PMNorthAnna3COLNPEmails Resource

From: Tony.Banks@dom.com
Sent: Tuesday, June 10, 2008 10:07 AM
To: Christopher Cook
Cc: Tony.Banks@dom.com
Subject: Fw: email 4 of 5
Attachments: Attachment 3.pdf

In discussions that were held during the April 10 and 11, 2008, Hydrology Safety Audit of NAPS 3, it was determined that the NRC's staff review would be assisted by Dominion providing clarifying information electronically or digitally. This was confirmed during a subsequent telephone call on May 22, 2008.

As discussed with Tom Kevern, NRC ESBWR and NAPS 3 Project Manager, Andrea Johnson, NRC Project Manager, and Chris Cook, NRC Hydrology Lead Reviwer, on June 9 and 10, 2008, Dominion is providing the following clarifying information:

1) HEC-RAS (Local PMP Drainage Analysis) input and output information used in calculation (labeled as a folder);
2) Site Layout and Drainage Areas (1 sheet) (labeled as Attachment 1);
3) HEC-RAS Cross-Section Locations (1 sheet) (labeled as Attachment 2);
4) HEC-RAS Input and Output Report (50 sheets) (labeled as Attachment 3); and
5) HEC-RAS Cross-Section Plots (17 sheets) (labeled as Attachment 4)

HEC-RAS Input and Output Report (50 sheets) (labeled as Attachment 3)

Separate emails are being sent based on attachment file sizes. Please acknowledge receipt. Thank you -

Tony Banks
Dominion
ESP/COL Project
804/273-2170

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Email Number: 360

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Subject: Fw: email 4 of 5
Sent Date: 6/10/2008 10:07:22 AM
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From: Tony.Banks@dom.com

Created By: Tony.Banks@dom.com

Recipients:
"Tony.Banks@dom.com" <Tony.Banks@dom.com>
Tracking Status: None
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Tracking Status: None

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Files	**Size**	**Date & Time**
MESSAGE	2007	6/10/2008 10:07:58 AM
Attachment 3.pdf	315576	

Options
Priority: Standard
Return Notification: No
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                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
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           X     X  X        X            X  X     X    X        X
           X     X  X        X    X       X   X    X    X        X
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********************************************************************************

PROJECT DATA
Project Title: North Anna COL Local PMP Rev. B
Project File : NAPMPSite.prj
Run Date and Time: 7/26/2007 3:26:06 PM

Project in English units

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

PLAN DATA

Plan Title: PMP Rev. B
Plan File : r:\Projects-Active\North Anna COL\H&H\Calculations\Local PMP Drainage\Revision B\HEC RAS Files\NAPMPSite.p08

          Geometry Title: PMP Rev B Geometry
          Geometry File : r:\Projects-Active\North Anna COL\H&H\Calculations\Local PMP Drainage\Revision B\HEC RAS Files\NAPMPSite.g07

          Flow Title    : PMP Flows
          Flow File     : r:\Projects-Active\North Anna COL\H&H\Calculations\Local PMP Drainage\Revision B\HEC RAS Files\NAPMPSite.f01

Plan Summary Information:
Number of:  Cross Sections =   85    Multiple Openings  =    0
            Culverts       =    0    Inline Structures  =    4
            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 only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Mixed Flow


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

FLOW DATA

Flow Title: PMP Flows
Flow File : r:\Projects-Active\North Anna COL\H&H\Calculations\Local PMP Drainage\Revision B\HEC RAS Files\NAPMPSite.f01

Flow Data (cfs)
************************************************************
* River           Reach           RS      *           PF 1 *
* Outfall         1               630     *         1864.4 *
* South Ditch     1               1850    *          334.5 *
* South Ditch     1               1063    *            371 *
* South Ditch     1               820     *          439.1 *
* South Ditch     1               278     *          560.2 *
* North Ditch     1               1312    *          646.5 *
* North Ditch     1               1108    *          871.7 *
```

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* North Ditch     1               845     *           946.3 *
* North Ditch     1               375     *           984.3 *
************************************************************

Boundary Conditions
*****************************************************************************************************
* River           Reach           Profile         *           Upstream                Downstream    *
*****************************************************************************************************
* Outfall         1               PF 1            *                                   Known WS = 265 *
* South Ditch     1               PF 1            *         Normal S = 0.005                         *
* North Ditch     1               PF 1            *          Normal S = 0.02                         *
*****************************************************************************************************

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

GEOMETRY DATA

Geometry Title: PMP Rev B Geometry
Geometry File : r:\Projects-Active\North Anna COL\H&H\Calculations\Local PMP Drainage\Revision B\HEC RAS Files\NAPMPSite.g07

CROSS SECTION


RIVER: Outfall
REACH: 1                 RS: 630

INPUT
Description: Section 630 - SWM Basin
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
    -356     282    -290     260       0     260      87     260     120     270
     185     272

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -356     .03    -356     .03     120    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -356     120               65      65      65             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    -356    -270     272        F

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         *  271.72  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *   0.030  *   0.035  *
* W.S. Elev (ft)         *  271.71  * Reach Len. (ft)       *   65.00  *   65.00  *   65.00  *
* Crit W.S. (ft)         *  260.94  * Flow Area (sq ft)     *          * 4403.04  *   47.68  *
* E.G. Slope (ft/ft)     *0.000003  * Area (sq ft)          *          * 4843.09  *   47.68  *
* Q Total (cfs)          * 1864.40  * Flow (cfs)           *          * 1861.30  *    3.10  *
* Top Width (ft)         *  500.81  * Top Width (ft)       *          *  445.14  *   55.67  *
* Vel Total (ft/s)       *    0.42  * Avg. Vel. (ft/s)     *          *    0.42  *    0.07  *
* Max Chl Dpth (ft)      *   11.71  * Hydr. Depth (ft)     *          *   11.29  *    0.86  *
* Conv. Total (cfs)      *1096589.0  * Conv. (cfs)          *          *1094764.0  *  1825.0  *
* Length Wtd. (ft)       *   65.00  * Wetted Per. (ft)     *          *  391.48  *   55.70  *
* Min Ch El (ft)         *  260.00  * Shear (lb/sq ft)     *          *    0.00  *    0.00  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *        *    0.00  *    0.00  *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   84.02  *    0.24  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    5.38  *    0.28  *
*****************************************************************************************************

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

CROSS SECTION


RIVER: Outfall
REACH: 1                 RS: 565

INPUT
Description: Section 565 - U/S Embankment
```

```
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -357     282    -290     260       0     260     106     260     130     270
     203     272

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -357     .03    -357     .03     130    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -357     130              265     265     265             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    -357    -250     272       F

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  271.72  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *   0.030  *   0.035  *
* W.S. Elev (ft)         *  271.71  * Reach Len. (ft)       *  265.00  *  265.00  *  265.00  *
* Crit W.S. (ft)         *  260.94  * Flow Area (sq ft)     *          * 4330.79  *   53.53  *
* E.G. Slope (ft/ft)     *0.000003  * Area (sq ft)          *          * 5008.19  *   53.53  *
* Q Total (cfs)          * 1864.40  * Flow (cfs)           *          * 1860.88  *    3.52  *
* Top Width (ft)         *  518.18  * Top Width (ft)       *          *  455.67  *   62.51  *
* Vel Total (ft/s)       *    0.43  * Avg. Vel. (ft/s)     *          *    0.43  *    0.07  *
* Max Chl Dpth (ft)      *   11.71  * Hydr. Depth (ft)     *          *   11.40  *    0.86  *
* Conv. Total (cfs)      *1084589.0  * Conv. (cfs)          *          *1082541.0  *  2048.7  *
* Length Wtd. (ft)       *  265.00  * Wetted Per. (ft)     *          *  382.00  *   62.53  *
* Min Ch El (ft)         *  260.00  * Shear (lb/sq ft)     *          *    0.00  *    0.00  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *        *    0.00  *    0.00  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  *        *   76.67  *    0.16  *
* C & E Loss (ft)        *          * Cum SA (acres)        *        *    4.71  *    0.19  *
*************************************************************************************************

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

INLINE STRUCTURE


RIVER: Outfall
REACH: 1                  RS: 425

INPUT
Description: Main Access Road Embankment
Distance from Upstream XS =      87
Deck/Roadway Width        =     118
Weir Coefficient          =     2.6
 Weir Embankment Coordinates    num =        9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -405     280    -300     276    -250     274    -207     272    -150     270
    -102     270      65     270     190     270     225     272

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =       3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Weir crest shape                            = Broad Crested


INLINE STRUCTURE OUTPUT  Profile #PF 1  Inl Struct:
*************************************************************************
* E.G. Elev (ft)         *  271.72  * Q Gates (cfs)          *          *
* W.S. Elev (ft)         *  271.71  * Q Gate Group (cfs)     *  260.94  *
* Q Total (cfs)          * 1864.40  * Gate Open Ht (ft)      *    2.00  *
* Q Weir (cfs)           * 1864.40  * Gate #Open             *     261  *
* Weir Flow Area (sq ft) *  575.98  * Gate Area (sq ft)      *  272.01  *
* Weir Sta Lft (ft)      * -198.89  * Gate Submerg           *          *
* Weir Sta Rgt (ft)      *  192.62  * Gate Invert (ft)       *  261.42  *
* Weir Max Depth (ft)    *    1.72  *                        *          *
* Weir Avg Depth (ft)    *    1.47  *                        *          *
* Weir Submerg           *    0.00  *                        *          *
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* Min El Weir Flow (ft)  *  270.01  *                        *          *
* Wr Top Wdth (ft)       *  391.51  *                        *          *
*****************************************************************************

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

CROSS SECTION


RIVER: Outfall
REACH: 1                  RS: 300

INPUT
Description: Section 300 - D/S Embankment
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
    -205     270     -80     240       0     240      80     240     165     270

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -205     .03    -205     .03     165    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -205     165              300     300     300             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    -205    -270     272        F

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  265.00  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *   0.030  *          *
* W.S. Elev (ft)         *  265.00  * Reach Len. (ft)       *  300.00  *  300.00  *  300.00  *
* Crit W.S. (ft)         *  241.60  * Flow Area (sq ft)     *          * 6187.58  *          *
* E.G. Slope (ft/ft)     *0.000001  * Area (sq ft)          *          * 6187.58  *          *
* Q Total (cfs)          * 1864.40  * Flow (cfs)           *          * 1864.40  *          *
* Top Width (ft)         *  335.00  * Top Width (ft)       *          *  335.00  *          *
* Vel Total (ft/s)       *    0.30  * Avg. Vel. (ft/s)     *          *    0.30  *          *
* Max Chl Dpth (ft)      *   25.00  * Hydr. Depth (ft)     *          *   18.47  *          *
* Conv. Total (cfs)      *2111154.0  * Conv. (cfs)          *          *2111154.0  *          *
* Length Wtd. (ft)       *  300.00  * Wetted Per. (ft)     *          *  342.24  *          *
* Min Ch El (ft)         *  240.00  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   42.61  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    2.31  *          *
*********************************************************************************************

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

CROSS SECTION


RIVER: Outfall
REACH: 1                  RS: 0

INPUT
Description: Section 0- Lake Anna
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
    -205     270     -80     240       0     240      80     240     165     270

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -205     .03    -205     .03     165    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -205     165              0       0       0             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	265.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	265.00	Reach Len. (ft)			
Crit W.S. (ft)	241.59	Flow Area (sq ft)		6187.50	
E.G. Slope (ft/ft)	0.000001	Area (sq ft)		6187.50	
Q Total (cfs)	1864.40	Flow (cfs)		1864.40	
Top Width (ft)	335.00	Top Width (ft)		335.00	
Vel Total (ft/s)	0.30	Avg. Vel. (ft/s)		0.30	
Max Chl Dpth (ft)	25.00	Hydr. Depth (ft)		18.47	
Conv. Total (cfs)	2111115.0	Conv. (cfs)		2111115.0	
Length Wtd. (ft)		Wetted Per. (ft)		342.24	
Min Ch El (ft)	240.00	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1850

INPUT
Description: Upstream Terminus
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-142	289.25	-60	288.4	-48	288.7	-36	288.4	-14	286
-2	282	0	282	2	282	14	286	55	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-142	.035	-14	.03	14	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-14	14	90	130	140	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	287.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	286.87	Reach Len. (ft)	90.00	130.00	140.00
Crit W.S. (ft)	285.18	Flow Area (sq ft)	3.48	88.38	1.11
E.G. Slope (ft/ft)	0.001308	Area (sq ft)	3.48	88.38	1.11
Q Total (cfs)	334.50	Flow (cfs)	3.05	330.50	0.94
Top Width (ft)	38.53	Top Width (ft)	7.98	28.00	2.55
Vel Total (ft/s)	3.60	Avg. Vel. (ft/s)	0.88	3.74	0.85
Max Chl Dpth (ft)	4.87	Hydr. Depth (ft)	0.44	3.16	0.44
Conv. Total (cfs)	9250.1	Conv. (cfs)	84.4	9139.6	26.1
Length Wtd. (ft)	129.67	Wetted Per. (ft)	8.03	29.30	2.69
Min Ch El (ft)	282.00	Shear (lb/sq ft)	0.04	0.25	0.03
Alpha	1.07	Stream Power (lb/ft s)	0.03	0.92	0.03
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	0.25	2.68	0.28
C & E Loss (ft)	0.00	Cum SA (acres)	0.50	1.01	0.59

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1720

INPUT
Description: Section 1720
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-150	289.25	-63	287.6	-51	287.9	-39	287.6	-14	286
-2	281.75	0	281.75	2	281.75	14	286	55	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
*********************************************
    -150    .035     -14     .03      14    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -14      14              112     150     170             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         *  286.91  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.22  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  286.69  * Reach Len. (ft)       *  112.00  *  150.00  *  170.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *    3.72  *   87.31  *    0.70  *
* E.G. Slope (ft/ft)     *0.001377  * Area (sq ft)          *    3.72  *   87.31  *    0.70  *
* Q Total (cfs)          *  334.50  * Flow (cfs)            *    2.88  *  331.10  *    0.52  *
* Top Width (ft)         *   40.80  * Top Width (ft)        *   10.78  *   28.00  *    2.02  *
* Vel Total (ft/s)       *    3.65  * Avg. Vel. (ft/s)      *    0.77  *    3.79  *    0.75  *
* Max Chl Dpth (ft)      *    4.94  * Hydr. Depth (ft)      *    0.34  *    3.12  *    0.34  *
* Conv. Total (cfs)      *  9014.5  * Conv. (cfs)           *    77.5  *  8923.0  *    14.0  *
* Length Wtd. (ft)       *  149.82  * Wetted Per. (ft)      *   10.80  *   29.46  *    2.13  *
* Min Ch El (ft)         *  281.75  * Shear (lb/sq ft)      *    0.03  *    0.25  *    0.03  *
* Alpha                  *    1.07  * Stream Power (lb/ft s) *    0.02  *    0.97  *    0.02  *
* Frctn Loss (ft)        *    0.23  * Cum Volume (acre-ft)  *    0.25  *    2.42  *    0.27  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *    0.48  *    0.92  *    0.58  *
************************************************************************************************

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 1570

INPUT
Description: Section 1570
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -165  289.25     -50     287     -38  287.25     -26     287     -14     286
      -2   281.6       0   281.6       2   281.6      14     286      55     300

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -165    .035     -14     .03      14    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -14      14              100     126     162             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         *  286.68  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.25  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  286.42  * Reach Len. (ft)       *  100.00  *  126.00  *  162.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *    1.07  *   82.25  *    0.26  *
* E.G. Slope (ft/ft)     *0.001714  * Area (sq ft)          *    1.07  *   82.25  *    0.26  *
* Q Total (cfs)          *  334.50  * Flow (cfs)            *    0.67  *  333.67  *    0.16  *
* Top Width (ft)         *   34.32  * Top Width (ft)        *    5.08  *   28.00  *    1.24  *
* Vel Total (ft/s)       *    4.00  * Avg. Vel. (ft/s)      *    0.62  *    4.06  *    0.60  *
* Max Chl Dpth (ft)      *    4.82  * Hydr. Depth (ft)      *    0.21  *    2.94  *    0.21  *
* Conv. Total (cfs)      *  8079.0  * Conv. (cfs)           *    16.2  *  8059.0  *     3.8  *
* Length Wtd. (ft)       *  125.92  * Wetted Per. (ft)      *    5.10  *   29.56  *    1.31  *
* Min Ch El (ft)         *  281.60  * Shear (lb/sq ft)      *    0.02  *    0.30  *    0.02  *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *    0.01  *    1.21  *    0.01  *
* Frctn Loss (ft)        *    0.21  * Cum Volume (acre-ft)  *    0.24  *    2.12  *    0.27  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.46  *    0.83  *    0.58  *
************************************************************************************************

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 1512

INPUT
Description: Section 1512
Station Elevation Data    num=      10
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-214	289.25	-54	286.4	-40	286.6	-27	286	-16	286
-2	281.5	0	281.5	2	281.5	15	286	55	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-214	.035	-16	.03	15	.035

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

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-16	15	68	68	68	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	286.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	286.22	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	3.02	85.72	0.07
E.G. Slope (ft/ft)	0.001683	Area (sq ft)	3.02	85.72	0.07
Q Total (cfs)	334.50	Flow (cfs)	1.74	332.73	0.03
Top Width (ft)	47.51	Top Width (ft)	15.87	31.00	0.64
Vel Total (ft/s)	3.77	Avg. Vel. (ft/s)	0.58	3.88	0.39
Max Chl Dpth (ft)	4.72	Hydr. Depth (ft)	0.19	2.77	0.11
Conv. Total (cfs)	8154.7	Conv. (cfs)	42.4	8111.5	0.7
Length Wtd. (ft)	68.00	Wetted Per. (ft)	15.88	32.46	0.68
Min Ch El (ft)	281.50	Shear (lb/sq ft)	0.02	0.28	0.01
Alpha	1.06	Stream Power (lb/ft s)	0.01	1.08	0.00
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	0.24	1.88	0.27
C & E Loss (ft)	0.00	Cum SA (acres)	0.43	0.74	0.58

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1414

INPUT
Description: Section 1414
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	300	-100	286.6	-45	286.3	-33	286.6	-21	286.3
-16	286	-2	281.4	0	281.4	2	281.4	15	286
55	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.035	-16	.03	15	.035

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

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-16	15	78	78	78	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	286.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	286.08	Reach Len. (ft)	78.00	78.00	78.00
Crit W.S. (ft)		Flow Area (sq ft)	0.06	83.08	0.01
E.G. Slope (ft/ft)	0.001892	Area (sq ft)	0.06	83.08	0.01
Q Total (cfs)	334.50	Flow (cfs)	0.01	334.49	0.00
Top Width (ft)	32.63	Top Width (ft)	1.39	31.00	0.24
Vel Total (ft/s)	4.02	Avg. Vel. (ft/s)	0.22	4.03	0.21
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)	0.04	2.68	0.04
Conv. Total (cfs)	7690.1	Conv. (cfs)	0.3	7689.7	0.0
Length Wtd. (ft)	78.00	Wetted Per. (ft)	1.39	32.53	0.25
Min Ch El (ft)	281.40	Shear (lb/sq ft)	0.00	0.30	0.00
Alpha	1.00	Stream Power (lb/ft s)	0.00	1.21	0.00
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	0.23	1.75	0.27
C & E Loss (ft)	0.00	Cum SA (acres)	0.42	0.69	0.57

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1365

INPUT
Description: Section 1365 - U/S Fire Water Tank
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	300	-100	286.6	-45	286.3	-33	286.5	-21	286.3
-16	286	-2	281.3	0	281.3	2	281.3	15	286
55	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.035	-16	.03	15	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-16	15	56	56	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	286.18	Element			
Vel Head (ft)	0.28	Wt. n-Val.		0.030	
W.S. Elev (ft)	285.90	Reach Len. (ft)	56.00	56.00	56.00
Crit W.S. (ft)		Flow Area (sq ft)		79.10	
E.G. Slope (ft/ft)	0.002178	Area (sq ft)		79.10	
Q Total (cfs)	334.50	Flow (cfs)		334.50	
Top Width (ft)	30.41	Top Width (ft)		30.41	
Vel Total (ft/s)	4.23	Avg. Vel. (ft/s)		4.23	
Max Chl Dpth (ft)	4.60	Hydr. Depth (ft)		2.60	
Conv. Total (cfs)	7168.0	Conv. (cfs)		7168.0	
Length Wtd. (ft)	56.00	Wetted Per. (ft)		31.97	
Min Ch El (ft)	281.30	Shear (lb/sq ft)		0.34	
Alpha	1.00	Stream Power (lb/ft s)		1.42	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	0.23	1.60	0.27
C & E Loss (ft)	0.00	Cum SA (acres)	0.42	0.64	0.57

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1317

INPUT
Description: Section 1317 - D/S Fire Water Tank
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	300	-100	286.5	-45	286.2	-33	286.4	-25	286.2
-16	286	-2	281.2	0	281.2	2	281.2	15	286
55	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.035	-16	.03	15	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-16	15	54	54	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	286.05	Element			
Vel Head (ft)	0.30	Wt. n-Val.		0.030	
W.S. Elev (ft)	285.75	Reach Len. (ft)	54.00	54.00	54.00
Crit W.S. (ft)		Flow Area (sq ft)		76.37	
E.G. Slope (ft/ft)	0.002366	Area (sq ft)		76.37	
Q Total (cfs)	334.50	Flow (cfs)		334.50	
Top Width (ft)	29.58	Top Width (ft)		29.58	
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)		4.38	
Max Chl Dpth (ft)	4.55	Hydr. Depth (ft)		2.58	

* Conv. Total (cfs)	*	6877.4	* Conv. (cfs)	*		*	6877.4	*			*
* Length Wtd. (ft)	*	54.00	* Wetted Per. (ft)	*		*	31.15	*			*
* Min Ch El (ft)	*	281.20	* Shear (lb/sq ft)	*		*	0.36	*			*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*		*	1.59	*			*
* Frctn Loss (ft)	*	0.14	* Cum Volume (acre-ft)	*	0.23	*	1.50	*	0.27		*
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	0.42	*	0.60	*	0.57		*

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1265

INPUT
Description: Section 1265
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-142	288	-50	286.2	-35	286.4	-22	286.2	-15	286
-2	281.15	0	281.15	2	281.15	15	286	55	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-142	.035	-15	.03	15	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-15	15	130	110	100	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	*	285.90	* Element	*	Left OB	*	Channel	*	Right OB		*
* Vel Head (ft)	*	0.37	* Wt. n-Val.	*		*	0.030	*			*
* W.S. Elev (ft)	*	285.53	* Reach Len. (ft)	*	130.00	*	110.00	*	100.00		*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	68.93	*			*
* E.G. Slope (ft/ft)	*	0.003035	* Area (sq ft)	*		*	68.93	*			*
* Q Total (cfs)	*	334.50	* Flow (cfs)	*		*	334.50	*			*
* Top Width (ft)	*	27.48	* Top Width (ft)	*		*	27.48	*			*
* Vel Total (ft/s)	*	4.85	* Avg. Vel. (ft/s)	*		*	4.85	*			*
* Max Chl Dpth (ft)	*	4.38	* Hydr. Depth (ft)	*		*	2.51	*			*
* Conv. Total (cfs)	*	6072.2	* Conv. (cfs)	*		*	6072.2	*			*
* Length Wtd. (ft)	*	109.86	* Wetted Per. (ft)	*		*	29.06	*			*
* Min Ch El (ft)	*	281.15	* Shear (lb/sq ft)	*		*	0.45	*			*
* Alpha	*	1.00	* Stream Power (lb/ft s)	*		*	2.18	*			*
* Frctn Loss (ft)	*	0.31	* Cum Volume (acre-ft)	*	0.23	*	1.41	*	0.27		*
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	0.42	*	0.56	*	0.57		*

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1177

INPUT
Description: Section 1177
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-117	289	-106	288	-52	286	-30	286.2	-17	286
-2	281	0	281	2	281	11	284	27	286
62	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-117	.035	-17	.03	11	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-17	11	70	50	30	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	*	285.58	* Element	*	Left OB	*	Channel	*	Right OB		*

* Vel Head (ft)	*	0.34	* Wt. n-Val.	*		*	0.030	*	0.035	*
* W.S. Elev (ft)	*	285.24	* Reach Len. (ft)	*	70.00	*	50.00	*	30.00	*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	68.52	*	6.12	*
* E.G. Slope (ft/ft)	*	0.002633	* Area (sq ft)	*		*	68.52	*	6.12	*
* Q Total (cfs)	*	334.50	* Flow (cfs)	*		*	324.87	*	9.63	*
* Top Width (ft)	*	35.61	* Top Width (ft)	*		*	25.71	*	9.90	*
* Vel Total (ft/s)	*	4.48	* Avg. Vel. (ft/s)	*		*	4.74	*	1.57	*
* Max Chl Dpth (ft)	*	4.24	* Hydr. Depth (ft)	*		*	2.66	*	0.62	*
* Conv. Total (cfs)	*	6519.2	* Conv. (cfs)	*		*	6331.4	*	187.8	*
* Length Wtd. (ft)	*	49.68	* Wetted Per. (ft)	*		*	26.89	*	9.97	*
* Min Ch El (ft)	*	281.00	* Shear (lb/sq ft)	*		*	0.42	*	0.10	*
* Alpha	*	1.09	* Stream Power (lb/ft s)	*		*	1.99	*	0.16	*
* Frctn Loss (ft)	*	0.18	* Cum Volume (acre-ft)	*	0.23	*	1.24	*	0.26	*
* C & E Loss (ft)	*	0.03	* Cum SA (acres)	*	0.42	*	0.50	*	0.56	*

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1063

INPUT
Description: Section 1063
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-195	289	-180	288	-114	286	-39	285.2	-27	285.8
-15	285.2	-6	282	-2	280.8	0	280.8	2	280.8
10	284	18	286	59	300				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-195	.035	-15	.03	10	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-15	10	72	72	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	*	285.37	* Element	*	Left OB	*	Channel	*	Right OB	*
* Vel Head (ft)	*	0.61	* Wt. n-Val.	*		*	0.030	*	0.035	*
* W.S. Elev (ft)	*	284.76	* Reach Len. (ft)	*	72.00	*	72.00	*	72.00	*
* Crit W.S. (ft)	*		* Flow Area (sq ft)	*		*	58.97	*	1.17	*
* E.G. Slope (ft/ft)	*	0.005099	* Area (sq ft)	*		*	58.97	*	1.17	*
* Q Total (cfs)	*	371.00	* Flow (cfs)	*		*	369.17	*	1.83	*
* Top Width (ft)	*	26.83	* Top Width (ft)	*		*	23.77	*	3.06	*
* Vel Total (ft/s)	*	6.17	* Avg. Vel. (ft/s)	*		*	6.26	*	1.56	*
* Max Chl Dpth (ft)	*	3.96	* Hydr. Depth (ft)	*		*	2.48	*	0.38	*
* Conv. Total (cfs)	*	5195.7	* Conv. (cfs)	*		*	5170.1	*	25.6	*
* Length Wtd. (ft)	*	72.00	* Wetted Per. (ft)	*		*	25.04	*	3.15	*
* Min Ch El (ft)	*	280.80	* Shear (lb/sq ft)	*		*	0.75	*	0.12	*
* Alpha	*	1.03	* Stream Power (lb/ft s)	*		*	4.69	*	0.18	*
* Frctn Loss (ft)	*	0.37	* Cum Volume (acre-ft)	*	0.23	*	1.17	*	0.26	*
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	0.42	*	0.47	*	0.56	*

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 1013

INPUT
Description: Section 1013 - U/S Diesel Tanks
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-64	300	-63.9	284.5	-27	284.8	-15	284.5	-7	282
-2	280.6	0	280.6	2	280.6	12	284	20	286
48	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
*********************************************
     -64    .035     -15     .03      12    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -15      12               63      63      63             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  284.99  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.56  * Wt. n-Val.            *          *   0.030  *   0.035  *
* W.S. Elev (ft)         *  284.43  * Reach Len. (ft)       *   63.00  *   63.00  *   63.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *   61.69  *    0.37  *
* E.G. Slope (ft/ft)     *0.005107  * Area (sq ft)          *          *   61.69  *    0.37  *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  370.61  *    0.39  *
* Top Width (ft)         *   28.49  * Top Width (ft)        *          *   26.77  *    1.72  *
* Vel Total (ft/s)       *    5.98  * Avg. Vel. (ft/s)      *          *    6.01  *    1.07  *
* Max Chl Dpth (ft)      *    3.83  * Hydr. Depth (ft)      *          *    2.30  *    0.21  *
* Conv. Total (cfs)      *  5191.3  * Conv. (cfs)           *          *  5185.8  *     5.5  *
* Length Wtd. (ft)       *   63.00  * Wetted Per. (ft)      *          *   27.90  *    1.77  *
* Min Ch El (ft)         *  280.60  * Shear (lb/sq ft)      *          *    0.71  *    0.07  *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *          *    4.24  *    0.07  *
* Frctn Loss (ft)        *    0.36  * Cum Volume (acre-ft)  *    0.23  *    1.07  *    0.26  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *    0.42  *    0.43  *    0.55  *
*************************************************************************************************

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 922

INPUT
Description: Section 922
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************
     -59     300   -58.9   283.7     -40   283.7     -28     284     -16   283.7
     -12   283.7      -2  280.35       0  280.35       2  280.35      12   283.7
      34     284      72     295

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -59    .035     -12    .035      12     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -12      12               90      90      90             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  284.61  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.50  * Wt. n-Val.            *   0.035  *   0.035  *   0.030  *
* W.S. Elev (ft)         *  284.11  * Reach Len. (ft)       *   90.00  *   90.00  *   90.00  *
* Crit W.S. (ft)         *  284.11  * Flow Area (sq ft)     *   15.69  *   56.77  *    5.77  *
* E.G. Slope (ft/ft)     *0.006537  * Area (sq ft)          *   15.69  *   56.77  *    5.77  *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *   25.80  *  335.85  *    9.35  *
* Top Width (ft)         *   93.29  * Top Width (ft)        *   46.90  *   24.00  *   22.38  *
* Vel Total (ft/s)       *    4.74  * Avg. Vel. (ft/s)      *    1.64  *    5.92  *    1.62  *
* Max Chl Dpth (ft)      *    3.76  * Hydr. Depth (ft)      *    0.33  *    2.37  *    0.26  *
* Conv. Total (cfs)      *  4588.6  * Conv. (cfs)           *   319.1  *  4153.8  *   115.7  *
* Length Wtd. (ft)       *   90.00  * Wetted Per. (ft)      *   47.32  *   25.09  *   22.40  *
* Min Ch El (ft)         *  280.35  * Shear (lb/sq ft)      *    0.14  *    0.92  *    0.11  *
* Alpha                  *    1.42  * Stream Power (lb/ft s) *    0.22  *    5.46  *    0.17  *
* Frctn Loss (ft)        *    0.73  * Cum Volume (acre-ft)  *    0.22  *    0.98  *    0.26  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.39  *    0.39  *    0.54  *
*************************************************************************************************

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

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 820

INPUT
Description: Section 820 Begin Lateral Weir
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	282	-15	281.4	-6.2	281.4	-2	280	0	280
2	280	6.2	281.4	20	282	48	283	79	295

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-6.2	.035	6.2	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.2	6.2	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	283.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.035	0.035	0.035
W.S. Elev (ft)	282.56	Reach Len. (ft)	12.00	12.00	12.00
Crit W.S. (ft)	282.87	Flow Area (sq ft)	20.63	25.92	16.40
E.G. Slope (ft/ft)	0.020305	Area (sq ft)	20.63	25.92	16.40
Q Total (cfs)	439.10	Flow (cfs)	121.86	250.35	66.89
Top Width (ft)	62.82	Top Width (ft)	20.80	12.40	29.62
Vel Total (ft/s)	6.97	Avg. Vel. (ft/s)	5.91	9.66	4.08
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	0.99	2.09	0.55
Conv. Total (cfs)	3081.5	Conv. (cfs)	855.2	1756.9	469.4
Length Wtd. (ft)	12.00	Wetted Per. (ft)	21.38	12.85	29.64
Min Ch El (ft)	280.00	Shear (lb/sq ft)	1.22	2.56	0.70
Alpha	1.34	Stream Power (lb/ft s)	7.23	24.69	2.86
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	0.18	0.90	0.23
C & E Loss (ft)	0.05	Cum SA (acres)	0.32	0.35	0.48

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

LATERAL STRUCTURE

RIVER: South Ditch
REACH: 1 RS: 800

INPUT
Description: Plant Access Road Overflow
Lateral structure position = Left overbank
Distance from Upstream XS = 1
Deck/Roadway Width = 1
Weir Coefficient = 2.6
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	282	11	281.8	108	280	193	278	263	276
325	274								

Weir crest shape = Broad Crested

LATERAL STRUCTURE OUTPUT Profile #PF 1 Lat Struct

E.G. US. (ft)	283.58	Weir Sta US (ft)	0.00

* W.S. US. (ft)	* 282.52	* Weir Sta DS (ft)	* 252.18	*	
* E.G. DS (ft)	* 275.34	* Weir Max Depth (ft)	* 0.52	*	
* W.S. DS (ft)	* 273.92	* Weir Avg Depth (ft)	* 0.35	*	
* Q US (cfs)	* 439.10	* Weir Submerg	* 0.00	*	
* Q Leaving Total (cfs)	* 139.22	* Min El Weir Flow (ft)	* 274.00	*	
* Q DS (cfs)	* 300.40	* Wr Top Wdth (ft)	* 252.18	*	
* Perc Q Leaving	* 31.59	* Q Gate Group (cfs)	*	*	
* Q Weir (cfs)	* 139.22	* Gate Open Ht (ft)	*	*	
* Q Gates (cfs)	*	* Gate #Open	*	*	
* Q Culv (cfs)	*	* Gate Area (sq ft)	*	*	
* Q Lat RC (cfs)	*	* Gate Submerg	*	*	
* Weir Flow Area (sq ft)	* 87.08	* Gate Invert (ft)	*	*	

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 782

INPUT
Description: Section 782
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	281.8	-15	281.2	-5.6	281.2	-2	280	0	280
2	280	5.6	281.2	48	282	49	281.65	77	295

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-5.6	.035	5.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-5.6	5.6	19.4	19.4	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 283.54	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.50	* Wt. n-Val.	* 0.035	* 0.035	* 0.030 *
* W.S. Elev (ft)	* 282.03	* Reach Len. (ft)	* 19.40	* 19.40	* 19.40 *
* Crit W.S. (ft)	* 282.45	* Flow Area (sq ft)	* 14.24	* 18.46	* 18.76 *
* E.G. Slope (ft/ft)	*0.044512	* Area (sq ft)	* 14.24	* 18.46	* 18.76 *
* Q Total (cfs)	* 432.45	* Flow (cfs)	* 96.52	* 225.50	* 110.44 *
* Top Width (ft)	* 76.81	* Top Width (ft)	* 21.40	* 11.20	* 44.21 *
* Vel Total (ft/s)	* 8.40	* Avg. Vel. (ft/s)	* 6.78	* 12.22	* 5.89 *
* Max Chl Dpth (ft)	* 2.03	* Hydr. Depth (ft)	* 0.67	* 1.65	* 0.42 *
* Conv. Total (cfs)	* 2049.7	* Conv. (cfs)	* 457.5	* 1068.8	* 523.4 *
* Length Wtd. (ft)	* 19.40	* Wetted Per. (ft)	* 21.65	* 11.59	* 44.36 *
* Min Ch El (ft)	* 280.00	* Shear (lb/sq ft)	* 1.83	* 4.43	* 1.18 *
* Alpha	* 1.37	* Stream Power (lb/ft s)	* 12.39	* 54.07	* 6.92 *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	* 0.18	* 0.89	* 0.23 *
* C & E Loss (ft)	* 0.05	* Cum SA (acres)	* 0.31	* 0.35	* 0.47 *

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 769.*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	281.44	-15.1	280.86	-14.58	280.86	-5.78	280.86	-2	279.6
0	279.6	2	279.6	5.78	280.86	39.91	281.5	45.94	281.96
46.88	281.74	73.4	294						

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
     -27    .035   -5.78    .035    5.78     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -5.78    5.78             19.4    19.4    19.4             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 756.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27  281.08   -15.2  280.53  -14.68  280.52   -5.96  280.52      -2   279.2
       0   279.2       2   279.2    5.96  280.52   38.18  281.13   43.87  281.92
   44.76  281.82    69.8     293

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
     -27    .035   -5.96    .035    5.96     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -5.96    5.96             19.4    19.4    19.4             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 743.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27  280.72   -15.3  280.19  -14.79  280.18   -6.14  280.18      -2   278.8
       0   278.8       2   278.8    6.14  280.18   36.46  280.75   41.81  281.88
   42.65  281.91    66.2     292

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
     -27    .035   -6.14    .035    6.14     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.14    6.14             19.4    19.4    19.4             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 730.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27  280.36   -15.4  279.86  -14.89  279.84   -6.32  279.84      -2   278.4
       0   278.4       2   278.4    6.32  279.84   34.73  280.38   39.74  281.84
   40.53     282    62.6     291

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
     -27    .035   -6.32    .035    6.32     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.32    6.32             19.4    19.4    19.4             .1       .3
```

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 717

INPUT
Description: Section 717
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	280	-15	279.5	-6.5	279.5	-2	278	0	278
2	278	6.5	279.5	33	280	59	290		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-6.5	.035	6.5	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.5	6.5	17	17	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	281.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.035	0.035	0.030
W.S. Elev (ft)	280.39	Reach Len. (ft)	17.00	17.00	17.00
Crit W.S. (ft)	280.61	Flow Area (sq ft)	15.32	24.37	17.26
E.G. Slope (ft/ft)	0.018740	Area (sq ft)	15.32	24.37	17.26
Q Total (cfs)	368.00	Flow (cfs)	72.37	210.08	85.56
Top Width (ft)	61.02	Top Width (ft)	20.50	13.00	27.52
Vel Total (ft/s)	6.46	Avg. Vel. (ft/s)	4.72	8.62	4.96
Max Chl Dpth (ft)	2.39	Hydr. Depth (ft)	0.75	1.87	0.63
Conv. Total (cfs)	2688.2	Conv. (cfs)	528.6	1534.6	625.0
Length Wtd. (ft)	17.00	Wetted Per. (ft)	20.90	13.49	27.60
Min Ch El (ft)	278.00	Shear (lb/sq ft)	0.86	2.11	0.73
Alpha	1.26	Stream Power (lb/ft s)	4.05	18.22	3.63
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	0.14	0.84	0.18
C & E Loss (ft)	0.00	Cum SA (acres)	0.26	0.32	0.40

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

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 696.6*

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	279.6	-15.4	279.12	-14.89	279.1	-6.32	279.1	-2	277.66
0	277.66	2	277.66	6.32	279.1	24.55	279.49	31.5	279.91
56.2	289								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-6.32	.035	6.32	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.32	6.32	17	17	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 676.2*

INPUT
Description:

```
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27   279.2   -15.3  278.71  -14.79   278.7   -6.14   278.7      -2  277.32
       0  277.32       2  277.32    6.14   278.7   23.41  279.12      30  279.81
    53.4     288

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -27    .035   -6.14    .035    6.14     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.14    6.14               17      17      17             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 655.8*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27   278.8   -15.2  278.31  -14.68   278.3   -5.96   278.3      -2  276.98
       0  276.98       2  276.98    5.96   278.3   22.28  278.74   28.49  279.72
    50.6     287

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -27    .035   -5.96    .035    5.96     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -5.96    5.96               17      17      17             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 635.4*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27   278.4   -15.1   277.9  -14.58   277.9   -5.78   277.9      -2  276.64
       0  276.64       2  276.64    5.78   277.9   21.14  278.37   26.99  279.63
    47.8     286

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -27    .035   -5.78    .035    5.78     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -5.78    5.78               17      17      17             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 615

INPUT
Description: Section 615
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -27     278     -15   277.5    -5.6   277.5      -2   276.3       0   276.3
       2   276.3     5.6   277.5      20     278      45     285
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-5.6	.035	5.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-5.6	5.6	17.5	17.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 279.31	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.91	* Wt. n-Val.	* 0.035	* 0.035	* 0.030 *
* W.S. Elev (ft)	* 278.40	* Reach Len. (ft)	* 17.50	* 17.50	* 17.50 *
* Crit W.S. (ft)	* 278.65	* Flow Area (sq ft)	* 16.30	* 19.22	* 9.67 *
* E.G. Slope (ft/ft)	*0.023250	* Area (sq ft)	* 16.30	* 19.22	* 9.67 *
* Q Total (cfs)	* 313.67	* Flow (cfs)	* 86.88	* 174.33	* 52.46 *
* Top Width (ft)	* 48.43	* Top Width (ft)	* 21.40	* 11.20	* 15.83 *
* Vel Total (ft/s)	* 6.94	* Avg. Vel. (ft/s)	* 5.33	* 9.07	* 5.42 *
* Max Chl Dpth (ft)	* 2.10	* Hydr. Depth (ft)	* 0.76	* 1.72	* 0.61 *
* Conv. Total (cfs)	* 2057.1	* Conv. (cfs)	* 569.8	* 1143.3	* 344.1 *
* Length Wtd. (ft)	* 17.50	* Wetted Per. (ft)	* 21.81	* 11.59	* 15.90 *
* Min Ch El (ft)	* 276.30	* Shear (lb/sq ft)	* 1.08	* 2.41	* 0.88 *
* Alpha	* 1.21	* Stream Power (lb/ft s)	* 5.78	* 21.83	* 4.79 *
* Frctn Loss (ft)	* 0.39	* Cum Volume (acre-ft)	* 0.11	* 0.80	* 0.16 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	* 0.22	* 0.30	* 0.36 *

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

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 600.5*

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	277.5	-15.13	276.93	-14.6	276.92	-5.82	276.92	-2	275.65
0	275.65	2	275.65	5.82	276.92	20.14	277.49	20.58	277.59
45	285								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-5.82	.035	5.82	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-5.82	5.82	17.5	17.5	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 586.*

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	277	-15.25	276.37	-14.74	276.35	-6.05	276.35	-2	275
0	275	2	275	6.05	276.35	20.29	276.99	20.72	277.06
45	285								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-6.05	.035	6.05	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.05	6.05	17.5	17.5	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 571.5*

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	276.5	-15.38	275.8	-14.87	275.78	-6.28	275.78	-2	274.35
0	274.35	2	274.35	6.28	275.78	20.43	276.48	20.86	276.53
45	285								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-6.28	.035	6.28	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.28	6.28	17.5	17.5	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 557

INPUT
Description: Section 557
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	276	-15	275.2	-6.5	275.2	-2	273.7	0	273.7
2	273.7	6.5	275.2	21	276	45	285		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.035	-6.5	.035	6.5	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6.5	6.5	15.75	15.75	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	277.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.34	Wt. n-Val.	0.035	0.035	0.030
W.S. Elev (ft)	275.93	Reach Len. (ft)	15.75	15.75	15.75
Crit W.S. (ft)	276.34	Flow Area (sq ft)	10.29	22.30	4.89
E.G. Slope (ft/ft)	*0.030051	Area (sq ft)	10.29	22.30	4.89
Q Total (cfs)	300.40	Flow (cfs)	49.39	229.49	21.52
Top Width (ft)	45.83	Top Width (ft)	19.52	13.00	13.32
Vel Total (ft/s)	8.01	Avg. Vel. (ft/s)	4.80	10.29	4.40
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)	0.53	1.72	0.37
Conv. Total (cfs)	1732.9	Conv. (cfs)	284.9	1323.8	124.1
Length Wtd. (ft)	15.75	Wetted Per. (ft)	19.54	13.49	13.34
Min Ch El (ft)	273.70	Shear (lb/sq ft)	0.99	3.10	0.69
Alpha	1.34	Stream Power (lb/ft s)	4.74	31.92	3.03
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	0.09	0.76	0.15
C & E Loss (ft)	0.01	Cum SA (acres)	0.19	0.28	0.33

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 542.*

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -27   275.5  -15.13  274.68  -14.96  274.68   -6.43  274.68      -2   273.2
       0   273.2       2   273.2    6.43  274.68   18.37  275.42   20.11  275.61
   42.75  283.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -27    .035   -6.43    .035    6.43     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.43    6.43            15.75   15.75   15.75             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 527.*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -27     275  -15.09  274.16  -14.91  274.15   -6.35  274.15      -2   272.7
       0   272.7       2   272.7    6.35  274.15   17.58  274.95   19.21  275.21
    40.5   282.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -27    .035   -6.35    .035    6.35     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.35    6.35            15.75   15.75   15.75             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 512.*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -27   274.5  -15.04  273.63  -14.87  273.62   -6.27  273.62      -2   272.2
       0   272.2       2   272.2    6.27  273.62   16.79  274.47   18.32  274.82
   38.25  281.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -27    .035   -6.27    .035    6.27     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -6.27    6.27            15.75   15.75   15.75             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 497

INPUT
Description: Section 497 - End Lateral Weir
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -27     274     -15   273.1    -6.2   273.1      -2   271.7       0   271.7
       2   271.7     6.2   273.1      16     274      36     280

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

```
     -27    .035    -6.2    .035     6.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -6.2     6.2               17      17      17             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  275.31  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.41  * Wt. n-Val.            *   0.035  *   0.035  *   0.030  *
* W.S. Elev (ft)         *  273.89  * Reach Len. (ft)       *   17.00  *   17.00  *   17.00  *
* Crit W.S. (ft)         *  274.33  * Flow Area (sq ft)     *   11.14  *   21.29  *    3.41  *
* E.G. Slope (ft/ft)     *0.031838  * Area (sq ft)          *   11.14  *   21.29  *    3.41  *
* Q Total (cfs)          *  300.40  * Flow (cfs)            *   58.35  *  225.85  *   16.20  *
* Top Width (ft)         *   40.37  * Top Width (ft)        *   19.35  *   12.40  *    8.62  *
* Vel Total (ft/s)       *    8.38  * Avg. Vel. (ft/s)      *    5.24  *   10.61  *    4.75  *
* Max Chl Dpth (ft)      *    2.19  * Hydr. Depth (ft)      *    0.58  *    1.72  *    0.40  *
* Conv. Total (cfs)      *  1683.6  * Conv. (cfs)           *   327.0  *  1265.7  *    90.8  *
* Length Wtd. (ft)       *   17.00  * Wetted Per. (ft)      *   19.38  *   12.85  *    8.65  *
* Min Ch El (ft)         *  271.70  * Shear (lb/sq ft)      *    1.14  *    3.29  *    0.78  *
* Alpha                  *    1.30  * Stream Power (lb/ft s) *    5.98  *   34.92  *    3.72  *
* Frctn Loss (ft)        *    0.50  * Cum Volume (acre-ft)  *    0.08  *    0.73  *    0.14  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *    0.16  *    0.26  *    0.32  *
*********************************************************************************************

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 478.*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -26.33  273.33     -19  272.76   -14.6  272.53      -6  272.53      -2   271.2
       0   271.2       2   271.2       6  272.53   16.85  273.31   18.06  273.55
      39     280

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  -26.33    .035      -6    .035       6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -6       6               17      17      17             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 459.*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -25.67  272.67   -18.5  272.08  -14.21  271.97    -5.8  271.97      -2   270.7
       0   270.7       2   270.7     5.8  271.97    17.7  272.63   19.03  272.78
      42     280

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  -25.67    .035    -5.8    .035     5.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -5.8     5.8               17      17      17             .1       .3

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 440
```

```
INPUT
Description: Section 440
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -25     272     -18   271.4    -5.6   271.4      -2   270.2       0   270.2
       2   270.2       5   271.4      20     272      45     280

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -25    .035    -5.6    .035     5.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -5.6     5.6                5      20      55             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  273.50  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.36  * Wt. n-Val.            *   0.035  *   0.035  *   0.030  *
* W.S. Elev (ft)         *  272.15  * Reach Len. (ft)       *    5.00  *   20.00  *   55.00  *
* Crit W.S. (ft)         *  272.56  * Flow Area (sq ft)     *   12.36  *   17.47  *    6.44  *
* E.G. Slope (ft/ft)     *0.037876  * Area (sq ft)          *   12.36  *   17.47  *    6.44  *
* Q Total (cfs)          *  300.40  * Flow (cfs)            *   75.15  *  189.70  *   35.54  *
* Top Width (ft)         *   45.45  * Top Width (ft)        *   19.40  *   11.20  *   14.85  *
* Vel Total (ft/s)       *    8.28  * Avg. Vel. (ft/s)      *    6.08  *   10.86  *    5.52  *
* Max Chl Dpth (ft)      *    1.95  * Hydr. Depth (ft)      *    0.64  *    1.56  *    0.43  *
* Conv. Total (cfs)      *  1543.5  * Conv. (cfs)           *   386.1  *   974.8  *   182.6  *
* Length Wtd. (ft)       *   20.86  * Wetted Per. (ft)      *   19.57  *   11.59  *   14.89  *
* Min Ch El (ft)         *  270.20  * Shear (lb/sq ft)      *    1.49  *    3.56  *    1.02  *
* Alpha                  *    1.27  * Stream Power (lb/ft s) *    9.08  *   38.71  *    5.65  *
* Frctn Loss (ft)        *    0.63  * Cum Volume (acre-ft)  *    0.06  *    0.71  *    0.13  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.14  *    0.25  *    0.30  *
*************************************************************************************************

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

CROSS SECTION


RIVER: South Ditch
REACH: 1                  RS: 404

INPUT
Description: Section 404 - U/S Road Crossing
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -36     272     -20     271    -9.5   267.5       9   267.5      17     270
      36     272      55     276      67     280

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -36    .035     -20    .035      36     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      36                20      45      70             .3       .5

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  272.23  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.05  * Wt. n-Val.            *   0.035  *   0.035  *   0.030  *
* W.S. Elev (ft)         *  272.18  * Reach Len. (ft)       *   20.00  *   45.00  *   70.00  *
* Crit W.S. (ft)         *  269.32  * Flow Area (sq ft)     *   10.92  *  167.34  *    0.08  *
* E.G. Slope (ft/ft)     *0.000406  * Area (sq ft)          *   10.92  *  167.34  *    0.08  *
* Q Total (cfs)          *  300.40  * Flow (cfs)            *    7.17  *  293.21  *    0.02  *
* Top Width (ft)         *   72.87  * Top Width (ft)        *   16.00  *   56.00  *    0.87  *
* Vel Total (ft/s)       *    1.68  * Avg. Vel. (ft/s)      *    0.66  *    1.75  *    0.20  *
* Max Chl Dpth (ft)      *    4.68  * Hydr. Depth (ft)      *    0.68  *    2.99  *    0.09  *
* Conv. Total (cfs)      * 14913.4  * Conv. (cfs)           *   356.1  * 14556.5  *     0.8  *
* Length Wtd. (ft)       *   43.19  * Wetted Per. (ft)      *   16.21  *   57.05  *    0.89  *
* Min Ch El (ft)         *  267.50  * Shear (lb/sq ft)      *    0.02  *    0.07  *    0.00  *
* Alpha                  *    1.06  * Stream Power (lb/ft s) *    0.01  *    0.13  *    0.00  *
```

* Frctn Loss (ft)	*	0.04	* Cum Volume (acre-ft)	*	0.06	*	0.67	*	0.13	*
* C & E Loss (ft)	*	0.03	* Cum SA (acres)	*	0.14	*	0.23	*	0.29	*

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 380

INPUT
Description: Access Road Crossing
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-98	272	-45	271	0	271	40	271	55	272
60	272.25	120	272.25						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-98	.035	-45	.035	40	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 40 15 25 35 .3 .5
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-98	-60	274	F
40	120	274	F

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	*	272.16	* Element	*	Left OB	*	Channel	*	Right OB	*	
* Vel Head (ft)	*	0.14	* Wt. n-Val.	*	0.035	*	0.035	*		*	
* W.S. Elev (ft)	*	272.02	* Reach Len. (ft)	*	15.00	*	25.00	*	35.00	*	
* Crit W.S. (ft)	*	271.68	* Flow Area (sq ft)	*	13.11	*	86.33	*		*	
* E.G. Slope (ft/ft)	*	0.005086	* Area (sq ft)	*	27.33	*	86.33	*	7.74	*	
* Q Total (cfs)	*	300.40	* Flow (cfs)	*	36.29	*	264.11	*		*	
* Top Width (ft)	*	153.31	* Top Width (ft)	*	53.00	*	85.00	*	15.31	*	
* Vel Total (ft/s)	*	3.02	* Avg. Vel. (ft/s)	*	2.77	*	3.06	*		*	
* Max Chl Dpth (ft)	*	1.02	* Hydr. Depth (ft)	*	0.87	*	1.02	*		*	
* Conv. Total (cfs)	*	4212.4	* Conv. (cfs)	*	508.9	*	3703.5	*		*	
* Length Wtd. (ft)	*	25.00	* Wetted Per. (ft)	*	15.00	*	85.00	*		*	
* Min Ch El (ft)	*	271.00	* Shear (lb/sq ft)	*	0.28	*	0.32	*		*	
* Alpha	*	1.00	* Stream Power (lb/ft s)	*	0.77	*	0.99	*		*	
* Frctn Loss (ft)	*		* Cum Volume (acre-ft)	*	0.05	*	0.54	*	0.12	*	
* C & E Loss (ft)	*		* Cum SA (acres)	*	0.12	*	0.16	*	0.28	*	

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

INLINE STRUCTURE

RIVER: South Ditch
REACH: 1 RS: 379

INPUT
Description:
Distance from Upstream XS = 1
Deck/Roadway Width = 12
Weir Coefficient = 2.6
Weir Embankment Coordinates num = 3

Sta	Elev	Sta	Elev	Sta	Elev
-40	271	0	271	45	271

Upstream Embankment side slope = 3 horiz. to 1.0 vertical
Downstream Embankment side slope = 3 horiz. to 1.0 vertical

```
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins          =
Weir crest shape                             = Broad Crested


INLINE STRUCTURE OUTPUT  Profile #PF 1  Inl Struct:
************************************************************************
* E.G. Elev (ft)         *  272.16  * Q Gates (cfs)          *          *
* W.S. Elev (ft)         *  272.02  * Q Gate Group (cfs)     *  271.68  *
* Q Total (cfs)          *  300.40  * Gate Open Ht (ft)      *    2.00  *
* Q Weir (cfs)           *  300.40  * Gate #Open             *     272  *
* Weir Flow Area (sq ft) *  113.66  * Gate Area (sq ft)      *  274.01  *
* Weir Sta Lft (ft)      *  -60.00  * Gate Submerg           *          *
* Weir Sta Rgt (ft)      *   40.00  * Gate Invert (ft)       *  272.01  *
* Weir Max Depth (ft)    *    1.16  *                        *          *
* Weir Avg Depth (ft)    *    1.14  *                        *          *
* Weir Submerg           *    0.87  *                        *          *
* Min El Weir Flow (ft)  *  271.01  *                        *          *
* Wr Top Wdth (ft)       *  100.00  *                        *          *
************************************************************************

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

CROSS SECTION


RIVER: South Ditch
REACH: 1                 RS: 332

INPUT
Description: Section 332 - D/S Road Crossing
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -70     272     -19     271      -4  266.18       4  266.18      19     271
      95     272

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -70    .035     -19     .03      19    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -19      19             12.5    17.5      25             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -70     -40     274       F
      60      95     274       F

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         *  272.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.05  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  272.01  * Reach Len. (ft)       *   12.50  *   17.50  *   25.00  *
* Crit W.S. (ft)         *  268.73  * Flow Area (sq ft)     *   16.88  *  149.23  *   30.34  *
* E.G. Slope (ft/ft)     *0.000235  * Area (sq ft)          *   26.00  *  149.23  *   38.75  *
* Q Total (cfs)          *  300.40  * Flow (cfs)            *    9.50  *  274.75  *   16.15  *
* Top Width (ft)         *  165.00  * Top Width (ft)        *   51.00  *   38.00  *   76.00  *
* Vel Total (ft/s)       *    1.53  * Avg. Vel. (ft/s)      *    0.56  *    1.84  *    0.53  *
* Max Chl Dpth (ft)      *    5.83  * Hydr. Depth (ft)      *    0.80  *    3.93  *    0.74  *
* Conv. Total (cfs)      * 19600.6  * Conv. (cfs)           *   619.6  * 17927.0  *  1054.0  *
* Length Wtd. (ft)       *   17.75  * Wetted Per. (ft)      *   21.00  *   39.51  *   41.00  *
* Min Ch El (ft)         *  266.18  * Shear (lb/sq ft)      *    0.01  *    0.06  *    0.01  *
* Alpha                  *    1.34  * Stream Power (lb/ft s) *    0.01  *    0.10  *    0.01  *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *    0.04  *    0.47  *    0.11  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *    0.10  *    0.12  *    0.24  *
*****************************************************************************************************

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

CROSS SECTION
```

RIVER: South Ditch
REACH: 1 RS: 305.*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-67.5	272	-19	271	-4	266.15	4	266.15	19	271
100	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-67.5	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	12.5	17.5	25	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 278

INPUT
Description: Section 278
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-65	272	-19	271	-4	266.12	4	266.12	19	271
105	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-65	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	17.67	17.67	17.67	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	272.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	271.94	Reach Len. (ft)	17.67	17.67	17.67
Crit W.S. (ft)		Flow Area (sq ft)	20.50	148.11	38.32
E.G. Slope (ft/ft)	0.000482	Area (sq ft)	20.50	148.11	38.32
Q Total (cfs)	421.50	Flow (cfs)	11.58	388.28	21.64
Top Width (ft)	162.61	Top Width (ft)	43.42	38.00	81.18
Vel Total (ft/s)	2.04	Avg. Vel. (ft/s)	0.56	2.62	0.56
Max Chl Dpth (ft)	5.82	Hydr. Depth (ft)	0.47	3.90	0.47
Conv. Total (cfs)	19205.6	Conv. (cfs)	527.4	17692.0	986.2
Length Wtd. (ft)	17.67	Wetted Per. (ft)	43.43	39.55	81.19
Min Ch El (ft)	266.12	Shear (lb/sq ft)	0.01	0.11	0.01
Alpha	1.53	Stream Power (lb/ft s)	0.01	0.30	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	0.03	0.35	0.06
C & E Loss (ft)	0.01	Cum SA (acres)	0.07	0.09	0.15

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 264.166*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-62.5	272	-19	271	-4	266.1	4	266.1	19	271
102.5	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-62.5	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	17.67	17.67	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 250.333*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60	272	-19	271	-4	266.08	4	266.08	19	271
100	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-60	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	17.67	17.67	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 236.5*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-57.5	272	-19	271	-4	266.06	4	266.06	19	271
97.5	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-57.5	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	17.67	17.67	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 222.666*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-55	272	-19	271	-4	266.04	4	266.04	19	271
95	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-55	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	17.67	17.67	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 208.833*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-52.5	272	-19	271	-4	266.02	4	266.02	19	271
92.5	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-52.5	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	17.67	17.67	.1	.3

CROSS SECTION

RIVER: South Ditch
REACH: 1 RS: 195

INPUT
Description: Section 195 - Downstream Outlet
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-50	272	-19	271	-4	266	4	266	19	271
90	272								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-50	.035	-19	.03	19	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	271.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	271.71	Reach Len. (ft)			
Crit W.S. (ft)	269.54	Flow Area (sq ft)	7.81	141.98	17.90
E.G. Slope (ft/ft)	0.001084	Area (sq ft)	7.81	141.98	17.90
Q Total (cfs)	560.20	Flow (cfs)	5.47	542.19	12.54
Top Width (ft)	110.42	Top Width (ft)	22.01	38.00	50.41
Vel Total (ft/s)	3.34	Avg. Vel. (ft/s)	0.70	3.82	0.70
Max Chl Dpth (ft)	5.71	Hydr. Depth (ft)	0.35	3.74	0.35
Conv. Total (cfs)	17014.4	Conv. (cfs)	166.3	16467.2	380.9
Length Wtd. (ft)		Wetted Per. (ft)	22.02	39.62	50.41
Min Ch El (ft)	266.00	Shear (lb/sq ft)	0.02	0.24	0.02
Alpha	1.27	Stream Power (lb/ft s)	0.02	0.93	0.02
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 1312

INPUT
Description: Section 1312 - U/S Road Crossing (1st)
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-135	290	-113	288	-100	284	-84	283.5	-61	284
-59	286	-27	287.2	-7	286	-1	284	1	284

```
       7     286     144     286     279     285     286  282.75     288  282.75
     295     285     473     286     670     288     765     290

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*******************************************
    -135    .035      -7    .035       7    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             -7       7             122     122     122             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     545     765     300       F

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  287.20  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.01  * Wt. n-Val.            *   0.035  *   0.035  *   0.035  *
* W.S. Elev (ft)         *  287.19  * Reach Len. (ft)       *  122.00  *  122.00  *  122.00  *
* Crit W.S. (ft)         *  285.57  * Flow Area (sq ft)     *  185.99  *   32.69  *  807.89  *
* E.G. Slope (ft/ft)     *0.000118  * Area (sq ft)          *  185.99  *   32.69  *  818.37  *
* Q Total (cfs)          *  646.50  * Flow (cfs)            *  133.65  *   25.70  *  487.16  *
* Top Width (ft)         *  700.48  * Top Width (ft)        *  103.04  *   14.00  *  583.44  *
* Vel Total (ft/s)       *    0.63  * Avg. Vel. (ft/s)      *    0.72  *    0.79  *    0.60  *
* Max Chl Dpth (ft)      *    4.44  * Hydr. Depth (ft)      *    1.81  *    2.34  *    1.50  *
* Conv. Total (cfs)      * 59635.5  * Conv. (cfs)           * 12328.0  *  2370.2  * 44937.2  *
* Length Wtd. (ft)       *  122.00  * Wetted Per. (ft)      *  104.42  *   14.65  *  538.72  *
* Min Ch El (ft)         *  284.00  * Shear (lb/sq ft)      *    0.01  *    0.02  *    0.01  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *    0.01  *    0.01  *    0.01  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  *    3.13  *    2.71  *    6.77  *
* C & E Loss (ft)        *          * Cum SA (acres)        *    1.73  *    0.85  *    4.72  *
*********************************************************************************************

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

INLINE STRUCTURE


RIVER: North Ditch
REACH: 1                  RS: 1245

INPUT
Description: Plant Access Road
Distance from Upstream XS =       1
Deck/Roadway Width        =     120
Weir Coefficient          =     2.6
 Weir Embankment Coordinates    num =        7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -40   287.2       0   287.2    85.5     286     234     286     306   285.7
     455   286.7     720     289

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =       3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Weir crest shape                            = Broad Crested


INLINE STRUCTURE OUTPUT  Profile #PF 1  Inl Struct:
************************************************************************
* E.G. Elev (ft)         *  287.20  * Q Gates (cfs)         *          *
* W.S. Elev (ft)         *  287.19  * Q Gate Group (cfs)    *  285.57  *
* Q Total (cfs)          *  646.50  * Gate Open Ht (ft)     *    3.00  *
* Q Weir (cfs)           *  646.50  * Gate #Open            *     285  *
* Weir Flow Area (sq ft) *  660.89  * Gate Area (sq ft)     *  285.57  *
* Weir Sta Lft (ft)      * -110.40  * Gate Submerg          *  300.01  *
* Weir Sta Rgt (ft)      *  512.44  * Gate Invert (ft)      *  286.14  *
* Weir Max Depth (ft)    *    3.70  *                       *          *
* Weir Avg Depth (ft)    *    1.13  *                       *          *
* Weir Submerg           *    0.99  *                       *          *
* Min El Weir Flow (ft)  *  283.51  *                       *          *
* Wr Top Wdth (ft)       *  582.74  *                       *          *
************************************************************************
```

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

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 1190

INPUT
Description: Section 1190 - D/S Road Crossing (1st)
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-147	290	-123	288	-111	284	-94	283.3	-72	284
-58	286	-29	286.8	-11	286	-2	283	2	283
11	286	81	285	81	290.5	153	290.5	153	284
158	284	170	281.79	172	281.79	180	284	270	284.9
270	300	383	300	383	285.6	414	286.7	450	286
450	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-147	.035	-11	.03	11	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-11 11 82 90 115 .3 .5

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
290	450	300	T

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	287.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	287.17	Reach Len. (ft)	82.00	90.00	115.00
Crit W.S. (ft)		Flow Area (sq ft)	219.44	64.84	474.69
E.G. Slope (ft/ft)	0.000120	Area (sq ft)	219.44	64.84	536.15
Q Total (cfs)	646.50	Flow (cfs)	161.69	70.35	414.46
Top Width (ft)	385.52	Top Width (ft)	109.52	22.00	254.00
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.74	1.08	0.87
Max Chl Dpth (ft)	5.38	Hydr. Depth (ft)	2.00	2.95	2.54
Conv. Total (cfs)	58946.9	Conv. (cfs)	14742.5	6414.6	37789.8
Length Wtd. (ft)	101.66	Wetted Per. (ft)	110.24	22.97	195.14
Min Ch El (ft)	283.00	Shear (lb/sq ft)	0.01	0.02	0.02
Alpha	1.04	Stream Power (lb/ft s)	0.01	0.02	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2.56	2.57	4.87
C & E Loss (ft)	0.01	Cum SA (acres)	1.43	0.80	3.55

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

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 1108

INPUT
Description: Section 1108
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-167	290	-122	288	-112	284	-94	283	-72	284
-66	286	-32	286.6	-15	286	-7	286	-2	282.4
2	282.4	9	286	60	286	73	281.64	75	281.64
88	286	297	286	333	286.7	378	286	378	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
    -167    .035      -7     .03       9    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -7       9              104     104     104             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     330     378     300       T

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  287.16  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.03  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  287.13  * Reach Len. (ft)       *  104.00  *  104.00  *  104.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *  221.36  *   54.05  *  416.87  *
* E.G. Slope (ft/ft)     *0.000447  * Area (sq ft)          *  221.36  *   54.05  *  453.24  *
* Q Total (cfs)          *  871.70  * Flow (cfs)            *  309.72  *  117.70  *  444.27  *
* Top Width (ft)         *  497.82  * Top Width (ft)        *  112.82  *   16.00  *  369.00  *
* Vel Total (ft/s)       *    1.26  * Avg. Vel. (ft/s)      *    1.40  *    2.18  *    1.07  *
* Max Chl Dpth (ft)      *    5.49  * Hydr. Depth (ft)      *    1.96  *    3.38  *    1.30  *
* Conv. Total (cfs)      * 41211.6  * Conv. (cfs)           * 14642.9  *  5564.8  * 21004.0  *
* Length Wtd. (ft)       *  104.00  * Wetted Per. (ft)      *  113.81  *   18.03  *  322.43  *
* Min Ch El (ft)         *  282.40  * Shear (lb/sq ft)      *    0.05  *    0.08  *    0.04  *
* Alpha                  *    1.21  * Stream Power (lb/ft s) *    0.08  *    0.18  *    0.04  *
* Frctn Loss (ft)        *    0.04  * Cum Volume (acre-ft)  *    2.15  *    2.45  *    3.56  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *    1.22  *    0.76  *    2.73  *
*********************************************************************************************

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: 987

INPUT
Description: Section 987
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -124     288     -90     286     -83     284     -69     284     -53     286
     -40   286.4     -12     284      -2   281.5       2   281.5      12     284
     210     286     345   287.2     345     300

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -124    .035     -12     .03      12    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -12      12              120     120     120             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     170     345     300       T

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  287.12  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.04  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  287.08  * Reach Len. (ft)       *  120.00  *  120.00  *  120.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *  165.02  *  108.94  *  360.67  *
* E.G. Slope (ft/ft)     *0.000291  * Area (sq ft)          *  165.02  *  108.94  *  477.67  *
* Q Total (cfs)          *  871.70  * Flow (cfs)            *  170.48  *  248.21  *  453.01  *
* Top Width (ft)         *  439.95  * Top Width (ft)        *   96.37  *   24.00  *  319.58  *
* Vel Total (ft/s)       *    1.37  * Avg. Vel. (ft/s)      *    1.03  *    2.28  *    1.26  *
* Max Chl Dpth (ft)      *    5.58  * Hydr. Depth (ft)      *    1.71  *    4.54  *    2.28  *
* Conv. Total (cfs)      * 51079.4  * Conv. (cfs)           *  9989.8  * 14544.2  * 26545.4  *
* Length Wtd. (ft)       *  120.00  * Wetted Per. (ft)      *   96.92  *   24.62  *  158.01  *
* Min Ch El (ft)         *  281.50  * Shear (lb/sq ft)      *    0.03  *    0.08  *    0.04  *
* Alpha                  *    1.33  * Stream Power (lb/ft s) *    0.03  *    0.18  *    0.05  *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)  *    1.69  *    2.26  *    2.45  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.97  *    0.72  *    1.91  *
*********************************************************************************************

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: North Ditch
REACH: 1 RS: 845

INPUT
Description: Section 845
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	288	-86	286	-63	284	-40	286.1	-12	284
-2	281.2	2	281.2	12	284	81	285.4	81	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.035	-12	.03	12	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12	12	66	66	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	287.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	286.94	Reach Len. (ft)	66.00	66.00	66.00
Crit W.S. (ft)		Flow Area (sq ft)	144.14	109.77	154.60
E.G. Slope (ft/ft)	0.000742	Area (sq ft)	144.14	109.77	154.60
Q Total (cfs)	946.30	Flow (cfs)	245.00	399.65	301.65
Top Width (ft)	173.58	Top Width (ft)	80.58	24.00	69.00
Vel Total (ft/s)	2.32	Avg. Vel. (ft/s)	1.70	3.64	1.95
Max Chl Dpth (ft)	5.74	Hydr. Depth (ft)	1.79	4.57	2.24
Conv. Total (cfs)	34735.3	Conv. (cfs)	8993.2	14669.7	11072.4
Length Wtd. (ft)	66.00	Wetted Per. (ft)	80.91	24.77	70.55
Min Ch El (ft)	281.20	Shear (lb/sq ft)	0.08	0.21	0.10
Alpha	1.41	Stream Power (lb/ft s)	0.14	0.75	0.20
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	1.26	1.96	1.58
C & E Loss (ft)	0.01	Cum SA (acres)	0.73	0.65	1.37

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 802

INPUT
Description: Section 802
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-86	286	-63	284	-40	285.8	-12	284	-2	281.2
2	281.2	12	284	54	285.4	54	300		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-86	.035	-12	.03	12	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12	12	54	54	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	286.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	286.82	Reach Len. (ft)	54.00	54.00	54.00
Crit W.S. (ft)		Flow Area (sq ft)	139.88	106.91	89.10
E.G. Slope (ft/ft)	0.001055	Area (sq ft)	139.88	106.91	89.10
Q Total (cfs)	946.30	Flow (cfs)	292.12	455.90	198.29
Top Width (ft)	140.00	Top Width (ft)	74.00	24.00	42.00
Vel Total (ft/s)	2.82	Avg. Vel. (ft/s)	2.09	4.26	2.23
Max Chl Dpth (ft)	5.62	Hydr. Depth (ft)	1.89	4.45	2.12
Conv. Total (cfs)	29138.5	Conv. (cfs)	8994.9	14038.0	6105.6

* Length Wtd. (ft)	* 54.00	* Wetted Per. (ft)	* 75.04	* 24.77	* 43.44	*
* Min Ch El (ft)	* 281.20	* Shear (lb/sq ft)	* 0.12	* 0.28	* 0.14	*
* Alpha	* 1.40	* Stream Power (lb/ft s)	* 0.26	* 1.21	* 0.30	*
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	* 1.05	* 1.79	* 1.40	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	* 0.61	* 0.61	* 1.29	*

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

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 742

INPUT
Description: Section 742
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-86	286	-63	284	-40	285.4	-12	284	-2	280.9
2	280.9	12	284	59	284	108	286.5	183	288
183	300								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-86	.035	-12	.03	12	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12 12 90 90 90 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
65	183	300	T

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 286.93	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.11	* Wt. n-Val.	* 0.035	* 0.030	* 0.035 *
* W.S. Elev (ft)	* 286.83	* Reach Len. (ft)	* 90.00	* 90.00	* 90.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	* 150.36	* 111.20	* 148.81 *
* E.G. Slope (ft/ft)	*0.000632	* Area (sq ft)	* 150.36	* 111.20	* 212.60 *
* Q Total (cfs)	* 946.30	* Flow (cfs)	* 255.15	* 375.10	* 316.05 *
* Top Width (ft)	* 210.25	* Top Width (ft)	* 74.00	* 24.00	* 112.25 *
* Vel Total (ft/s)	* 2.31	* Avg. Vel. (ft/s)	* 1.70	* 3.37	* 2.12 *
* Max Chl Dpth (ft)	* 5.93	* Hydr. Depth (ft)	* 2.03	* 4.63	* 2.81 *
* Conv. Total (cfs)	* 37643.8	* Conv. (cfs)	* 10149.9	* 14921.4	* 12572.6 *
* Length Wtd. (ft)	* 90.00	* Wetted Per. (ft)	* 74.99	* 24.94	* 53.01 *
* Min Ch El (ft)	* 280.90	* Shear (lb/sq ft)	* 0.08	* 0.18	* 0.11 *
* Alpha	* 1.28	* Stream Power (lb/ft s)	* 0.13	* 0.59	* 0.24 *
* Frctn Loss (ft)	* 0.07	* Cum Volume (acre-ft)	* 0.87	* 1.66	* 1.21 *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 0.52	* 0.58	* 1.19 *

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

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 662

INPUT
Description: Section 662
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-86	286	-62	284	-40	285.2	-13	284	-2	280.75
2	280.75	13	284	61	286	275	288	275	300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-86	.035	-13	.03	13	.035

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -13      13              104     104     104             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
      81     275     300       T

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  286.85  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.17  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  286.68  * Reach Len. (ft)       *  104.00  *  104.00  *  104.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *  142.28  *  118.44  *   92.41  *
* E.G. Slope (ft/ft)     *0.001001  * Area (sq ft)          *  142.28  *  118.44  *  105.45  *
* Q Total (cfs)          *  946.30  * Flow (cfs)            *  295.97  *  498.12  *  152.22  *
* Top Width (ft)         *  219.82  * Top Width (ft)        *   73.00  *   26.00  *  120.82  *
* Vel Total (ft/s)       *    2.68  * Avg. Vel. (ft/s)      *    2.08  *    4.21  *    1.65  *
* Max Chl Dpth (ft)      *    5.93  * Hydr. Depth (ft)      *    1.95  *    4.56  *    1.36  *
* Conv. Total (cfs)      * 29911.1  * Conv. (cfs)           *  9355.1  * 15744.7  *  4811.4  *
* Length Wtd. (ft)       *  104.00  * Wetted Per. (ft)      *   73.82  *   26.94  *   68.04  *
* Min Ch El (ft)         *  280.75  * Shear (lb/sq ft)      *    0.12  *    0.27  *    0.08  *
* Alpha                  *    1.55  * Stream Power (lb/ft s) *    0.25  *    1.16  *    0.14  *
* Frctn Loss (ft)        *    0.14  * Cum Volume (acre-ft)  *    0.56  *    1.42  *    0.88  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *    0.37  *    0.53  *    0.95  *
*********************************************************************************************

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

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: 550

INPUT
Description: Section 550 - U/S Road Crossing (2nd)
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -57     284     -34     285     -22   284.8     -12     284      -7     282
      -2   280.5       2   280.5       7     282      12     284      63     286
     108   287.2     108     300

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -57    .035     -12     .03      12    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -12      12              170     150     140             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     104     108     300       T

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  286.70  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.34  * Wt. n-Val.            *   0.035  *   0.030  *   0.035  *
* W.S. Elev (ft)         *  286.36  * Reach Len. (ft)       *  170.00  *  150.00  *  140.00  *
* Crit W.S. (ft)         *  285.63  * Flow Area (sq ft)     *   80.03  *  108.21  *   71.98  *
* E.G. Slope (ft/ft)     *0.001808  * Area (sq ft)          *   80.03  *  108.21  *   71.98  *
* Q Total (cfs)          *  946.30  * Flow (cfs)            *  204.81  *  601.91  *  139.58  *
* Top Width (ft)         *  133.61  * Top Width (ft)        *   45.00  *   24.00  *   64.61  *
* Vel Total (ft/s)       *    3.64  * Avg. Vel. (ft/s)      *    2.56  *    5.56  *    1.94  *
* Max Chl Dpth (ft)      *    5.86  * Hydr. Depth (ft)      *    1.78  *    4.51  *    1.11  *
* Conv. Total (cfs)      * 22255.4  * Conv. (cfs)           *  4816.8  * 14156.0  *  3282.7  *
* Length Wtd. (ft)       *  150.00  * Wetted Per. (ft)      *   47.42  *   25.21  *   64.66  *
* Min Ch El (ft)         *  280.50  * Shear (lb/sq ft)      *    0.19  *    0.48  *    0.13  *
* Alpha                  *    1.64  * Stream Power (lb/ft s) *    0.49  *    2.69  *    0.24  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)  *    0.30  *    1.15  *    0.67  *
* C & E Loss (ft)        *          * Cum SA (acres)        *    0.22  *    0.47  *    0.73  *
*********************************************************************************************

INLINE STRUCTURE
```

RIVER: North Ditch
REACH: 1 RS: 500

INPUT
Description: North Plant Access Road
Distance from Upstream XS = 1
Deck/Roadway Width = 81
Weir Coefficient = 2.6
Weir Embankment Coordinates num = 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-35	284	-22	284	0	284	757	286	144	288
185	288								

Upstream Embankment side slope = 3 horiz. to 1.0 vertical
Downstream Embankment side slope = 3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Weir crest shape = Broad Crested

INLINE STRUCTURE OUTPUT Profile #PF 1 Inl Struct:

E.G. Elev (ft)	286.70	Q Gates (cfs)	
W.S. Elev (ft)	286.36	Q Gate Group (cfs)	285.63
Q Total (cfs)	946.30	Gate Open Ht (ft)	1.00
Q Weir (cfs)	946.30	Gate #Open	
Weir Flow Area (sq ft)	255.56	Gate Area (sq ft)	
Weir Sta Lft (ft)	-57.00	Gate Submerg	
Weir Sta Rgt (ft)	89.22	Gate Invert (ft)	
Weir Max Depth (ft)	2.70		
Weir Avg Depth (ft)	1.75		
Weir Submerg	0.56		
Min El Weir Flow (ft)	284.01		
Wr Top Wdth (ft)	146.22		

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 375

INPUT
Description: Section 375 - D/S Road Crossing (2nd)
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	284.5	-20	284.2	-12	284	-4	282	0	281
4	282	12	284	28	284.3	104	286	145	288
158	288	158	300						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-12	.035	12	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12 12 18.57 18.57 18.57 .3 .5
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
120	158	300	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	286.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.035	0.035	0.035
W.S. Elev (ft)	285.79	Reach Len. (ft)	18.57	18.57	18.57
Crit W.S. (ft)	285.71	Flow Area (sq ft)	30.90	79.07	76.26
E.G. Slope (ft/ft)	0.006696	Area (sq ft)	30.90	79.07	76.26
Q Total (cfs)	984.30	Flow (cfs)	137.52	596.08	250.70
Top Width (ft)	126.83	Top Width (ft)	20.00	24.00	82.83
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	4.45	7.54	3.29
Max Chl Dpth (ft)	4.79	Hydr. Depth (ft)	1.54	3.29	0.92
Conv. Total (cfs)	12029.0	Conv. (cfs)	1680.7	7284.6	3063.8

```
* Length Wtd. (ft)       *   18.57  * Wetted Per. (ft)       *   21.30  *   24.74  *   82.84  *
* Min Ch El (ft)         *  281.00  * Shear (lb/sq ft)       *    0.61  *    1.34  *    0.38  *
* Alpha                  *    1.43  * Stream Power (lb/ft s) *    2.70  *   10.07  *    1.26  *
* Frctn Loss (ft)        *    0.12  * Cum Volume (acre-ft)   *    0.08  *    0.83  *    0.43  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    0.10  *    0.39  *    0.49  *
*********************************************************************************************

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

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 362.571*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  284.44  -20.69  284.16  -13.14  283.97    -4.6  282.04   -4.38  281.99
       0  280.87    4.38  281.99     4.6  282.04   13.14  283.89   23.96  284.08
   29.44  284.19  106.85  285.98  112.29  286.22  148.62  287.77  161.86  287.79
  161.86  298.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035  -13.14    .035   13.14    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -13.14   13.14             18.57   18.57   18.57             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120  161.86298.5714       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 350.142*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  284.39  -21.37  284.12  -14.29  283.94      -5  282.04   -4.76  281.97
       0  280.74    4.76  281.97       5  282.04   14.29  283.77    25.3  283.97
   30.88  284.09  109.71  285.95  115.24  286.19  152.23  287.53  165.71  287.57
  165.71  296.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035  -14.29    .035   14.29    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -14.29   14.29             18.57   18.57   18.57             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120  165.71297.1429       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 337.714*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
*****************************************************************************
     -32  284.33  -22.06  284.08  -15.43  283.91    -5.4  282.03   -5.14  281.96
       0  280.61    5.14  281.96     5.4  282.03   15.43  283.66   26.64  283.86
   32.32  283.98  112.56  285.93  118.19  286.15  155.85   287.3  169.57  287.36
  169.57  294.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035  -15.43    .035   15.43    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -15.43   15.43             18.57   18.57   18.57             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120  169.57295.7143       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 325.285*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
     -32  284.27  -22.74  284.04  -16.57  283.89    -5.8  282.02   -5.52  281.95
       0  280.49    5.52  281.95     5.8  282.02   16.57  283.54   27.98  283.74
   33.76  283.88  115.41  285.91  121.14  286.11  159.46  287.07  173.43  287.14
  173.43  292.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035  -16.57    .035   16.57    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -16.57   16.57             18.57   18.57   18.57             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120  173.43294.2857       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 312.857*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
     -32  284.21  -23.43     284  -17.71  283.86    -6.2  282.01    -5.9  281.94
       0  280.36     5.9  281.94     6.2  282.01   17.71  283.43   29.32  283.63
    35.2  283.77  118.27  285.89   124.1  286.07  163.08  286.83  177.29  286.93
  177.29  290.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035  -17.71    .035   17.71    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -17.71   17.71             18.57   18.57   18.57             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120  177.29292.8571       F

CROSS SECTION


RIVER: North Ditch
```

```
REACH: 1                 RS: 300.428*

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  284.16  -24.11  283.96  -18.86  283.83    -6.6  282.01   -6.29  281.92
       0  280.23    6.29  281.92     6.6  282.01   18.86  283.31   30.66  283.51
   36.64  283.67  121.12  285.86  127.05  286.04  166.69   286.6  181.14  286.71
  181.14  288.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035  -18.86    .035   18.86    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -18.86   18.86             18.57   18.57   18.57             .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120  181.14291.4286       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: 288

INPUT
Description: Section 288
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32   284.1     -20   283.8      -7     282       0   280.1       7     282
      20   283.2      32   283.4     130     286     185   286.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -20      20             17.6    17.6    17.6             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     120     185     290       F

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  285.46  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.73  * Wt. n-Val.            *   0.035  *   0.035  *   0.035  *
* W.S. Elev (ft)         *  284.73  * Reach Len. (ft)       *   17.60  *   17.60  *   17.60  *
* Crit W.S. (ft)         *  284.73  * Flow Area (sq ft)     *    9.39  *  103.10  *   50.65  *
* E.G. Slope (ft/ft)     *0.009067  * Area (sq ft)          *    9.39  *  103.10  *   50.65  *
* Q Total (cfs)          *  984.30  * Flow (cfs)           *   31.14  *  774.68  *  178.48  *
* Top Width (ft)         *  114.22  * Top Width (ft)       *   12.00  *   40.00  *   62.22  *
* Vel Total (ft/s)       *    6.03  * Avg. Vel. (ft/s)     *    3.32  *    7.51  *    3.52  *
* Max Chl Dpth (ft)      *    4.63  * Hydr. Depth (ft)     *    0.78  *    2.58  *    0.81  *
* Conv. Total (cfs)      * 10337.0  * Conv. (cfs)          *   327.0  *  8135.6  *  1874.4  *
* Length Wtd. (ft)       *   17.60  * Wetted Per. (ft)     *   12.64  *   40.69  *   62.24  *
* Min Ch El (ft)         *  280.10  * Shear (lb/sq ft)     *    0.42  *    1.43  *    0.46  *
* Alpha                  *    1.29  * Stream Power (lb/ft s) *  1.40  *   10.78  *    1.62  *
* Frctn Loss (ft)        *    0.16  * Cum Volume (acre-ft) *    0.02  *    0.54  *    0.22  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)       *    0.05  *    0.29  *    0.26  *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
```

```
         water surface was used.

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 266.4*

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  283.68     -20   283.4      -7  281.63      -6  281.38       0  279.98
       6  281.38       7  281.63      20  282.96   29.35  283.14   32.92  283.16
   39.47  283.25   50.38  283.06   51.94  283.06   53.49  283.13   58.17  283.62
   83.87  284.52  115.03  285.54   138.4  286.03   197.6   286.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20             17.6    17.6    17.6             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     118   197.6     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 244.8*

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  283.26     -20     283      -7  281.25      -6  281.04       0  279.86
       6  281.04       7  281.26      20  282.72   30.01  282.93   33.83  282.92
   40.86  282.94   52.53   282.3    54.2  282.24   55.87  282.34   60.88  283.21
   88.41  284.39  121.77  285.65   146.8  286.06   210.2   286.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20             17.6    17.6    17.6             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     116   210.2     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 223.2*

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  282.84     -20   282.6      -7  280.88      -6  280.69       0  279.74
       6  280.69       7  280.89      20  282.48   30.67  282.72   34.75  282.68
   42.24  282.62   54.69  281.53   56.47  281.43   58.25  281.56   63.58  282.81
   92.94  284.26  128.52  285.77   155.2  286.08   222.8   286.5

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

```
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20             17.6    17.6    17.6             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     114   222.8     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: 201.6*

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  282.42     -20   282.2      -7   280.5      -6  280.35       0  279.62
       6  280.35       7  280.51      20  282.24   31.34  282.51   35.67  282.44
   43.62  282.31   56.84  280.77   58.73  280.61   60.62  280.78   66.29   282.4
   97.47  284.13  135.26  285.88   163.6  286.11   235.4   286.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20             17.6    17.6    17.6             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     112   235.4     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: 180

INPUT
Description: Section 180
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32     282     -20   281.8      -6     280       0   279.5       6     280
      20     282      32   282.3      45     282      59     280      61   279.8
      63     280      69     282     102     284     142     286     248   286.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20               18      18      18             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
     110     248     290       T

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  283.58  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.18  * Wt. n-Val.            *   0.035  *   0.035  *   0.035  *
* W.S. Elev (ft)         *  282.40  * Reach Len. (ft)       *   18.00  *   18.00  *   18.00  *
* Crit W.S. (ft)         *  282.71  * Flow Area (sq ft)     *    5.96  *   72.26  *   45.38  *
* E.G. Slope (ft/ft)     *0.023978  * Area (sq ft)          *    5.96  *   72.26  *   45.38  *
* Q Total (cfs)          *  984.30  * Flow (cfs)            *   24.03  *  701.14  *  259.12  *
* Top Width (ft)         *  107.54  * Top Width (ft)        *   12.00  *   40.00  *   55.54  *
* Vel Total (ft/s)       *    7.96  * Avg. Vel. (ft/s)      *    4.03  *    9.70  *    5.71  *
* Max Chl Dpth (ft)      *    2.90  * Hydr. Depth (ft)      *    0.50  *    1.81  *    0.82  *
* Conv. Total (cfs)      *  6356.6  * Conv. (cfs)           *   155.2  *  4527.9  *  1673.4  *
* Length Wtd. (ft)       *   18.00  * Wetted Per. (ft)      *   12.40  *   40.30  *   56.05  *
* Min Ch El (ft)         *  279.50  * Shear (lb/sq ft)      *    0.72  *    2.68  *    1.21  *
```

```
* Alpha                 *    1.20  * Stream Power (lb/ft s) *    2.90  *   26.04  *    6.92  *
* Frctn Loss (ft)       *    0.42  * Cum Volume (acre-ft)   *    0.01  *    0.37  *    0.14  *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)         *    0.03  *    0.21  *    0.16  *
*****************************************************************************************

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

CROSS SECTION


RIVER: North Ditch
REACH: 1                RS: 162.*

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  281.28     -20  281.06      -7   279.3      -6  279.13       0  278.34
       6  279.13       7  279.31      20  281.26   29.24  281.49   32.97  281.54
   39.25  281.39   47.02  280.93   50.03  280.48   52.34  280.14   54.65  279.99
   62.15  280.03   64.31  280.12   65.43  280.32   66.47  280.41   72.95   282.1
      97  283.48  108.62  284.01  151.85  285.63   266.4   286.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -20      20               18      18      18             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   106.8   266.4     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                RS: 144.*

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  280.56     -20  280.32      -7  278.48      -6  278.27       0  277.18
       6  278.27       7  278.49      20  280.52   29.93  280.77   33.94  280.78
   40.69  280.62   49.04  279.86   52.27  279.36   54.76  278.98   57.24  278.99
   65.29  280.07   67.62  280.43   68.82  280.74   69.94  280.83   76.91  282.19
  102.75  283.61  115.24  284.01  161.69  285.26   284.8   285.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -20      20               18      18      18             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   103.6   284.8     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                RS: 126.*

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  279.84     -20  279.58      -7  277.65      -6   277.4       0  276.02
```

```
       6   277.4       7  277.66      20  279.78   30.62  280.05   34.91  280.01
   42.12  279.85   51.05  278.79   54.51  278.24   57.17  277.82   59.83     278
   68.44   280.1   70.93  280.75   72.21  281.16   73.41  281.24   80.86  282.29
   108.5  283.74  121.85  284.02  171.54   284.9   303.2   285.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20              18      18      18             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   100.4   303.2     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 108.*

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -32  279.12     -20  278.84      -7  276.83      -6  276.54       0  274.86
       6  276.54       7  276.83      20  279.04   31.31  279.32   35.87  279.25
   43.56  279.07   53.07  277.71   56.76  277.12   59.58  276.66   62.41     277
   71.59  280.14   74.24  281.06   75.61  281.58   76.88  281.65   84.82  282.38
  114.25  283.87  128.47  284.03  181.38  284.53   321.6   284.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20              18      18      18             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    97.2   321.6     290       F

CROSS SECTION


RIVER: North Ditch
REACH: 1                  RS: 90

INPUT
Description: Section 90
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -32   278.4     -20   278.1      -7     276       0   273.7       7     276
      20   278.3      32   278.6      45   278.3      59     276      62   275.5
      65     276      79     282     120     284     340   284.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20              20      20      20             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
      94     340     290       T

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         *  280.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    2.35  * Wt. n-Val.            *          *   0.035  *   0.035  *
* W.S. Elev (ft)         *  277.71  * Reach Len. (ft)       *   20.00  *   20.00  *   20.00  *
```

* Crit W.S. (ft)	*	278.43	* Flow Area (sq ft)	*		*	57.20	*	23.98	*
* E.G. Slope (ft/ft)	*	0.048489	* Area (sq ft)	*		*	57.20	*	23.98	*
* Q Total (cfs)	*	984.30	* Flow (cfs)	*		*	738.86	*	245.44	*
* Top Width (ft)	*	54.56	* Top Width (ft)	*		*	34.20	*	20.36	*
* Vel Total (ft/s)	*	12.12	* Avg. Vel. (ft/s)	*		*	12.92	*	10.24	*
* Max Chl Dpth (ft)	*	4.01	* Hydr. Depth (ft)	*		*	1.67	*	1.18	*
* Conv. Total (cfs)	*	4470.0	* Conv. (cfs)	*		*	3355.4	*	1114.6	*
* Length Wtd. (ft)	*	20.00	* Wetted Per. (ft)	*		*	35.22	*	20.93	*
* Min Ch El (ft)	*	273.70	* Shear (lb/sq ft)	*		*	4.92	*	3.47	*
* Alpha	*	1.03	* Stream Power (lb/ft s)	*		*	63.50	*	35.49	*
* Frctn Loss (ft)	*	0.85	* Cum Volume (acre-ft)	*	0.00	*	0.23	*	0.08	*
* C & E Loss (ft)	*	0.01	* Cum SA (acres)	*	0.01	*	0.13	*	0.09	*

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 72.*

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	277.58	-20	277.28	-7	275.23	-6	274.94	0	273
6	274.94	7	275.23	20	277.5	30.38	277.74	32.49	277.77
41.62	277.58	46.02	277.32	52.87	276.17	54.6	275.92	56.33	275.74
60.58	275.53	63.71	275.37	66.83	276.01	77.09	280.18	81.4	281.61
124.06	283.28	306.29	283.92	353	284.1				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-20	.035	20	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	20	20	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
92.2	353	290	F

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 54.*

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	276.76	-20	276.46	-7	274.46	-6	274.2	0	272.3
6	274.2	7	274.47	20	276.7	30.78	276.93	32.97	276.95
42.47	276.76	47.03	276.34	54.15	275.13	55.95	274.89	57.75	274.8
62.17	275.06	65.41	275.24	68.66	276.02	79.31	280.13	83.79	281.22
128.12	282.56	317.47	283.44	366	283.7				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-20	.035	20	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	20	20	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
90.4	366	290	F

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 36.*

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	275.94	-20	275.64	-7	273.69	-6	273.47	0	271.6
6	273.47	7	273.7	20	275.9	31.19	276.12	33.46	276.12
43.31	275.94	48.05	275.36	55.43	274.09	57.3	273.86	59.16	273.87
63.75	274.58	67.12	275.11	70.48	276.03	81.54	280.09	86.19	280.82
132.19	281.85	328.65	282.96	379	283.3				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-20	.035	20	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	20	20	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
88.6	379	290	F

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 18.*

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	275.12	-20	274.82	-7	272.91	-6	272.73	0	270.9
6	272.73	7	272.93	20	275.1	31.59	275.31	33.95	275.29
44.16	275.12	49.06	274.38	56.72	273.04	58.65	272.83	60.58	272.93
65.34	274.11	68.82	274.98	72.31	276.04	83.77	280.04	88.59	280.43
136.25	281.13	339.82	282.48	392	282.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-20	.035	20	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	20	20	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
86.8	392	290	F

CROSS SECTION

RIVER: North Ditch
REACH: 1 RS: 0

INPUT
Description: Section 0
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	274.3	-20	274	-6	272	0	270.2	6	272
20	274.3	32	274.5	45	274.3	58	272	60	271.8
62	272	86	280	351	282	405	282.5		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-20	.035	20	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	13.33	16.67	.1	.3

```
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
      85     405     290       T

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         *  275.99  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.97  * Wt. n-Val.            *   0.035  *   0.035  *   0.035  *
* W.S. Elev (ft)         *  274.03  * Reach Len. (ft)       *   13.33  *   16.67  *   16.67  *
* Crit W.S. (ft)         *  274.81  * Flow Area (sq ft)     *    0.02  *   62.05  *   26.31  *
* E.G. Slope (ft/ft)     *0.041448  * Area (sq ft)          *    0.02  *   62.05  *   26.31  *
* Q Total (cfs)          *  984.30  * Flow (cfs)            *    0.01  *  728.70  *  255.60  *
* Top Width (ft)         *   61.02  * Top Width (ft)        *    1.13  *   38.35  *   21.55  *
* Vel Total (ft/s)       *   11.14  * Avg. Vel. (ft/s)      *    0.50  *   11.74  *    9.72  *
* Max Chl Dpth (ft)      *    3.83  * Hydr. Depth (ft)      *    0.01  *    1.62  *    1.22  *
* Conv. Total (cfs)      *  4834.8  * Conv. (cfs)           *     0.0  *  3579.3  *  1255.5  *
* Length Wtd. (ft)       *   16.64  * Wetted Per. (ft)      *    1.13  *   39.18  *   22.08  *
* Min Ch El (ft)         *  270.20  * Shear (lb/sq ft)      *    0.04  *    4.10  *    3.08  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *    0.02  *   48.12  *   29.96  *
* Frctn Loss (ft)        *    0.81  * Cum Volume (acre-ft)  *    0.00  *    0.09  *    0.03  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *    0.01  *    0.05  *    0.04  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: -33.333*

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  273.53     -20  273.27      -7  271.43      -6  271.32       0  270.03
       6  271.32       7  271.44      20  273.47   29.19  273.62   39.16  273.51
   49.12     272   50.65  271.87   50.78  271.88   52.18     272   70.57  277.33
   84.13  277.42   130.3  277.39  150.83  277.86  273.62  280.66     315  281.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20            13.33   16.67   16.67             .1       .3

CROSS SECTION


RIVER: North Ditch
REACH: 1                 RS: -66.666*

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -32  272.77     -20  272.53      -7  270.71      -6  270.64       0  269.87
       6  270.64       7  270.72      20  272.63   26.39  272.74   33.31  272.72
   40.23  271.99    41.3  271.93   41.39  271.94   42.36     272   55.14  274.67
   64.57  274.71   96.65   274.2  110.91  274.93  196.25  279.32     225  280.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -32    .035     -20    .035      20    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20      20            13.33   16.67   16.67             .1       .3

CROSS SECTION
```

RIVER: North Ditch
REACH: 1 RS: -100

INPUT
Description: Section -100 SWM Basin Inlet
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-32	272	-20	271.8	-7	270	0	269.7	7	270
20	271.8	32	272	45	272	63	271	71	272
135	280								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-32	.035	-20	.035	20	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	274.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.05	Wt. n-Val.	0.035	0.035	0.035
W.S. Elev (ft)	272.22	Reach Len. (ft)			
Crit W.S. (ft)	272.81	Flow Area (sq ft)	3.86	67.57	25.71
E.G. Slope (ft/ft)	*0.042005	Area (sq ft)	3.86	67.57	25.71
Q Total (cfs)	984.30	Flow (cfs)	15.59	830.39	138.32
Top Width (ft)	104.77	Top Width (ft)	12.00	40.00	52.77
Vel Total (ft/s)	10.13	Avg. Vel. (ft/s)	4.04	12.29	5.38
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)	0.32	1.69	0.49
Conv. Total (cfs)	4802.6	Conv. (cfs)	76.1	4051.6	674.9
Length Wtd. (ft)		Wetted Per. (ft)	12.22	40.26	52.88
Min Ch El (ft)	269.70	Shear (lb/sq ft)	0.83	4.40	1.27
Alpha	1.28	Stream Power (lb/ft s)	3.34	54.09	6.86
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)			
C & E Loss (ft)	0.03	Cum SA (acres)			

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

STORAGE AREA: SWM Basin
Volume Method : Rating Curve

Elevation	Volume
260	0
262	3
264	6.3
266	9.9
268	14
270	18.4
272	23.2

SUMMARY OF MANNING'S N VALUES

River:Outfall

Reach	River Sta.	n1	n2	n3
1	630	.03	.03	.035
1	565	.03	.03	.035
1	425	Inl Struct		
1	300	.03	.03	.035
1	0	.03	.03	.035

River:South Ditch

Reach	River Sta.	n1	n2	n3
1	1850	.035	.03	.035

```
*1              *    1720        *     .035*      .03*     .035*
*1              *    1570        *     .035*      .03*     .035*
*1              *    1512        *     .035*      .03*     .035*
*1              *    1414        *     .035*      .03*     .035*
*1              *    1365        *     .035*      .03*     .035*
*1              *    1317        *     .035*      .03*     .035*
*1              *    1265        *     .035*      .03*     .035*
*1              *    1177        *     .035*      .03*     .035*
*1              *    1063        *     .035*      .03*     .035*
*1              *    1013        *     .035*      .03*     .035*
*1              *    922         *     .035*     .035*      .03*
*1              *    820         *     .035*     .035*     .035*
*1              *    800         *Lat Struct*        *        *
*1              *    782         *     .035*     .035*      .03*
*1              *    769.*       *     .035*     .035*      .03*
*1              *    756.*       *     .035*     .035*      .03*
*1              *    743.*       *     .035*     .035*      .03*
*1              *    730.*       *     .035*     .035*      .03*
*1              *    717         *     .035*     .035*      .03*
*1              *    696.6*      *     .035*     .035*      .03*
*1              *    676.2*      *     .035*     .035*      .03*
*1              *    655.8*      *     .035*     .035*      .03*
*1              *    635.4*      *     .035*     .035*      .03*
*1              *    615         *     .035*     .035*      .03*
*1              *    600.5*      *     .035*     .035*      .03*
*1              *    586.*       *     .035*     .035*      .03*
*1              *    571.5*      *     .035*     .035*      .03*
*1              *    557         *     .035*     .035*      .03*
*1              *    542.*       *     .035*     .035*      .03*
*1              *    527.*       *     .035*     .035*      .03*
*1              *    512.*       *     .035*     .035*      .03*
*1              *    497         *     .035*     .035*      .03*
*1              *    478.*       *     .035*     .035*      .03*
*1              *    459.*       *     .035*     .035*      .03*
*1              *    440         *     .035*     .035*      .03*
*1              *    404         *     .035*     .035*      .03*
*1              *    380         *     .035*     .035*      .03*
*1              *    379         *Inl Struct*        *        *
*1              *    332         *     .035*      .03*     .035*
*1              *    305.*       *     .035*      .03*     .035*
*1              *    278         *     .035*      .03*     .035*
*1              *    264.166*    *     .035*      .03*     .035*
*1              *    250.333*    *     .035*      .03*     .035*
*1              *    236.5*      *     .035*      .03*     .035*
*1              *    222.666*    *     .035*      .03*     .035*
*1              *    208.833*    *     .035*      .03*     .035*
*1              *    195         *     .035*      .03*     .035*
****************************************************************

River:North Ditch
****************************************************************
*     Reach      *   River Sta.   *   n1    *   n2    *   n3    *
****************************************************************
*1              *    1312        *     .035*     .035*     .035*
*1              *    1245        *Inl Struct*        *        *
*1              *    1190        *     .035*      .03*     .035*
*1              *    1108        *     .035*      .03*     .035*
*1              *    987         *     .035*      .03*     .035*
*1              *    845         *     .035*      .03*     .035*
*1              *    802         *     .035*      .03*     .035*
*1              *    742         *     .035*      .03*     .035*
*1              *    662         *     .035*      .03*     .035*
*1              *    550         *     .035*      .03*     .035*
*1              *    500         *Inl Struct*        *        *
*1              *    375         *     .035*     .035*     .035*
*1              *    362.571*    *     .035*     .035*     .035*
*1              *    350.142*    *     .035*     .035*     .035*
*1              *    337.714*    *     .035*     .035*     .035*
*1              *    325.285*    *     .035*     .035*     .035*
*1              *    312.857*    *     .035*     .035*     .035*
*1              *    300.428*    *     .035*     .035*     .035*
*1              *    288         *     .035*     .035*     .035*
*1              *    266.4*      *     .035*     .035*     .035*
*1              *    244.8*      *     .035*     .035*     .035*
*1              *    223.2*      *     .035*     .035*     .035*
```

```
*1                *    201.6*      *     .035*     .035*     .035*
*1                *    180         *     .035*     .035*     .035*
*1                *    162.*       *     .035*     .035*     .035*
*1                *    144.*       *     .035*     .035*     .035*
*1                *    126.*       *     .035*     .035*     .035*
*1                *    108.*       *     .035*     .035*     .035*
*1                *    90          *     .035*     .035*     .035*
*1                *    72.*        *     .035*     .035*     .035*
*1                *    54.*        *     .035*     .035*     .035*
*1                *    36.*        *     .035*     .035*     .035*
*1                *    18.*        *     .035*     .035*     .035*
*1                *    0           *     .035*     .035*     .035*
*1                *    -33.333*    *     .035*     .035*     .035*
*1                *    -66.666*    *     .035*     .035*     .035*
*1                *    -100        *     .035*     .035*     .035*
*****************************************************************

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

SUMMARY OF REACH LENGTHS

River: Outfall
*****************************************************************
*     Reach      *   River Sta.   *  Left   * Channel *  Right  *
*****************************************************************
*1                *    630         *       65*       65*       65*
*1                *    565         *      265*      265*      265*
*1                *    425         *Inl Struct*         *         *
*1                *    300         *      300*      300*      300*
*1                *    0           *        0*        0*        0*
*****************************************************************

River: South Ditch
*****************************************************************
*     Reach      *   River Sta.   *  Left   * Channel *  Right  *
*****************************************************************
*1                *    1850        *       90*      130*      140*
*1                *    1720        *      112*      150*      170*
*1                *    1570        *      100*      126*      162*
*1                *    1512        *       68*       68*       68*
*1                *    1414        *       78*       78*       78*
*1                *    1365        *       56*       56*       56*
*1                *    1317        *       54*       54*       54*
*1                *    1265        *      130*      110*      100*
*1                *    1177        *       70*       50*       30*
*1                *    1063        *       72*       72*       72*
*1                *    1013        *       63*       63*       63*
*1                *    922         *       90*       90*       90*
*1                *    820         *       12*       12*       12*
*1                *    800         *Lat Struct*         *         *
*1                *    782         *     19.4*     19.4*     19.4*
*1                *    769.*       *     19.4*     19.4*     19.4*
*1                *    756.*       *     19.4*     19.4*     19.4*
*1                *    743.*       *     19.4*     19.4*     19.4*
*1                *    730.*       *     19.4*     19.4*     19.4*
*1                *    717         *       17*       17*       17*
*1                *    696.6*      *       17*       17*       17*
*1                *    676.2*      *       17*       17*       17*
*1                *    655.8*      *       17*       17*       17*
*1                *    635.4*      *       17*       17*       17*
*1                *    615         *     17.5*     17.5*     17.5*
*1                *    600.5*      *     17.5*     17.5*     17.5*
*1                *    586.*       *     17.5*     17.5*     17.5*
*1                *    571.5*      *     17.5*     17.5*     17.5*
*1                *    557         *    15.75*    15.75*    15.75*
*1                *    542.*       *    15.75*    15.75*    15.75*
*1                *    527.*       *    15.75*    15.75*    15.75*
*1                *    512.*       *    15.75*    15.75*    15.75*
*1                *    497         *       17*       17*       17*
*1                *    478.*       *       17*       17*       17*
*1                *    459.*       *       17*       17*       17*
*1                *    440         *        5*       20*       55*
*1                *    404         *       20*       45*       70*
*1                *    380         *       15*       25*       35*
*1                *    379         *Inl Struct*         *         *
```

```
*1                *    332          *     12.5*     17.5*       25*
*1                *    305.*        *     12.5*     17.5*       25*
*1                *    278          *    17.67*    17.67*    17.67*
*1                *    264.166*     *    17.67*    17.67*    17.67*
*1                *    250.333*     *    17.67*    17.67*    17.67*
*1                *    236.5*       *    17.67*    17.67*    17.67*
*1                *    222.666*     *    17.67*    17.67*    17.67*
*1                *    208.833*     *    17.67*    17.67*    17.67*
*1                *    195          *        0*        0*        0*
****************************************************************

River: North Ditch
****************************************************************
*     Reach       *   River Sta.    *  Left   * Channel *  Right  *
****************************************************************
*1                *    1312         *      122*      122*      122*
*1                *    1245         *Inl Struct*         *         *
*1                *    1190         *       82*       90*      115*
*1                *    1108         *      104*      104*      104*
*1                *    987          *      120*      120*      120*
*1                *    845          *       66*       66*       66*
*1                *    802          *       54*       54*       54*
*1                *    742          *       90*       90*       90*
*1                *    662          *      104*      104*      104*
*1                *    550          *      170*      150*      140*
*1                *    500          *Inl Struct*         *         *
*1                *    375          *    18.57*    18.57*    18.57*
*1                *    362.571*     *    18.57*    18.57*    18.57*
*1                *    350.142*     *    18.57*    18.57*    18.57*
*1                *    337.714*     *    18.57*    18.57*    18.57*
*1                *    325.285*     *    18.57*    18.57*    18.57*
*1                *    312.857*     *    18.57*    18.57*    18.57*
*1                *    300.428*     *    18.57*    18.57*    18.57*
*1                *    288          *     17.6*     17.6*     17.6*
*1                *    266.4*       *     17.6*     17.6*     17.6*
*1                *    244.8*       *     17.6*     17.6*     17.6*
*1                *    223.2*       *     17.6*     17.6*     17.6*
*1                *    201.6*       *     17.6*     17.6*     17.6*
*1                *    180          *       18*       18*       18*
*1                *    162.*        *       18*       18*       18*
*1                *    144.*        *       18*       18*       18*
*1                *    126.*        *       18*       18*       18*
*1                *    108.*        *       18*       18*       18*
*1                *    90           *       20*       20*       20*
*1                *    72.*         *       20*       20*       20*
*1                *    54.*         *       20*       20*       20*
*1                *    36.*         *       20*       20*       20*
*1                *    18.*         *       20*       20*       20*
*1                *    0            *    13.33*    16.67*    16.67*
*1                *    -33.333*     *    13.33*    16.67*    16.67*
*1                *    -66.666*     *    13.33*    16.67*    16.67*
*1                *    -100         *        0*        0*        0*
****************************************************************

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

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Outfall

*****************************************************
*     Reach       *   River Sta.    * Contr.  * Expan.  *
*****************************************************
*1                *    630          *       .1*       .3*
*1                *    565          *       .3*       .5*
*1                *    425          *Inl Struct*         *
*1                *    300          *       .1*       .3*
*1                *    0            *       .1*       .3*
*****************************************************
River: South Ditch

*****************************************************
*     Reach       *   River Sta.    * Contr.  * Expan.  *
*****************************************************
*1                *    1850         *       .1*       .3*
*1                *    1720         *       .1*       .3*
```

```
*1                *    1570    *       .1*       .3*
*1                *    1512    *       .1*       .3*
*1                *    1414    *       .1*       .3*
*1                *    1365    *       .1*       .3*
*1                *    1317    *       .1*       .3*
*1                *    1265    *       .1*       .3*
*1                *    1177    *       .1*       .3*
*1                *    1063    *       .1*       .3*
*1                *    1013    *       .1*       .3*
*1                *    922     *       .1*       .3*
*1                *    820     *       .1*       .3*
*1                *    800     *Lat Struct*        *
*1                *    782     *       .1*       .3*
*1                *    769.*   *       .1*       .3*
*1                *    756.*   *       .1*       .3*
*1                *    743.*   *       .1*       .3*
*1                *    730.*   *       .1*       .3*
*1                *    717     *       .1*       .3*
*1                *    696.6*  *       .1*       .3*
*1                *    676.2*  *       .1*       .3*
*1                *    655.8*  *       .1*       .3*
*1                *    635.4*  *       .1*       .3*
*1                *    615     *       .1*       .3*
*1                *    600.5*  *       .1*       .3*
*1                *    586.*   *       .1*       .3*
*1                *    571.5*  *       .1*       .3*
*1                *    557     *       .1*       .3*
*1                *    542.*   *       .1*       .3*
*1                *    527.*   *       .1*       .3*
*1                *    512.*   *       .1*       .3*
*1                *    497     *       .1*       .3*
*1                *    478.*   *       .1*       .3*
*1                *    459.*   *       .1*       .3*
*1                *    440     *       .1*       .3*
*1                *    404     *       .3*       .5*
*1                *    380     *       .3*       .5*
*1                *    379     *Inl Struct*        *
*1                *    332     *       .1*       .3*
*1                *    305.*   *       .1*       .3*
*1                *    278     *       .1*       .3*
*1                *    264.166**       .1*       .3*
*1                *    250.333**       .1*       .3*
*1                *    236.5*  *       .1*       .3*
*1                *    222.666**       .1*       .3*
*1                *    208.833**       .1*       .3*
*1                *    195     *       .1*       .3*
*****************************************************
River: North Ditch

*****************************************************
*     Reach       *   River Sta.    * Contr.  * Expan.  *
*****************************************************
*1                *    1312    *       .3*       .5*
*1                *    1245    *Inl Struct*        *
*1                *    1190    *       .3*       .5*
*1                *    1108    *       .1*       .3*
*1                *    987     *       .1*       .3*
*1                *    845     *       .1*       .3*
*1                *    802     *       .1*       .3*
*1                *    742     *       .1*       .3*
*1                *    662     *       .1*       .3*
*1                *    550     *       .3*       .5*
*1                *    500     *Inl Struct*        *
*1                *    375     *       .3*       .5*
*1                *    362.571**       .3*       .5*
*1                *    350.142**       .3*       .5*
*1                *    337.714**       .3*       .5*
*1                *    325.285**       .3*       .5*
*1                *    312.857**       .3*       .5*
*1                *    300.428**       .3*       .5*
*1                *    288     *       .1*       .3*
*1                *    266.4*  *       .1*       .3*
*1                *    244.8*  *       .1*       .3*
*1                *    223.2*  *       .1*       .3*
*1                *    201.6*  *       .1*       .3*
```

```
*1                *    180      *        .1*        .3*
*1                *    162.*    *        .1*        .3*
*1                *    144.*    *        .1*        .3*
*1                *    126.*    *        .1*        .3*
*1                *    108.*    *        .1*        .3*
*1                *    90       *        .1*        .3*
*1                *    72.*     *        .1*        .3*
*1                *    54.*     *        .1*        .3*
*1                *    36.*     *        .1*        .3*
*1                *    18.*     *        .1*        .3*
*1                *    0        *        .1*        .3*
*1                *    -33.333**        .1*        .3*
*1                *    -66.666**        .1*        .3*
*1                *    -100     *        .1*        .3*
*****************************************************
```

Profile Output Table - Standard Table 1

River	Reach	River Sta	Profile	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)	Froude # Chl
South Ditch	1	1850	PF 1	334.5	282.0	286.9	285.2	287.1	0.001308	3.7	93.0	38.5	0.37
South Ditch	1	1720	PF 1	334.5	281.8	286.7		286.9	0.001377	3.8	91.7	40.8	0.38
South Ditch	1	1570	PF 1	334.5	281.6	286.4		286.7	0.001714	4.1	83.6	34.3	0.42
South Ditch	1	1512	PF 1	334.5	281.5	286.2		286.5	0.001683	3.9	88.8	47.5	0.41
South Ditch	1	1414	PF 1	334.5	281.4	286.1		286.3	0.001892	4.0	83.2	32.6	0.43
South Ditch	1	1365	PF 1	334.5	281.3	285.9		286.2	0.002178	4.2	79.1	30.4	0.46
South Ditch	1	1317	PF 1	334.5	281.2	285.7		286.0	0.002366	4.4	76.4	29.6	0.48
South Ditch	1	1265	PF 1	334.5	281.2	285.5		285.9	0.003035	4.9	68.9	27.5	0.54
South Ditch	1	1177	PF 1	334.5	281.0	285.2		285.6	0.002633	4.7	74.6	35.6	0.51
South Ditch	1	1063	PF 1	371.0	280.8	284.8		285.4	0.005099	6.3	60.1	26.8	0.70
South Ditch	1	1013	PF 1	371.0	280.6	284.4		285.0	0.005107	6.0	62.1	28.5	0.70
South Ditch	1	922	PF 1	371.0	280.4	284.1	284.1	284.6	0.006537	5.9	78.2	93.3	0.68
South Ditch	1	820	PF 1	439.1	280.0	282.6	282.9	283.6	0.020305	9.7	63.0	62.8	1.18
South Ditch	1	800		Lat Struct									
South Ditch	1	782	PF 1	432.4	280.0	282.0	282.4	283.5	0.044512	12.2	51.5	76.8	1.68
South Ditch	1	717	PF 1	368.0	278.0	280.4	280.6	281.2	0.018740	8.6	56.9	61.0	1.11
South Ditch	1	615	PF 1	313.7	276.3	278.4	278.7	279.3	0.023250	9.1	45.2	48.4	1.22
South Ditch	1	557	PF 1	300.4	273.7	275.9	276.3	277.3	0.030051	10.3	37.5	45.8	1.38
South Ditch	1	497	PF 1	300.4	271.7	273.9	274.3	275.3	0.031838	10.6	35.8	40.4	1.43
South Ditch	1	440	PF 1	300.4	270.2	272.1	272.6	273.5	0.037876	10.9	36.3	45.5	1.53
South Ditch	1	404	PF 1	300.4	267.5	272.2	269.3	272.2	0.000406	1.8	178.3	72.9	0.18
South Ditch	1	380	PF 1	300.4	271.0	272.0	271.7	272.2	0.005086	3.1	99.4	153.3	0.53
South Ditch	1	379		Inl Struct									
South Ditch	1	332	PF 1	300.4	266.2	272.0	268.7	272.1	0.000235	1.8	196.5	165.0	0.16
South Ditch	1	278	PF 1	421.5	266.1	271.9		272.0	0.000482	2.6	206.9	162.6	0.23
South Ditch	1	195	PF 1	560.2	266.0	271.7	269.5	271.9	0.001084	3.8	167.7	110.4	0.35
Outfall	1	630	PF 1	1864.4	260.0	271.7	260.9	271.7	0.000003	0.4	4450.7	500.8	0.02
Outfall	1	565	PF 1	1864.4	260.0	271.7	260.9	271.7	0.000003	0.4	4384.3	518.2	0.02
Outfall	1	425		Inl Struct									
Outfall	1	300	PF 1	1864.4	240.0	265.0	241.6	265.0	0.000001	0.3	6187.6	335.0	0.01
Outfall	1	0	PF 1	1864.4	240.0	265.0	241.6	265.0	0.000001	0.3	6187.5	335.0	0.01
North Ditch	1	1312	PF 1	646.5	284.0	287.2	285.6	287.2	0.000118	0.8	1026.6	700.5	0.09
North Ditch	1	1245		Inl Struct									
North Ditch	1	1190	PF 1	646.5	283.0	287.2		287.2	0.000120	1.1	759.0	385.5	0.11
North Ditch	1	1108	PF 1	871.7	282.4	287.1		287.2	0.000447	2.2	692.3	497.8	0.21
North Ditch	1	987	PF 1	871.7	281.5	287.1		287.1	0.000291	2.3	634.6	439.9	0.19
North Ditch	1	845	PF 1	946.3	281.2	286.9		287.1	0.000742	3.6	408.5	173.6	0.30
North Ditch	1	802	PF 1	946.3	281.2	286.8		287.0	0.001055	4.3	335.9	140.0	0.36
North Ditch	1	742	PF 1	946.3	280.9	286.8		286.9	0.000632	3.4	410.4	210.3	0.28
North Ditch	1	662	PF 1	946.3	280.8	286.7		286.9	0.001001	4.2	353.1	219.8	0.35
North Ditch	1	550	PF 1	946.3	280.5	286.4	285.6	286.7	0.001808	5.6	260.2	133.6	0.46
North Ditch	1	500		Inl Struct									
North Ditch	1	375	PF 1	984.3	281.0	285.8	285.7	286.4	0.006696	7.5	186.2	126.8	0.73
North Ditch	1	288	PF 1	984.3	280.1	284.7	284.7	285.5	0.009067	7.5	163.1	114.2	0.82
North Ditch	1	180	PF 1	984.3	279.5	282.4	282.7	283.6	0.023978	9.7	123.6	107.5	1.27
North Ditch	1	90	PF 1	984.3	273.7	277.7	278.4	280.1	0.048489	12.9	81.2	54.6	1.76
North Ditch	1	0	PF 1	984.3	270.2	274.0	274.8	276.0	0.041448	11.7	88.4	61.0	1.63
North Ditch	1	-100	PF 1	984.3	269.7	272.2	272.8	274.3	0.042005	12.3	97.1	104.8	1.67

Profile Output Table - Standard Table 2

River	Reach	River Sta	Profile	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)
South Ditch	1	1850	PF 1	287.09	286.87	0.21	0.17	0.00	3.05	330.50	0.94	38.53
South Ditch	1	1720	PF 1	286.91	286.69	0.22	0.23	0.00	2.88	331.10	0.52	40.80
South Ditch	1	1570	PF 1	286.68	286.42	0.25	0.21	0.01	0.67	333.67	0.16	34.32
South Ditch	1	1512	PF 1	286.46	286.22	0.23	0.12	0.00	1.74	332.73	0.03	47.51
South Ditch	1	1414	PF 1	286.34	286.08	0.25	0.16	0.00	0.01	334.49	0.00	32.63
South Ditch	1	1365	PF 1	286.18	285.90	0.28	0.13	0.00		334.50		30.41
South Ditch	1	1317	PF 1	286.05	285.75	0.30	0.14	0.01		334.50		29.58
South Ditch	1	1265	PF 1	285.90	285.53	0.37	0.31	0.01		334.50		27.48
South Ditch	1	1177	PF 1	285.58	285.24	0.34	0.18	0.03		324.87	9.63	35.61
South Ditch	1	1063	PF 1	285.37	284.76	0.61	0.37	0.01		369.17	1.83	26.83
South Ditch	1	1013	PF 1	284.99	284.43	0.56	0.36	0.02		370.61	0.39	28.49
South Ditch	1	922	PF 1	284.61	284.11	0.50	0.73	0.01	25.80	335.85	9.35	93.29
South Ditch	1	820	PF 1	283.58	282.56	1.02	0.98	0.05	121.86	250.35	66.89	62.82
South Ditch	1	800		Lat Struct								
South Ditch	1	782	PF 1	283.54	282.03	1.50	0.00	0.05	96.52	225.50	110.44	76.81
South Ditch	1	717	PF 1	281.21	280.39	0.82	0.36	0.00	72.37	210.08	85.56	61.02
South Ditch	1	615	PF 1	279.31	278.40	0.91	0.39	0.00	86.88	174.33	52.46	48.43
South Ditch	1	557	PF 1	277.27	275.93	1.34	0.52	0.01	49.39	229.49	21.52	45.83
South Ditch	1	497	PF 1	275.31	273.89	1.41	0.50	0.00	58.35	225.85	16.20	40.37
South Ditch	1	440	PF 1	273.50	272.15	1.36	0.63	0.01	75.15	189.70	35.54	45.45
South Ditch	1	404	PF 1	272.23	272.18	0.05	0.04	0.03	7.17	293.21	0.02	72.87
South Ditch	1	380	PF 1	272.16	272.02	0.14			36.29	264.11		153.31
South Ditch	1	379		Inl Struct								
South Ditch	1	332	PF 1	272.06	272.01	0.05	0.00	0.00	9.50	274.75	16.15	165.00
South Ditch	1	278	PF 1	272.04	271.94	0.10	0.01	0.01	11.58	388.28	21.64	162.61
South Ditch	1	195	PF 1	271.93	271.71	0.22			5.47	542.19	12.54	110.42
Outfall	1	630	PF 1	271.72	271.71	0.00	0.00	0.00		1861.30	3.10	500.81
Outfall	1	565	PF 1	271.72	271.71	0.00				1860.88	3.52	518.18
Outfall	1	425		Inl Struct								
Outfall	1	300	PF 1	265.00	265.00	0.00	0.00	0.00		1864.40		335.00
Outfall	1	0	PF 1	265.00	265.00	0.00				1864.40		335.00
North Ditch	1	1312	PF 1	287.20	287.19	0.01			133.65	25.70	487.16	700.48
North Ditch	1	1245		Inl Struct								
North Ditch	1	1190	PF 1	287.19	287.17	0.01	0.02	0.01	161.69	70.35	414.46	385.52
North Ditch	1	1108	PF 1	287.16	287.13	0.03	0.04	0.00	309.72	117.70	444.27	497.82
North Ditch	1	987	PF 1	287.12	287.08	0.04	0.05	0.01	170.48	248.21	453.01	439.95
North Ditch	1	845	PF 1	287.06	286.94	0.12	0.06	0.01	245.00	399.65	301.65	173.58
North Ditch	1	802	PF 1	286.99	286.82	0.17	0.04	0.02	292.12	455.90	198.29	140.00
North Ditch	1	742	PF 1	286.93	286.83	0.11	0.07	0.01	255.15	375.10	316.05	210.25
North Ditch	1	662	PF 1	286.85	286.68	0.17	0.14	0.02	295.97	498.12	152.22	219.82
North Ditch	1	550	PF 1	286.70	286.36	0.34			204.81	601.91	139.58	133.61
North Ditch	1	500		Inl Struct								
North Ditch	1	375	PF 1	286.41	285.79	0.62	0.12	0.01	137.52	596.08	250.70	126.83
North Ditch	1	288	PF 1	285.46	284.73	0.73	0.16	0.00	31.14	774.68	178.48	114.22
North Ditch	1	180	PF 1	283.58	282.40	1.18	0.42	0.02	24.03	701.14	259.12	107.54
North Ditch	1	90	PF 1	280.06	277.71	2.35	0.85	0.01		738.86	245.44	54.56
North Ditch	1	0	PF 1	275.99	274.03	1.97	0.81	0.00	0.01	728.70	255.60	61.02
North Ditch	1	-100	PF 1	274.27	272.22	2.05	0.56	0.03	15.59	830.39	138.32	104.77