1 INPUT

PAGE 1

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

*DIAGRAM

*** FREE ***

```
1 ID CLV CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN 2003
2 ID CENTRAL BASIN (SOUTHWEST, SOUTHEAST, NORTHEAST AREAS)
3 ID RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
4 ID INPUT FILE = FSW3.DAT
5 ID INPUT FILE DATE = OCTOBER, 2003
6 ID DESIGN STORM = 100-YEAR 6-HR STORM
7 ID STORM DISTRIBUTION = SDN #3
8 ID MODELED BY PBS&J (STEPHEN C. ALTMAN P.E.)
9 ID ENTIRE WATERSHED
10 ID 2002 MASTER PLAN UPDATE MODEL W/ ADJUSTMENTS FOR
11 ID 2003 CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN
12 ID COMPOSITE CURVE NUMBER RUN
13 ID
14 ID REFERENCED HYDROLOGIC MODELS:
15 ID CITY OF LAS VEGAS CITY WIDE HYDROLOGY ANALYSIS (PBS&J 1997)
16 ID PREDESIGN REPORT FOR I-15 FREEWAY CHANNEL (PARSONS BRINCKERHOFF 1999)
17 ID FINAL CENTRAL BASIN ASSESMENT (CARTER-BURGESS 1998)
18 ID HYDRAULIC DESIGN REPORT FOR I-15 WIDENING (LOUIS BERGER 1999)
19 ID
20 ID JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
21 ID
22 ID CONCENTRATION AREA DARF
23 ID POINT SQ. MI.
24 ID 0-0.5 0.99
25 ID 0.5-1 0.975
26 ID 1-2 0.95
27 ID 2-3 0.925
28 ID 3-4 0.915
29 ID 4-5 0.908
30 ID 5-6 0.903
31 ID 6-7 0.895
32 ID 7-8 0.885
33 ID
34 ID JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
35 ID
36 ID 100-YEAR, 6-HOUR STORM, SDN3
37 ID
38 ID 5 0 0 300
39 ID 5 0 0
40 ID 5 0 0
41 ID JR PREC 0.99 0.975 0.95 0.925 0.915 0.908 0.903 0.895 0.885
*
* AREA PREVIOUSLY IN FLAMINGO WATERSHED
*
42 KK FW01
43 BA 0.324
44 PB 2.77
45 PC 0.000 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
46 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
47 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
48 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
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1

HEC-1 INPUT

PAGE 2

231 KK ED13
 232 BA 0.226
 233 PB 2.77
 234 LS 0 92.1
 235 UD 0.381
 *
 236 KK CED13
 237 KM COMBINE RCED12 AND ED13
 238 KM DECATUR AND ELDORA
 239 HC 2
 *
 240 KK RCED13
 241 KM ROUTE CED13 TO CED02
 242 KM FACILITY = DECATUR DRAIN
 243 KM FACILITY # = FWDE 0025
 244 KM LINING = RCB
 245 RD 1320 0.0031 0.015 0 TRAP 10 0
 *
 246 KK CED02
 247 KM COMBINE RED01, ED02, AND RCED13
 248 KM DECATUR AND EDNA
 249 HC 3
 * *
 250 KK RCED02
 251 KM ROUTE CED02 TO CCPS03
 252 KM FACILITY = DECATUR DRAIN
 253 KM FACILITY # = FWDE 0000
 254 KM LINING = RCB
 255 RD 1320 0.0038 0.015 0 TRAP 12 0
 *
 256 KK DCPS03
 257 KM RETRIEVE DPS03
 258 DR DCPS03
 *
 259 KK RDPS03
 260 KM ROUTE DPS003 TO CPS03
 261 KM DECATUR
 262 RD 1200 0.0033 0.016 0 TRAP 0 50
 *
 263 KK CCPS03
 264 KM COMBINE CPS03, RCED02, AND RDPS03
 265 KM DECATUR AND PALMYRA
 266 HC 3
 *

1

HEC-1 INPUT

PAGE 8

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

267 KK RCPS03
 268 KM ROUTE CCPS03 TO CPS06
 269 KM FACILITY = PALMYRA/SIRIUS DRAIN
 270 KM FACILITY # = FWPS 0057
 271 KM LINING = RCB
 272 RD 5280 0.0128 0.015 0 TRAP 12 0
 *
 273 KK PS06-C
 274 BA 0.387
 275 PB 2.77
 276 LS 0 92.3
 277 UD 0.315
 *

278 KK CPS06
 279 KM COMBINE RCPS03 AND PS06-C
 280 KM VALLEY VIEW AND PALMYRA
 281 HC 2
 *

282 KK CCPS06
 283 KM COMBINE CPS06 AND RCCE3FA
 284 KM VALLEY VIEW AND PALMYRA
 285 HC 2
 *

286 KK RCCPS06
 287 KM ROUTE CCPS06 TO RCPS06
 288 KM FACILITY = PALMYRA/SIRIUS DRAIN
 289 KM FACILITY # = FWPS 0000
 290 KM LINING = RCB
 291 RD 3000 0.015 0.015 0 TRAP 20 0
 *

292 KK FW09
 293 BA 0.255

fsw3.OUT

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294      PB      2.77
295      LS       0      94.0
296      UD      0.399
      *

297      KK      DSPM
298      KM      DIVERT FLOW TO SPRING MTN./I-15 INTERCHANGE DETENTION BASIN
299      KM      FROM "HYDRAULIC DESIGN REPORT FOR I-15 WIDENING" BY LOUIS BERGER 1999
300      DT      DSM
301      DI       0      50      100      200      300      400      1000      2000
302      DQ       0       0      20      60      160      260      260      260
      *

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1 HEC-1 INPUT PAGE 9

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

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303      KK      RCFW9
304      KM      ROUTE DSPM TO CCCEFD
305      KM      FROM "HYDRAULIC DESIGN REPORT FOR I-15 WIDENING" BY LOUIS BERGER 1999
306      KM      LINING = RCP
307      RD      1390 0.0046 0.015      0      CIRC      5
      *

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308      KK      CE3FD-C
309      BA      0.281
310      PB      2.77
311      LS       0      93.7
312      UD      0.431
      *

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313      KK      CCCE3FD-C
314      KM      COMBINE RCFW9 AND CE3FD-C
315      KM      FREEWAY CHANNEL AND DESERT INN
316      HC       2
      *

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317      KK      RCCE3FD
318      KM      ROUTE CCE3FD-C TO CRCPS06
319      KM      FACILITY = FREEWAY CHANNEL DESERT INN TO I-15
320      KM      FACILITY # = FW15 0301
321      KM      LINING = CONCRETE
322      RD      1300 0.0042 0.015      0      TRAP      12      2
      *

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323      KK      CRCPS06
324      KM      COMBINE RCCCE3FD AND RCCPS06
325      KM      COMBINATION AT FREEWAY CHANNEL AND PALMYRA
326      HC       2
      *

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327      KK      RRCRCPS06
328      KM      ROUTE CRCPS06 TO CPS08
329      KM      FACILITY = FREEWAY CHANNEL DESERT INN TO I-15
330      KM      FACILITY # = FW15 0271
331      KM      LINING = RCB
332      RD      1700 0.0059 0.015      0      TRAP      24      0
      *

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333      KK      PS08
334      BA      0.179
335      PB      2.77
336      LS       0      92.1
337      UD      0.239
      *

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1 HEC-1 INPUT PAGE 10

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

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338      KK      CPS08
339      KM      COMBINE RRCRCPS06 AND PS08
340      KM      FREEWAY CHANNEL AND SUBBASIN PS08
341      HC       2
      *

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342      KK      ED05-C
343      BA      0.441
344      PB      2.77
345      LS       0      90.9
346      UD      0.496
      *

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347      KK      KRCED05-C
348      KM      ROUTE CED05-C TO CCPS08
349      KM      EDNA AVENUE
350      RD      1900 0.0158 0.016      0      TRAP      0      50
      *

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351      KK      CCPS08
352      KM      COMBINE CPS08 AND RCED05-C
353      KM      EDNA AND FREEWAY CHANNEL
354      HC       2
      *

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148 . . . . . CCE2ED-C.....
157 . . . . . -----> DCPS03
152 . . . . . DCCE2ED
      . . . . . V
      . . . . . V
160 . . . . . RDCCE2ED
      . . . . .
164 . . . . . CE3FA
      . . . . .
169 . . . . . CCE3FA.....
      . . . . . V
      . . . . . V
173 . . . . . RCCE3FA
      . . . . .
179 . . . . . PS01-C
      . . . . . V
      . . . . . V
184 . . . . . RPS01-C
      . . . . .
190 . . . . . PS03
      . . . . .
195 . . . . . CPS03.....
      . . . . .
199 . . . . . ED01
      . . . . . V
      . . . . . V
204 . . . . . RED01
      . . . . .
208 . . . . . ED02
      . . . . .
213 . . . . . ED11
      . . . . .
218 . . . . . ED12
      . . . . .
223 . . . . . CED12.....
      . . . . . V
      . . . . . V
227 . . . . . RCED12
      . . . . .
231 . . . . . ED13
      . . . . .
236 . . . . . CED13.....
      . . . . . V
      . . . . . V
240 . . . . . RCED13
      . . . . .
246 . . . . . CED02.....
      . . . . . V
      . . . . . V
250 . . . . . RCED02
      . . . . .
258 . . . . . <----- DCPS03
256 . . . . . DCPS03
      . . . . . V
      . . . . . V
259 . . . . . RDPS03
      . . . . .
263 . . . . . CCPS03.....
      . . . . . V
      . . . . . V
267 . . . . . RCPS03
      . . . . .
273 . . . . . PS06-C
      . . . . .
278 . . . . . CPS06.....
282 . . . . . CCPS06.....
      . . . . . V
      . . . . . V
286 . . . . . RCCPS06
      . . . . .

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292      .      FW09
      .      .
      .      .
300      .      .----->    DSM
297      .      DSPM
      .      V
      .      V
303      .      RCFW9
      .      .
      .      .
308      .      .      CE3FD-C
      .      .
      .      .
313      .      CCE3FD-C.....
      .      V
      .      V
317      .      RCCE3FD
      .      .
      .      .
323      .      CRCP506.....
      .      V
      .      V
327      .      RCRCP506
      .      .
      .      .
333      .      .      PS08
      .      .
      .      .
338      .      CPS08.....
      .      .
      .      .
342      .      ED05-C
      .      V
      .      V
347      .      RCED05-C
      .      .
      .      .
351      .      CCPS08...
      .      V
      .      V
355      .      RCCPS08
      .      .
      .      .
361      .      ED10-C
      .      .
      .      .
366      .      CED10-C.....
      .      V
      .      V
370      .      RCED10-C
      .      .
      .      .
376      .      SA06-C
      .      V
      .      V
381      .      RSA06-C
      .      .
      .      .
387      .      .      SA08
      .      .
      .      .
392      .      CSA08.....
      .      .
      .      .
396      .      CCSA08.....
      .      .
      .      .
404      .      .----->    DSAHARA
400      .      DCCSA08
      .      .
      .      .
407      .      OK09-C
      .      V
      .      V
412      .      ROK09
      .      .
      .      .
416      .      .      OK10
      .      .
      .      .
421      .      COK10.....
      .      V
      .      V
425      .      RCOK10
      .      .
      .      .
431      .      .      OK11-C
      .      .
      .      .
436      .      1COK11C.....
      .      .
      .      .
440      .      COK11-C.....
      .      V

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3 COMBINED AT													
+	CCPS03	1.85	1	FLOW	1836.	1795.	1731.	1665.	1637.	1619.	1605.	1585.	1560.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RCPS03	1.85	1	FLOW	1823.	1782.	1721.	1650.	1625.	1604.	1596.	1569.	1549.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT													
+	PS06-C	.39	1	FLOW	454.	445.	431.	417.	411.	407.	404.	399.	394.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CPS06	2.23	1	FLOW	2191.	2144.	2071.	1989.	1959.	1936.	1925.	1895.	1870.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
2 COMBINED AT													
+	CCPS06	4.91	1	FLOW	3815.	3719.	3574.	3418.	3356.	3312.	3291.	3233.	3180.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RCCPS06	4.91	1	FLOW	3779.	3685.	3537.	3386.	3330.	3279.	3261.	3208.	3156.
				TIME	3.92	3.92	3.92	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT													
+	FW09	.25	1	FLOW	282.	277.	268.	260.	257.	254.	253.	250.	247.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
DIVERSION TO													
+	DSM	.25	1	FLOW	142.	137.	128.	120.	117.	114.	113.	110.	107.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	DSPM	.25	1	FLOW	140.	140.	140.	140.	140.	140.	140.	140.	140.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCFW9	.25	1	FLOW	140.	140.	140.	140.	140.	140.	140.	140.	140.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	CE3FD-C	.28	1	FLOW	295.	290.	281.	272.	268.	266.	264.	261.	258.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
2 COMBINED AT													
+	CCE3FD-C	.54	1	FLOW	435.	430.	421.	412.	408.	406.	404.	401.	398.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RCCE3FD	.54	1	FLOW	431.	426.	417.	408.	405.	403.	401.	398.	395.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
2 COMBINED AT													
+	CRCP06	5.44	1	FLOW	4210.	4111.	3955.	3791.	3726.	3682.	3655.	3597.	3541.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RCRCP06	5.44	1	FLOW	4184.	4084.	3935.	3779.	3718.	3667.	3646.	3589.	3536.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT													
+	PS08	.18	1	FLOW	235.	231.	223.	216.	213.	211.	209.	207.	204.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPS08	5.62	1	FLOW	4316.	4214.	4054.	3886.	3819.	3774.	3746.	3689.	3632.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	4.00
HYDROGRAPH AT													
+	ED05-C	.44	1	FLOW	388.	380.	367.	354.	349.	346.	343.	339.	334.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RCED05-C	.44	1	FLOW	384.	378.	363.	353.	347.	342.	340.	336.	332.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
2 COMBINED AT													
+	CCPS08	6.06	1	FLOW	4696.	4584.	4413.	4232.	4164.	4110.	4083.	4023.	3964.
				TIME	3.92	3.92	3.92	4.00	4.00	3.92	4.00	4.00	4.00
ROUTED TO													
+	RCCPS08	6.06	1	FLOW	4678.	4569.	4402.	4230.	4163.	4108.	4082.	4022.	3962.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT													
+	ED10-C	.22	1	FLOW	241.	236.	228.	220.	217.	214.	213.	210.	207.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CED10-C	6.28	1	FLOW	4855.	4739.	4563.	4374.	4299.	4249.	4218.	4156.	4092.
				TIME	3.92	3.92	3.92	3.92	4.00	3.92	3.92	3.92	4.00
ROUTED TO													

FUTURE 10-YR

FSW310.out

```
1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 08JUN04 TIME 08:54:36
*
*****
```

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*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****
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X X XXXXXX XXXX X
X X X X X XX
X X X X X X
XXXXXX XXXX X XXXX X
X X X X X X
X X X X X X
X X XXXXXX XXXX XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

1

HEC-1 INPUT

PAGE 1

```

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

*DIAGRAM
*** FREE ***
1 ID CLV CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN 2003
2 ID CENTRAL BASIN (SOUTHWEST, SOUTHEAST, NORTHEAST AREAS)
3 ID FUTURE CONDITION - FUTURE LAND USE, PROPOSED MASTER PLAN FACILITIES
4 ID EXISTING AND FUTURE LOCAL FACILITIES
5 ID INPUT FILE = FSW310.DAT
6 ID INPUT FILE DATE = OCTOBER, 2003
7 ID DESIGN STORM = 10-YEAR 6-HR STORM
8 ID STORM DISTRIBUTION = SDN #3
9 ID MODELED BY PBS&J (STEPHEN C. ALTMAN P.E. AND GHAITH HAMADE, PhD.)
10 ID STORM CENTERING - FULL WATERSHED
11 ID COMPOSITE CURVE NUMBER RUN
12 ID 2002 MPU SUBBASINS USED FOR OFFSITE AREAS EXCEPT WHERE SPECIFIED
13 ID REFERENCED HYDROLOGIC MODELS:
14 ID CITY OF LAS VEGAS CITY WIDE HYDROLOGY ANALYSIS (PBS&J 1997)
15 ID PREDESIGN REPORT FOR I-15 FREEWAY CHANNEL (PARSONS BRINCKERHOFF 1999)
16 ID FINAL CENTRAL BASIN ASSESMENT (CARTER-BURGESS 1998)
17 ID HYDRAULIC DESIGN REPORT FOR I-15 WIDENING (LOUIS BERGER 1999)
18 ID CCRFCD 2002 LAS VEGAS VALLEY MASTER PLAN UPDATE (PBS&J, GCW, LBG)
19 ID
20 ID JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
21 ID
22 ID CONCENTRATION AREA DARF
23 ID POINT SQ. MI.
24 ID 0-0.5 0.564
25 ID 0.5-1 0.556
26 ID 1-2 0.542
27 ID 2-3 0.527
28 ID 3-4 0.522
29 ID 4-5 0.518
30 ID 5-6 0.515
31 ID 6-7 0.51
32 ID 7-8 0.504
33 ID
34 ID JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
35 ID
36 ID 10-YEAR, 6-HOUR STORM, SDN3
37 ID
38 IT 5 0 0 300
39 IO 5 0 0
40 IN 5 0 0
41 JR PREC 0.564 0.556 0.542 0.527 0.522 0.518 0.515 0.51 0.504
*
42 KK FW01
43 BA 0.324
44 PB 2.77
45 PC 0.000 0.020 0.057 0.070 0.087 0.108 0.124 0.130 0.130 0.130
46 PC 0.130 0.130 0.130 0.133 0.140 0.142 0.148 0.158 0.172 0.181
47 PC 0.190 0.197 0.199 0.200 0.201 0.204 0.214 0.229 0.241 0.249
48 PC 0.251 0.256 0.270 0.278 0.281 0.283 0.295 0.322 0.352 0.409
49 PC 0.499 0.590 0.710 0.744 0.781 0.812 0.819 0.835 0.851 0.856
50 PC 0.860 0.868 0.876 0.888 0.910 0.926 0.937 0.950 0.970 0.976
51 PC 0.982 0.985 0.987 0.989 0.990 0.993 0.994 0.995 0.998

HEC-1 INPUT
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1

PAGE 2

1

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*
297      KK  RCPS05
298      KM  ROUTE CPS05 TO CPS06
299      KM  FACILITY = PALMYRA/SIRIUS DRAIN
300      KM  FACILITY # = FWPS 0057
301      KM  LINING = RCP
302      RD   1300    0.01    0.013      0    CIRC      10
*

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HEC-1 INPUT

PAGE 9

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

```

303      KK  PS06
304      BA  0.084
305      PB  2.77
306      LS   0    92.8
307      UD  0.244
*

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308      KK  CPS06
309      KM  COMBINE RCPS05 AND PS06
310      KM  VALLEY VIEW AND PALMYRA
311      HC   2
*
312      KK  CCPS06
313      KM  COMBINE CPS06 AND RCCE3FA
314      KM  VALLEY VIEW AND PALMYRA
315      HC   2
*

```

```

316      KK  RCPS06
317      KM  ROUTE CPS06 TO CPS07
318      KM  FACILITY = PALMYRA/SIRIUS DRAIN
319      KM  FACILITY # = FWPS 0000
320      KM  LINING = RCB
321      RD   3000    0.015    0.015      0    TRAP     12      0
*

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```

322      KK  PS07
323      BA  0.101
324      PB  2.77
325      LS   0    92.3
326      UD  0.244
*

```

```

327      KK  CPS07
328      KM  COMBINE PS07 AND RCPS06
329      KM  FREEWAY CHANNEL AND DESERT INN
330      HC   2
*

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```

331      KK  FW09
332      BA  0.255    260
333      PB  2.77
334      LS   0    94.0
335      UD  0.399
*

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336      KK  DSPM
337      KM  DIVERT FLOW TO SPRING MTN./I-15 INTERCHANGE DETENTION BASIN
338      KM  FROM "HYDRAULIC DESIGN REPORT FOR I-15 WIDENING" BY LOUIS BERGER 1999
339      DT   DSM
340      DI   0      50      100      200      300      400      1000
341      DQ   0      0      20      60      160      260      260
*

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1

HEC-1 INPUT

PAGE 10

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

```

342      KK  RCFW9
343      KM  ROUTE DSPM TO CCCEFD
344      KM  FROM "HYDRAULIC DESIGN REPORT FOR I-15 WIDENING" BY LOUIS BERGER 1999
345      KM  LINING = RCP
346      RD   1390    0.0046    0.015      0    CIRC      5
*

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347      KK  PS07A
348      BA  0.035
349      PB  2.77
350      LS   0    92.7
351      UD  0.219
*

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```

352      KK  CE3FD
353      BA  0.145
354      PB  2.77
355      LS   0    94.8
356      UD  0.305
*

```

357 KKCE3FD-C
 358 KM COMBINE RCFW9, PS07A, AND CE3FD-C
 359 KM FREEWAY CHANNEL AND DESERT INN
 360 HC 3
 *
 361 KK RCCE3FD
 362 KM ROUTE CCE3FD-C TO CRCPS06
 363 KM FACILITY = FREEWAY CHANNEL DESERT INN TO I-15
 364 KM FACILITY # = FW15 0301
 365 KM LINING = CONCRETE
 366 RD 1300 0.0042 0.015 0 TRAP 12 2
 *
 367 KK CCPS07
 368 KM COMBINE CPS07 AND RCCE3FD
 369 KM FREEWAY CHANNEL AND DESERT INN
 370 HC 2
 *
 371 KK RCCPS07
 372 KM ROUTE CCPS07 TO CPS08
 373 KM FACILITY = FREEWAY CHANNEL DESERT INN TO I-15
 374 KM FACILITY # = FW15 0271
 375 KM LINING = RCB
 376 RD 1700 0.0059 0.015 0 TRAP 24 0
 *

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HEC-1 INPUT

PAGE 11

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

377	KK	PS08	
378	BA	0.178	
379	PB	2.77	
380	LS	0	92.1
381	UD	0.278	
	*		

382 KK CPS08
 383 KM COMBINE RCCPS07 AND PS08
 384 KM FREEWAY CHANNEL AND SUBBASIN PS08
 385 HC 2
 *
 386 KK ED03
 387 BA 0.046
 388 PB 2.77
 389 LS 0 91.3
 390 UD 0.229
 *
 391 KK RCED03
 392 KM ROUTE ED03 TO CED04
 393 KM EDNA AVENUE
 394 RD 2600 0.0084 0.016 0 TRAP 0 50
 *
 395 KK ED04
 396 BA 0.044
 397 PB 2.77
 398 LS 0 92.0
 399 UD 0.267
 *
 400 KK CED04
 401 KM COMBINE RCED03 AND ED04
 402 KM VALLEY VIEW AND PENNWOOD
 403 HC 2
 *
 404 KK RCED04
 405 KM ROUTE CED04 TO CCPS08
 406 KM EDNA AVENUE
 407 RD 2000 0.015 0.016 0 TRAP 0 50
 *
 408 KK ED05
 409 BA 0.127
 410 PB 2.77
 411 LS 0 90.8
 412 UD 0.246
 *

1

HEC-1 INPUT

PAGE 12

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

413 KK RED05
 414 KM ROUTE ED05 TO CED06
 415 KM TARA
 416 RD 2650 0.009 0.016 0 TRAP 0 50
 *

417 KK ED06
 418 BA 0.077
 419 PB 2.77
 420 LS 0 91.1
 421 UD 0.274
 *

 422 KK CED06
 423 KM COMBINE RED05 AND ED06
 424 KM VALLEY VIEW AND TARA
 425 HC 2
 *

 426 KK RCED06
 427 KM ROUTE CED06 TO CED08
 428 KM MOBILE HOME PARK ROAD
 429 RD 2500 0.011 0.016 0 TRAP 0 50
 *

 430 KK ED07
 431 BA 0.066
 432 PB 2.77
 433 LS 0 90.5
 434 UD 0.248
 *

 435 KK RED07
 436 KM ROUTE ED07 TO CED08
 437 KM MOBILE HOME PARK ROAD
 438 RD 3100 0.008 0.016 0 TRAP 0 50
 *

 439 KK ED08
 440 BA 0.080
 441 PB 2.77
 442 LS 0 90.4
 443 UD 0.296
 *

 444 KK CED08
 445 KM COMBINE RCED06, RCED04, RED07 AND ED08
 446 KM SOUTHEAST CORNER OF MOBILE PARK
 447 HC 4
 *

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HEC-1 INPUT

PAGE 13

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

448 KK RCED08
 449 KM ROUTE CED08 TO CED09
 450 KM EXISTING DITCH
 451 RD 1900 0.017 0.016 0 TRAP 0 50
 *

 452 KK ED09
 453 BA 0.026
 454 PB 2.77
 455 LS 0 88.5
 456 UD 0.178
 *

 457 KK CCPS08
 458 KM COMBINE ED09, CPS08 AND RCED08
 459 KM EDNA AND FREEWAY CHANNEL
 460 HC 3
 *

 461 KK RCCPS08
 462 KM ROUTE CCPS08 TO CED10
 463 KM FACILITY = FREEWAY CHANNEL FROM DESERT INN TO I-15
 464 KM FACILITY # = FW15 0242
 465 KM LINING = RCB
 466 RD 1500 0.0093 0.015 0 TRAP 24 0
 *

 467 KK ED10
 468 BA 0.191
 469 PB 2.77
 470 LS 0 90.4
 471 UD 0.306
 *

 472 KK CED10
 473 KM COMBINE RCCPS08 AND ED10
 474 KM COMBINATION OF FREEWAY CHANNEL AND ED10
 475 HC 2
 *

 476 KKRCE10-C
 477 KM ROUTE CED10-C TO CSA08
 478 KM FACILITY = FREEWAY CHANNEL FROM DESERT INN TO I-15
 479 KM FACILITY # = FW15 0214
 480 KM LINING = RCB

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237      .      .      .      .      .      ED01
      .      .      .      .      .      V
242      .      .      .      .      .      V
      .      .      .      .      .      RED01
      .      .      .      .      .      .
246      .      .      .      .      .      CED02.....
      .      .      .      .      .      V
      .      .      .      .      .      V
250      .      .      .      .      .      RCED02
      .      .      .      .      .      .
258      .      .      .      .      .      .
256      .      .      .      .      .      .<----- DCPS03
      .      .      .      .      .      DCPS03
      .      .      .      .      .      V
259      .      .      .      .      .      V
      .      .      .      .      .      RDPS03
      .      .      .      .      .      .
263      .      .      .      .      .      CCPS03.....
      .      .      .      .      .      V
      .      .      .      .      .      V
267      .      .      .      .      .      RCPS03
      .      .      .      .      .      .
273      .      .      .      .      .      PS04
      .      .      .      .      .      .
278      .      .      .      .      .      CPS04.....
      .      .      .      .      .      V
      .      .      .      .      .      V
282      .      .      .      .      .      RCPS04
      .      .      .      .      .      .
288      .      .      .      .      .      PS05
      .      .      .      .      .      .
293      .      .      .      .      .      CPS05.....
      .      .      .      .      .      V
      .      .      .      .      .      V
297      .      .      .      .      .      RCPS05
      .      .      .      .      .      .
303      .      .      .      .      .      PS06
      .      .      .      .      .      .
308      .      .      .      .      .      CPS06.....
      .      .      .      .      .      .
312      .      .      .      .      .      CCPS06.....
      .      .      .      .      .      V
      .      .      .      .      .      V
316      .      .      .      .      .      RCPS06
      .      .      .      .      .      .
322      .      .      .      .      .      PS07
      .      .      .      .      .      .
327      .      .      .      .      .      CPS07.....
      .      .      .      .      .      .
331      .      .      .      .      .      FW09
      .      .      .      .      .      .
339      .      .      .      .      .      .-----> DSM
336      .      .      .      .      .      DSPM
      .      .      .      .      .      V
      .      .      .      .      .      V
342      .      .      .      .      .      RCFW9
      .      .      .      .      .      .
347      .      .      .      .      .      PS07A
      .      .      .      .      .      .
352      .      .      .      .      .      .      CE3FD
      .      .      .      .      .      .
357      .      .      .      .      .      CCE3FD-C.....
      .      .      .      .      .      V
      .      .      .      .      .      V
361      .      .      .      .      .      RCCE3FD
      .      .      .      .      .      .
367      .      .      .      .      .      CCPS07.....
      .      .      .      .      .      V
371      .      .      .      .      .      RCCPS07
      .      .      .      .      .      .
377      .      .      .      .      .      PS08
      .      .      .      .      .      .
382      .      .      .      .      .      CPS08.....

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386      ED03
.      V
.      V
391      RCED03
.
.
395      .      ED04
.      .
.      .
400      CED04.....
.      V
.      V
404      RCED04
.
.
408      .      ED05
.      .      V
.      .      V
413      .      RED05
.      .
.      .
417      .      .      ED06
.      .      .
.      .      .
422      .      CED06.....
.      .      V
.      .      V
426      .      RCED06
.      .
.      .
430      .      .      ED07
.      .      .      V
.      .      .      V
435      .      .      RED07
.      .
.      .
439      .      .      .      ED08
.      .      .      .
.      .      .      .
444      .      CED08.....
.      .      V
.      .      V
448      .      RCED08
.      .
.      .
452      .      .      ED09
.      .
.      .
457      CCPS08.....
.      V
461      RCCPS08
.
.
467      .      ED10
.      .
.      .
472      CED10.....
.      V
.      V
476      RCED10-C
.
.
482      .      SA06
.      .      V
.      .      V
487      .      RCSA06
.      .
.      .
491      .      .      SA07
.      .      .
.      .      .
496      .      CSA07.....
.      .      V
.      .      V
500      .      RCSA07
.      .
.      .
506      .      .      SA08
.      .      .
.      .      .
511      .      CSA08.....
.      .
.      .
515      CCSA08.....
.
.
523      .-----> DSAHARA
519      DCCSA08
.
.
526      .      OK09

```


HYDROGRAPH AT													
+	DCPS03	.00	1	FLOW	123.	120.	114.	107.	105.	104.	103.	101.	98.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RDPS03	.00	1	FLOW	123.	120.	115.	109.	107.	106.	106.	103.	99.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
3 COMBINED AT													
+	CCPS03	1.85	1	FLOW	686.	665.	631.	595.	583.	574.	565.	555.	542.
				TIME	4.00	4.00	4.00	4.00	4.08	4.08	4.08	4.08	4.08
ROUTED TO													
+	RCPS03	1.85	1	FLOW	678.	660.	627.	593.	582.	573.	564.	554.	540.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT													
+	PS04	.19	1	FLOW	109.	107.	103.	98.	97.	96.	95.	94.	92.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CPS04	2.04	1	FLOW	737.	715.	679.	644.	632.	622.	613.	602.	587.
				TIME	4.00	4.00	4.08	4.08	4.08	4.08	4.08	4.08	4.08
ROUTED TO													
+	RCPS04	2.04	1	FLOW	734.	714.	679.	643.	631.	621.	612.	600.	585.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT													
+	PS05	.11	1	FLOW	65.	63.	61.	58.	57.	57.	56.	55.	54.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPS05	2.15	1	FLOW	765.	742.	704.	667.	655.	645.	636.	624.	608.
				TIME	4.00	4.00	4.08	4.08	4.08	4.08	4.08	4.08	4.08
ROUTED TO													
+	RCPS05	2.15	1	FLOW	761.	740.	704.	666.	654.	644.	635.	622.	606.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT													
+	PS06	.08	1	FLOW	53.	52.	50.	48.	48.	47.	47.	46.	45.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPS06	2.23	1	FLOW	785.	762.	724.	685.	673.	662.	653.	640.	624.
				TIME	4.00	4.00	4.08	4.08	4.08	4.08	4.08	4.08	4.08
2 COMBINED AT													
+	CCPS06	4.90	1	FLOW	1283.	1242.	1172.	1097.	1073.	1053.	1040.	1015.	985.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
ROUTED TO													
+	RCPS06	4.90	1	FLOW	1273.	1231.	1162.	1090.	1066.	1048.	1033.	1009.	981.
				TIME	4.00	4.00	4.08	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT													
+	PS07	.10	1	FLOW	62.	61.	58.	56.	55.	55.	54.	53.	52.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPS07	5.01	1	FLOW	1304.	1262.	1191.	1114.	1090.	1070.	1057.	1032.	1002.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.08
HYDROGRAPH AT													
+	FW09	.25	1	FLOW	139.	136.	131.	126.	125.	123.	122.	121.	119.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
DIVERSION TO													
+	DSM	.25	1	FLOW	36.	34.	33.	31.	30.	29.	29.	28.	28.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	DSPM	.25	1	FLOW	103.	102.	99.	96.	95.	94.	93.	92.	91.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RCFW9	.25	1	FLOW	102.	100.	98.	95.	94.	93.	92.	91.	90.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	PS07A	.04	1	FLOW	23.	22.	22.	21.	20.	20.	20.	20.	19.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	CE3FD	.14	1	FLOW	94.	93.	90.	86.	85.	84.	84.	83.	81.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT													
+	CCE3FD-C	.44	1	FLOW	211.	207.	201.	194.	191.	190.	188.	186.	183.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													

FSW310.out													
+	RCCE3FD	.44	1	FLOW TIME	208. 3.83	204. 3.83	198. 3.83	191. 3.83	189. 3.83	188. 3.83	187. 3.83	184. 3.83	181. 3.83
2 COMBINED AT													
+	CCPS07	5.44	1	FLOW TIME	1480. 4.00	1435. 4.00	1359. 4.00	1277. 4.00	1251. 4.00	1230. 4.00	1216. 4.00	1189. 4.00	1157. 4.00
ROUTED TO													
+	RCCPS07	5.44	1	FLOW TIME	1473. 4.00	1429. 4.00	1353. 4.00	1271. 4.00	1245. 4.00	1224. 4.00	1210. 4.00	1183. 4.00	1152. 4.00
HYDROGRAPH AT													
+	PS08	.18	1	FLOW TIME	100. 3.67	98. 3.67	94. 3.67	90. 3.67	89. 3.67	88. 3.67	87. 3.67	86. 3.75	84. 3.75
2 COMBINED AT													
+	CPS08	5.62	1	FLOW TIME	1533. 4.00	1488. 4.00	1410. 4.00	1325. 4.00	1299. 4.00	1277. 4.00	1263. 4.00	1235. 4.00	1203. 4.00
HYDROGRAPH AT													
+	ED03	.05	1	FLOW TIME	27. 3.67	26. 3.67	25. 3.67	24. 3.67	24. 3.67	24. 3.67	23. 3.67	23. 3.67	23. 3.67
ROUTED TO													
+	RCED03	.05	1	FLOW TIME	27. 3.83	27. 3.83	26. 3.83	24. 3.83	24. 3.83	24. 3.83	23. 3.83	23. 3.83	23. 3.83
HYDROGRAPH AT													
+	ED04	.04	1	FLOW TIME	25. 3.67	25. 3.67	24. 3.67	23. 3.67	22. 3.67	22. 3.67	22. 3.67	22. 3.67	21. 3.67
2 COMBINED AT													
+	CED04	.09	1	FLOW TIME	49. 3.83	48. 3.83	46. 3.83	44. 3.83	44. 3.83	43. 3.83	43. 3.83	42. 3.83	41. 3.83
ROUTED TO													
+	RCED04	.09	1	FLOW TIME	50. 3.92	48. 3.92	47. 3.92	45. 3.92	44. 3.92	43. 3.92	43. 3.92	42. 3.92	41. 3.92
HYDROGRAPH AT													
+	ED05	.13	1	FLOW TIME	70. 3.67	68. 3.67	66. 3.67	63. 3.67	62. 3.67	61. 3.67	60. 3.67	59. 3.67	58. 3.67
ROUTED TO													
+	RED05	.13	1	FLOW TIME	70. 3.83	69. 3.83	66. 3.83	63. 3.83	62. 3.83	61. 3.83	59. 3.83	58. 3.83	59. 3.83
HYDROGRAPH AT													
+	ED06	.08	1	FLOW TIME	41. 3.67	40. 3.67	38. 3.67	37. 3.67	36. 3.67	36. 3.67	35. 3.67	35. 3.67	34. 3.67
2 COMBINED AT													
+	CED06	.20	1	FLOW TIME	107. 3.83	105. 3.83	100. 3.83	96. 3.83	95. 3.83	93. 3.83	90. 3.83	89. 3.83	89. 3.83
ROUTED TO													
+	RCED06	.20	1	FLOW TIME	109. 3.92	106. 3.92	102. 3.92	97. 3.92	96. 3.92	95. 3.92	92. 3.92	90. 3.92	90. 3.92
HYDROGRAPH AT													
+	ED07	.07	1	FLOW TIME	35. 3.67	35. 3.67	33. 3.67	32. 3.67	31. 3.67	31. 3.67	30. 3.67	30. 3.67	29. 3.67
ROUTED TO													
+	RED07	.07	1	FLOW TIME	36. 3.92	35. 3.92	33. 3.92	32. 3.92	32. 3.92	31. 3.92	31. 3.92	30. 3.92	30. 3.92
HYDROGRAPH AT													
+	ED08	.08	1	FLOW TIME	39. 3.75	38. 3.75	37. 3.75	35. 3.75	35. 3.75	34. 3.75	34. 3.75	33. 3.75	33. 3.75
4 COMBINED AT													
+	CED08	.44	1	FLOW TIME	226. 3.92	221. 3.92	212. 3.92	202. 3.92	199. 3.92	197. 3.92	193. 3.92	190. 3.92	188. 3.92
ROUTED TO													
+	RCED08	.44	1	FLOW TIME	221. 4.00	213. 3.92	208. 4.00	195. 4.00	195. 4.00	194. 4.00	188. 4.00	183. 4.00	182. 4.00
HYDROGRAPH AT													
+	ED09	.03	1	FLOW TIME	14. 3.58	13. 3.58	13. 3.58	12. 3.58	12. 3.58	12. 3.58	12. 3.58	11. 3.58	11. 3.58
3 COMBINED AT													
+	CCPS08	6.08	1	FLOW TIME	1758. 4.00	1705. 4.00	1622. 4.00	1525. 4.00	1498. 4.00	1476. 4.00	1455. 4.00	1423. 4.00	1389. 4.00
ROUTED TO													
+	RCCPS08	6.08	1	FLOW TIME	1754. 4.00	1702. 4.00	1618. 4.00	1522. 4.00	1494. 4.00	1472. 4.00	1451. 4.00	1420. 4.00	1386. 4.00
HYDROGRAPH AT													
+	ED10	.19	1	FLOW TIME	93. 3.75	91. 3.75	87. 3.75	83. 3.75	82. 3.75	80. 3.75	80. 3.75	78. 3.75	77. 3.75

PROJECT SITE

