SUBDIVISION COMMITTEE
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 9
APRIL 27, 2006

STAFF REPORT
(One-Step Final Plat)

CASE NUMBER: SUB 2006-33 – CLIFTON HEIGHTS COMMERCIAL 2nd ADDITION

OWNER/APPLICANT: JRD, LLC, Attn: Jay W. Russell, P.O. Box 75337, Wichita, KS 67275-0337

SURVEYOR/ENGINEER: Baughman Company, P.A., Attn: Phil Meyer, 315 Ellis, Wichita, KS 67211

LOCATION: North side of 55th St. South, West of Oliver

SITE SIZE: 3.48 acres

NUMBER OF LOTS

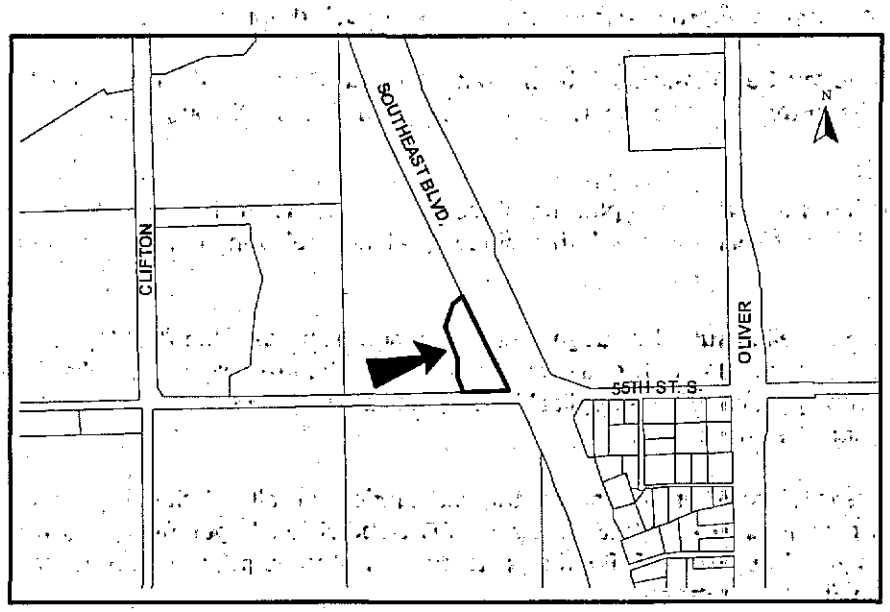
Residential:	
Office:	
Commercial:	1
Industrial:	
Total:	1

MINIMUM LOT AREA: 3.04 acres

CURRENT ZONING: SF-20, Single-Family Residential

PROPOSED ZONING: LC, Limited Commercial

VICINITY MAP



NOTE: This site is located in the County adjoining Wichita's city limits and annexation is required. The site has been approved for a zone change (ZON 2005-59) from SF-20, Single-Family Residential to LC, Limited Commercial. A Protective Overlay (P-O #168) was also approved for this site addressing uses, outside storage and building height.

STAFF COMMENTS:

A. Prior to this plat being scheduled for City Council review, annexation of the property will need to be completed.

B. The applicant shall guarantee the extension of sanitary sewer and City water (main and lateral) to serve the lots being platted.

C. If improvements are guaranteed by petition, a notarized certificate listing the petitions shall be submitted to the Planning Department for recording.

D. City/County Engineering needs to comment on the status of the applicant's drainage plan. ***Sedgwick County Engineering requests a flood study for this plat or a careful review of existing flood studies from 55th St. bridge construction.***

E. Traffic/County Engineering needs to comment on the access controls. The plat denotes one opening along 55th South. ***Access controls are approved.***

F. The site is located within the Maximum Mission Area of the Air Installation Compatible Use Zone (AICUZ) study to identify noise impact areas around McConnell Air Force Base. The applicant shall submit an avigational easement covering all of the subject plat and a restrictive covenant assuring that adequate construction methods will be used to minimize the effects of noise pollution in the habitable structures constructed on subject property.

G. If any drainage will be directed onto the adjacent railroad right-of-way, a letter shall be provided from that railroad indicating their agreement to accept such drainage.

H. A Protective Overlay Certificate shall be submitted to MAPD prior to City Council consideration, identifying the approved Protective Overlay and its special conditions for development on this property.

I. The Applicant is reminded that a platting binder is required with the final plat. Approval of this plat will be subject to submittal of this binder and any relevant conditions found by such a review.

J. The plattor's text shall include language that a drainage plan has been developed for the plat and that all drainage easements, rights-of-way, or reserves shall remain at established grades or as modified with the approval of the applicable City or County Engineer, and unobstructed to allow for the conveyance of stormwater.

K. The applicant shall install or guarantee the installation of all utilities and facilities that are applicable and described in Article 8 of the MAPC Subdivision Regulations. (Water service and fire hydrants required by Article 8 for fire protection shall be as per the direction and approval of the Chief of the Fire Department.)

L. The applicant's engineer is advised that the Register of Deeds is requiring the name(s) of the notary public, who acknowledges the signatures on this plat, to be printed beneath the notary's signature.

M. To receive mail delivery without delay, and to avoid unnecessary expense, the applicant is advised of the necessity to meet with the U.S. Postal Service Growth Management Coordinator (Phone: 316-946-4556) prior to development of the plat so that the type of delivery, and the tentative mailbox locations can be determined.

N. The applicant is advised that various State and Federal requirements (specifically but not limited to the Army Corps of Engineers, Kanopolis Project Office, Rt. 1, Box 317, Valley Center, KS 67147) for the control of soil and wind erosion and the protection of wetlands may impact how this site can be developed. It is the applicant's responsibility to contact all appropriate agencies to determine any such requirements.

O. The owner of the subdivision *should* note that any construction that results in earthwork activities that will disturb one (1) acre or more of ground cover requires a Federal/State NPDES Storm Water Discharge Permit from the Kansas Department of Health and Environment in Topeka. Also, for projects located within the City of Wichita, erosion and sediment control devices must be used on ALL projects. For projects outside of the City of Wichita, but within the Wichita Metropolitan area, the owner should contact the appropriate governmental jurisdiction concerning erosion and sediment control device requirements.

P. Perimeter closure computations shall be submitted with the final plat tracing.

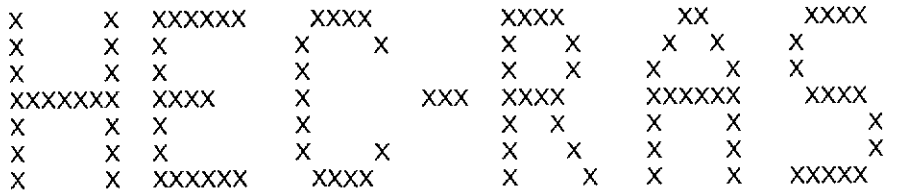
Q. Recording of the plat within 30 days after approval by the City Council and/or County Commission.

R. The representatives from the **utility companies** should be prepared to comment on the need for any additional utility easements to be platted on this property.

S. A compact disc (CD), which will be used by the City and County GIS Departments, detailing the final plat in digital format in AutoCAD. If a disc is not provided, please send via e-mail to Cheryl Holloway (E-Mail address: cholloway@wichita.gov. Please include the name of the plat on the disc.

creek.rep

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



PROJECT DATA
Project Title: creek
Project File : creek.prj
Run Date and Time: 5/22/2006 1:57:39 PM

Project in English units

PLAN DATA

Plan Title: Plan 07
Plan File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.p07

Geometry Title: developed
Geometry File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.g02

Flow Title : existing-pondpack
Flow File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.f02

Plan Summary Information:

Number of:	Cross Sections	= 10	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 1	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

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

FLOW DATA

Flow Title: existing-pondpack
Flow File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.f02

Flow Data (cfs)

River	Reach	RS	PF 1
creek	55th	5801	3500

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
creek	55th	PF 1		Critical

GEOMETRY DATA

Geometry Title: developed
Geometry File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.g02

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5801

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1287	5126	1286	5132	1284	5137	1282	5141	1280
5145	1278	5149	1276	5153	1274	5157	1272	5163	1272
5165	1274	5167	1276	5169	1278	5176	1280	5180	1282
5186	1284	5193	1286	5400	1288				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5126	.03	5193	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5126	5193	100	222	300	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1287.22	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.86	Wt. n-Val.	0.050	0.030
0.050				
W.S. Elev (ft)	1286.36	Reach Len. (ft)	100.00	222.00
300.00				
Crit W.S. (ft)		Flow Area (sq ft)	8.16	469.12
6.71				
E.G. Slope (ft/ft)	0.001924	Area (sq ft)	8.16	469.12

6.71				
Q Total (cfs)	3500.00	Flow (cfs)	3.39	3493.82
2.79				
Top Width (ft)	149.62	Top Width (ft)	45.36	67.00
37.26				
Vel Total (ft/s)	7.23	Avg. Vel. (ft/s)	0.42	7.45
0.42				
Max Chl Dpth (ft)	14.36	Hydr. Depth (ft)	0.18	7.00
0.18				
Conv. Total (cfs)	79793.5	Conv. (cfs)	77.3	79652.6
63.5				
Length Wtd. (ft)	222.51	Wetted Per. (ft)	45.36	73.91
37.26				
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.02	0.76
0.02				
Alpha	1.06	Stream Power (lb/ft s)	0.01	5.68
0.01				
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	0.09	9.96
0.40				
C & E Loss (ft)	0.07	Cum SA (acres)	0.09	1.53
1.01				

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5579

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5006	1286.5	5115	1286.5	5120	1284	5146	1280	5149	1278
5152	1276	5157	1274	5159	1272	5169	1272	5171	1274
5181	1280	5183	1282	5185	1284	52001285.765		5202	1286
5265	1288	5292	1286	5333	1284				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5006	.05	5120	.03	5202	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5120	5202	50	130	180 .1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1286.77	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.64	Wt. n-Val.	0.050	0.030
0.050				
W.S. Elev (ft)	1286.13	Reach Len. (ft)	50.00	130.00
180.00				
Crit W.S. (ft)		Flow Area (sq ft)	4.55	532.83
46.81				
E.G. Slope (ft/ft)	0.001562	Area (sq ft)	4.55	532.83
46.81				
Q Total (cfs)	3500.00	Flow (cfs)	5.17	3438.87
55.96				
Top Width (ft)	133.21	Top Width (ft)	4.26	82.00
46.94				

Vel Total (ft/s)	5.99	Avg. Vel. (ft/s)	1.14	6.45	1.20
Max Chl Dpth (ft)	14.13	Hydr. Depth (ft)	1.07	6.50	1.00
Conv. Total (cfs)	88564.8	Conv. (cfs)	130.9	87017.9	1416.1
Length Wtd. (ft)	129.35	Wetted Per. (ft)	4.77	89.00	49.13
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.09	0.58	0.09
Alpha	1.14	Stream Power (lb/ft s)	0.11	3.77	0.11
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	0.07	7.41	0.22
C & E Loss (ft)	0.16	Cum SA (acres)	0.04	1.15	0.72

Warning: Divided flow computed for this cross-section.
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 conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5449

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1286	5058	1286	5091	1286	5120	1285	5133	1280
5137	1278	5141	1276	5145	1274	5147	1272	5154	1272
5155	1274	5158	1276	5161	1278	5165	1280	5168	1282
5172	1284	5269	1286	5350	1286	5388	1284		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5133	.04	5172	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5133	5172	250	204	180	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1286.19	Element	Left OB	Channel
Right OB				
Vel Head (ft)	2.28	Wt. n-Val.	0.050	0.040
W.S. Elev (ft)	1283.92	Reach Len. (ft)	250.00	204.00
180.00				
Crit W.S. (ft)	1283.02	Flow Area (sq ft)	19.93	278.71

E.G. Slope (ft/ft)	0.009571	Area (sq ft)	19.93	278.71
Q Total (cfs)	3500.00	Flow (cfs)	86.60	3413.40
Top Width (ft)	49.01	Top Width (ft)	10.18	38.83
Vel Total (ft/s)	11.72	Avg. Vel. (ft/s)	4.35	12.25
Max Chl Dpth (ft)	11.92	Hydr. Depth (ft)	1.96	7.18
Conv. Total (cfs)	35775.3	Conv. (cfs)	885.2	34890.1
Length Wtd. (ft)	204.53	Wetted Per. (ft)	10.91	45.05
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	1.09	3.70
Alpha	1.07	Stream Power (lb/ft s)	4.74	45.27
Frctn Loss (ft) 0.12	0.72	Cum Volume (acre-ft)	0.06	6.20
C & E Loss (ft) 0.62	0.43	Cum SA (acres)	0.03	0.97

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

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5245

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5077	1286	5164	1286	5177	1286	5178	1285	5182	1278
5187	1276	5192	1274	5195	1272	5206	1272	5209	1274
5216	1276	5223	1278	5229	1280	5236	1282	5242	1284
5377	1284	5440	1286						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5077	.05	5177	.03	5242	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5177	5242	205	205	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1285.05	Element	Left OB	Channel
Right OB				

Vel Head (ft)	0.85	Wt. n-Val.		0.030
0.050				
W.S. Elev (ft)	1284.20	Reach Len. (ft)	205.00	205.00
205.00				
Crit W.S. (ft)		Flow Area (sq ft)		469.84
27.31				
E.G. Slope (ft/ft)	0.001795	Area (sq ft)		469.84
27.31				
Q Total (cfs)	3500.00	Flow (cfs)		3488.50
11.50				
Top Width (ft)	204.77	Top Width (ft)		63.54
141.23				
Vel Total (ft/s)	7.04	Avg. Vel. (ft/s)		7.42
0.42				
Max Chl Dpth (ft)	12.20	Hydr. Depth (ft)		7.39
0.19				
Conv. Total (cfs)	82600.1	Conv. (cfs)		82328.6
271.4				
Length Wtd. (ft)	205.00	Wetted Per. (ft)		70.61
141.23				
Min Ch El (ft)	1272.00	Shear (lb/sq ft)		0.75
0.02				
Alpha	1.11	Stream Power (lb/ft s)		5.54
0.01				
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)		4.45
0.06				
C & E Loss (ft)	0.03	Cum SA (acres)		0.73
0.33				

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5040

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1288	5093	1288	5117	1286	5124	1284	5136	1282
5149	1280	5152	1278	5160	1272	5176	1272	5179	1274
5185	1276	5191	1278	5197	1280	5203	1282	5209	1284
5218	1286	5235	1286	5328	1286				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5093	.03	5218	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5093	5218	40	40	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.64	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.75	Wt. n-Val.		0.030
W.S. Elev (ft)	1283.89	Reach Len. (ft)	10.00	10.00
10.00				
Crit W.S. (ft)	1280.51	Flow Area (sq ft)		503.29

E.G. Slope (ft/ft)	0.001959	Area (sq ft)	503.29
Q Total (cfs)	3500.00	Flow (cfs)	3500.00
Top Width (ft)	83.97	Top Width (ft)	83.97
Vel Total (ft/s)	6.95	Avg. Vel. (ft/s)	6.95
Max Chl Dpth (ft)	11.89	Hydr. Depth (ft)	5.99
Conv. Total (cfs)	79070.2	Conv. (cfs)	79070.2
Length Wtd. (ft)	10.00	Wetted Per. (ft)	89.09
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.69
Alpha	1.00	Stream Power (lb/ft s)	4.81
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	2.16
C & E Loss (ft)	0.01	Cum SA (acres)	0.38

BRIDGE

RIVER: creek
REACH: 55th RS: 5020

INPUT
Description:
Distance from Upstream XS = 10
Deck/Roadway Width = 20
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
5000	1286	5350	1286
1290		1290	

Upstream Bridge Cross Section Data
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1288	5093	1288	5117	1286	5124	1284	5136	1282
5149	1280	5152	1278	5160	1272	5176	1272	5179	1274
5185	1276	5191	1278	5197	1280	5203	1282	5209	1284
5218	1286	5235	1286	5328	1286				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5093	.03	5218	.05

Bank Sta: Left	Right	Coeff Contr.	Expan.
5093	5218	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
5000	1286	5350	1286
1290		1290	

Downstream Bridge Cross Section Data

Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Coeff Contr.	Expan.
5121	5206	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 2

Pier Data
Pier Station Upstream= 5153 Downstream= 5141
Upstream num= 2

Width	Elev	Width	Elev
2	1272	2	1292

Downstream num= 2

Width	Elev	Width	Elev
2	1272	2	1292

Pier Data
Pier Station Upstream= 5188 Downstream= 5176
Upstream num= 2

Width	Elev	Width	Elev
2	1272	2	1290

Downstream num= 2

Width	Elev	Width	Elev
2	1272	2	1290

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft) 1284.64 Element Inside BR US
Inside BR DS

W.S. US. (ft)	1283.89	E.G. Elev (ft)	1284.60
1284.49			
Q Total (cfs)	3500.00	W.S. Elev (ft)	1283.71
1283.33			
Q Bridge (cfs)	3500.00	Crit W.S. (ft)	1280.72
1281.12			
Q Weir (cfs)		Max Chl Dpth (ft)	11.71
11.33			
Weir Sta Lft (ft)		Vel Total (ft/s)	7.58
8.65			
Weir Sta Rgt (ft)		Flow Area (sq ft)	462.03
404.83			
Weir Submerg		Froude # Chl	0.55
0.63			
Weir Max Depth (ft)		Specif Force (cu ft)	2865.74
2661.46			
Min El Weir Flow (ft)	1290.01	Hydr Depth (ft)	5.90
5.93			
Min El Prs (ft)	1286.00	W.P. Total (ft)	109.14
95.70			
Delta EG (ft)	0.22	Conv. Total (cfs)	59886.6
52447.9			
Delta WS (ft)	0.49	Top Width (ft)	78.35
68.31			
BR Open Area (sq ft)	606.17	Frctn Loss (ft)	0.08
0.03			
BR Open Vel (ft/s)	8.65	C & E Loss (ft)	0.03
0.04			
Coef of Q		Shear Total (lb/sq ft)	0.90
1.18			
Br Sel Method	Energy only	Power Total (lb/ft s)	6.84
10.17			

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than
the downstream energy. This is not physically possible, the momentum answer has been
disregarded.

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5000

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	50	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.41	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.02	Wt. n-Val.		0.030
W.S. Elev (ft)	1283.39	Reach Len. (ft)	50.00	50.00
50.00				
Crit W.S. (ft)		Flow Area (sq ft)		431.54
E.G. Slope (ft/ft)	0.002767	Area (sq ft)		431.54
Q Total (cfs)	3500.00	Flow (cfs)		3500.00
Top Width (ft)	72.75	Top Width (ft)		72.75
Vel Total (ft/s)	8.11	Avg. Vel. (ft/s)		8.11
Max Chl Dpth (ft)	11.39	Hydr. Depth (ft)		5.93
Conv. Total (cfs)	66542.9	Conv. (cfs)		66542.9
Length Wtd. (ft)	50.00	Wetted Per. (ft)		78.56
Min Ch El (ft)	1272.00	Shear (lb/sq ft)		0.95
Alpha	1.00	Stream Power (lb/ft s)		7.69
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)		1.75
C & E Loss (ft)	0.01	Cum SA (acres)		0.31

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4950

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.26	Element	Left OB	Channel

Right OB				
Vel Head (ft)	1.11	Wt. n-Val.		0.030
W.S. Elev (ft)	1283.15	Reach Len. (ft)	50.00	50.00
50.00				
Crit W.S. (ft)		Flow Area (sq ft)		414.10
E.G. Slope (ft/ft)	0.003080	Area (sq ft)		414.10
Q Total (cfs)	3500.00	Flow (cfs)		3500.00
Top Width (ft)	71.05	Top Width (ft)		71.05
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)		8.45
Max Chl Dpth (ft)	11.15	Hydr. Depth (ft)		5.83
Conv. Total (cfs)	63070.3	Conv. (cfs)		63070.3
Length Wtd. (ft)	50.00	Wetted Per. (ft)		76.79
Min Ch El (ft)	1272.00	Shear (lb/sq ft)		1.04
Alpha	1.00	Stream Power (lb/ft s)		8.76
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)		1.27
C & E Loss (ft)	0.01	Cum SA (acres)		0.23

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4900

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.08	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.23	Wt. n-Val.		0.030
W.S. Elev (ft)	1282.85	Reach Len. (ft)	50.00	50.00
50.00				

Crit W.S. (ft)		Flow Area (sq ft)	393.30
E.G. Slope (ft/ft)	0.003520	Area (sq ft)	393.30
Q Total (cfs)	3500.00	Flow (cfs)	3500.00
Top Width (ft)	68.97	Top Width (ft)	68.97
Vel Total (ft/s)	8.90	Avg. Vel. (ft/s)	8.90
Max Chl Dpth (ft)	10.85	Hydr. Depth (ft)	5.70
Conv. Total (cfs)	58991.8	Conv. (cfs)	58991.8
Length Wtd. (ft)	50.00	Wetted Per. (ft)	74.63
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	1.16
Alpha	1.00	Stream Power (lb/ft s)	10.31
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	0.80
C & E Loss (ft)	0.02	Cum SA (acres)	0.15

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4850

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1283.87	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.42	Wt. n-Val.		0.030
W.S. Elev (ft)	1282.45	Reach Len. (ft)	50.00	50.00
50.00				
Crit W.S. (ft)	1280.94	Flow Area (sq ft)		366.27
E.G. Slope (ft/ft)	0.004232	Area (sq ft)		366.27
Q Total (cfs)	3500.00	Flow (cfs)		3500.00

Top Width (ft)	66.17	Top Width (ft)	66.17
Vel Total (ft/s)	9.56	Avg. Vel. (ft/s)	9.56
Max Chl Dpth (ft)	10.45	Hydr. Depth (ft)	5.54
Conv. Total (cfs)	53800.7	Conv. (cfs)	53800.7
Length Wtd. (ft)	50.00	Wetted Per. (ft)	71.72
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	1.35
Alpha	1.00	Stream Power (lb/ft s)	12.89
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	0.37
C & E Loss (ft)	0.11	Cum SA (acres)	0.07

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

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4800

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1283.47	Element	Left OB Channel Right OB
Vel Head (ft)	2.53	Wt. n-Val.	0.030
W.S. Elev (ft)	1280.94	Reach Len. (ft)	
Crit W.S. (ft)	1280.94	Flow Area (sq ft)	274.34

E.G. Slope (ft/ft)	0.008777	Area (sq ft)	274.34
Q Total (cfs)	3500.00	Flow (cfs)	3500.00
Top Width (ft)	55.04	Top Width (ft)	55.04
Vel Total (ft/s)	12.76	Avg. Vel. (ft/s)	12.76
Max Chl Dpth (ft)	8.94	Hydr. Depth (ft)	4.98
Conv. Total (cfs)	37358.4	Conv. (cfs)	37358.4
Length Wtd. (ft)		Wetted Per. (ft)	60.18
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	2.50
Alpha	1.00	Stream Power (lb/ft s)	31.87
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

SUMMARY OF MANNING'S N VALUES

River:creek

Reach	River Sta.	n1	n2	n3
55th	5801	.05	.03	.05
55th	5579	.05	.03	.05
55th	5449	.05	.04	.05
55th	5245	.05	.03	.05
55th	5040	.05	.03	.05
55th	5020	Bridge		
55th	5000	.05	.03	.05
55th	4950	.05	.03	.05
55th	4900	.05	.03	.05
55th	4850	.05	.03	.05
55th	4800	.05	.03	.05

SUMMARY OF REACH LENGTHS

River: creek

Reach	River Sta.	Left	Channel	Right
55th	5801	100	222	300
55th	5579	50	130	180
55th	5449	250	204	180
55th	5245	205	205	205
55th	5040	40	40	40
55th	5020	Bridge		
55th	5000	50	50	50
55th	4950	50	50	50
55th	4900	50	50	50

55th	4850	50	50	50
55th	4800	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: creek

Reach	River Sta.	Contr.	Expan.
55th	5801	.1	.3
55th	5579	.1	.3
55th	5449	.1	.3
55th	5245	.1	.3
55th	5040	.1	.3
55th	5020	Bridge	
55th	5000	.1	.3
55th	4950	.1	.3
55th	4900	.1	.3
55th	4850	.1	.3
55th	4800	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.
E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	
			(cfs)	(ft)	(ft)	(ft)
(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		
55th	5801	PF 1	3500.00	1272.00	1286.36	
1287.22	0.001924	7.45	483.99	149.62	0.50	
55th	5579	PF 1	3500.00	1272.00	1286.13	
1286.77	0.001562	6.45	584.18	133.21	0.45	
55th	5449	PF 1	3500.00	1272.00	1283.92	1283.02
1286.19	0.009571	12.25	298.64	49.01	0.81	
55th	5245	PF 1	3500.00	1272.00	1284.20	
1285.05	0.001795	7.42	497.15	204.77	0.48	
55th	5040	PF 1	3500.00	1272.00	1283.89	1280.51
1284.64	0.001959	6.95	503.29	83.97	0.50	
55th	5020		Bridge			
55th	5000	PF 1	3500.00	1272.00	1283.39	
1284.41	0.002767	8.11	431.54	72.75	0.59	
55th	4950	PF 1	3500.00	1272.00	1283.15	
1284.26	0.003080	8.45	414.10	71.05	0.62	
55th	4900	PF 1	3500.00	1272.00	1282.85	
1284.08	0.003520	8.90	393.30	68.97	0.66	
55th	4850	PF 1	3500.00	1272.00	1282.45	1280.94
1283.87	0.004232	9.56	366.27	66.17	0.72	
55th	4800	PF 1	3500.00	1272.00	1280.94	1280.94
1283.47	0.008777	12.76	274.34	55.04	1.01	

Profile Output Table - Standard Table 2

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn

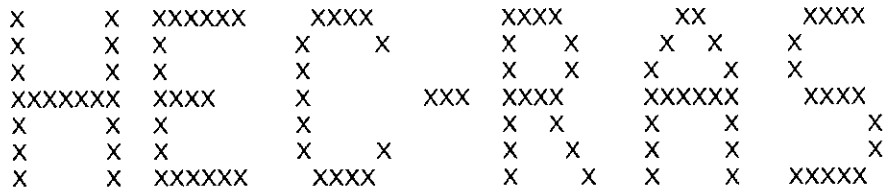
Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)	(ft)
55th	5801		PF 1	1287.22	1286.36	0.86
0.38	0.07	3.39	3493.82	2.79	149.62	
55th	5579		PF 1	1286.77	1286.13	0.64
0.41	0.16	5.17	3438.87	55.96	133.21	
55th	5449		PF 1	1286.19	1283.92	2.28
0.72	0.43	86.60	3413.40		49.01	
55th	5245		PF 1	1285.05	1284.20	0.85
0.38	0.03		3488.50	11.50	204.77	
55th	5040		PF 1	1284.64	1283.89	0.75
0.03	0.01		3500.00		83.97	
55th	5020			Bridge		
55th	5000		PF 1	1284.41	1283.39	1.02
0.15	0.01		3500.00		72.75	
55th	4950		PF 1	1284.26	1283.15	1.11
0.16	0.01		3500.00		71.05	
55th	4900		PF 1	1284.08	1282.85	1.23
0.19	0.02		3500.00		68.97	
55th	4850		PF 1	1283.87	1282.45	1.42
0.29	0.11		3500.00		66.17	
55th	4800		PF 1	1283.47	1280.94	2.53
			3500.00		55.04	

HEC-RAS Plan: Plan 03 River: creek Reach: 55th Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
55th	5801	PF 1	1287.22	1286.36	0.86	0.38	0.07	3.39	3493.82	2.79	149.62
55th	5579	PF 1	1286.77	1286.13	0.64	0.41	0.16	5.17	3438.87	55.96	133.21
55th	5449	PF 1	1286.19	1283.92	2.28	0.72	0.43	86.60	3413.40		49.01
55th	5245	PF 1	1285.05	1284.20	0.85	0.38	0.03		3488.50	11.50	204.77
55th	5040	PF 1	1284.64	1283.89	0.75	0.03	0.01		3500.00		83.97
55th	5020		Bridge								
55th	5000	PF 1	1284.41	1283.39	1.02	0.15	0.01		3500.00		72.75
55th	4950	PF 1	1284.26	1283.15	1.11	0.16	0.01		3500.00		71.05
55th	4900	PF 1	1284.08	1282.85	1.23	0.19	0.02		3500.00		68.97
55th	4850	PF 1	1283.87	1282.45	1.42	0.29	0.11		3500.00		66.17
55th	4800	PF 1	1283.47	1280.94	2.53				3500.00		55.04

creek.rep

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



PROJECT DATA
Project Title: creek
Project File : creek.prj
Run Date and Time: 5/22/2006 1:57:04 PM

Project in English units

PLAN DATA

Plan Title: Plan 06
Plan File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.p06

Geometry Title: existing
Geometry File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.g01

Flow Title : existing-pondpack
Flow File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.f02

Plan Summary Information:

Number of:	Cross Sections	= 10	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 1	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

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

FLOW DATA

Flow Title: existing-pondpack
Flow File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.f02

Flow Data (cfs)

River	Reach	RS	PF 1
creek	55th	5801	3500

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
creek	55th	PF 1		Critical

GEOMETRY DATA

Geometry Title: existing
Geometry File : f:\HYDRO\Projects\Clifton Heights Commercial 2nd\HECRAS\creek.g01

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5801

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1287	5126	1286	5132	1284	5137	1282	5141	1280
5145	1278	5149	1276	5153	1274	5157	1272	5163	1272
5165	1274	5167	1276	5169	1278	5176	1280	5180	1282
5186	1284	5193	1286	5400	1288				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5126	.03	5193	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5126	5193	100	222	300	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1286.61	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.13	Wt. n-Val.		0.030
W.S. Elev (ft)	1285.48	Reach Len. (ft)	100.00	222.00
300.00				
Crit W.S. (ft)		Flow Area (sq ft)		411.15
E.G. Slope (ft/ft)	0.002808	Area (sq ft)		411.15

Q Total (cfs)	3500.00	Flow (cfs)			3500.00
Top Width (ft)	63.63	Top Width (ft)			63.63
Vel Total (ft/s)	8.51	Avg. Vel. (ft/s)			8.51
Max Chl Dpth (ft)	13.48	Hydr. Depth (ft)			6.46
Conv. Total (cfs)	66051.6	Conv. (cfs)			66051.6
Length Wtd. (ft)	221.74	Wetted Per. (ft)			70.39
Min Ch El (ft)	1272.00	Shear (lb/sq ft)			1.02
Alpha	1.00	Stream Power (lb/ft s)			8.72
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	1.37		9.74
0.36					
C & E Loss (ft)	0.00	Cum SA (acres)	0.86		1.48
0.93					

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5579

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5006	1286	5128	1284	5139	1282	5146	1280	5149	1278
5152	1276	5157	1274	5159	1272	5169	1272	5171	1274
5181	1280	5183	1282	5185	1284	5202	1286	5265	1288
5292	1286	5333	1284						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5006	.05	5128	.03	5185	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5128	5185	50	130	180	.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1286.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.	0.050	0.030	0.050
W.S. Elev (ft)	1284.89	Reach Len. (ft)	50.00	130.00	180.00
Crit W.S. (ft)		Flow Area (sq ft)	24.09	405.66	11.45
E.G. Slope (ft/ft)	0.002543	Area (sq ft)	24.09	405.66	11.45
Q Total (cfs)	3500.00	Flow (cfs)	21.03	3469.22	9.76
Top Width (ft)	136.99	Top Width (ft)	54.22	57.00	25.77

Vel Total (ft/s)	7.93	Avg. Vel. (ft/s)	0.87	8.55
0.85				
Max Chl Dpth (ft)	12.89	Hydr. Depth (ft)	0.44	7.12
0.44				
Conv. Total (cfs)	69403.9	Conv. (cfs)	416.9	68793.4
193.5				
Length Wtd. (ft)	121.75	Wetted Per. (ft)	54.22	64.03
26.74				
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.07	1.01
0.07				
Alpha	1.15	Stream Power (lb/ft s)	0.06	8.60
0.06				
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	1.35	7.66
0.32				
C & E Loss (ft)	0.01	Cum SA (acres)	0.79	1.18
0.85				

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

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5449

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1286	5058	1284	5091	1282	5133	1280	5137	1278
5141	1276	5145	1274	5147	1272	5154	1272	5155	1274
5158	1276	5161	1278	5165	1280	5168	1282	5172	1284
5269	1286	5350	1286	5388	1284				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5133	.04	5172	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5133	5172	250	204	180	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1285.59	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.09	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	1284.49	Reach Len. (ft)	250.00	204.00
180.00				
Crit W.S. (ft)		Flow Area (sq ft)	199.33	301.15
8.14				
E.G. Slope (ft/ft)	0.004941	Area (sq ft)	199.33	301.15
8.14				
Q Total (cfs)	3500.00	Flow (cfs)	710.85	2782.55
6.60				
Top Width (ft)	161.39	Top Width (ft)	89.24	39.00
33.15				
Vel Total (ft/s)	6.88	Avg. Vel. (ft/s)	3.57	9.24

0.81 Max Chl Dpth (ft)	12.49	Hydr. Depth (ft)	2.23	7.72
0.25 Conv. Total (cfs)	49794.0	Conv. (cfs)	10113.1	39587.0
93.9 Length Wtd. (ft)	209.59	Wetted Per. (ft)	89.36	45.24
33.66 Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.69	2.05
0.07 Alpha	1.49	Stream Power (lb/ft s)	2.45	18.97
0.06 Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	1.22	6.60
0.28 C & E Loss (ft)	0.17	Cum SA (acres)	0.71	1.03
0.72				

Warning: Divided flow computed for this cross-section.
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 conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5245

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5077	1284	5164	1282	5177	1280	5182	1278	5187	1276
5192	1274	5195	1272	5206	1272	5209	1274	5216	1276
5223	1278	5229	1280	5236	1282	5242	1284	5377	1284
5440	1286								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5077	.05	5164	.03	5242	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5164	5242	205	205	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.97	Element	Left OB	Channel
Right OB Vel Head (ft)	0.54	Wt. n-Val.	0.050	0.030
0.050 W.S. Elev (ft)	1284.42	Reach Len. (ft)	205.00	205.00
205.00 Crit W.S. (ft)		Flow Area (sq ft)	123.87	544.06
60.05 E.G. Slope (ft/ft)	0.001207	Area (sq ft)	123.87	544.06

60.05 Q Total (cfs)	3500.00	Flow (cfs)	161.28	3304.80
33.92 Top Width (ft)	313.35	Top Width (ft)	87.00	78.00
148.35 Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	1.30	6.07
0.56 Max Chl Dpth (ft)	12.42	Hydr. Depth (ft)	1.42	6.98
0.40 Conv. Total (cfs)	100762.4	Conv. (cfs)	4643.3	95142.8
976.4 Length Wtd. (ft)	205.00	Wetted Per. (ft)	87.45	82.01
148.36 Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.11	0.50
0.03 Alpha	1.51	Stream Power (lb/ft s)	0.14	3.04
0.02 Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	0.29	4.62
0.14 C & E Loss (ft)	0.02	Cum SA (acres)	0.20	0.76
0.35				

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

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5040

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1288	5093	1288	5117	1286	5124	1284	5136	1282
5149	1280	5152	1278	5160	1272	5176	1272	5179	1274
5185	1276	5191	1278	5197	1280	5203	1282	5209	1284
5218	1286	5235	1286	5328	1286				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5093	.03	5218	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5093	5218	40	40	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.64	Element	Left OB	Channel
Right OB Vel Head (ft)	0.75	Wt. n-Val.		0.030
W.S. Elev (ft)	1283.89	Reach Len. (ft)	10.00	10.00
10.00 Crit W.S. (ft)	1280.51	Flow Area (sq ft)		503.29
E.G. Slope (ft/ft)	0.001959	Area (sq ft)		503.29
Q Total (cfs)	3500.00	Flow (cfs)		3500.00

Top Width (ft)	83.97	Top Width (ft)	83.97
Vel Total (ft/s)	6.95	Avg. Vel. (ft/s)	6.95
Max Chl Dpth (ft)	11.89	Hydr. Depth (ft)	5.99
Conv. Total (cfs)	79070.2	Conv. (cfs)	79070.2
Length Wtd. (ft)	10.00	Wetted Per. (ft)	89.09
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	0.69
Alpha	1.00	Stream Power (lb/ft s)	4.81
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	2.16
C & E Loss (ft)	0.01	Cum SA (acres)	0.38

BRIDGE

RIVER: creek
REACH: 55th RS: 5020

INPUT
Description:
Distance from Upstream XS = 10
Deck/Roadway Width = 20
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
5000	1286	5350	1286

Upstream Bridge Cross Section Data
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1288	5093	1288	5117	1286	5124	1284	5136	1282
5149	1280	5152	1278	5160	1272	5176	1272	5179	1274
5185	1276	5191	1278	5197	1280	5203	1282	5209	1284
5218	1286	5235	1286	5328	1286				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5093	.03	5218	.05

Bank Sta: Left	Right	Coeff Contr.	Expan.
5093	5218	.1	.3

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
5000	1286	5350	1286

Downstream Bridge Cross Section Data
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272

5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Coeff Contr.	Expan.
5121	5206	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 2

Pier Data
Pier Station Upstream= 5153 Downstream= 5141
Upstream num= 2

Width	Elev	Width	Elev
2	1272	2	1292

Downstream num= 2

Width	Elev	Width	Elev
2	1272	2	1292

Pier Data
Pier Station Upstream= 5188 Downstream= 5176
Upstream num= 2

Width	Elev	Width	Elev
2	1272	2	1290

Downstream num= 2

Width	Elev	Width	Elev
2	1272	2	1290

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	1284.64	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	1283.89	E.G. Elev (ft)	1284.60
1284.49			
Q Total (cfs)	3500.00	W.S. Elev (ft)	1283.71
1283.33			

Q Bridge (cfs)	3500.00	Crit W.S. (ft)	1280.72
1281.12			
Q Weir (cfs)		Max Chl Dpth (ft)	11.71
11.33			
Weir Sta Lft (ft)		Vel Total (ft/s)	7.58
8.65			
Weir Sta Rgt (ft)		Flow Area (sq ft)	462.03
404.83			
Weir Submerg		Froude # Chl	0.55
0.63			
Weir Max Depth (ft)		Specif Force (cu ft)	2865.74
2661.46			
Min El Weir Flow (ft)	1290.01	Hydr Depth (ft)	5.90
5.93			
Min El Prs (ft)	1286.00	W.P. Total (ft)	109.14
95.70			
Delta EG (ft)	0.22	Conv. Total (cfs)	59886.6
52447.9			
Delta WS (ft)	0.49	Top Width (ft)	78.35
68.31			
BR Open Area (sq ft)	606.17	Frctn Loss (ft)	0.08
0.03			
BR Open Vel (ft/s)	8.65	C & E Loss (ft)	0.03
0.04			
Coef of Q		Shear Total (lb/sq ft)	0.90
1.18			
Br Sel Method	Energy only	Power Total (lb/ft s)	6.84
10.17			

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than
the downstream energy. This is not physically possible, the momentum answer has been
disregarded.

CROSS SECTION

RIVER: creek
REACH: 55th RS: 5000

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.41	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.02	Wt. n-Val.		0.030
W.S. Elev (ft)	1283.39	Reach Len. (ft)	50.00	50.00
50.00				
Crit W.S. (ft)		Flow Area (sq ft)		431.54
E.G. Slope (ft/ft)	0.002767	Area (sq ft)		431.54
Q Total (cfs)	3500.00	Flow (cfs)		3500.00
Top Width (ft)	72.75	Top Width (ft)		72.75
Vel Total (ft/s)	8.11	Avg. Vel. (ft/s)		8.11
Max Chl Dpth (ft)	11.39	Hydr. Depth (ft)		5.93
Conv. Total (cfs)	66542.9	Conv. (cfs)		66542.9
Length Wtd. (ft)	50.00	Wetted Per. (ft)		78.56
Min Ch El (ft)	1272.00	Shear (lb/sq ft)		0.95
Alpha	1.00	Stream Power (lb/ft s)		7.69
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)		1.75
C & E Loss (ft)	0.01	Cum SA (acres)		0.31

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4950

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.26	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.11	Wt. n-Val.		0.030
W.S. Elev (ft)	1283.15	Reach Len. (ft)	50.00	50.00

50.00 Crit W.S. (ft)		Flow Area (sq ft)	414.10
E.G. Slope (ft/ft)	0.003080	Area (sq ft)	414.10
Q Total (cfs)	3500.00	Flow (cfs)	3500.00
Top Width (ft)	71.05	Top Width (ft)	71.05
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)	8.45
Max Chl Dpth (ft)	11.15	Hydr. Depth (ft)	5.83
Conv. Total (cfs)	63070.3	Conv. (cfs)	63070.3
Length Wtd. (ft)	50.00	Wetted Per. (ft)	76.79
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	1.04
Alpha	1.00	Stream Power (lb/ft s)	8.76
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	1.27
C & E Loss (ft)	0.01	Cum SA (acres)	0.23

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4900

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1284.08	Element	Left OB	Channel
Right OB Vel Head (ft)	1.23	Wt. n-Val.		0.030
W.S. Elev (ft)	1282.85	Reach Len. (ft)	50.00	50.00
50.00 Crit W.S. (ft)		Flow Area (sq ft)		393.30
E.G. Slope (ft/ft)	0.003520	Area (sq ft)		393.30

Q Total (cfs)	3500.00	Flow (cfs)	3500.00
Top Width (ft)	68.97	Top Width (ft)	68.97
Vel Total (ft/s)	8.90	Avg. Vel. (ft/s)	8.90
Max Chl Dpth (ft)	10.85	Hydr. Depth (ft)	5.70
Conv. Total (cfs)	58991.8	Conv. (cfs)	58991.8
Length Wtd. (ft)	50.00	Wetted Per. (ft)	74.63
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	1.16
Alpha	1.00	Stream Power (lb/ft s)	10.31
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	0.80
C & E Loss (ft)	0.02	Cum SA (acres)	0.15

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4850

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1283.87	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.42	Wt. n-Val.		0.030
W.S. Elev (ft)	1282.45	Reach Len. (ft)	50.00	50.00
50.00				
Crit W.S. (ft)	1280.94	Flow Area (sq ft)		366.27
E.G. Slope (ft/ft)	0.004232	Area (sq ft)		366.27
Q Total (cfs)	3500.00	Flow (cfs)		3500.00
Top Width (ft)	66.17	Top Width (ft)		66.17
Vel Total (ft/s)	9.56	Avg. Vel. (ft/s)		9.56

Max Chl Dpth (ft)	10.45	Hydr. Depth (ft)	5.54
Conv. Total (cfs)	53800.7	Conv. (cfs)	53800.7
Length Wtd. (ft)	50.00	Wetted Per. (ft)	71.72
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	1.35
Alpha	1.00	Stream Power (lb/ft s)	12.89
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	0.37
C & E Loss (ft)	0.11	Cum SA (acres)	0.07

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

CROSS SECTION

RIVER: creek
REACH: 55th RS: 4800

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1289	5065	1288	5121	1286	5123	1284	5130	1282
5138	1280	5141	1278	5143	1276	5145	1274	5146	1272
5160	1272	5163	1274	5171	1276	5177	1278	5186	1280
5193	1282	5200	1284	5206	1286	5291	1286		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.05	5121	.03	5206	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5121	5206	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1283.47	Element	Left OB Channel Right OB
Vel Head (ft)	2.53	Wt. n-Val.	0.030
W.S. Elev (ft)	1280.94	Reach Len. (ft)	
Crit W.S. (ft)	1280.94	Flow Area (sq ft)	274.34
E.G. Slope (ft/ft)	0.008777	Area (sq ft)	274.34
Q Total (cfs)	3500.00	Flow (cfs)	3500.00

Top Width (ft)	55.04	Top Width (ft)	55.04
Vel Total (ft/s)	12.76	Avg. Vel. (ft/s)	12.76
Max Chl Dpth (ft)	8.94	Hydr. Depth (ft)	4.98
Conv. Total (cfs)	37358.4	Conv. (cfs)	37358.4
Length Wtd. (ft)		Wetted Per. (ft)	60.18
Min Ch El (ft)	1272.00	Shear (lb/sq ft)	2.50
Alpha	1.00	Stream Power (lb/ft s)	31.87
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

SUMMARY OF MANNING'S N VALUES

River:creek

Reach	River Sta.	n1	n2	n3
55th	5801	.05	.03	.05
55th	5579	.05	.03	.05
55th	5449	.05	.04	.05
55th	5245	.05	.03	.05
55th	5040	.05	.03	.05
55th	5020	Bridge		
55th	5000	.05	.03	.05
55th	4950	.05	.03	.05
55th	4900	.05	.03	.05
55th	4850	.05	.03	.05
55th	4800	.05	.03	.05

SUMMARY OF REACH LENGTHS

River: creek

Reach	River Sta.	Left	Channel	Right
55th	5801	100	222	300
55th	5579	50	130	180
55th	5449	250	204	180
55th	5245	205	205	205
55th	5040	40	40	40
55th	5020	Bridge		
55th	5000	50	50	50
55th	4950	50	50	50
55th	4900	50	50	50
55th	4850	50	50	50
55th	4800	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: creek

Reach	River Sta.	Contr.	Expan.
55th	5801	.1	.3
55th	5579	.1	.3
55th	5449	.1	.3
55th	5245	.1	.3
55th	5040	.1	.3
55th	5020	Bridge	
55th	5000	.1	.3
55th	4950	.1	.3
55th	4900	.1	.3
55th	4850	.1	.3
55th	4800	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.
E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	
(ft)	(ft/ft)	(ft/s)	(cfs) (sq ft)	(ft)	(ft)	(ft)
55th	5801	PF 1	3500.00	1272.00	1285.48	
1286.61	0.002808	8.51	411.15	63.63	0.59	
55th	5579	PF 1	3500.00	1272.00	1284.89	
1286.02	0.002543	8.55	441.21	136.99	0.56	
55th	5449	PF 1	3500.00	1272.00	1284.49	
1285.59	0.004941	9.24	508.62	161.39	0.59	
55th	5245	PF 1	3500.00	1272.00	1284.42	
1284.97	0.001207	6.07	727.98	313.35	0.41	
55th	5040	PF 1	3500.00	1272.00	1283.89	1280.51
1284.64	0.001959	6.95	503.29	83.97	0.50	
55th	5020		Bridge			
55th	5000	PF 1	3500.00	1272.00	1283.39	
1284.41	0.002767	8.11	431.54	72.75	0.59	
55th	4950	PF 1	3500.00	1272.00	1283.15	
1284.26	0.003080	8.45	414.10	71.05	0.62	
55th	4900	PF 1	3500.00	1272.00	1282.85	
1284.08	0.003520	8.90	393.30	68.97	0.66	
55th	4850	PF 1	3500.00	1272.00	1282.45	1280.94
1283.87	0.004232	9.56	366.27	66.17	0.72	
55th	4800	PF 1	3500.00	1272.00	1280.94	1280.94
1283.47	0.008777	12.76	274.34	55.04	1.01	

Profile Output Table - Standard Table 2

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

55th	5801	PF 1	1286.61	1285.48	1.13
0.59	0.00	3500.00		63.63	
55th	5579	PF 1	1286.02	1284.89	1.13
0.42	0.01 21.03	3469.22	9.76	136.99	
55th	5449	PF 1	1285.59	1284.49	1.09
0.45	0.17 710.85	2782.55	6.60	161.39	
55th	5245	PF 1	1284.97	1284.42	0.54
0.31	0.02 161.28	3304.80	33.92	313.35	
55th	5040	PF 1	1284.64	1283.89	0.75
0.03	0.01	3500.00		83.97	
55th	5020		Bridge		
55th	5000	PF 1	1284.41	1283.39	1.02
0.15	0.01	3500.00		72.75	
55th	4950	PF 1	1284.26	1283.15	1.11
0.16	0.01	3500.00		71.05	
55th	4900	PF 1	1284.08	1282.85	1.23
0.19	0.02	3500.00		68.97	
55th	4850	PF 1	1283.87	1282.45	1.42
0.29	0.11	3500.00		66.17	
55th	4800	PF 1	1283.47	1280.94	2.53
		3500.00		55.04	

HEC-RAS Plan: Plan 03 River: creek Reach: 55th Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
55th	5801	PF 1	1286.61	1285.48	1.13	0.59	0.00		3500.00		63.63
55th	5579	PF 1	1286.02	1284.89	1.13	0.42	0.01	21.03	3469.22	9.76	136.99
55th	5449	PF 1	1285.59	1284.49	1.09	0.45	0.17	710.85	2782.55	6.60	161.39
55th	5245	PF 1	1284.97	1284.42	0.54	0.31	0.02	161.28	3304.80	33.92	313.35
55th	5040	PF 1	1284.64	1283.89	0.75	0.03	0.01		3500.00		83.97
55th	5020		Bridge								
55th	5000	PF 1	1284.41	1283.39	1.02	0.15	0.01		3500.00		72.75
55th	4950	PF 1	1284.26	1283.15	1.11	0.16	0.01		3500.00		71.05
55th	4900	PF 1	1284.08	1282.85	1.23	0.19	0.02		3500.00		68.97
55th	4850	PF 1	1283.87	1282.45	1.42	0.29	0.11		3500.00		66.17
55th	4800	PF 1	1283.47	1280.94	2.53				3500.00		55.04

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: F:\HYDRO\PROJECTS\CLIFTON HEIGHTS COMMERCIAL 2ND\PONDPACK\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
A 10	OFFSITE		OFFSITE	100y24

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OFFSITE	100y24	2502.927	16.4000	3447.33

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 10	100y24	2502.927	16.4000	3447.33

PONDPACK
OFFSITE DRAINAGE

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 100y24

Peak Discharge =	3447.33 cfs
Time to Peak =	16.4000 hrs
HYG Volume =	2502.927 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
1.9000	.00	.01	.04	.07	.10
2.1500	.13	.15	.18	.21	.24
2.4000	.27	.29	.32	.35	.38
2.6500	.41	.44	.46	.49	.52
2.9000	.57	.72	.87	1.02	1.17
3.1500	1.32	1.47	1.62	1.77	1.92
3.4000	2.07	2.22	2.37	2.52	2.67
3.6500	2.82	2.97	3.12	3.27	3.42
3.9000	3.83	4.27	4.72	5.16	5.60
4.1500	6.05	6.49	6.93	7.38	7.82
4.4000	8.27	8.71	9.15	9.60	10.04
4.6500	10.48	10.93	11.37	11.82	12.55
4.9000	13.49	14.43	15.37	16.31	17.25
5.1500	18.19	19.14	20.08	21.02	21.96
5.4000	22.90	23.84	24.78	25.72	26.66
5.6500	27.60	28.54	29.49	30.61	32.18
5.9000	33.75	35.32	36.89	38.45	40.02
6.1500	41.59	43.16	44.72	46.29	47.86
6.4000	49.43	51.00	52.56	54.13	55.70
6.6500	57.27	58.83	60.41	62.64	64.87
6.9000	67.10	69.33	71.56	73.78	76.01
7.1500	78.24	80.47	82.70	84.93	87.16
7.4000	89.38	91.61	93.84	96.07	98.30
7.6500	100.53	102.75	105.47	108.35	111.24
7.9000	114.13	117.02	119.91	122.79	125.68
8.1500	128.57	131.46	134.35	137.23	140.12
8.4000	143.01	145.90	148.79	151.67	154.56
8.6500	157.45	160.66	164.27	167.87	171.48
8.9000	175.09	178.69	182.30	185.90	189.51
9.1500	193.12	196.72	200.33	203.93	207.54
9.4000	211.15	214.75	218.36	221.97	225.57
9.6500	229.35	233.97	238.59	243.22	247.84
9.9000	252.46	257.09	261.71	266.33	270.95

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
10.1500	275.58	280.20	284.82	289.45	294.07
10.4000	298.69	303.32	307.94	312.56	317.18
10.6500	324.02	331.14	338.26	345.39	352.51
10.9000	359.63	366.75	373.88	381.00	388.12
11.1500	395.25	402.37	409.49	416.62	423.74
11.4000	430.86	437.98	445.11	452.23	467.34
11.6500	487.75	508.17	528.59	549.01	569.42
11.9000	589.84	610.26	630.68	651.09	671.51
12.1500	691.93	712.35	732.77	753.18	773.60
12.4000	794.02	814.44	834.85	859.91	894.96
12.6500	930.02	965.07	1000.12	1035.17	1070.22
12.9000	1105.27	1140.32	1175.38	1210.43	1245.48
13.1500	1280.53	1315.58	1350.63	1385.68	1420.74
13.4000	1455.79	1490.84	1526.38	1575.71	1625.05
13.6500	1674.39	1723.73	1773.07	1822.40	1871.74
13.9000	1921.08	1970.42	2019.76	2069.10	2118.43
14.1500	2167.77	2217.11	2266.45	2315.79	2365.12
14.4000	2414.46	2463.80	2504.63	2542.62	2580.62
14.6500	2618.62	2656.61	2694.61	2732.61	2770.61
14.9000	2808.60	2846.60	2884.60	2922.60	2960.59
15.1500	2998.59	3036.59	3074.59	3112.58	3150.58
15.4000	3188.58	3214.63	3227.07	3239.51	3251.95
15.6500	3264.39	3276.83	3289.26	3301.70	3314.14
15.9000	3326.58	3339.02	3351.46	3363.90	3376.34
16.1500	3388.78	3401.22	3413.66	3426.10	3438.54
16.4000	3447.33	3439.98	3432.62	3425.26	3417.91
16.6500	3410.55	3403.19	3395.84	3388.48	3381.12
16.9000	3373.77	3366.41	3359.05	3351.70	3344.34
17.1500	3336.99	3329.63	3322.27	3314.92	3307.56
17.4000	3288.71	3268.59	3248.47	3228.34	3208.22
17.6500	3188.10	3167.98	3147.86	3127.74	3107.62
17.9000	3087.49	3067.37	3047.25	3027.13	3007.01
18.1500	2986.89	2966.76	2946.64	2926.52	2900.73
18.4000	2871.41	2842.09	2812.77	2783.45	2754.13
18.6500	2724.81	2695.48	2666.16	2636.84	2607.52
18.9000	2578.20	2548.88	2519.56	2490.24	2460.92
19.1500	2431.60	2402.28	2372.96	2345.15	2320.35
19.4000	2295.55	2270.75	2245.94	2221.14	2196.34
19.6500	2171.54	2146.74	2121.94	2097.14	2072.34
19.9000	2047.54	2022.74	1997.94	1973.14	1948.33
20.1500	1923.53	1898.73	1874.26	1856.11	1837.96
20.4000	1819.81	1801.67	1783.52	1765.37	1747.22
20.6500	1729.07	1710.92	1692.77	1674.62	1656.47
20.9000	1638.32	1620.18	1602.03	1583.88	1565.73
21.1500	1547.58	1529.43	1514.75	1501.14	1487.52
21.4000	1473.90	1460.28	1446.67	1433.05	1419.43
21.6500	1405.81	1392.20	1378.58	1364.96	1351.35

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
21.9000	1337.73	1324.11	1310.49	1296.88	1283.26
22.1500	1269.64	1257.11	1245.74	1234.38	1223.01
22.4000	1211.64	1200.28	1188.91	1177.54	1166.17
22.6500	1154.81	1143.44	1132.07	1120.71	1109.34
22.9000	1097.97	1086.60	1075.24	1063.87	1052.50
23.1500	1041.70	1033.16	1024.62	1016.08	1007.54
23.4000	999.00	990.46	981.92	973.38	964.84
23.6500	956.30	947.76	939.22	930.68	922.14
23.9000	913.60	905.06	896.52	887.98	879.44
24.1500	872.28	865.25	858.22	851.19	844.16
24.4000	837.13	830.10	823.07	816.03	809.00
24.6500	801.97	794.94	787.91	780.88	773.85
24.9000	766.82	759.79	752.76	745.72	739.25
25.1500	733.11	726.96	720.82	714.67	708.52
25.4000	702.38	696.23	690.09	683.94	677.80
25.6500	671.65	665.51	659.36	653.21	647.07
25.9000	640.92	634.78	628.63	622.61	616.82
26.1500	611.03	605.23	599.44	593.65	587.86
26.4000	582.06	576.27	570.48	564.69	558.89
26.6500	553.10	547.31	541.52	535.73	529.93
26.9000	524.14	518.35	512.57	506.99	501.42
27.1500	495.84	490.27	484.69	479.11	473.54
27.4000	467.96	462.39	456.81	451.23	445.66
27.6500	440.08	434.51	428.93	423.35	417.78
27.9000	412.20	406.63	401.49	396.48	391.47
28.1500	386.46	381.46	376.45	371.44	366.43
28.4000	361.42	356.41	351.40	346.39	341.38
28.6500	336.37	331.36	326.35	321.34	316.34
28.9000	311.33	306.70	302.46	298.23	293.99
29.1500	289.75	285.52	281.28	277.04	272.81
29.4000	268.57	264.33	260.10	255.86	251.62
29.6500	247.39	243.15	238.91	234.68	230.44
29.9000	226.40	223.09	219.77	216.46	213.15
30.1500	209.84	206.52	203.21	199.90	196.58
30.4000	193.27	189.96	186.65	183.33	180.02
30.6500	176.71	173.39	170.08	166.77	163.45
30.9000	161.00	158.61	156.22	153.83	151.44
31.1500	149.05	146.66	144.27	141.88	139.49
31.4000	137.10	134.71	132.32	129.93	127.54
31.6500	125.16	122.77	120.38	117.99	116.05
31.9000	114.37	112.69	111.01	109.33	107.64
32.1500	105.96	104.28	102.60	100.91	99.23
32.4000	97.55	95.87	94.19	92.50	90.82
32.6500	89.14	87.46	85.78	84.24	82.96
32.9000	81.67	80.39	79.11	77.83	76.55
33.1500	75.26	73.98	72.70	71.42	70.13
33.4000	68.85	67.57	66.29	65.01	63.72

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
33.6500	62.44	61.16	59.90	58.89	57.88
33.9000	56.87	55.87	54.86	53.85	52.84
34.1500	51.83	50.82	49.81	48.81	47.80
34.4000	46.79	45.78	44.77	43.76	42.76
34.6500	41.75	40.74	39.92	39.15	38.39
34.9000	37.62	36.85	36.08	35.31	34.55
35.1500	33.78	33.01	32.24	31.47	30.70
35.4000	29.94	29.17	28.40	27.63	26.86
35.6500	26.10	25.51	25.11	24.70	24.30
35.9000	23.89	23.48	23.08	22.67	22.27
36.1500	21.86	21.46	21.05	20.64	20.24
36.4000	19.83	19.43	19.02	18.62	18.21
36.6500	17.83	17.55	17.27	16.99	16.71
36.9000	16.43	16.15	15.87	15.59	15.31
37.1500	15.03	14.75	14.47	14.19	13.91
37.4000	13.63	13.35	13.06	12.78	12.50
37.6500	12.30	12.11	11.91	11.71	11.52
37.9000	11.32	11.12	10.93	10.73	10.54
38.1500	10.34	10.14	9.95	9.75	9.55
38.4000	9.36	9.16	8.97	8.77	8.61
38.6500	8.47	8.33	8.19	8.05	7.91
38.9000	7.77	7.63	7.49	7.36	7.22
39.1500	7.08	6.94	6.80	6.66	6.52
39.4000	6.38	6.24	6.10	5.98	5.88
39.6500	5.78	5.68	5.58	5.48	5.38
39.9000	5.28	5.18	5.08	4.98	4.89
40.1500	4.79	4.69	4.59	4.49	4.39
40.4000	4.29	4.19	4.09	4.02	3.95
40.6500	3.88	3.81	3.74	3.67	3.60
40.9000	3.53	3.46	3.39	3.32	3.25
41.1500	3.18	3.11	3.04	2.97	2.90
41.4000	2.83	2.76	2.71	2.66	2.61
41.6500	2.56	2.52	2.47	2.42	2.37
41.9000	2.32	2.27	2.22	2.17	2.13
42.1500	2.08	2.03	1.98	1.93	1.88
42.4000	1.83	1.79	1.76	1.72	1.69
42.6500	1.65	1.62	1.58	1.55	1.52
42.9000	1.48	1.45	1.41	1.38	1.34
43.1500	1.31	1.27	1.24	1.21	1.17
43.4000	1.14	1.11	1.09	1.06	1.04
43.6500	1.02	.99	.97	.94	.92
43.9000	.89	.87	.84	.82	.79
44.1500	.77	.74	.72	.70	.67
44.4000	.65	.63	.62	.60	.58
44.6500	.56	.54	.53	.51	.49
44.9000	.47	.46	.44	.42	.40
45.1500	.38	.37	.35	.33	.32

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
45.4000	.30	.29	.28	.27	.26
45.6500	.25	.24	.22	.21	.20
45.9000	.19	.18	.17	.16	.14
46.1500	.13	.12	.11	.10	.09
46.4000	.09	.08	.08	.07	.07
46.6500	.06	.06	.05	.05	.04
46.9000	.04	.03	.03	.02	.02
47.1500	.01	.00	.00		

Baughman

TRANSMITTAL

TO:	FROM:
Scott Lindebak	Trevor Kurth
COMPANY:	DATE:
City of Wichita	5-22-06
ADDRESS:	PROJECT:
7th Floor City Hall	Clifton Heights Commercial 2nd
CITY/ STATE:	PROJECT NUMBER:
Wichita, KS	

RE:
Clifton Heights Commercial 2nd

VIA: DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER

☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
1	5-22-06	Clifton Heights Commercial 2nd

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

SIGNED: _____
Trevor R. Kurth, I.E.

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ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P.A.
315 Ellis Street
Wichita, Kansas 67203
P 316.262.7271
F 316.262.0149

Baughman

TRANSMITTAL

TO: Scott Lindebak	FROM: Trevor Kurth
COMPANY: City of Wichita	DATE: 4-17-06
ADDRESS: 7th Floor City Hall	PROJECT: Clifton Heights Commercial 2nd
CITY/ STATE: Wichita, KS	PROJECT NUMBER:

RE:
Clifton Heights Commercial Addition

VIA: DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER

☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
2	4-17-06	**Clifton Heights Commercial 2nd Addition**

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

SIGNED: Trevor Kurth
Trevor R. Kurth, I.E.

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