LOMR DOCUMENTATION AND MODELING

FOR

BULLARD WASH

FROM

ROOSEVELT IRRIGATION DISTRICT CANAL

TO

INDIAN SCHOOL ROAD

LOMR DATE: March 3, 1995

Engineering by: The WLB Group

Federal Emergency Management Agency

Washington, D.C. 20472

MAR 0 3 1995

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Phoenix, AZ 85009

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IN REPLY REFER TO:
Case No.: 95-09-266P

The Honorable Carl Gow
Mayor, City of Goodyear
629 North Litchfield Road
Goodyear, Arizona 85338

Community: City of Goodyear, Arizona
Community No.: 040046

106

Dear Mayor Gow:

This is in response to a letter dated February 7, 1995, from Mr. Mark T. Gavan, P.E., R.L.S., Project Manager, The WLB Group Inc., regarding the effective Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. With his February 7 letter, Mr. Gavan submitted additional data in support of his February 1, 1995, request for a revision to the effective FIS and FIRM for Bullard Wash, from the Roosevelt Irrigation District Canal to Indian School Road. This revision is based on a detailed hydraulic analysis of this reach of Bullard Wash, which was previously unstudied. All data required to review this revision request were submitted by Mr. Gavan with his February 1 and February 7 letters.

We have completed our review of the data submitted and have determined that the items listed below represent the best available data for the flooding source listed above.

- Sheets 1 and 2 of the as-built topographic work maps entitled "Bullard Wash FIS Work Map," prepared by B & R Engineering, dated January 30, 1995

- HEC-2 hydraulic model, entitled "White Tanks/Agua Fria Drainage Master Study, 100-Year Storm Event Floodplain Run File: 'BULL-RID.H2I,' Bullard Wash, Wash 10, Roosevelt Irrigation District Canal (RID Canal) to Indian School Road Reach. Sections 6.320-7.753," dated January 25, 1995

C/ Goodyear, AZ
March 3, 1995
95-01-2[illegible]

We will include this information in our next physical map revision of the FIRM for Maricopa County, Arizona and Incorporated Areas. The tentative date for the next preliminary FIRM is fall 1996. In the interim, your community may use these data in its floodplain management programs.

If you have any questions regarding this matter, please contact Mr. John Magnotti of our staff in Washington, DC, either by telephone at (202) 646-3932 or by facsimile at (202) 646-4596.

Sincerely,

Michael K. Buckley, P.E., Chief
Hazard Identification Branch
Mitigation Directorate

cc: Mr. Ron Nevitt
Floodplain Administration
Flood Control District of Maricopa County

Mr. Mark T. Gavan, P.E., R.L.S.
Project Manager
The WLB Group Inc.

Transmittal

Stantec Consulting Inc.
8211 S 48th Street
Phoenix, Arizona 85044-5355 USA
Tel: (602) 438-2200 Fax: (602) 431-9562
www.stantec.com

Stantec

To:	FCDMC	Sender:	Ghassan Aouad
	2801 W. Durango	Delivered:	By mail
	Phoenix, AZ 85009	☐x	For Your Information
Attention:	Mr. Amir Motamedi, PE	☐	For Your Approval
		☐	For Your Review
Date:	11-13-02	☐	As Requested
File:	81500260		

FLOOD CONTROL DISTRICT
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TECH & ... FINANCE
PIO LANDS
ADMIN S & M
REG P & PM
✓ENG FILE
CONTRACTS
ROUTING
GLJ

Reference:Bullard Wash Floodplain

Quantity	Date	Description

Remarks:

Dear Amir,

Included is a copy of what I received from FEMA regarding the CLOMR work for the segment of Bullard Wash upstream of section 6.320 (just south of Thomas Rd to Indian School Rd). This work was prepared by WLB Group and B&R Engineering. I think that the peak flows used in this CLOMR were based on the hydrology of the original White Tanks ADMS prepared by WLB Group.

If you have any questions, please call me at 602-438-2200

BULLARD WASH
INDIAN SCHOOL
TO THOMAS RD.

Greg

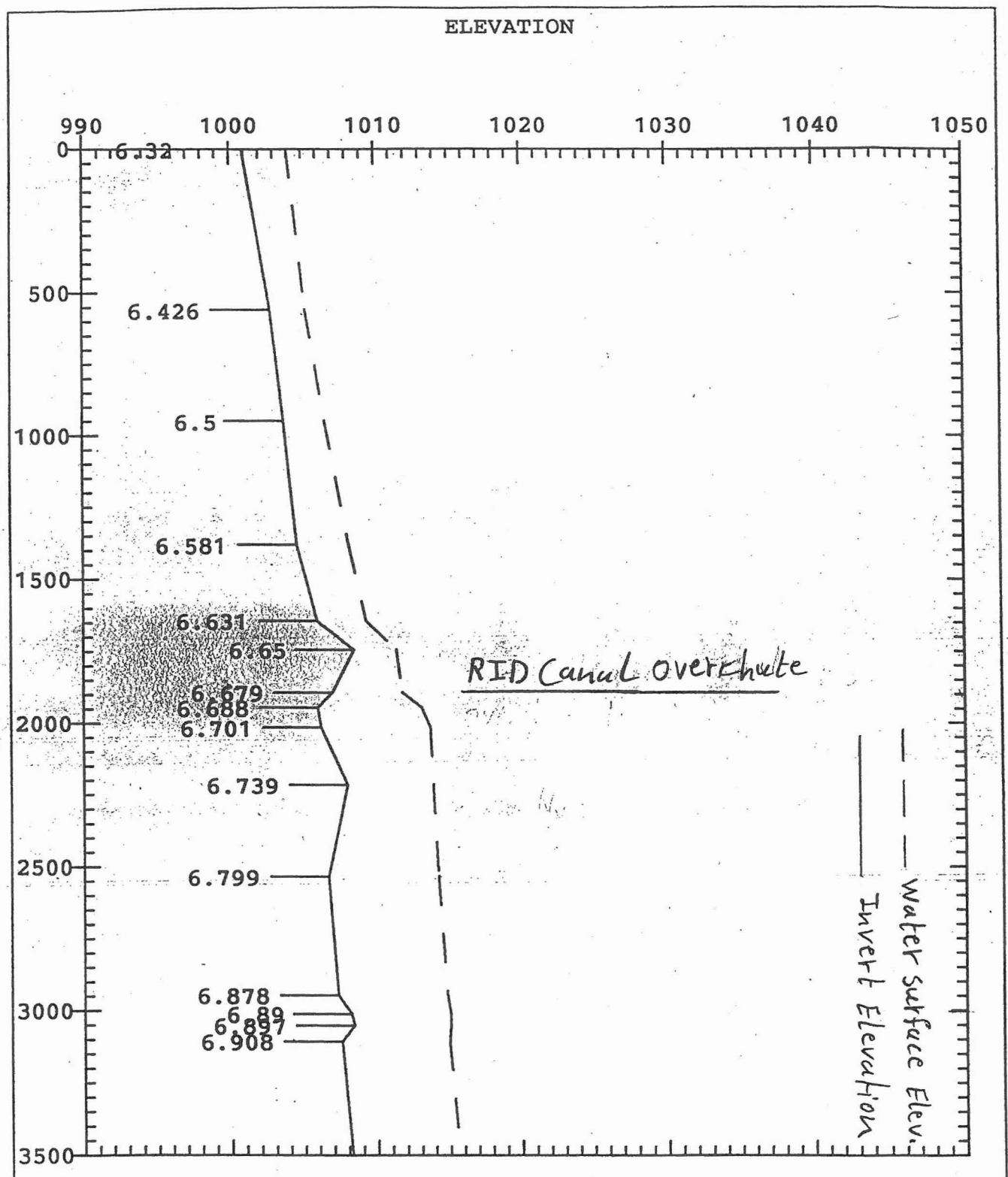
STANTEC CONSUL

For URS. Would like to get it back for our files once they are done.

Thna

Copy:

Transmittal 97.dot



WASH 10 - BULLARD WASH

RID Canal To Indian School Road

MICHAEL BAKER, JR., INC.
RECEIVED
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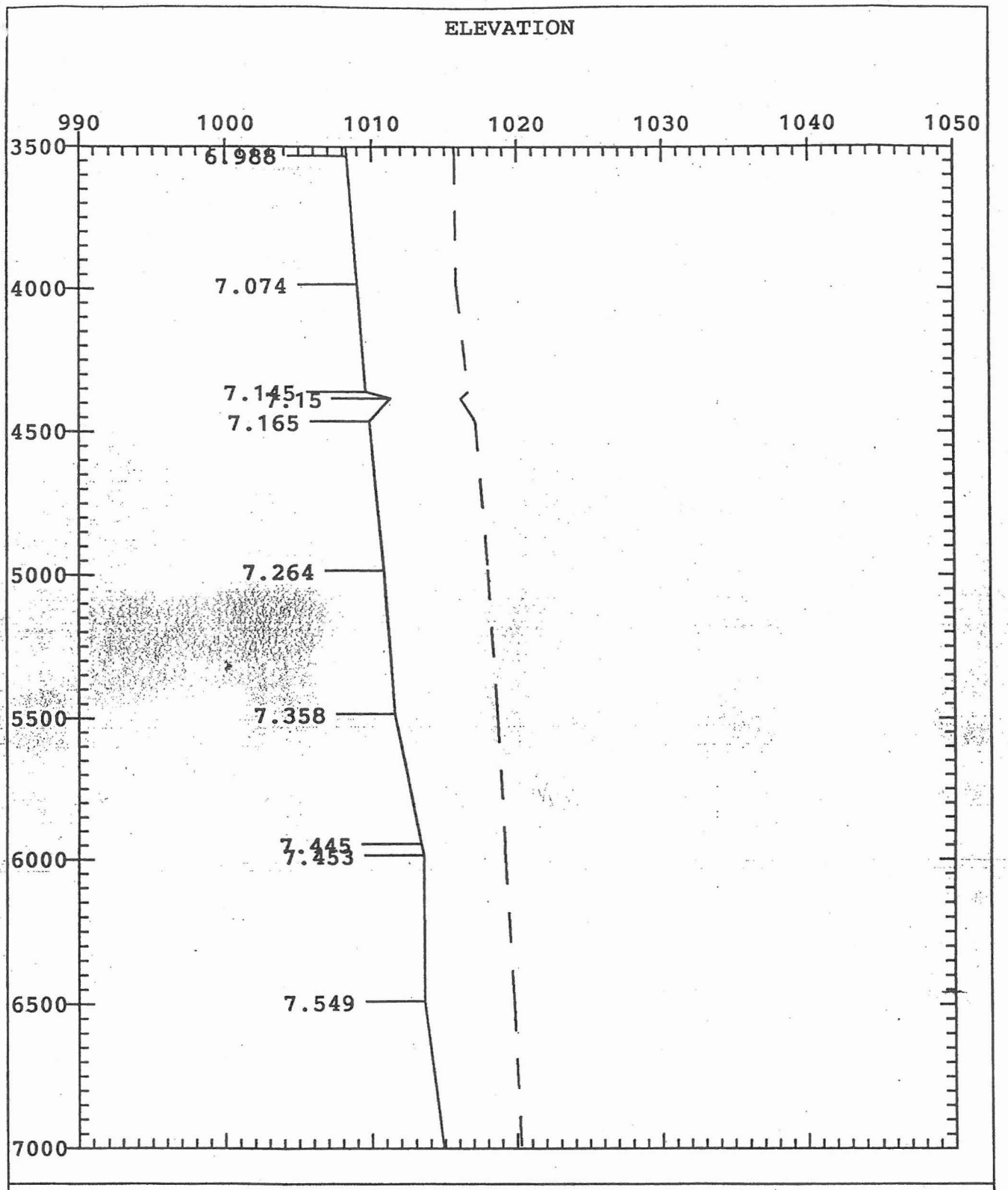
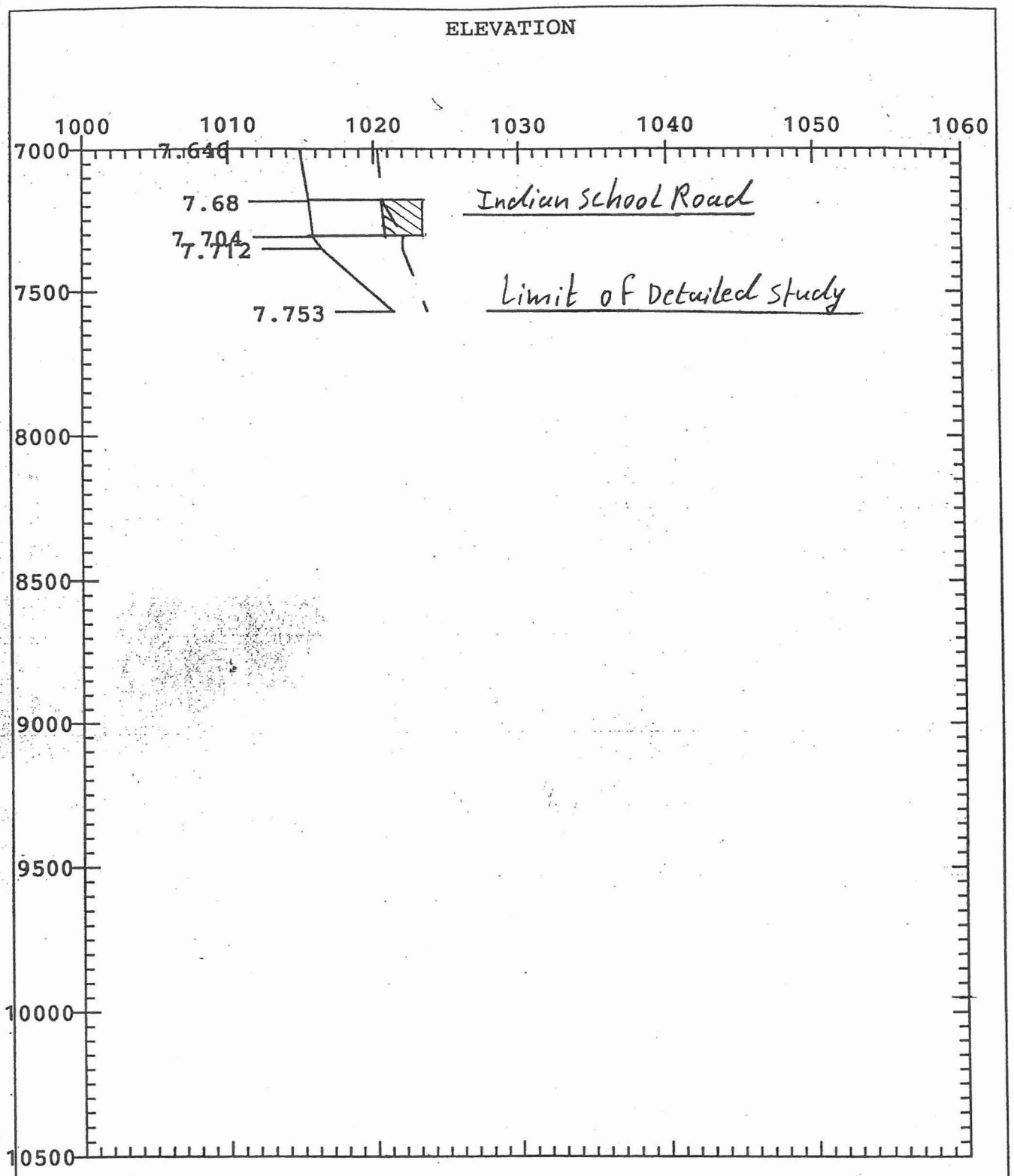
ALEXANDRIA, VIRGINIA



WASH 10 - BULLARD WASH

RID Canal To Indian School Road



WASH 10 - BULLARD WASH

RID Canal To Indian School Road

Bull_rid.h20

FLOODWAY DATA, BULLARD WASH,WASH 10,ROO
PROFILE NO. 2

	STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
L	6.320	650.	2019.	2.3	1004.6	1004.0	.6
	6.426	600.	1631.	2.9	1005.8	1005.3	.5
	6.500	585.	1788.	2.6	1006.8	1006.5	.3
	6.581	355.	1222.	3.8	1008.1	1008.1	.0
	6.631	218.	669.	7.0	1009.3	1009.3	.0
	6.650	167.	482.	9.7	1011.4	1011.4	.0
	6.679	92.	439.	10.7	1011.8	1011.8	.0
	6.688	92.	650.	7.2	1013.1	1013.1	.0
	6.701	187.	954.	4.3	1013.7	1013.7	.0
	6.739	200.	880.	4.6	1013.9	1013.9	.0
M	6.799	148.	768.	5.3	1014.2	1014.2	.0
	6.878	154.	796.	5.1	1014.8	1014.8	.0
	6.890	164.	898.	4.6	1014.9	1015.0	-.1
	6.897	164.	870.	4.7	1014.9	1015.0	-.1
N	6.908	161.	719.	5.7	1015.0	1015.0	.0
	6.988	307.	1400.	2.9	1015.7	1015.7	.0
O	7.074	173.	680.	6.0	1015.8	1015.8	.0
	7.145	217.	930.	4.4	1016.7	1016.7	.0
	7.150	156.	477.	8.6	1016.1	1016.1	.0
P	7.165	161.	771.	5.3	1017.2	1017.2	.0
	7.264	239.	908.	4.5	1018.0	1018.0	.0
Q	7.358	234.	910.	4.5	1018.7	1018.7	.0
	7.445	175.	923.	4.4	1019.2	1019.2	.0
	7.453	175.	892.	4.6	1019.2	1019.2	.0
R	7.549	267.	1031.	4.0	1019.8	1019.8	.0
	7.646	137.	515.	7.9	1020.3	1020.3	.0
	7.680	110.	567.	7.3	1020.7	1020.7	.0
S	7.704	169.	858.	4.8	1022.1	1022.1	.0
	7.712	185.	766.	5.4	1022.0	1022.0	.0
T	7.753	464.	621.	6.6	1023.7	1023.7	.0

Floodplain		Topwid	CWSEL	Q
L	6.320	477.4	1003.99	4662 cfs
				3400 cfs

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    25JAN95    TIME   00:38:06 *
 *****************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                   X
X     X  X        X     X             X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

25JAN95 00:38:06 PAGE 1

THIS RUN EXECUTED 25JAN95 00:38:06

```
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
```

from BADL 3/3/95

```
T1      WHITE TANKS / AGUA FRIA AREA DRAINAGE MASTER STUDY
T2      100 - YEAR STORM EVENT   FLOODPLAIN RUN FILE: "BULL-RID.H2I"
T3      BULLARD WASH,WASH 10,ROOSEVELT IRRIGATION DISTRICT CANAL (RID CANAL)
T4      TO INDIAN SCHOOL ROAD REACH. SECTIONS   6.320 - 7.753
T5      100-YEAR FLOODPLAIN PROFILE
T6      PEAK FLOWS ARE FROM WHITE TANKS/AGUA FRIA ADMS HEC1 RUN (WTADMS.24)

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0        0        0        0        0    1003.99      0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      1        0        0        0        0        0        0        0        0        0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38       43        1       53       21       22       54       51        4        8
     42        5       26        0      110        0      200

QT        2     4662     4662
NC      .07      .07      .04       .1       .3
ET                         9.1                                                   9650    10300

          ***NOTE: THIS REACH IS A SEGMENT OF BULLARD WASH (WASH 10)
             DEFINED IN THE WHITE TANKS AGUA FRIA AREA DRAINAGE MASTER STUDY.
             THE FLOODPLAIN AND FLOODWAY LIMITS WERE LEFT OFF THE CORRESPON-
             DING MAPS BECAUSE THIS AREA WAS UNDER CONSTRUCTION AT THE TIME
             OF THE STUDY.THIS NOW REFLECTS THE AS BUILT CONDITIONS.***

             Q = Q AT CP286       (= 4662 CFS).

X1    6.320       13     9900    10100
GR     1008     8860     1006     9230     1004     9555   1002.5     9660     1002     9670
GR   1001.3     9900   1000.9    10000   1001.4    10100     1002    10480   1003.1    10800
GR     1004    11030     1006    11060     1007    11220

ET                         9.1                                                   9700    10300
X1    6.426       13     9935    10100      560      560      560
GR   1008.0     8780     1006     9210     1006     9460   1004.0     9555   1003.4     9660
GR   1003.2     9760   1003.0     9860   1002.8     9935   1002.8    10000     1003    10100
GR   1004.0    10635   1006.0    10720   1006.8    11220
```

1

25JAN95 00:38:06 PAGE 2

```
ET                         0.4

             Sections 6.500 thru 6.650, manually or by X3 card, are truncated
             lt. and rt. to simulate 1:4 flow expansion d.s. of overchute.
             Floodway delineation is coincident with flow expansion.

X1    6.500       12     9960    10100      390      390      390
X3                          9650                    10235
GR     1010     8860     1008     9245     1006     9378   1004.0     9656   1003.9     9760
GR   1003.7     9860   1003.8     9960   1003.8    10000   1003.8    10100   1004.0    10280
     1006.0    10775     1008    10860
```

```
ET                          0.4
X1     6.581        10      9940      10040       430       430       430
X3                            9805                 10160
GR      1010      9135      1008       9405      1006      9515    1004.8      9840    1004.6      9940
GR    1004.6     10000    1004.6      10040      1006     10650    1008.0     10880    1010.0     11240

NC       .07       .07       .04         .1        .3
ET                          0.4
X1     6.631         8      9510      10130       263       263       263
X3                            9891                 10109
GR      1010      9215      1008       9510      1006      9800    1006.4     10000    1006.0     10130
GR      1006     10485      1008      10963      1010     11260

NC                          .03
ET                          0.4
X1     6.650         6      9916      10084       100       100       100
GR    1013.0      9916    1008.5       9917    1008.5      9953    1008.5     10073    1008.5     10083
GR    1013.0     10084

NC       .03       .03      .016         .3        .5
QT         2      4703      4703
ET                          0.4

                Q = Q AT CP268        (= 4703 CFS).

                Immediately downstream of RID Canal overchute
                Top of overchute = 1013.0

X1     6.679         5      9954      10046       150       150       150
GR    1013.0      9954    1007.0     9954.1    1007.0     10000    1007.0   10045.9    1013.0     10046

ET                          9.1                                                          9954      10046

                Upstream (North) side of RID Canal overchute
                Top of overchute = 1013.0

X1     6.688         5      9954      10046        52        52        52
GR    1013.1      9954    1006.0     9954.1    1006.0     10000    1006.0   10045.9    1013.1     10046
```



```
QT         2      4088      4088
NC       .03       .03       .03         .1        .3

                Q = Q AT 1I268        (= 4088 CFS).  ~~3~~347

                Section manually truncated at 10070 right to eliminate
                ineffective flow area in the right overbank.

X1     6.701         8      9880      10070        70        70        70
GR    1014.0      9880.0  1011.61       9907   1011.25      9928    1006.49      9969   1006.23     10000
GR    1007.1      10043   1009.12    10069.9      1014     10070

                Future Verde Lane (low water crossing-proposed configuration)
                Section manually truncated at 9880 left and 10080 right to
                eliminate ineffective flow areas in the left and right overbanks

X1     6.739         9      9880      10080       200       200       200
GR    1014.0      9880     1011.6     9880.1    1008.9      9950    1008.0      9975    1008.0     10000
GR    1008.0     10010     1008.9      10040    1012.8   10079.9      1014     10080

X1     6.799         9      9919      10090       319       319       319
GR    1016.6      9919    1008.04      9956   1007.36      9990   1006.68      9996   1006.68     10004
GR    1007.3     10014    1008.21     10042   1014.31     10078    1015.0     10090

ET                          9.1                                                          9955      10110
X1     6.878         8      9955      10135       412       412       412
GR    1015.0      9955    1007.30      9996   1007.30     10004    1009.0     10078    1013.0     10100
GR    1014.0     10118     1014.6     10125   1015.00     10135

ET                          9.1                                                          9947      10111

                Robson Circle South south curb line (small dia. cross pipes
                ignored)
                Section manually truncated at 9920 left and 10130 right to
                eliminate ineffective flow area in overbanks.
                Note 0.91 horz. modification factor

X1     6.890        11      9920      10130       110        20        65      0.91
GR    1016.0    9919.9    1012.16      9920   1009.87      9985   1008.99     10000   1008.50     10005
GR    1008.2     10035     1008.6   10067.5   1009.10   10072.5   1010.12     10100   1011.12     10130
GR    1016.0   10130.1

ET                          9.1                                                          9947      10111

                Robson Circle South north curb line (repeated section)
                Section manually truncated at 9920 left and 10130 right to
                eliminate ineffective flow area in overbanks.
```

Note 0.91 horz. modification factor

```
X1    6.897      11      9920     10130       40       40       40     0.91      0.2
GR   1016.0   9919.9   1012.16      9920  1009.87     9985  1008.99    10000  1008.50    10005
GR   1008.2     10035    1008.6   10067.5  1009.10  10072.5  1010.12    10100  1011.12    10130
GR   1016.0   10130.1
```

Section manually truncated at 9940 left to eliminate
ineffective flow area in far left overbank.

```
X1    6.908       8      9940     10120       40      110       55
GR   1018.0    9940    1009.0      9990  1007.55     9996  1007.55    10004   1009.0    10060
GR   1010.0   10070    1014.0     10100   1015.0    10120

X1    6.988      15      9770     10170      450      370      425
X3                              9860
GR   1016.0    9770    1015.0      9780   1014.0     9800   1014.0     9830   1015.0     9845
GR   1015.6    9860    1015.0      9880  1010.41     9961  1009.39     9984  1008.76     9990
GR   1008.3    9996    1008.3     10004  1009.41    10060  1009.91    10120  1016.08    10170

X1    7.074      11      9920     10106      450      470      455
GR   1016.0    9920    1015.0      9950  1010.23     9987  1009.01     9996  1009.01    10004
GR   1009.7   10009    1010.0     10030  1010.59    10065  1011.58    10075  1015.26    10095
GR   1016.5   10106
```

Golf Cart Path
(Small diameter cross culverts ignored)
Note 0.82 horz. modification factor

```
X1    7.145       9      9870     10140      310      460      375     .82
GR   1017.0    9870    1016.0      9880   1011.0     9970  1009.60     9992  1009.60    10008
GR   1011.0   10050    1012.0     10090   1016.0    10135   1017.0    10140
```

Upstream end of golf cart path (manually truncated at 9940 left
to eliminate ineffective flow area in overbank).
Note 0.82 horz. modification factor

```
X1    7.150      10      9938     10140       24       24       24     .82
GR   1018.0    9938    1018.0      9939   1018.0     9940   1016.0     9941  1012.00     9990
GR   1012.0    9992    1011.3     10008   1011.3    10048   1016.0    10130  1017.00    10140

ET                       9.1                                                   9960    10125
X1    7.165      11      9960     10155       80       45       80
GR   1018.0    9960    1011.11     9990  1010.74     9994  1009.86     9996  1010.15    10004
GR   1010.9   10010    1011.18    10040  1011.72    10082  1014.28    10100   1015.0    10125
GR   1017.5   10155
```



```
X1    7.264      18      9700     10105      520      520      520
X3                              9860
GR   1019.0    9700    1018.0      9710   1017.0     9720   1016.0     9730   1015.0     9755
GR   1017.0  9840.0    1017.5      9860   1016.0     9900  1015.02     9950  1013.70     9970
GR   1011.3    9991   1010.85      9996   1011.1    10004  1011.49    10006  1012.00    10035
GR   1012.9   10065   1014.71     10080   1019.0    10105

X1    7.358      11    9880.0     10127      500      500      500
GR   1019.0  9880.0    1015.3      9950  1014.95     9975  1012.53     9990  1011.59     9996
GR   1011.8   10004    1012.3     10007  1012.81    10045  1013.06    10075  1016.66    10100
GR   1019.4   10127
```

Robson Cir. North south curb line (small dia. cross pipes
ignored)
Section manually truncated at 9975 left and at 10155 right to
eliminate ineffective flow area in overbanks.

```
X1    7.445       9      9975     10155      460      500      460     .97
GR   1021.0  9974.9    1014.0      9975   1013.5     9980  1013.37    10050  1013.37    10065
GR   1013.9   10105   1014.43     10110  1015.69    10155   1021.0  10155.1
```

Robson Cir. North north curb line
Section manually truncated at 9975 left and at 10155 right to
eliminate ineffective flow area in overbanks.

```
X1    7.453                                  40       40       40                0.2

X1    7.549      11      9890     10168      505      505      505
GR   1020.0    9890    1019.0      9910  1015.51     9985  1013.72     9996   1013.6    10004
GR   1014.1   10007   1014.84     10085  1014.91    10120  1015.52    10132  1018.96    10155
GR   1021.0   10168

X1    7.646      12      9890     10108      510      510      510
GR   1023.0    9890    1021.0      9935  1016.83     9950  1015.94     9974  1015.66     9994
GR   1014.9    9996   1015.03     10004  1015.51    10008  1016.11    10045  1016.45    10052
GR   1023.8   10096   1024.54     10108

        2    4121      4121
     .012    .012      .012       0.3       0.5
```

→ 3=?7

Q = Q AT CP253 (= 4121 CFS)..

Indian School Road Bypass structure 10-10x5 box culvert

```
 X1     7.680        8       9940      10050        185        185        185
 X3        10                                                          1022       1022
 GR    1023.5     9840     1022.0       9920     1016.0       9940    1015.50       9942    1015.50      10048
 GR    1016.0    10050     1024.0      10065    1022.96      10110
1
    25JAN95      00:38:06                                                                                    PAGE    6


 SC    10.012      0.4        3.0                    5         10        125       12.1     1015.8     1015.5
 X1     7.704        7       9925      10110        125        125        125                  .3
 X2                            2     1020.8    1023.26
 X3        10                                                                   1023.3     1023.3
 BT         2     9925     1023.3                10110    1023.26                                          .
 GR    1023.0     9925     1022.0       9930     1016.0       9940    1015.50       9942    1015.50      10048
 GR    1016.0    10050    1022.96      10110

 X1     7.712        5       9930      10120         42         20         42
 GR    1023.0     9930     1016.4       9951     1016.4      10060     1019.0      10065     1022.1      10120

 X1     7.753        9       9650      10335        270        200        220
 X3                                                          10335
 GR    1026.0     9650     1022.0       9900     1021.4      10000     1022.0      10100     1024.5      10335
 GR    1024.0    10400     1021.4      10410     1021.4      10435     1024.0      10440
1
    25JAN95      00:38:06                                                                                    PAGE    7

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 *PROF 1
0

 CCHV=      .100 CEHV=      .300
 *SECNO 6.320
```

***NOTE: THIS REACH IS A SEGMENT OF BULLARD WASH (WASH 10)
DEFINED IN THE WHITE TANKS AGUA FRIA AREA DRAINAGE MASTER STUDY.
THE FLOODPLAIN AND FLOODWAY LIMITS WERE LEFT OFF THE CORRESPON-
DING MAPS BECAUSE THIS AREA WAS UNDER CONSTRUCTION AT THE TIME
OF THE STUDY.THIS NOW REFLECTS THE AS BUILT CONDITIONS.***

Q = Q AT CP286 (= 4662 CFS).

```
     6.320      3.09   1003.99       .00   1003.99   1004.07       .08       .00       .00   1001.30
    4662.0     926.9    1806.9    1928.2     633.3     573.0    1432.2        .0        .0    1001.40
       .00      1.46      3.15      1.35      .070      .040      .070      .000   1000.90    9555.70
   .001771        0.        0.        0.         0         0         0       .00   1471.74   11027.44


 *SECNO 6.426
     6.426      2.47   1005.27       .00       .00   1005.37       .10      1.30       .01   1002.80
    4662.0    1482.0    1494.1    1685.9     794.9     397.5     981.2      30.9      17.1   1003.00
       .06      1.86      3.76      1.72      .070      .040      .070      .000   1002.80    9494.68
   .003169      560.      560.      560.         2         0         0       .00   1194.29   10688.97


 *SECNO 6.500

 3470 ENCROACHMENT STATIONS=     9650.0   10235.0  TYPE=      1  TARGET=      585.000
```

Sections 6.500 thru 6.650, manually or by X3 card, are truncated
lt. and rt. to simulate 1:4 flow expansion d.s. of overchute.
Floodway delineation is coincident with flow expansion.

```
     6.500      2.85   1006.55       .00       .00   1006.72       .17      1.33       .02   1003.80
    4662.0    2087.6    1694.2     880.2     839.8     384.6     360.8      47.8      25.1   1003.80
       .10      2.49      4.40      2.44      .070      .040      .070      .000   1003.70    9650.00
   .003653      390.      390.      390.         2         0         0       .00    585.00   10235.00


 *SECNO 6.581
1
    25JAN95      00:38:06                                                                                    PAGE    8

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


 3470 ENCROACHMENT STATIONS=     9805.0   10160.0  TYPE=      1  TARGET=      355.000
     6.581      3.55   1008.15       .00       .00   1008.44       .29      1.69       .04   1004.60
    4662.0    1415.0    1991.4    1255.6     459.8     354.9     409.3      61.6      29.7   1004.60
```

```
       .13      3.08      5.61      3.07      .070      .040      .070      .000   1004.60   9805.00
   .004216      430.      430.      430.         2         0         0       .00    355.00  10160.00

CCHV=     .100 CEHV=     .300
*SECNO 6.631

3470 ENCROACHMENT STATIONS=     9891.0   10109.0  TYPE=      1  TARGET=      218.000
     6.631      3.33   1009.33       .00       .00   1010.08       .75      1.50       .14 100000.00
    4662.0        .0    4662.0        .0        .0     669.0        .0      67.3      31.5 100000.00
       .14       .00      6.97       .00      .000      .040      .000      .000   1006.00   9891.00
   .008200      263.      263.      263.         2         0         0       .00    218.00  10109.00

*SECNO 6.650

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     6.650      2.89   1011.39   1011.39       .00   1012.85      1.45       .89       .21   1013.00
    4662.0        .0    4662.0        .0        .0     482.1        .0      68.7      31.9   1013.00
       .14       .00      9.67       .00      .000      .030      .000      .000   1008.50   9916.36
   .009635      100.      100.      100.        20        11         0       .00    167.29  10083.64

CCHV=     .300 CEHV=     .500
*SECNO 6.679

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.27

                Q = Q AT CP268       (= 4703 CFS).

                Immediately downstream of RID Canal overchute
                Top of overchute = 1013.0

     6.679      4.77   1011.77       .00       .00   1013.56      1.79       .54       .17   1013.00
    4703.0        .0    4703.0        .0        .0     438.1        .0      70.2      32.4   1013.00
       .14       .00     10.73       .00      .000      .016      .000      .000   1007.00   9954.02
   .001896      150.      150.      150.         4         0         0       .00     91.96  10045.98

1
   25JAN95      00:38:06                                                                          PAGE     9

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 6.688

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.88

                Upstream (North) side of RID Canal overchute
                Top of overchute = 1013.0

     6.688      7.09   1013.09       .00       .00   1013.90       .81       .05       .29   1013.10
    4703.0        .0    4703.0        .0        .0     651.0        .0      70.9      32.5   1013.10
       .15       .00      7.22       .00      .000      .016      .000      .000   1006.00   9954.00
   .000538       52.       52.       52.         3         0         0       .00     92.00  10046.00

CCHV=     .100 CEHV=     .300
*SECNO 6.701

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68

                Q = Q AT 1I268       (= 4088 CFS).

                Section manually truncated at 10070 right to eliminate
                ineffective flow area in the right overbank.

     6.701      7.48   1013.71       .00       .00   1014.00       .28       .05       .05   1014.00
    4088.0        .0    4088.0        .0        .0     954.8        .0      72.2      32.7   1014.00
       .15       .00      4.28       .00      .000      .030      .000      .000   1006.23   9883.16
   .000879       70.       70.       70.         2         0         0       .00    186.83  10069.99

*SECNO 6.739

                Future Verde Lane (low water crossing-proposed configuration)
                Section manually truncated at 9880 left and 10080 right to
```

eliminate ineffective flow areas in the left and right overbanks

SECNO Q TIME SLOPE	DEPTH QLOB VLOB XLOBL	CWSEL QCH VCH XLCH	CRIWS QROB VROB XLOBR	WSELK ALOB XNL ITRIAL	EG ACH XNCH IDC	HV AROB XNR ICONT	HL VOL WTN CORAR	OLOSS TWA ELMIN TOPWID	L-BANK ELEV R-BANK ELEV SSTA ENDST
6.739	5.89	1013.89	.00	.00	1014.22	.33	.21	.02	1014.00
4088.0	.0	4088.0	.0	.0	880.5	.0	76.4	33.6	1014.00
.16	.00	4.64	.00	.000	.030	.000	.000	1008.00	9880.00
.001246	200.	200.	200.	2	0	0	.00	199.99	10079.99

*SECNO 6.799

6.799	7.54	1014.22	.00	.00	1014.66	.44	.41	.03	1016.60
4088.0	.0	4088.0	.0	.0	768.4	.0	82.4	34.9	1015.00
.18	.00	5.32	.00	.000	.030	.000	.000	1006.68	9929.27
.001301	319.	319.	319.	0	0	0	.00	148.23	10077.50

*SECNO 6.878

6.878	7.51	1014.81	.00	.00	1015.20	.39	.54	.00	1015.00
4088.0	.0	4088.0	.0	.0	815.2	.0	89.9	36.4	1015.00
.20	.00	5.01	.00	.000	.030	.000	.000	1007.30	9955.99
.001322	412.	412.	412.	2	0	0	.00	174.34	10130.33

*SECNO 6.890

Robson Circle South south curb line (small dia. cross pipes ignored)
Section manually truncated at 9920 left and 10130 right to eliminate ineffective flow area in overbanks.
Note 0.91 horz. modification factor

6.890	6.82	1015.02	.00	.00	1015.28	.26	.06	.01	1012.16
4088.0	.0	4088.0	.0	.1	1003.7	.1	91.3	36.7	1011.12
.21	.01	4.07	.15	.030	.030	.030	.000	1008.20	9919.92
.000741	110.	65.	20.	2	0	0	.00	191.24	10111.16

*SECNO 6.897

Robson Circle South north curb line (repeated section)
Section manually truncated at 9920 left and 10130 right to eliminate ineffective flow area in overbanks.
Note 0.91 horz. modification factor

6.897	6.64	1015.04	.00	.00	1015.32	.28	.03	.01	1012.36
4088.0	.0	4088.0	.0	.1	968.9	.1	92.2	36.8	1011.32
.21	.01	4.22	.15	.030	.030	.030	.000	1008.40	9919.93
.000834	40.	40.	40.	2	0	0	.00	191.23	10111.16

SECNO Q TIME SLOPE	DEPTH QLOB VLOB XLOBL	CWSEL QCH VCH XLCH	CRIWS QROB VROB XLOBR	WSELK ALOB XNL ITRIAL	EG ACH XNCH IDC	HV AROB XNR ICONT	HL VOL WTN CORAR	OLOSS TWA ELMIN TOPWID	L-BANK ELEV R-BANK ELEV SSTA ENDST

*SECNO 6.908

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

Section manually truncated at 9940 left to eliminate ineffective flow area in far left overbank.

6.908	7.40	1014.95	.00	.00	1015.45	.50	.06	.07	1018.00
4088.0	.0	4088.0	.0	.0	723.9	.0	93.3	37.1	1015.00
.21	.00	5.65	.00	.000	.030	.000	.000	1007.55	9956.93
.001783	40.	55.	110.	2	0	0	.00	162.13	10119.05

*SECNO 6.988

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.98

3470 ENCROACHMENT STATIONS= 9860.0 10170.0 TYPE= 1 TARGET= -9860.000

6.988	7.39	1015.69	.00	.00	1015.82	.13	.34	.04	100000.00
4088.0	.0	4088.0	.0	.0	1406.3	.0	103.6	39.3	100000.00
.25	.00	2.91	.00	.000	.030	.000	.000	1008.30	9860.00
.000454	450.	425.	370.	2	0	0	.00	306.89	10166.89

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*SECNO 7.074

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .44

     7.074      6.79   1015.80       .00       .00   1016.35       .55       .40       .13   1016.00
    4088.0        .0    4088.0        .0        .0     684.3        .0     114.6      41.9   1016.50
       .27       .00      5.97       .00      .000      .030      .000      .000   1009.01   9925.83
   .002359      450.      455.      470.         2         0         0       .00    174.02  10099.84

*SECNO 7.145

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.44

                Golf Cart Path
                (Small diameter cross culverts ignored)
1
   25JAN95      00:38:06                                                                                PAGE   12

                Note 0.82 horz. modification factor

     7.145      7.07   1016.67       .00       .00   1016.97       .30       .59       .03   1017.00
    4088.0        .0    4088.0        .0        .0     931.7        .0     121.5      43.5   1017.00
       .30       .00      4.39       .00      .000      .030      .000      .000   1009.60   9872.71
   .001131      310.      375.      460.         2         0         0       .00    217.33  10090.04

*SECNO 7.150

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .41

                Upstream end of golf cart path (manually truncated at 9940 left
                to eliminate ineffective flow area in overbank).
                Note 0.82 horz. modification factor

     7.150      4.84   1016.14       .00       .00   1017.27      1.13       .05       .25   1018.00
    4088.0        .0    4088.0        .0        .0     478.6        .0     121.9      43.6   1017.00
       .30       .00      8.54       .00      .000      .030      .000      .000   1011.30   9940.40
   .006712       24.       24.       24.         3         0         0       .00    156.22  10096.62

*SECNO 7.165

301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.11

     7.165      7.31   1017.17       .00       .00   1017.57       .40       .22       .07   1018.00
    4088.0        .0    4088.0        .0        .0     806.4        .0     123.1      44.0   1017.50
       .30       .00      5.07       .00      .000      .030      .000      .000   1009.86   9963.62
   .001509       80.       80.       45.         3         0         0       .00    187.42  10151.03

*SECNO 7.264

3470 ENCROACHMENT STATIONS=     9860.0   10105.0  TYPE=      1  TARGET=    -9860.000
     7.264      7.17   1018.02       .00       .00   1018.33       .31       .75       .01 100000.00
    4088.0        .0    4088.0        .0        .0     913.2        .0     133.4      46.5 100000.00
       .34       .00      4.48       .00      .000      .030      .000      .000   1010.85   9860.00
   .001378      520.      520.      520.         3         0         0       .00    239.27  10099.27

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   25JAN95      00:38:06                                                                                PAGE   13

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 7.358
     7.358      7.11   1018.70       .00       .00   1019.01       .31       .68       .00   1019.00
    4088.0        .0    4088.0        .0        .0     911.0        .0     143.8      49.2   1019.40
       .37       .00      4.49       .00      .000      .030      .000      .000   1011.59   9885.75
   .001348      500.      500.      500.         2         0         0       .00    234.31  10120.06

*SECNO 7.445

                Robson Cir. North south curb line (small dia. cross pipes
                ignored)
                Section manually truncated at 9975 left and at 10155 right to
                eliminate ineffective flow area in overbanks.

     7.445      5.83   1019.20       .00       .00   1019.50       .30       .49       .00   1014.00
    4088.0        .0    4088.0        .0        .2     923.3        .1     153.5      51.4   1015.69
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      .39       .16      4.43       .15      .030      .030      .030      .000   1013.37   9974.92
  .000868      460.      460.      500.         2         0         0       .00    174.74  10149.66

*SECNO 7.453

                Robson Cir. North north curb line
                Section manually truncated at 9975 left and at 10155 right to
                eliminate ineffective flow area in overbanks.

     7.453      5.65   1019.22       .00       .00   1019.54       .33       .04       .01   1014.20
    4088.0        .0    4088.0        .0        .2     892.1        .1     154.3      51.5   1015.89
       .40       .16      4.58       .15      .030      .030      .030      .000   1013.57   9974.93
  .000973       40.       40.       40.         2         0         0       .00    174.73  10149.66

*SECNO 7.549
     7.549      6.22   1019.82       .00       .00   1020.07       .24       .51       .01   1020.00
    4088.0        .0    4088.0        .0        .0    1031.3        .0     165.5      54.1   1021.00
       .43       .00      3.96       .00      .000      .030      .000      .000   1013.60   9893.56
  .001059      505.      505.      505.         2         0         0       .00    266.93  10160.49

*SECNO 7.646

3301 HV CHANGED MORE THAN HVINS

1
   25JAN95      00:38:06                                                                          PAGE   14

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49

     7.646      5.38   1020.28       .00       .00   1021.26       .98       .98       .22   1023.00
    4088.0        .0    4088.0        .0        .0     514.9        .0     174.5      56.5   1024.54
       .45       .00      7.94       .00      .000      .030      .000      .000   1014.90   9937.58
  .004455      510.      510.      510.         2         0         0       .00    137.38  10074.95

CCHV=      .300 CEHV=      .500
*SECNO 7.680

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.41

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1022.00 ELREA=      1022.00

                Q = Q AT CP253       (= 4121 CFS).

                Indian School Road Bypass structure 10-10x5 box culvert

     7.680      5.16   1020.66       .00       .00   1021.48       .82       .17       .05   1016.00
    4121.0        .0    4121.0        .0        .0     566.6        .0     176.8      57.0   1016.00
       .46       .00      7.27       .00      .000      .012      .000      .000   1015.50   9940.00
  .000388      185.      185.      185.         2         0         0       .00    110.00  10050.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    10         .012       .40     3.00        .00      5.00     10.00    125.00     12         1      1015.80   1015.50

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE  1 - WINGWALLS FLARED 45 DEGREES (1:1); INLET NOT SKEWED

*SECNO 7.704

SPECIAL CULVERT OUTLET CONTROL
EGIC =    1021.899  EGOC =    1022.416  PCWSE=    1020.659  ELTRD=    1023.260


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.49

1
   25JAN95      00:38:06                                                                          PAGE   15

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


SPECIAL CULVERT

    EGIC      EGOC        H4      QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
```

```
   1021.90   1022.42       .94        0.     4121.     4.801     500.0   1023.26        0.


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1023.30 ELREA=      1023.30

     7.704      6.26   1022.06       .00       .00   1022.42       .36       .94       .00   1023.30
    4121.0        .0    4121.0        .0        .0     858.3        .0     178.9      57.4   1023.26
       .46       .00      4.80       .00      .000      .012      .000      .000   1015.80   9930.40
   .000175      125.      125.      125.         2         0         0       .00    169.26  10099.66

*SECNO 7.712
     7.712      5.62   1022.02       .00       .00   1022.47       .45       .01       .05   1023.00
    4121.0        .0    4121.0        .0        .0     765.6        .0     179.7      57.6   1022.10
       .47       .00      5.38       .00      .000      .012      .000      .000   1016.40   9933.11
   .000289       42.       42.       20.         2         0         0       .00    185.49  10118.60

*SECNO 7.753
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=          .0   10335.0  TYPE=       1  TARGET=     10335.000
     7.753      2.29   1023.69   1023.69       .00   1024.37       .68       .13       .12   1076.00
    4121.0        .0    4121.0        .0        .0     621.3        .0     183.2      59.2 100000.00
       .48       .00      6.63       .00      .000      .012      .000      .000   1021.40   9794.41
   .001947      270.      220.      200.        20        18         0       .00    464.41  10258.81

1
PROFILE FOR STREAM  BULLARD WASH,WASH 10,ROO


PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA


ELEVATION  1001.     1006.     1011.     1016.     1021.     1026.     1031.     1036.     1041.     1046.
    SECNO   CUMDIS

     6.32      0.  IL    E   . M       .         .         .         .         .         .         .         .
              50.  IL    WE  . M       .         .         .         .         .         .         .         .
             100.  CIR    E  . M       .         .         .         .         .         .         .         .
             150.  CIL    E  . M       .         .         .         .         .         .         .         .
             200.  CIL    E  . M       .         .         .         .         .         .         .         .
             250.  C I    WE . M       .         .         .         .         .         .         .         .
             300.  C IR    E . M       .         .         .         .         .         .         .         .
             350.  C IL    E . M       .         .         .         .         .         .         .         .
             400.  C  I    E . M       .         .         .         .         .         .         .         .
             450.  C  IR   E . M       .         .         .         .         .         .         .         .
             500.  C  IR   WE. M       .         .         .         .         .         .         .         .
             550.  C   I    E. M       .         .         .         .         .         .         .         .
     6.43    600.  C   I    E. M       .         .         .         .         .         .         .         .
             650.  C   I    E. M       .         .         .         .         .         .         .         .
             700.  C   IR   WE M       .         .         .         .         .         .         .         .
             750.  C   IL    E  M      .         .         .         .         .         .         .         .
             800.  C    I    E  M      .         .         .         .         .         .         .         .
             850.  C    I    WE M      .         .         .         .         .         .         .         .
             900.  C    I    .E  M     .         .         .         .         .         .         .         .
     6.50    950.  C     I   .WE M     .         .         .         .         .         .         .         .
            1000.  C     I   . E  M    .         .         .         .         .         .         .         .
            1050.  C     I   . E  M    .         .         .         .         .         .         .         .
            1100.  C     I   . WE  M   .         .         .         .         .         .         .         .
            1150.  C     IL  .  E  M   .         .         .         .         .         .         .         .
            1200.  C      I  .  WE  M  .         .         .         .         .         .         .         .
            1250.  C      I  .   E  M  .         .         .         .         .         .         .         .
            1300.  C      I  .   E  M  .         .         .         .         .         .         .         .
            1350.  C      I  .   WE  M .         .         .         .         .         .         .         .
     6.58   1400.  C      I  .    E  M .         .         .         .         .         .         .         .
            1450.  C       I .    WE M .         .         .         .         .         .         .         L
            1500.  C       I .    WE M .         .         .         .         .         .         .         L
            1550.  C        I.     WEM .         .         .         .         .         .         .         L
            1600.  C         I     W E .         .         .         .         .         .         .         L
     6.63   1650.  C         I      WE .         .         .         .         .         .         .         L
            1700.  C         .  I     W.E        .         .         .         .         .         .         L
     6.65   1750.  .         .    I    .W  E     .         .         .         .         .         .         .
            1800.  C         .   I     .W  E     .         .         .         .         .         .         .
            1850.  C         .  I      .W  LE    .         .         .         .         .         .         .
     6.68   1900.  C         . I       . W LE    .         .         .         .         .         .         .
     6.69   1950.  C         I         .   W E   .         .         .         .         .         .         .
            2000.  C         .I        .    WE   .         .         .         .         .         .         .
     6.70   2050.  C         .I        .     E   .         .         .         .         .         .         .
            2100.  C         . I       .     E   .         .         .         .         .         .         .
            2150.  C         . I       .     E   .         .         .         .         .         .         .
            2200.  C         .  I      .     WE  .         .         .         .         .         .         .
     6.74   2250.  C         .   I     .     WE  .         .         .         .         .         .         .
            2300.  C         .   I     .     WE  .         .         .         .         .         .         .
            2350.  C         .  I      .     WEL .         .         .         .         .         .         .
            2400.  C         .  I      .     WE L.         .         .         .         .         .         .
            2450.  C         .  I      .     WE L.         .         .         .         .         .         .
            2500.  C         . I       .      ER L         .         .         .         .         .         .
     6.80   2550.  C         . I       .      WE .L        .         .         .         .         .         .
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        2600.  C     . I       .     WE .L         .         .         .         .         .         .         .
        2650.  C     . I       .     WE .L         .         .         .         .         .         .         .
        2700.  C     . I       .     WE L          .         .         .         .         .         .         .
        2750.  C     . I       .     WE L          .         .         .         .         .         .         .
        2800.  C     . I       .     WEL.          .         .         .         .         .         .         .
        2850.  C     . I       .      EL.          .         .         .         .         .         .         .
        2900.  C     .. I      .      EL.          .         .         .         .         .         .         .
  6.88  2950.  C     .  I      .      WE.          .         .         .         .         .         .         .
        3000.  C     .   I     . R L  WEM          .         .         .         .         .         .         .
  6.89  3050.  C     .    I   R  L    WEM          .         .         .         .         .         .         .
  6.90  3100.  C     .    I    .R L   WE.M         .         .         .         .         .         .         .
  6.91  3150.  C     .  I      .      WE.   L      .         .         .         .         .         .         .
        3200.  C     .  I      .      WE.          .         .         .         .         .         .         L
        3250.  C     .   I     .      WE.          .         .         .         .         .         .         L
        3300.  C     .   I     .       E.          .         .         .         .         .         .         L
        3350.  C     .   I     .       E.          .         .         .         .         .         .         L
        3400.  C     .   I     .       WE          .         .         .         .         .         .         L
        3450.  C     .   I     .       WE          .         .         .         .         .         .         L
        3500.  C     .    I    .       WE          .         .         .         .         .         .         L
  6.99  3550.  C     .    I    .        E          .         .         .         .         .         .         L
        3600.  C     .    I    .        E          .         .         .         .         .         .         L
        3650.  C     .    I    .        E          .         .         .         .         .         .         L
        3700.  C     .    I    .        E          .         .         .         .         .         .         L
        3750.  C     .    I    .        E          .         .         .         .         .         .         L
        3800.  C     .     I   .        E          .         .         .         .         .         .         L
        3850.  C     .     I   .        WE         .         .         .         .         .         .         L
        3900.  C     .     I   .        WE         .         .         .         .         .         .         L
        3950.  C     .     I   .        WE         .         .         .         .         .         .         L
  7.07  4000.  C     .     I   .        WE         .         .         .         .         .         .         .
        4050.  C     .     I   .        WE         .         .         .         .         .         .         .
        4100.  C     .      I  .        WE         .         .         .         .         .         .         .
        4150.  C     .      I  .        .ER        .         .         .         .         .         .         .
        4200.  C     .      I  .        .WE        .         .         .         .         .         .         .
        4250.  C     .      I  .        .WE        .         .         .         .         .         .         .
        4300.  C     .      I  .        .WE        .         .         .         .         .         .         .
        4350.  C     .      I  .        .WE        .         .         .         .         .         .         .
  7.14  4400.  C     .      I  .        . E        .         .         .         .         .         .         .
  7.15  4450.  C     .         .I       W REL      .         .         .         .         .         .         .
  7.16  4500.  C     .       I .         .  EL     .         .         .         .         .         .         L
        4550.  C     .       I .         .  E      .         .         .         .         .         .         L
        4600.  C     .       I .         .  WE     .         .         .         .         .         .         L
        4650.  C     .       I .         .  WE     .         ..        .         .         .         .         L
        4700.  C     .        I.         .  WE     .         .         .         .         .         .         L
        4750.  C     .        I.         .  WEM    .         .         .         .         .         .         L
        4800.  C     .        I.         .   EM    .         .         .         .         .         .         L
        4850.  C     .        I.         .   EM    .         .         .         .         .         .         L
        4900.  C     .        I.         .   WEM   .         .         .         .         .         .         L
        4950.  C     .         I         .   WEM   .         .         .         .         .         .         L
  7.26  5000.  C     .         I         .   WEM   .         .         .         .         .         .         L
        5050.  C     .         I         .   WEM   .         .         .         .         .         .         L
        5100.  C     .         I         .    EM   .         .         .         .         .         .         L
        5150.  C     .         I         .    EM   .         .         .         .         .         .         L
        5200.  C     .         I         .    EM   .         .         .         .         .         .         L
        5250.  C     .         .I        .    WE   .         .         .         .         .         .         L
        5300.  C     .         .I        .    WE   .         .         .         .         .         .         L
        5350.  C     .         .I        .    WE   .         .         .         .         .         .         L
        5400.  C     .         .I        .    WE   .         .         .         .         .         .         L
        5450.  C     .         .I        .    WE   .         .         .         .         .         .         L
  7.36  5500.  C     .         .I        .     ER  .         .         .         .         .         .         .
        5550.  C     .         . I       .    LEM  .         .         .         .         .         .         .
        5600.  C     .         . I       .   LREM  .         .         .         .         .         .         .
        5650.  C     .         .  I      .  L RWEM .         .         .         .         .         .         .
        5700.  C     .         .  I      . L R WEM .         .         .         .         .         .         .
        5750.  C     .         .  I     .L R  WEM .         .         .         .         .         .         .
        5800.  C     .         .   I     L R   WE M.         .         .         .         .         .         .
        5850.  C     .         .   I   L.R     WE M.         .         .         .         .         .         .
        5900.  C     .         .   I  L .R     WE  M         .         .         .         .         .         .
  7.45  5950.  C     .         .    IL   R       E  M        .         .         .         .         .         .
  7.45  6000.  C     .         .    I L  R       E  .M       .         .         .         .         .         .
        6050.  C     .         .    I  L .R      E  M        .         .         .         .         .         .
        6100.  C     .         .    I   L. R     E  M        .         .         .         .         .         .
        6150.  C     .         .    I    L  R   WE M         .         .         .         .         .         .
        6200.  C     .         .   .I    .L  R  WE M         .         .         .         .         .         .
        6250.  C     .         .    I     . L  R WEM.        .         .         .         .         .         .
        6300.  C     .         .    I     .  L  RWEM.        .         .         .         .         .         .
        6350.  C     .         .    I     .     L WEM.       .         .         .         .         .         .
        6400.  C     .         .    I     .      L EM.       .         .         .         .         .         .
        6450.  C     .         .    I     .        LER.      .         .         .         .         .         .
  7.55  6500.  C     .         .    I     .          E R     .         .         .         .         .         .
        6550.  C     .         .     I    .          WE.R    .         .         .         .         .         .
        6600.  C     .         .     I    .          WE. R   .         .         .         .         .         .
        6650.  C     .         .     I    .          WEL R   .         .         .         .         .         .
        6700.  C     .         .     I    .          WE.L R  .         .         .         .         .         .
        6750.  C     .         .      I   .          W EL  R .         .         .         .         .         .
        6800.  C     .         .      I   .          W E L R .         .         .         .         .         .
        6850.  C     .         .      I   .          W E L  R.         .         .         .         .         .
        6900.  C     .         .      I   .           WE  L  R         .         .         .         .         .
        6950.  C     .         .       I  .           WE  L  R         .         .         .         .         .
  7.65  7000.  C     .         .       I  .           W.E  L  R        .         .         .         .         .
        7050.  C     .         .       I  .           WLE RM   .       .         .         .         .         .
        7100.  C     .         .        I.          LRW.E  M   .       .         .         .         .         .
        7150.  C     .         .        I.  L         W.E  M   .       .         .         .         .         .
  7.68  7200.  C     .         .        IL             WE  M   .       .         .         .         .         .
        7250.  C     .         .        I.      L     .WE M    .       .         .         .         .         .
        7300.  C     .         .         I             . WE M  .       .         .         .         .         .
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      7.70  7350.  C        .        .        I        . WE L   .        .        .        .        .        .
      7.71  7400.  C        .        .        .I       . WEL    .        .        .        .        .        .
            7450.  C        .        .        .  I     .  WE    .        .       L .       .        .        R
            7500.  C        .        .        .     I  .   WE   .        .        .        .       . L       R
            7550.  C        .        .        .       I .    WE .        .        .        .        .        L
      7.75  7600.  .        .        .        .        .I    WE .        .        .        .        .        L
1
   25JAN95      00:38:06                                                                                    PAGE   16

 T1       WHITE TANKS / AGUA FRIA AREA DRAINAGE MASTER STUDY
 T2       100 - YEAR STORM EVENT   FLOODPLAIN RUN FILE: "10-AVOND.H2I"
 T3       BULLARD WASH,WASH 10,ROOSEVELT IRRIGATION DISTRICT CANAL (RID CANAL)
 T4       TO INDIAN SCHOOL ROAD REACH. SECTIONS   6.320 - 7.753
 T5       (AVONDALE DRAIN) IN GOLF COURSE AREA @ GLOBE PROPERTY
 T6       100-YEAR FLOODWAY PROFILE

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 3                                                                   1004.59

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      14                  -1

1
   25JAN95      00:38:06                                                                                    PAGE   17

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

 *PROF 2
0

 CCHV=      .100 CEHV=      .300
 *SECNO 6.320

 3470 ENCROACHMENT STATIONS=     9650.0   10300.0  TYPE=      1  TARGET=      650.000

            ***NOTE: THIS REACH IS A SEGMENT OF BULLARD WASH (WASH 10)
               DEFINED IN THE WHITE TANKS AGUA FRIA AREA DRAINAGE MASTER STUDY.
               THE FLOODPLAIN AND FLOODWAY LIMITS WERE LEFT OFF THE CORRESPON-
               DING MAPS BECAUSE THIS AREA WAS UNDER CONSTRUCTION AT THE TIME
               OF THE STUDY.THIS NOW REFLECTS THE AS BUILT CONDITIONS.***

                Q = Q AT CP286       (= 4662 CFS).

     6.320      3.69   1004.59       .00   1003.99   1004.70       .11       .00       .00   1001.30
    4662.0    1237.1    2356.9    1068.0     719.8     693.0     606.4        .0        .0   1001.40
       .00      1.72      3.40      1.76      .070      .040      .070      .000   1000.90   9650.00
   .001598        0.        0.        0.         0         0         0       .00    650.00  10300.00

 *SECNO 6.426

 3470 ENCROACHMENT STATIONS=     9700.0   10300.0  TYPE=      1  TARGET=      600.000
     6.426      2.98   1005.78       .00   1005.27   1005.94       .17      1.22       .02   1002.80
    4662.0    1459.1    2048.3    1154.6     633.6     480.6     517.2      23.5       8.0   1003.00
       .05      2.30      4.26      2.23      .070      .040      .070      .000   1002.80   9700.00
   .003165      560.      560.      560.         2         0         0       .00    600.00  10300.00

 *SECNO 6.500

 3470 ENCROACHMENT STATIONS=     9650.0   10235.0  TYPE=      1  TARGET=      585.000

                Sections 6.500 thru 6.650, manually or by X3 card, are truncated
                lt. and rt. to simulate 1:4 flow expansion d.s. of overchute.
                Floodway delineation is coincident with flow expansion.

     6.500      3.20   1006.90       .00   1006.55   1007.03       .13      1.08       .00   1003.80
    4662.0    2088.6    1691.5     881.9     947.3     433.2     407.6      38.8      13.3   1003.80
       .09      2.20      3.90      2.16      .070      .040      .070      .000   1003.70   9650.00
   .002450      390.      390.      390.         2         0         0       .00    585.00  10235.00

1
   25JAN95      00:38:06                                                                                    PAGE   18

     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

 *SECNO 6.581

 3470 ENCROACHMENT STATIONS=     9805.0   10160.0  TYPE=      1  TARGET=      355.000
     6.581      3.54   1008.14       .00   1008.15   1008.44       .29      1.36       .05   1004.60
    4662.0    1415.0    1991.5    1255.6     459.1     354.3     408.6      53.6      18.0   1004.60
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       .12      3.08      5.62      3.07      .070      .040      .070      .000   1004.60   9805.00
   .004238      430.      430.      430.         2         0         0       .00    355.00  10160.00


CCHV=     .100 CEHV=     .300
*SECNO 6.631

3470 ENCROACHMENT STATIONS=     9891.0   10109.0  TYPE=      1  TARGET=      218.000
     6.631      3.33   1009.33       .00   1009.33   1010.08       .75      1.51       .14 100000.00
    4662.0        .0    4662.0        .0        .0     669.1        .0      59.3      19.7 100000.00
       .13       .00      6.97       .00      .000      .040      .000      .000   1006.00   9891.00
   .008197      263.      263.      263.         2         0         0       .00    218.00  10109.00


*SECNO 6.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     6.650      2.89   1011.39   1011.39   1011.39   1012.85      1.45       .89       .21   1013.00
    4662.0        .0    4662.0        .0        .0     482.1        .0      60.7      20.2   1013.00
       .13       .00      9.67       .00      .000      .030      .000      .000   1008.50   9916.36
   .009639      100.      100.      100.        19        11         0       .00    167.29  10083.64


CCHV=     .300 CEHV=     .500
*SECNO 6.679
 2800 NAT Q1=    1079.97  WSELK=    1011.77  ENC Q1=    1080.02  WSEL=    1011.77  RATIO=     .0000
 NAT Q1=    1080.  RATIOS LOB, CH, ROB=    .0000  1.0000    .0000  WSEL=    1011.77

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.28


3470 ENCROACHMENT STATIONS=     9954.0   10046.0  TYPE=      4  TARGET=         .000

                Q = Q AT CP268       (= 4703 CFS).
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                Immediately downstream of RID Canal overchute
                Top of overchute = 1013.0

     6.679      4.77   1011.77       .00   1011.77   1013.55      1.79       .54       .17   1063.00
    4703.0        .0    4703.0        .0        .0     438.6        .0      62.2      20.6   1013.00
       .13       .00     10.72       .00      .000      .016      .000      .000   1007.00   9954.02
   .001890      150.      150.      150.         2         0         0       .00     91.96  10045.98


*SECNO 6.688

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.87


3470 ENCROACHMENT STATIONS=     9954.0   10046.0  TYPE=      1  TARGET=       92.000

                Upstream (North) side of RID Canal overchute
                Top of overchute = 1013.0

     6.688      7.08   1013.08       .00   1013.09   1013.89       .81       .05       .29   1063.10
    4703.0        .0    4703.0        .0        .0     650.4        .0      62.9      20.7 100000.00
       .14       .00      7.23       .00      .000      .016      .000      .000   1006.00   9954.00
   .000539       52.       52.       52.         3         0         0       .00     92.00  10046.00


CCHV=     .100 CEHV=     .300
*SECNO 6.701

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68


                Q = Q AT 1I268       (= 4088 CFS).

                Section manually truncated at 10070 right to eliminate
                ineffective flow area in the right overbank.

     6.701      7.48   1013.71       .00   1013.71   1013.99       .29       .05       .05   1014.00
    4088.0        .0    4088.0        .0        .0     953.8        .0      64.2      20.9   1014.00
       .14       .00      4.29       .00      .000      .030      .000      .000   1006.23   9883.22
   .000881       70.       70.       70.         2         0         0       .00    186.78  10069.99
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
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     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 6.739

                Future Verde Lane (low water crossing-proposed configuration)
                Section manually truncated at 9880 left and 10080 right to
                eliminate ineffective flow areas in the left and right overbanks

     6.739      5.88    1013.88       .00    1013.89    1014.22       .34       .21       .02    1014.00
    4088.0        .0     4088.0        .0        .0      879.6        .0      68.4      21.8    1014.00
       .15       .00       4.65       .00       .000       .030      .000      .000   1008.00    9880.00
   .001250      200.       200.      200.         2          0         0       .00    199.99   10079.99

*SECNO 6.799
     6.799      7.54    1014.22       .00    1014.22    1014.66       .44       .41       .03    1016.60
    4088.0        .0     4088.0        .0        .0      767.9        .0      74.4      23.1    1015.00
       .17       .00       5.32       .00       .000       .030      .000      .000   1006.68    9929.28
   .001303      319.       319.      319.         0          0         0       .00    148.20   10077.48

*SECNO 6.878

3470 ENCROACHMENT STATIONS=     9955.0   10110.0  TYPE=      1  TARGET=      155.000
     6.878      7.47    1014.77       .00    1014.81    1015.18       .41       .52       .00    1065.00
    4088.0        .0     4088.0        .0        .0      796.0        .0      81.8      24.5  100000.00
       .19       .00       5.14       .00       .000       .030      .000      .000   1007.30    9956.23
   .001224      412.       412.      412.         2          0         0       .00    153.77   10110.00

*SECNO 6.890

3470 ENCROACHMENT STATIONS=     9947.0   10111.0  TYPE=      1  TARGET=      164.000

                Robson Circle South south curb line (small dia. cross pipes
                ignored)
                Section manually truncated at 9920 left and 10130 right to
                eliminate ineffective flow area in overbanks.
                Note 0.91 horz. modification factor

     6.890      6.73    1014.93       .00    1015.02    1015.26       .32       .07       .01  100000.00
    4088.0        .0     4088.0        .0        .0      897.5        .0      83.1      24.8  100000.00
       .20       .00       4.55       .00       .000       .030      .000      .000   1008.20    9947.00
   .000933      110.        65.       20.         2          0         0       .00    164.00   10111.00


  25JAN95      00:38:06                                                                                    PAGE   21

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
     Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
     TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
     SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 6.897

3470 ENCROACHMENT STATIONS=     9947.0   10111.0  TYPE=      1  TARGET=      164.000

                Robson Circle South north curb line (repeated section)
                Section manually truncated at 9920 left and 10130 right to
                eliminate ineffective flow area in overbanks.
                Note 0.91 horz. modification factor

     6.897      6.56    1014.96       .00    1015.04    1015.30       .34       .04       .01  100000.00
    4088.0        .0     4088.0        .0        .0      870.3        .0      83.9      24.9  100000.00
       .20       .00       4.70       .00       .000       .030      .000      .000   1008.40    9947.00
   .001031       40.        40.       40.         1          0         0       .00    164.00   10111.00

*SECNO 6.908

                Section manually truncated at 9940 left to eliminate
                ineffective flow area in far left overbank.

     6.908      7.37    1014.92       .00    1014.95    1015.42       .50       .07       .05    1018.00
    4088.0        .0     4088.0        .0        .0      718.9        .0      84.9      25.1    1015.00
       .20       .00       5.69       .00       .000       .030      .000      .000   1007.55    9957.10
   .001813       40.        55.      110.         2          0         0       .00    161.34   10118.44

*SECNO 6.988

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.99

3470 ENCROACHMENT STATIONS=     9860.0   10170.0  TYPE=      1  TARGET=    -9860.000
     6.988      7.37    1015.67       .00    1015.69    1015.81       .13       .35       .04  100000.00
    4088.0        .0     4088.0        .0        .0     1400.4        .0      95.2      27.4  100000.00
       .24       .00       2.92       .00       .000       .030      .000      .000   1008.30    9860.00
   .000460      450.       425.      370.         2          0         0       .00    306.73   10166.73
```

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*SECNO 7.074

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .44

     7.074      6.77   1015.78       .00   1015.80   1016.34       .56       .40       .13   1016.00
    4088.0        .0    4088.0        .0        .0     679.5        .0     106.1      29.9   1016.50
       .26       .00      6.02       .00      .000      .030      .000      .000   1009.01   9926.65
   .002395      450.      455.      470.         3         0         0       .00    172.95  10099.60
```



```
    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 7.145

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.45 .

                Golf Cart Path
                (Small diameter cross culverts ignored)
                Note 0.82 horz. modification factor

     7.145      7.06   1016.66       .00   1016.67   1016.96       .30       .60       .03   1017.00
    4088.0        .0    4088.0        .0        .0     930.5        .0     113.0      31.6   1017.00
       .29       .00      4.39       .00      .000      .030      .000      .000   1009.60   9872.76
   .001135      310.      375.      460.         2         0         0       .00    217.26  10090.02

*SECNO 7.150

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .41

                Upstream end of golf cart path (manually truncated at 9940 left
                to eliminate ineffective flow area in overbank).
                Note 0.82 horz. modification factor

     7.150      4.83   1016.13       .00   1016.14   1017.27      1.14       .05       .25   1018.00
    4088.0        .0    4088.0        .0        .0     477.1        .0     113.4      31.7   1017.00
       .29       .00      8.57       .00      .000      .030      .000      .000   1011.30   9940.40
   .006775       24.       24.       24.         3         0         0       .00    156.14  10096.54

*SECNO 7.165

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.15

3470 ENCROACHMENT STATIONS=     9960.0   10125.0  TYPE=      1  TARGET=      165.000
     7.165      7.26   1017.12       .00   1017.17   1017.56       .44       .22       .07   1068.00
    4088.0        .0    4088.0        .0        .0     770.5        .0     114.6      32.0 100000.00
       .29       .00      5.31       .00      .000      .030      .000      .000   1009.86   9963.82
   .001463       80.       80.       45.         3         0         0       .00    161.17  10125.00
```



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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 7.264

3470 ENCROACHMENT STATIONS=     9860.0   10105.0  TYPE=      1  TARGET=    -9860.000
     7.264      7.15   1018.00       .00   1018.02   1018.32       .32       .75       .01 100000.00
    4088.0        .0    4088.0        .0        .0     907.6        .0     124.6      34.4 100000.00
       .32       .00      4.50       .00      .000      .030      .000      .000   1010.85   9860.00
   .001406      520.      520.      520.         2         0         0       .00    239.13  10099.13

*SECNO 7.358
     7.358      7.10   1018.69       .00   1018.70   1019.01       .31       .69       .00   1019.00
    4088.0        .0    4088.0        .0        .0     910.3        .0     135.0      37.1   1019.40
       .35       .00      4.49       .00      .000      .030      .000      .000   1011.59   9885.81
   .001351      500.      500.      500.         2         0         0       .00    234.22  10120.03
```

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*SECNO 7.445

                Robson Cir. North south curb line (small dia. cross pipes
                ignored)
                Section manually truncated at 9975 left and at 10155 right to
                eliminate ineffective flow area in overbanks.

     7.445      5.82   1019.19       .00   1019.20   1019.50       .30       .49       .00   1014.00
    4088.0        .0    4088.0        .0        .2     922.8        .1     144.7      39.2   1015.69
       .38       .16      4.43       .15      .030      .030      .030      .000   1013.37   9974.93
   .000869      460.      460.      500.         2         0         0       .00    174.73  10149.66

*SECNO 7.453

                Robson Cir. North north curb line
                Section manually truncated at 9975 left and at 10155 right to
                eliminate ineffective flow area in overbanks.

     7.453      5.65   1019.22       .00   1019.22   1019.54       .33       .04       .01   1014.20
    4088.0        .0    4088.0        .0        .2     891.7        .1     145.5      39.4   1015.89
       .38       .16      4.58       .15      .030      .030      .030      .000   1013.57   9974.93
   .000974       40.       40.       40.         2         0         0       .00    174.73  10149.66

*SECNO 7.549
     7.549      6.22   1019.82       .00   1019.82   1020.06       .24       .51       .01   1020.00
    4088.0        .0    4088.0        .0        .0    1030.9        .0     156.7      42.0   1021.00
       .42       .00      3.97       .00      .000      .030      .000      .000   1013.60   9893.60
   .001061      505.      505.      505.         2         0         0       .00    266.88  10160.48

1
   25JAN95      00:38:06                                                                          PAGE   24

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 7.646

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49

     7.646      5.38   1020.28       .00   1020.28   1021.26       .98       .98       .22   1023.00
    4088.0        .0    4088.0        .0        .0     514.8        .0     165.7      44.3   1024.54
       .44       .00      7.94       .00      .000      .030      .000      .000   1014.90   9937.58
   .004458      510.      510.      510.         2         0         0       .00    137.37  10074.95

CCHV=      .300 CEHV=      .500
*SECNO 7.680

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.42

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1022.00 ELREA=      1022.00

                Q = Q AT CP253       (= 4121 CFS).

                Indian School Road Bypass structure 10-10x5 box culvert

     7.680      5.16   1020.66       .00   1020.66   1021.48       .82       .17       .05   1016.00
    4121.0        .0    4121.0        .0        .0     566.6        .0     168.0      44.9   1016.00
       .44       .00      7.27       .00      .000      .012      .000      .000   1015.50   9940.00
   .000388      185.      185.      185.         2         0         0       .00    110.00  10050.00

SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    10          .012      .40      3.00       .00      5.00     10.00     125.00    12         1      1015.80   1015.50

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE  1 - WINGWALLS FLARED 45 DEGREES (1:1); INLET NOT SKEWED

*SECNO 7.704
1
   25JAN95      00:38:06                                                                          PAGE   25

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST
```

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1021.899 EGOC = 1022.416 PCWSE= 1020.659 ELTRD= 1023.260

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.49

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1021.90	1022.42	.94	0.	4121.	4.802	500.0	1023.26	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1023.30 ELREA= 1023.30

7.704	6.26	1022.06	.00	1022.06	1022.42	.36	.94	.00	1023.30
4121.0	.0	4121.0	.0	.0	858.2	.0	170.1	45.3	1023.26
.45	.00	4.80	.00	.000	.012	.000	.000	1015.80	9930.40
.000175	125.	125.	125.	2	0	0	.00	169.25	10099.65

*SECNO 7.712

7.712	5.62	1022.02	.00	1022.02	1022.47	.45	.01	.05	1023.00
4121.0	.0	4121.0	.0	.0	765.5	.0	170.8	45.4	1022.10
.45	.00	5.38	.00	.000	.012	.000	.000	1016.40	9933.12
.000289	42.	42.	20.	2	0	0	.00	185.48	10118.60

*SECNO 7.753
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10335.0 TYPE= 1 TARGET= 10335.000

7.753	2.29	1023.69	1023.69	1023.69	1024.37	.68	.13	.12	1076.00
4121.0	.0	4121.0	.0	.0	621.1	.0	174.3	47.1	100000.00
.46	.00	6.63	.00	.000	.012	.000	.000	1021.40	9794.42
.001948	270.	220.	200.	20	18	0	.00	464.36	10258.79

THIS RUN EXECUTED 25JAN95 00:38:36

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BULLARD WASH,WASH 10,ROO

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	SSTA	STCHL	STCHR	ENDST	DIFWSX	TOPWID	DEPTH	ELMIN	10*KS	VCH
	6.320	4662.00	1003.99	9555.70	9900.00	10100.00	11027.44	.00	1471.74	3.09	1000.90	17.71	3.15
	6.320	4662.00	1004.59	9650.00	9900.00	10100.00	10300.00	.00	650.00	3.69	1000.90	15.98	3.40
	6.426	4662.00	1005.27	9494.68	9935.00	10100.00	10688.97	1.28	1194.29	2.47	1002.80	31.69	3.76
	6.426	4662.00	1005.78	9700.00	9935.00	10100.00	10300.00	1.18	600.00	2.98	1002.80	31.65	4.26
	6.500	4662.00	1006.55	9650.00	9960.00	10100.00	10235.00	1.28	585.00	2.85	1003.70	36.53	4.40
	6.500	4662.00	1006.90	9650.00	9960.00	10100.00	10235.00	1.12	585.00	3.20	1003.70	24.50	3.90
	6.581	4662.00	1008.15	9805.00	9940.00	10040.00	10160.00	1.60	355.00	3.55	1004.60	42.16	5.61
	6.581	4662.00	1008.14	9805.00	9940.00	10040.00	10160.00	1.25	355.00	3.54	1004.60	42.38	5.62
	6.631	4662.00	1009.33	9891.00	9510.00	10130.00	10109.00	1.18	218.00	3.33	1006.00	82.00	6.97
	6.631	4662.00	1009.33	9891.00	9510.00	10130.00	10109.00	1.19	218.00	3.33	1006.00	81.97	6.97
*	6.650	4662.00	1011.39	9916.36	9916.00	10084.00	10083.64	2.06	167.29	2.89	1008.50	96.35	9.67
*	6.650	4662.00	1011.39	9916.36	9916.00	10084.00	10083.64	2.06	167.29	2.89	1008.50	96.39	9.67
*	6.679	4703.00	1011.77	9954.02	9954.00	10046.00	10045.98	.38	91.96	4.77	1007.00	18.96	10.73
*	6.679	4703.00	1011.77	9954.02	9954.00	10046.00	10045.98	.38	91.96	4.77	1007.00	18.90	10.72
*	6.688	4703.00	1013.09	9954.00	9954.00	10046.00	10046.00	1.32	92.00	7.09	1006.00	5.38	7.22
*	6.688	4703.00	1013.08	9954.00	9954.00	10046.00	10046.00	1.31	92.00	7.08	1006.00	5.39	7.23
*	6.701	4088.00	1013.71	9883.16	9880.00	10070.00	10069.99	.63	186.83	7.48	1006.23	8.79	4.28
*	6.701	4088.00	1013.71	9883.22	9880.00	10070.00	10069.99	.63	186.78	7.48	1006.23	8.81	4.29
	6.739	4088.00	1013.89	9880.00	9880.00	10080.00	10079.99	.17	199.99	5.89	1008.00	12.46	4.64
	6.739	4088.00	1013.88	9880.00	9880.00	10080.00	10079.99	.17	199.99	5.88	1008.00	12.50	4.65

6.799	4088.00	1014.22	9929.27	9919.00	10090.00	10077.50	.33	148.23	7.54	1006.68	13.01	5.32
6.799	4088.00	1014.22	9929.28	9919.00	10090.00	10077.48	.33	148.20	7.54	1006.68	13.03	5.32

	SECNO	Q	CWSEL	SSTA	STCHL	STCHR	ENDST	DIFWSX	TOPWID	DEPTH	ELMIN	10*KS	VCH
	6.878	4088.00	1014.81	9955.99	9955.00	10135.00	10130.33	.59	174.34	7.51	1007.30	13.22	5.01
	6.878	4088.00	1014.77	9956.23	9955.00	10135.00	10110.00	.55	153.77	7.47	1007.30	12.24	5.14
	6.890	4088.00	1015.02	9919.92	9919.99	10111.09	10111.16	.21	191.24	6.82	1008.20	7.41	4.07
	6.890	4088.00	1014.93	9947.00	9919.99	10111.09	10111.00	.17	164.00	6.73	1008.20	9.33	4.55
	6.897	4088.00	1015.04	9919.93	9919.99	10111.09	10111.16	.02	191.23	6.64	1008.40	8.34	4.22
	6.897	4088.00	1014.96	9947.00	9919.99	10111.09	10111.00	.02	164.00	6.56	1008.40	10.31	4.70
*	6.908	4088.00	1014.95	9956.93	9940.00	10120.00	10119.05	-.09	162.13	7.40	1007.55	17.83	5.65
	6.908	4088.00	1014.92	9957.10	9940.00	10120.00	10118.44	-.04	161.34	7.37	1007.55	18.13	5.69
*	6.988	4088.00	1015.69	9860.00	9770.00	10170.00	10166.89	.74	306.89	7.39	1008.30	4.54	2.91
*	6.988	4088.00	1015.67	9860.00	9770.00	10170.00	10166.73	.75	306.73	7.37	1008.30	4.60	2.92
*	7.074	4088.00	1015.80	9925.83	9920.00	10106.00	10099.84	.10	174.02	6.79	1009.01	23.59	5.97
*	7.074	4088.00	1015.78	9926.65	9920.00	10106.00	10099.60	.10	172.95	6.77	1009.01	23.95	6.02
*	7.145	4088.00	1016.67	9872.71	9870.00	10091.40	10090.04	.87	217.33	7.07	1009.60	11.31	4.39
*	7.145	4088.00	1016.66	9872.76	9870.00	10091.40	10090.02	.89	217.26	7.06	1009.60	11.35	4.39
*	7.150	4088.00	1016.14	9940.40	9938.00	10103.64	10096.62	-.53	156.22	4.84	1011.30	67.12	8.54
*	7.150	4088.00	1016.13	9940.40	9938.00	10103.64	10096.54	-.53	156.14	4.83	1011.30	67.75	8.57
*	7.165	4088.00	1017.17	9963.62	9960.00	10155.00	10151.03	1.03	187.42	7.31	1009.86	15.09	5.07
*	7.165	4088.00	1017.12	9963.82	9960.00	10155.00	10125.00	.99	161.17	7.26	1009.86	14.63	5.31
	7.264	4088.00	1018.02	9860.00	9700.00	10105.00	10099.27	.85	239.27	7.17	1010.85	13.78	4.48
	7.264	4088.00	1018.00	9860.00	9700.00	10105.00	10099.13	.88	239.13	7.15	1010.85	14.06	4.50
	7.358	4088.00	1018.70	9885.75	9880.00	10127.00	10120.06	.68	234.31	7.11	1011.59	13.48	4.49
	7.358	4088.00	1018.69	9885.81	9880.00	10127.00	10120.03	.69	234.22	7.10	1011.59	13.51	4.49
	7.445	4088.00	1019.20	9974.92	9975.00	10149.60	10149.66	.50	174.74	5.83	1013.37	8.68	4.43
	7.445	4088.00	1019.19	9974.93	9975.00	10149.60	10149.66	.50	174.73	5.82	1013.37	8.69	4.43
	7.453	4088.00	1019.22	9974.93	9975.00	10149.60	10149.66	.02	174.73	5.65	1013.57	9.73	4.58
	7.453	4088.00	1019.22	9974.93	9975.00	10149.60	10149.66	.02	174.73	5.65	1013.57	9.74	4.58
	7.549	4088.00	1019.82	9893.56	9890.00	10168.00	10160.49	.60	266.93	6.22	1013.60	10.59	3.96
	7.549	4088.00	1019.82	9893.60	9890.00	10168.00	10160.48	.60	266.88	6.22	1013.60	10.61	3.97
*	7.646	4088.00	1020.28	9937.58	9890.00	10108.00	10074.95	.46	137.38	5.38	1014.90	44.55	7.94
*	7.646	4088.00	1020.28	9937.58	9890.00	10108.00	10074.95	.46	137.37	5.38	1014.90	44.58	7.94
*	7.680	4121.00	1020.66	9940.00	9940.00	10050.00	10050.00	.38	110.00	5.16	1015.50	3.88	7.27
*	7.680	4121.00	1020.66	9940.00	9940.00	10050.00	10050.00	.38	110.00	5.16	1015.50	3.88	7.27
*	7.704	4121.00	1022.06	9930.40	9925.00	10110.00	10099.66	1.40	169.26	6.26	1015.80	1.75	4.80
*	7.704	4121.00	1022.06	9930.40	9925.00	10110.00	10099.65	1.40	169.25	6.26	1015.80	1.75	4.80

1

	SECNO	Q	CWSEL	SSTA	STCHL	STCHR	ENDST	DIFWSX	TOPWID	DEPTH	ELMIN	10*KS	VCH
	7.712	4121.00	1022.02	9933.11	9930.00	10120.00	10118.60	-.04	185.49	5.62	1016.40	2.89	5.38
	7.712	4121.00	1022.02	9933.12	9930.00	10120.00	10118.60	-.04	185.48	5.62	1016.40	2.89	5.38
*	7.753	4121.00	1023.69	9794.41	9650.00	10335.00	10258.81	1.67	464.41	2.29	1021.40	19.47	6.63
*	7.753	4121.00	1023.69	9794.42	9650.00	10335.00	10258.79	1.67	464.36	2.29	1021.40	19.48	6.63

1

BULLARD WASH,WASH 10,ROO

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
6.320	1003.99	.00	1004.07	1471.74	926.91	1806.94	1928.15	.00	.00	9900.00	10100.00	.00
6.320	1004.59	.60	1004.70	650.00	1237.10	2356.90	1068.00	650.00	9650.00	9900.00	10100.00	10300.00
6.426	1005.27	.00	1005.37	1194.29	1481.97	1494.11	1685.91	.00	.00	9935.00	10100.00	.00
6.426	1005.78	.50	1005.94	600.00	1459.06	2048.32	1154.62	600.00	9700.00	9935.00	10100.00	10300.00
6.500	1006.55	.00	1006.72	585.00	2087.61	1694.21	880.19	585.00	9650.00	9960.00	10100.00	10235.00
6.500	1006.90	.35	1007.03	585.00	2088.64	1691.47	881.90	585.00	9650.00	9960.00	10100.00	10235.00
6.581	1008.15	.00	1008.44	355.00	1415.04	1991.36	1255.60	355.00	9805.00	9940.00	10040.00	10160.00
6.581	1008.14	-.01	1008.44	355.00	1414.99	1991.45	1255.56	355.00	9805.00	9940.00	10040.00	10160.00

	6.631	1009.33	.00	1010.08	218.00	.00	4662.00	.00	218.00	9891.00	9510.00	10130.00	10109.00
	6.631	1009.33	.00	1010.08	218.00	.00	4662.00	.00	218.00	9891.00	9510.00	10130.00	10109.00
*	6.650	1011.39	.00	1012.85	167.29	.00	4662.00	.00	.00	.00	9916.00	10084.00	.00
*	6.650	1011.39	.00	1012.85	167.29	.00	4662.00	.00	.00	.00	9916.00	10084.00	.00
*	6.679	1011.77	.00	1013.56	91.96	.00	4703.00	.00	.00	.00	9954.00	10046.00	.00
*	6.679	1011.77	.00	1013.55	91.96	.00	4703.00	.00	.00	9954.00	9954.00	10046.00	10046.00
*	6.688	1013.09	.00	1013.90	92.00	.00	4703.00	.00	.00	.00	9954.00	10046.00	.00
*	6.688	1013.08	-.01	1013.89	92.00	.00	4703.00	.00	92.00	9954.00	9954.00	10046.00	10046.00
*	6.701	1013.71	.00	1014.00	186.83	.00	4088.00	.00	.00	.00	9880.00	10070.00	.00
*	6.701	1013.71	-.01	1013.99	186.78	.00	4088.00	.00	.00	.00	9880.00	10070.00	.00
	6.739	1013.89	.00	1014.22	199.99	.00	4088.00	.00	.00	.00	9880.00	10080.00	.00
	6.739	1013.88	.00	1014.22	199.99	.00	4088.00	.00	.00	.00	9880.00	10080.00	.00
	6.799	1014.22	.00	1014.66	148.23	.00	4088.00	.00	.00	.00	9919.00	10090.00	.00
	6.799	1014.22	.00	1014.66	148.20	.00	4088.00	.00	.00	.00	9919.00	10090.00	.00
	6.878	1014.81	.00	1015.20	174.34	.00	4088.00	.00	.00	.00	9955.00	10135.00	.00
	6.878	1014.77	-.04	1015.18	153.77	.00	4088.00	.00	155.00	9955.00	9955.00	10135.00	10110.00
	6.890	1015.02	.00	1015.28	191.24	.00	4087.98	.02	.00	.00	9919.99	10111.09	.00
	6.890	1014.93	-.09	1015.26	164.00	.00	4088.00	.00	164.00	9947.00	9919.99	10111.09	10111.00
	6.897	1015.04	.00	1015.32	191.23	.00	4087.98	.02	.00	.00	9919.99	10111.09	.00
	6.897	1014.96	-.08	1015.30	164.00	.00	4088.00	.00	164.00	9947.00	9919.99	10111.09	10111.00
*	6.908	1014.95	.00	1015.45	162.13	.00	4088.00	.00	.00	.00	9940.00	10120.00	.00
	6.908	1014.92	-.03	1015.42	161.34	.00	4088.00	.00	.00	.00	9940.00	10120.00	.00
*	6.988	1015.69	.00	1015.82	306.89	.00	4088.00	.00	-9860.00	9860.00	9770.00	10170.00	10170.00
*	6.988	1015.67	-.02	1015.81	306.73	.00	4088.00	.00	-9860.00	9860.00	9770.00	10170.00	10170.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	7.074	1015.80	.00	1016.35	174.02	.00	4088.00	.00	.00	.00	9920.00	10106.00	.00
*	7.074	1015.78	-.02	1016.34	172.95	.00	4088.00	.00	.00	.00	9920.00	10106.00	.00
*	7.145	1016.67	.00	1016.97	217.33	.00	4088.00	.00	.00	.00	9870.00	10091.40	.00
*	7.145	1016.66	-.01	1016.96	217.26	.00	4088.00	.00	.00	.00	9870.00	10091.40	.00
	7.150	1016.14	.00	1017.27	156.22	.00	4088.00	.00	.00	.00	9938.00	10103.64	.00
	7.150	1016.13	-.01	1017.27	156.14	.00	4088.00	.00	.00	.00	9938.00	10103.64	.00
*	7.165	1017.17	.00	1017.57	187.42	.00	4088.00	.00	.00	.00	9960.00	10155.00	.00
*	7.165	1017.12	-.05	1017.56	161.17	.00	4088.00	.00	165.00	9960.00	9960.00	10155.00	10125.00
	7.264	1018.02	.00	1018.33	239.27	.00	4088.00	.00	-9860.00	9860.00	9700.00	10105.00	10105.00
	7.264	1018.00	-.01	1018.32	239.13	.00	4088.00	.00	-9860.00	9860.00	9700.00	10105.00	10105.00
	7.358	1018.70	.00	1019.01	234.31	.00	4088.00	.00	.00	.00	9880.00	10127.00	.00
	7.358	1018.69	.00	1019.01	234.22	.00	4088.00	.00	.00	.00	9880.00	10127.00	.00
	7.445	1019.20	.00	1019.50	174.74	.03	4087.95	.02	.00	.00	9975.00	10149.60	.00
	7.445	1019.19	.00	1019.50	174.73	.03	4087.95	.02	.00	.00	9975.00	10149.60	.00
	7.453	1019.22	.00	1019.54	174.73	.03	4087.96	.02	.00	.00	9975.00	10149.60	.00
	7.453	1019.22	.00	1019.54	174.73	.03	4087.96	.02	.00	.00	9975.00	10149.60	.00
	7.549	1019.82	.00	1020.07	266.93	.00	4088.00	.00	.00	.00	9890.00	10168.00	.00
	7.549	1019.82	.00	1020.06	266.88	.00	4088.00	.00	.00	.00	9890.00	10168.00	.00
*	7.646	1020.28	.00	1021.26	137.38	.00	4088.00	.00	.00	.00	9890.00	10108.00	.00
*	7.646	1020.28	.00	1021.26	137.37	.00	4088.00	.00	.00	.00	9890.00	10108.00	.00
*	7.680	1020.66	.00	1021.48	110.00	.00	4121.00	.00	.00	.00	9940.00	10050.00	.00
*	7.680	1020.66	.00	1021.48	110.00	.00	4121.00	.00	.00	.00	9940.00	10050.00	.00
*	7.704	1022.06	.00	1022.42	169.26	.00	4121.00	.00	.00	.00	9925.00	10110.00	.00
*	7.704	1022.06	.00	1022.42	169.25	.00	4121.00	.00	.00	.00	9925.00	10110.00	.00
	7.712	1022.02	.00	1022.47	185.49	.00	4121.00	.00	.00	.00	9930.00	10120.00	.00
	7.712	1022.02	.00	1022.47	185.48	.00	4121.00	.00	.00	.00	9930.00	10120.00	.00
*	7.753	1023.69	.00	1024.37	464.41	.00	4121.00	.00	10335.00	.00	9650.00	10335.00	10335.00
*	7.753	1023.69	.00	1024.37	464.36	.00	4121.00	.00	10335.00	.00	9650.00	10335.00	10335.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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TION SECNO=      6.650  PROFILE=  1  CRITICAL DEPTH ASSUMED
JTION SECNO=     6.650  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      6.650  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=      6.650  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      6.650  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      6.679  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      6.679  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      6.688  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      6.688  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      6.701  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      6.701  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      6.908  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      6.988  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      6.988  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.074  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.074  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.145  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.145  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.150  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.150  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.165  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.165  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.646  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.646  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.680  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.680  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      7.704  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      7.704  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      7.753  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      7.753  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      7.753  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=      7.753  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      7.753  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      7.753  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
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FLOODWAY DATA, BULLARD WASH,WASH 10,ROO
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY		DIFFERENCE
6.320	650.	2019.	2.3	1004.6	1004.0	1003.6	.6
6.426	600.	1631.	2.9	1005.8	1005.3	1005.0	.5
6.500	585.	1788.	2.6	1006.8	1006.5	1006.2	.3
6.581	355.	1222.	3.8	1008.1	1008.1	1007.7	.0
6.631	218.	669.	7.0	1009.3	1009.3	1008.8	.0
6.650	167.	482.	9.7	1011.4	1011.4	1010.8	.0
6.679	92.	439.	10.7	1011.8	1011.8	1011.3	.0
6.688	92.	650.	7.2	1013.1	1013.1	1012.2	.0
6.701	187.	954.	4.3	1013.7	1013.7	1012.6	.0
6.739	200.	880.	4.6	1013.9	1013.9	1012.9	.0
6.799	148.	768.	5.3	1014.2	1014.2	1013.4	.0
6.878	154.	796.	5.1	1014.8	1014.8	1014.0	.0
6.890	164.	898.	4.6	1014.9	1015.0	1014.2	-.1
6.897	164.	870.	4.7	1014.9	1015.0	1014.2	-.1
6.908	161.	719.	5.7	1015.0	1015.0	1014.2	.0
6.988	307.	1400.	2.9	1015.7	1015.7	1014.9	.0
7.074	173.	680.	6.0	1015.8	1015.8	1015.0	.0
7.145	217.	930.	4.4	1016.7	1016.7	1016.0	.0
7.150	156.	477.	8.6	1016.1	1016.1	1015.4	.0
7.165	161.	771.	5.3	1017.2	1017.2	1016.7	.0
7.264	239.	908.	4.5	1018.0	1018.0	1017.5	.0
7.358	234.	910.	4.5	1018.7	1018.7	1018.2	.0
7.445	175.	923.	4.4	1019.2	1019.2	1018.7	.0
7.453	175.	892.	4.6	1019.2	1019.2	1018.7	.0
7.549	267.	1031.	4.0	1019.8	1019.8	1019.3	.0
7.646	137.	515.	7.9	1020.3	1020.3	1019.8	.0
7.680	110.	567.	7.3	1020.7	1020.7	1020.4	.0
7.704	169.	858.	4.8	1022.1	1022.1	1021.1	.0
7.712	185.	766.	5.4	1022.0	1022.0	1021.6	.0
7.753	464.	621.	6.6	1023.7	1023.7	1023.4	.0

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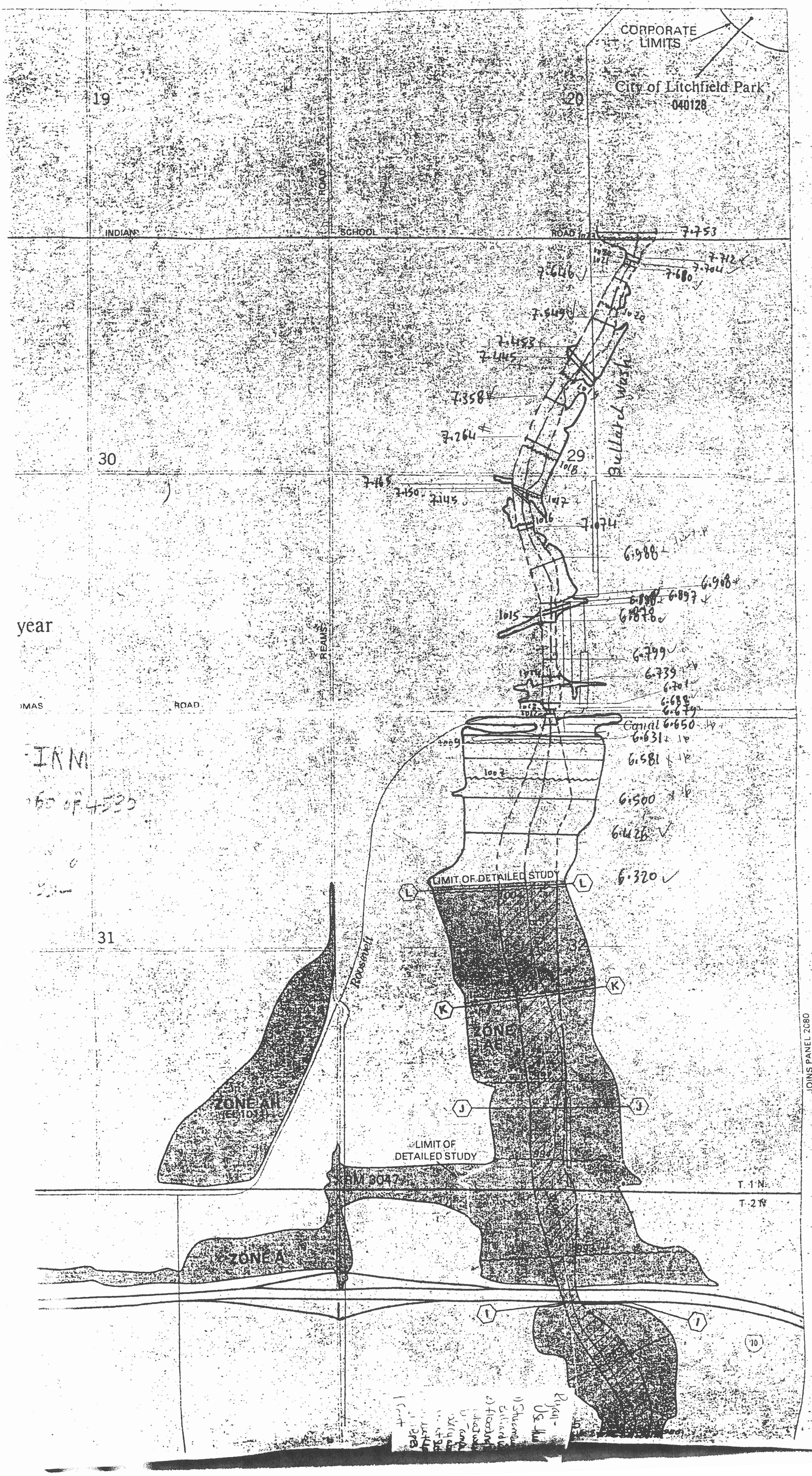
CORPORATE LIMITS
City of Litchfield Park
040128
19
20
30
29
31
32
INDIAN
SCHOOL
ROAD
REAMS
ROAD
Bullard Wash
Roosevelt
Canal
LIMIT OF DETAILED STUDY
ZONE AE
ZONE AH
ZONE A
BM 3047
T. 1 N.
T. 2 N.
JOINS PANEL 2080
7.753
7.712
7.704
7.680
7.646
7.549
7.453
7.445
7.358
7.264
7.165
7.150
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7.074
6.988
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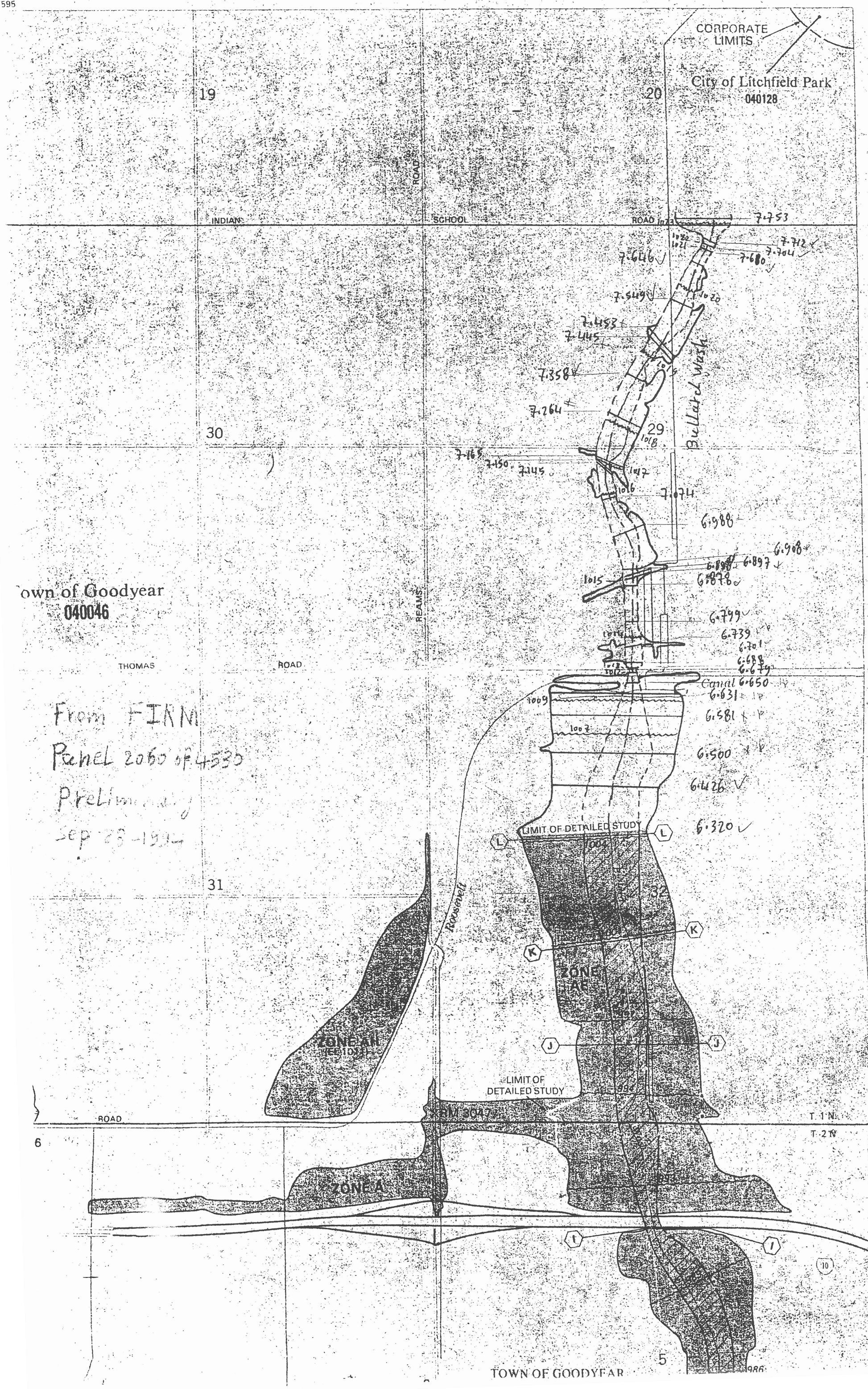
6.320

year


CORPORATE LIMITS
City of Litchfield Park
040128
19
20
INDIAN
SCHOOL
ROAD
REAMS
30
29
Bullard Wash
Town of Goodyear
040046
THOMAS
ROAD
From FIRM
Panel 2060 of 4530
Preliminary
Sep 28 1984
31
32
Roosevelt
Canal
LIMIT OF DETAILED STUDY
ZONE AE
ZONE AH
ZONE A
JOINS PANEL 2080
T. 1 N.
T. 2 N.
6
5
TOWN OF GOODYEAR

FEMA USE ONLY

FORM 1

REVISION REQUESTOR AND COMMUNITY OFFICIAL FORM

1. The basis for this revision request is (are): (check all that apply)
   - [ ] Physical change
     - [ ] Existing
     - [ ] Proposed
   - [ ] Improved methodology
   - [ ] Improved data
   - [ ] Floodway revision
   - [x] Other New Detailed study
   - Explain
2. Flooding Source: Bullard Wash
3. Project Name/Identifier: Bullard Wash, RID Canal To Indian School Road
4. FEMA zone designations affected: A, B
   (example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)
5. The NFIP map panel(s) affected for all impacted communities is (are):

	Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
EX:	480301	Katy, City	Harris, Fort Bend	TX	480301	0005D	02/08/83
	480287	Harris County	Harris	TX	48201C	0220G	09/28/90
	040046	Goodyear	Maricopa	AZ	04013C	2060D	04/15/88

6. The submitted request encompasses the following types of flooding, structures, and associated disciplines: (check all that apply)

Types of Flooding	Structures	Disciplines*
[ ] Riverine	[ ] Channelization	[ ] Water Resources
[ ] Coastal	[ ] Levee/Floodwall	[ ] Hydrology
[ ] Alluvial Fan	[x] Bridge/Culvert	[ ] Hydraulics
[ ] Shallow Flooding	[ ] Dam	[ ] Sediment Transport
[ ] Lakes	[ ] Coastal	[ ] Interior Drainage
Affected by wind/wave action	[ ] Fill	[ ] Structural
[ ] Yes	[ ] Pump Station	[ ] Geotechnical
[ ] No	[ ] None	[ ] Land Surveying
[ ] Other (describe)	[x] Other (describe) RID Canal Overchute	[ ] Other (describe)

* Attach completed "Certification by Registered Professional and/or Land Surveyor" Form for each discipline checked. (Form 2)

MICHAEL BAKER, JR., INC.
RECEIVED
FEB 10 1995
ALEXANDRIA, VIRGINIA

Floodway Information

- Does the affected flooding source have a floodway designated on the effective FIRM or FBFM?
  ☐ Yes ☒ No
- Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM?
  ☐ Yes ☐ No

If yes, give reason: N/A

Attach request to revise the floodway from community CEO or designated official.

Attach copy of either a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

Does the State have jurisdiction over the floodway or it's adoption by communities participating in the NFIP? ☒ Yes ☐ No

If yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

Proposed Encroachments

With floodways:

1A. Does the revision request involve fill, new construction, substantial improvement, or other development in the floodway? ☐ Yes ☒ No

1B. If yes, does the development cause the 100-year water surface elevation increase at any location by more than 0.000 feet? ☐ Yes ☐ No

Without floodways:

2A. Does the revision request involve fill, new construction, substantial improvement, or other development in the 100-year floodplain? ☐ Yes ☒ No

2B. If yes, does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the 100-year water surface elevation increase at any location by more than one foot (or other surcharge limit if community or state has adopted more stringent criteria)? ☐ Yes ☐ No

If answer to either Items 1B or 2B is yes, please provide documentation that all requirements of Section 65.12 of the NFIP regulations have been met.

Revision Requestor Acknowledgement

- Having read NFIP Regulations, 44 CFR Ch. I, parts 59, 60, 61, 65, and 72, I believe that the proposed revision ☒ is ☐ is not in compliance with the requirements of the aforementioned NFIP Regulations.

Community Official Acknowledgement

- Was this revision request reviewed by the community for compliance with the community's adopted floodplain management ordinances? ☒ Yes ☐ No
- Does this revision request have the endorsement of the community? ☒ Yes ☐ No

If no to either of the above questions, please explain: _____

Please note that community acknowledgement and/or notification is required for all requests as outlined in Section 65.4 (b) of the NFIP Regulations.

Operation and Maintenance

- Does the physical change involve a flood control structure (e.g., levees, floodwalls, channelization, basins, dams)? ☐ Yes ☒ No

If yes, please provide the following information for each of the new flood control structures:

A. Inspection of the flood control project will be conducted periodically by _____ (entity)

_____ with a maximum interval of _____ months between inspections.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by _____ (entity)

to ensure the integrity and degree of flood protection of the structure.

C. A formal plan of operation, including documentation of the flood warning system, specific actions and assignments of responsibility by individual name or title, and provisions for testing the plan at intervals not less than one year, ☐ has ☐ has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for ☐ performing ☐ overseeing compliance with the maintenance and operation plans of the (Name) _____ flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Attach operation and maintenance plans

Requested Response from FEMA

- After examining the pertinent NFIP regulations and reviewing the document entitled "Appeals, Revisions, and Amendments to Flood Insurance Maps: A Guide for Community Officials," dated January 1990, this request is for a:

____a. CLOMR — A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision (LOMR or PMR), or proposed hydrology changes (see 44 CFR Ch. I, Parts 60, 65, and 72).

____b. LOMR — A letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations. LOMRs typically depict decreased flood hazards. (See 44 CFR Ch. I, Parts 60 and 65.)

X c. PMR — A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects increased flood hazards or large-scope changes. (See 44 CFR Ch. I, Parts 60 and 65.)

____d. Other: Describe _____

_____

_____

Forms Included

Form 2 entitled "Certification By Registered Professional Engineer And/Or Land Surveyor" must be submitted.

The following forms should be included with this request if (check the included forms):

• Hydrologic analysis for riverine flooding differs from that used to develop FIRM	☐ Hydrologic Analysis Form (Form 3)
• Hydraulic analysis for riverine flooding differs from that used to develop FIRM	☒ Riverine Hydraulic Analysis (Form 4)
• The request is based solely on updated topographic information	☒ Riverine/Coastal Mapping (Form 5)
• The request involves any type of channel modification	☐ Channelization (Form 6)
• The request involves new bridge or culvert or revised analysis of an existing bridge or culvert	☒ Bridge/Culvert Form (Form 7)
• The request involves a new or revised levee/floodwall system	☐ Levee/Floodwall System Analysis (Form 8)
• The request involves analysis of coastal flooding	☐ Coastal Analysis Form (Form 9)
• The request involves coastal structures credited as providing protection from the 100-year flood	☐ Coastal Structures Form (Form 10)
• The request involves an existing, proposed, or modified dam	☐ Dam Form (Form 11)
• This request involves structures credited as providing protection from the 100-year flood on an alluvial fan	☐ Alluvial Fan Flooding Form (Form 12)

Initial Review Fee

- The minimum initial review fee for the appropriate request category has been included.

  ☐ Yes ☐ No

  If yes, the amount submitted is $ _____.

  or

- This request is for a project that is for public benefit and is intended to reduce the flood hazard to existing development in identified flood hazard areas as opposed to planned floodplain development.

  ☒ Yes ☐ No

Note: I understand that my signature indicates that all information submitted in support of this request is correct.

Mark T. Gavan

Signature of Revision Requestor

Mark T. Gavan, Vice Pres.

Printed Name and Title of Revision Requestor

The WLB Group, Inc.

Company Name

Date Feb. 1, 1995

Note: Signature indicates that the community understands, from the revision requestor, the impacts of the revision on flooding conditions in the community.

Signature of Community Official

Printed Name and Title of Community Official

Community Name

Date

Attach letters from all affected jur nges to floodway, if applicable.

Note: Although a photograph of s review.

Patti

We are in the process of getting this signed by the Community. We should have it this week and will send it to you.

thx Mark

FEMA USE ONLY

FORM 2

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2.

2. I am licensed with an expertise in Hydrology & Hydraulics
[example: water resources (hydrology, hydraulics, sediment transport, interior drainage)* structural, geotechnical, land surveying.]

3. I have 15 years experience in the expertise listed above.

4. I have ☐ prepared ☒ reviewed the attached supporting data and analyses related to my expertise.

5. I ☒ have ☐ have not visited and physically viewed the project.

6. In my opinion, the following analyses and/or design, were performed in accordance with sound engineering practices:
Floodplain/Floodway Delineation

7. Based upon the following review, the modifications in place have been constructed in general accordance with plans and specifications.

Basis for above statement: (check all that apply)

a. ☐ Viewed all phases of actual construction.
b. ☐ Compared plans and specifications with as-built survey information.
c. ☐ Examined plans and specifications and compared with completed projects.
d. ☒ Other New Study

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

Name: Mark T. Gavan
(please print or type)

Title: Vice President - The WLB Group, Inc.
(please print or type)

Registration No. 15594, P.E. Expiration Date: December 31, 1996

State Arizona

Type of License Professional Engineer

Mark T. Gavan
Signature

Feb. 1, 1995
Date

REGISTERED PROFESSIONAL ENGINEER (CIVIL)
CERTIFICATE NO.
15594
MARK T.
GAVAN
Date Signed
ARIZONA, U.S.A.

Seal
(Optional)

*Specify Subdiscipline

Note: Insert not applicable (N/A) when statement does not apply.

Model Parameters (Cont'd)

5. Explain how reach lengths for channel and overbanks were determined:
Along Channel centerline and straight line between cross-sections in estimated overbank reaches.

Results
(from model used to revise 100-year water surface elevations)

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ☐ Yes ☒ No

b. Supercritical depth? ☐ Yes ☒ No

c. Critical depth? (see Note Below) ☒ Yes ☐ No

d. Other unique situations? ☐ Yes ☒ No

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum head loss between cross-sections? ΔWSEL= 2.05

3. What is the distance between the cross-sections in 2 above? 100

4. What is the maximum distance between cross-sections? 560

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? 1 foot

b. What is the maximum surcharge for the revised conditions? N/A foot

c. What is the maximum velocity? 10.7 fps

d. What type of erosion protection is provided? Riprap

Explain: There is inlet and outlet riprap erosion Protection of the RID Canal Overchute

Note: Critical depth occurs where floodwaters flow across an agricultural berm downstream of the RID Canal overchute (sec. 6.650) and at the furthest upstream cross-section (sec. 7.753) where flow enters the Indian School Road Box Culverts

Results (Cont'd)

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ☐ Yes ☒ No

If yes, explain:

_____

_____

_____

Attach a Floodway Data Table showing data for each cross section listed in the published floodway data table in the FIS report.

7. Do 100-year water surface elevations increase at any location? N/A ☐ Yes ☐ No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

Please attach a completed comparison table entitled: Water Surface Elevation Check.

Revised FIRM/FBFM and Flood Profiles

Not Applicable

A. The revised water surface elevations tie into those computed by the effective FIS Model (10-, 50-, 100-, and 500-year), downstream of the project at cross-section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, downstream of the project at cross section _____ within _____ feet and upstream of the project at cross section _____ within _____ feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits.

Proceed to Riverine/Coastal Mapping Form.

FLOODWAY DATA, BULLARD WASH,WASH 10,ROO
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
6.320	650.	2019.	2.3	1004.6	1004.0	.6
6.426	600.	1631.	2.9	1005.8	1005.3	.5
6.500	585.	1788.	2.6	1006.8	1006.5	.3
6.581	355.	1222.	3.8	1008.1	1008.1	.0
6.631	218.	669.	7.0	1009.3	1009.3	.0
6.650	167.	482.	9.7	1011.4	1011.4	.0
6.679	92.	439.	10.7	1011.8	1011.8	.0
6.688	92.	650.	7.2	1013.1	1013.1	.0
6.701	187.	954.	4.3	1013.7	1013.7	.0
6.739	200.	880.	4.6	1013.9	1013.9	.0
6.799	148.	768.	5.3	1014.2	1014.2	.0
6.878	154.	796.	5.1	1014.8	1014.8	.0
6.890	164.	898.	4.6	1014.9	1015.0	-.1
6.897	164.	870.	4.7	1014.9	1015.0	-.1
6.908	161.	719.	5.7	1015.0	1015.0	.0
6.988	307.	1400.	2.9	1015.7	1015.7	.0
7.074	173.	680.	6.0	1015.8	1015.8	.0
7.145	217.	930.	4.4	1016.7	1016.7	.0
7.150	156.	477.	8.6	1016.1	1016.1	.0
7.165	161.	771.	5.3	1017.2	1017.2	.0
7.264	239.	908.	4.5	1018.0	1018.0	.0
7.358	234.	910.	4.5	1018.7	1018.7	.0
7.445	175.	923.	4.4	1019.2	1019.2	.0
7.453	175.	892.	4.6	1019.2	1019.2	.0
7.549	267.	1031.	4.0	1019.8	1019.8	.0
7.646	137.	515.	7.9	1020.3	1020.3	.0
7.680	110.	567.	7.3	1020.7	1020.7	.0
7.704	169.	858.	4.8	1022.1	1022.1	.0
7.712	185.	766.	5.4	1022.0	1022.0	.0
7.753	464.	621.	6.6	1023.7	1023.7	.0

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FORM 5

RIVERINE/COASTAL MAPPING FORM

Community Name: Town of Goodyear

Flooding Source: Bullard Wash

Project Name/Identifier: Bullard Wash, RID Canal to Indian School Road

Mapping Changes

1. A topographic work map of suitable scale, contour interval, and planimetric definition must be submitted showing (insert N/A when not applicable):

		Included
A.	Revised 100- year floodplain boundaries (Zone A)	☒ Yes ☐ No ☐ N/A
B.	Revised 100- and 500-year floodplain boundaries	☐ Yes ☐ No ☒ N/A
C.	Revised 100-year floodway boundaries	☒ Yes ☐ No ☐ N/A
D.	Location and alignment of all cross sections used in the revised hydraulic model with stationing control indicated	☐ Yes ☐ No ☐ N/A
E.	Stream alignments, road and dam alignments	☐ Yes ☐ No ☐ N/A
F.	Current community boundaries	☐ Yes ☐ No ☐ N/A
G.	Effective 100- and 500-year floodplain and 100-year floodway boundaries from the FIRM/FBFM reduced or enlarged to the scale of the topographic work map	☐ Yes ☐ No ☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ Yes ☐ No ☒ N/A
I.	The requestor's property boundaries and community easements	☐ Yes ☐ No ☒ N/A
J.	The signed certification of a registered professional engineer	☒ Yes ☐ No ☐ N/A
K.	Location and description of reference marks	☐ Yes ☐ No ☒ N/A
L.	Vertical datum (example: NGVD 1929, NAVD 1988, etc.)	☒ Yes ☐ No ☐ N/A
M.	Coastal zone designations tie into adjacent areas not being revised	☐ Yes ☐ No ☒ N/A
N.	Location and alignment of all coastal transects used to revise the coastal analyses	☐ Yes ☐ No ☒ N/A

If any of the items above are marked no or N/A, please explain: _____

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)? Aerial Topography, 12/89 Field Survey, 12/89-4/90 Bullard Wash, RID Canal To Indian School Road as-built Survey 12-14-94

3. What is the scale and contour interval of the following workmaps?

   a. Effective FIS _____ scale _____ Contour interval _____

   b. Revision Request 1" = 400' & 1" = 100' scale 2 ft 1 ft Contour interval _____

Note: Revised topographic information must be of equal or greater detail

Mapping Changes (Continued)

4. Attach an annotated FIRM and FBFM at the scale of the effective FIRM and FBFM showing the revised 100-year and 500-year floodplains and the 100-year floodway boundaries and how they tie into those shown on the effective FIRM and FBFM downstream and upstream of the revision, or adjacent to the area of revision for coastal studies.

   Attach additional pages if needed.

5. Flood Boundaries and 100-year water surface elevations:

   Has the 100-year floodplain been shifted or increased or the 100-year water surface elevation increased at any location on property other than the requestor's or community's?

   ☐ Yes ☒ No

   If yes, please give the location of shift or increase and an explanation for the increase.

   _____

   _____

   _____

   a. Have the affected property owners been notified of this shift or increase and the effect it will have on their property? N/A ☐ Yes ☐ No

      If yes, please attach letters from these property owners stating they have no objections to the revised flood boundaries.

   b. What is the number of insurable structures that will be impacted by this shift or increase? N/A

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? N/A ☐ Yes ☐ No

   If yes, explain:

   _____

   _____

   _____

7. If a V-zone has been designated, has it been delineated to extend landward to the heel of the primary frontal dune? N/A ☐ Yes ☐ No

   If no, explain:

   _____

   _____

   _____

8. Manual or digital map submission:

   ☒ Manual
   ☐ Digital

   Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance of submission as possible.

Not Applicable

Earth Fill Placement

1. Has fill been placed in the regulatory floodway? ☐ Yes ☐ No

   If yes, please attach completed Riverine Hydraulic Form.

2. Has fill been placed in floodway fringe (area between the floodway and 100-year floodplain boundaries)? ☐ Yes ☐ No

   If yes, then complete A, B, C, and D below.

   A. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☐ No

      If yes, justify steeper slopes _____

      _____

   B. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.) ☐ Yes ☐ No

      If no, describe erosion protection provided _____

      _____

   C. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☐ Yes ☐ No

   D. Can structures conceivably be constructed on the fill at any time in the future? ☐ Yes ☐ No

      If yes, provide certification of fill compaction (item C. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer.

3. Has fill been placed in a V-zone? ☐ Yes ☐ No

   If yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall? ☐ Yes ☐ No

   If yes, attach the coastal structures form.

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FORM 7

BRIDGE/CULVERT FORM*

Community Name: Town of Goodyear
Flooding Source: Bullard Wash
Project Name/Identifier: Bullard Wash, RID Canal To Indian School Road.

Identifier

1. Name of roadway, railroad, etc.: Indian School Road.
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Section 70680
3. This revision reflects (check one of the following):
   - [X] New bridge/culvert not modeled in the FIS
   - [ ] Modified bridge/culvert previously modeled in the FIS
   - [ ] New bridge/culvert previously modeled in the FIS (Explain why new analysis was performed.) New Study

Background

Provide the following information about the structure:

1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3-foot diameter circular piers; 40-foot wide ogee shape spillway)
   Ten 10 ft x 5 ft x 125 ft Box Culverts
2. Entrance geometry of culvert/ type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) Wingwalls flared 45 degree (1:1); Inlet not skewed
3. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO,HY8) HEC-2 with Special Culvert Routine

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). (Attach explanation)

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

*One form per new/revised bridge/culvert

BRIDGE/CULVERT FORM

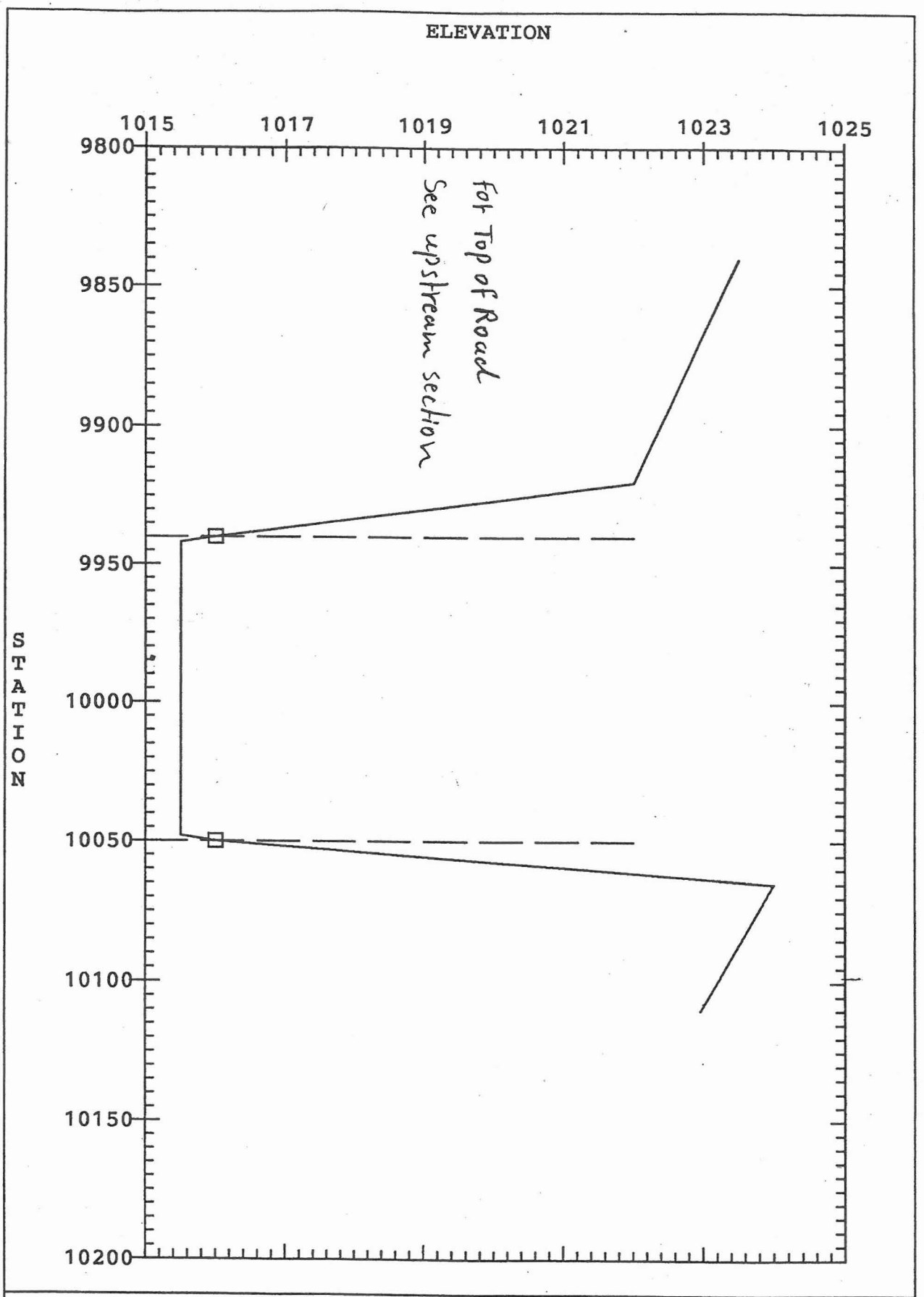
Analysis

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

See Attached Sheet

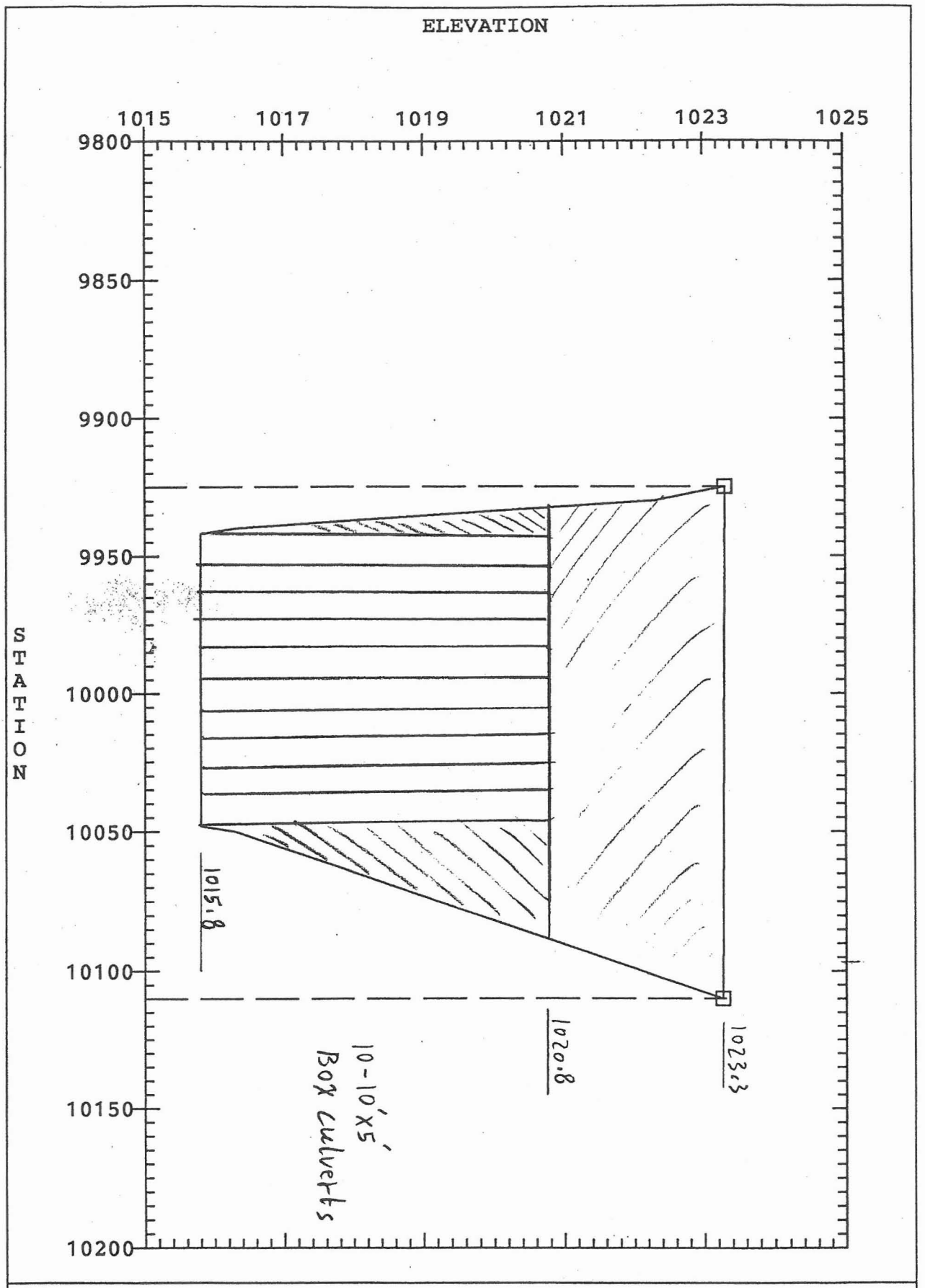
Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

See Attached Sheet



SECTION : 7.680

Bullard Wash, RID Canal To Indian School Road

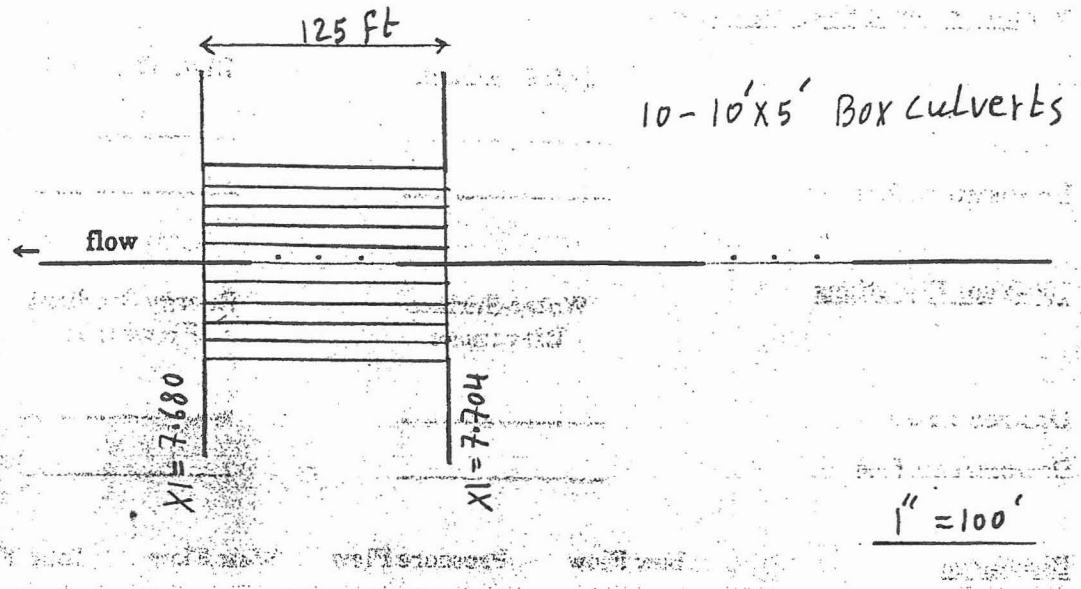


SECTION : 7.704

Bullard Wash, RID Canal To Indian School Road

Analysis (Cont'd)

Sketch the plan view of the structure(s). Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure(s).



Attach plans of the structure(s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft.)	125 ft
Calculated culvert/bridge area (ft^2) by the hydraulic model, if applicable	500 ft^2
Total culvert/bridge area (ft^2)	500 ft^2

Analysis (Cont'd)

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	1023.3	1023.3
Downstream face	1022.0	1022.0

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1023.3	1023.3
Downstream face	1023.3	1023.3

100-Year Elevations

	Water-Surface Elevations	Energy Gradient Elevations
Upstream face	1022.06	1022.42
Downstream face	1020.66	1021.48

Discharge

	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure(s) (cfs)		culvert flow 4121	0	4121

The maximum depth of flow over the roadway/railroad (ft.) 0

Weir length (ft.) 0

Top Widths

	Floodplain	Floodway
Upstream face	169.3	169.3
Downstream face	110.0	110.0

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	185.0	185.0
Downstream face	110.0	110.0

Analysis (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.012
Friction loss coefficient through structure(s)	
Other loss coefficients (e.g., bend, manhole, etc.)	
Total loss coefficient	
Weir coefficient	3.00
Pier coefficient	
Contraction loss coefficient	0.30
Expansion loss coefficient	0.50

Sediment Transport Considerations

1. A. Is there any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year water-surface elevations?

   ☐ Yes ☐ No

   B. Based on the conditions (such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions), is there a potential for debris and sediment transport (including scour and deposition) to affect the 100-year water-surface elevations and/or conveyance capacity through the bridge/culvert?

   ☐ Yes ☐ No

2. If the answer to either 1A or 1B is yes:

   A. What is the estimated sediment (bed material) load?

   _____ cfs (attach gradation curve)

   Explain method used to estimate the sediment transport and the depth of scour and/or deposition _____

   B. Will sediment accumulate anywhere through the bridge/culvert?

   ☐ Yes ☐ No

   If yes, explain what is the impact on the conveyance capacity through the bridge/culvert? _____

Analysis (Cont'd)

Floodway Analysis

Explain method of bridge encroachment (floodway run) Continue flow within bridge or culvert opening until overtopping occurs.

Comments (explain any unusual situations):

Attach analysis

FEMA USE ONLY

FORM 1

REVISION REQUESTOR AND COMMUNITY OFFICIAL FORM

1. The basis for this revision request is (are): (check all that apply)
   - ☐ Physical change
     - ☐ Existing
     - ☐ Proposed
   - ☐ Improved methodology
   - ☐ Improved data
   - ☐ Floodway revision
   - ☒ Other New Detailed Study
     - Explain
2. Flooding Source: Bullard Wash
3. Project Name/Identifier: Bullard Wash, RID Canal To Indian School Road
4. FEMA zone designations affected: A, B
   (example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)
5. The NFIP map panel(s) affected for all impacted communities is (are):

	Community No.	Community Name	County	State	Map No.	Panel No.	Effective Date
EX:	480301	Katy, City	Harris, Fort Bend	TX	480301	0005D	02/08/83
	480287	Harris County	Harris	TX	48201C	0220G	09/28/90
	040046	Goodyear	Maricopa	AZ	04013C	2060D	04/15/88

6. The submitted request encompasses the following types of flooding, structures, and associated disciplines: (check all that apply)

Types of Flooding	Structures	Disciplines*
☐ Riverine	☐ Channelization	☐ Water Resources
☐ Coastal	☐ Levee/Floodwall	☐ Hydrology
☐ Alluvial Fan	☒ Bridge/Culvert	☐ Hydraulics
☐ Shallow Flooding	☐ Dam	☐ Sediment Transport
☐ Lakes	☐ Coastal	☐ Interior Drainage
Affected by wind/wave action	☐ Fill	☐ Structural
☐ Yes	☐ Pump Station	☐ Geotechnical
☐ No	☐ None	☐ Land Surveying
☐ Other (describe)	☒ Other (describe) RID Canal Overchute	☐ Other (describe)

* Attach completed "Certification by Registered Professional and/or Land Surveyor" Form for each discipline checked. (Form 2)

MICHAEL BAKER, JR., INC.
RECEIVED
FEB 1 0 1995
ALEXANDRIA, VIRGINIA

Floodway Information

- Does the affected flooding source have a floodway designated on the effective FIRM or FBFM?
  ☐ Yes ☒ No
- Does the revised floodway delineation differ from that shown on the effective FIRM or FBFM?
  ☐ Yes ☐ No

If yes, give reason: N/A

Attach request to revise the floodway from community CEO or designated official.

Attach copy of either a public notice distributed by the community stating the community's intent to revise the floodway or a statement by the community that it has notified all affected property owners and affected adjacent jurisdictions.

Does the State have jurisdiction over the floodway or it's adoption by communities participating in the NFIP? ☒ Yes ☐ No

If yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

Proposed Encroachments

With floodways:

1A. Does the revision request involve fill, new construction, substantial improvement, or other development in the floodway? ☐ Yes ☒ No

1B. If yes, does the development cause the 100-year water surface elevation increase at any location by more than 0.000 feet? ☐ Yes ☐ No

Without floodways:

2A. Does the revision request involve fill, new construction, substantial improvement, or other development in the 100-year floodplain? ☐ Yes ☒ No

2B. If yes, does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the 100-year water surface elevation increase at any location by more than one foot (or other surcharge limit if community or state has adopted more stringent criteria)? ☐ Yes ☐ No

If answer to either Items 1B or 2B is yes, please provide documentation that all requirements of Section 65.12 of the NFIP regulations have been met.

Revision Requestor Acknowledgement

- Having read NFIP Regulations, 44 CFR Ch. I, parts 59, 60, 61, 65, and 72, I believe that the proposed revision ☒ is ☐ is not in compliance with the requirements of the aforementioned NFIP Regulations.

Community Official Acknowledgement

- Was this revision request reviewed by the community for compliance with the community's adopted floodplain management ordinances? ☒ Yes ☐ No
- Does this revision request have the endorsement of the community? ☒ Yes ☐ No

If no to either of the above questions, please explain: _____

Please note that community acknowledgement and/or notification is required for all requests as outlined in Section 65.4 (b) of the NFIP Regulations.

Operation and Maintenance

- Does the physical change involve a flood control structure (e.g., levees, floodwalls, channelization, basins, dams)? ☐ Yes ☒ No

If yes, please provide the following information for each of the new flood control structures:

A. Inspection of the flood control project will be conducted periodically by _____ (entity)

_____ with a maximum interval of _____ months between inspections.

B. Based on the results of scheduled periodic inspections, appropriate maintenance of the flood control facilities will be conducted by _____ (entity)

to ensure the integrity and degree of flood protection of the structure.

C. A formal plan of operation, including documentation of the flood warning system, specific actions and assignments of responsibility by individual name or title, and provisions for testing the plan at intervals not less than one year, ☐ has ☐ has not been prepared for the flood control structure.

D. The community is willing to assume responsibility for ☐ performing ☐ overseeing compliance with the maintenance and operation plans of the (Name) _____ flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Attach operation and maintenance plans

Requested Response from FEMA

- After examining the pertinent NFIP regulations and reviewing the document entitled "Appeals, Revisions, and Amendments to Flood Insurance Maps: A Guide for Community Officials," dated January 1990, this request is for a:

____a. CLOMR — A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision (LOMR or PMR), or proposed hydrology changes (see 44 CFR Ch. I, Parts 60, 65, and 72).

____b. LOMR — A letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations. LOMRs typically depict decreased flood hazards. (See 44 CFR Ch. I, Parts 60 and 65.)

X c. PMR — A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects increased flood hazards or large-scope changes. (See 44 CFR Ch. I, Parts 60 and 65.)

____d. Other: Describe _____

_____

_____

Forms Included

Form 2 entitled "Certification By Registered Professional Engineer And/Or Land Surveyor" must be submitted.

The following forms should be included with this request if (check the included forms):

• Hydrologic analysis for riverine flooding differs from that used to develop FIRM	☐ Hydrologic Analysis Form (Form 3)
• Hydraulic analysis for riverine flooding differs from that used to develop FIRM	☒ Riverine Hydraulic Analysis (Form 4)
• The request is based solely on updated topographic information	☒ Riverine/Coastal Mapping (Form 5)
• The request involves any type of channel modification	☐ Channelization (Form 6)
• The request involves new bridge or culvert or revised analysis of an existing bridge or culvert	☒ Bridge/Culvert Form (Form 7)
• The request involves a new or revised levee/floodwall system	☐ Levee/Floodwall System Analysis (Form 8)
• The request involves analysis of coastal flooding	☐ Coastal Analysis Form (Form 9)
• The request involves coastal structures credited as providing protection from the 100-year flood	☐ Coastal Structures Form (Form 10)
• The request involves an existing, proposed, or modified dam	☐ Dam Form (Form 11)
• This request involves structures credited as providing protection from the 100-year flood on an alluvial fan	☐ Alluvial Fan Flooding Form (Form 12)

Initial Review Fee

- The minimum initial review fee for the appropriate request category has been included.

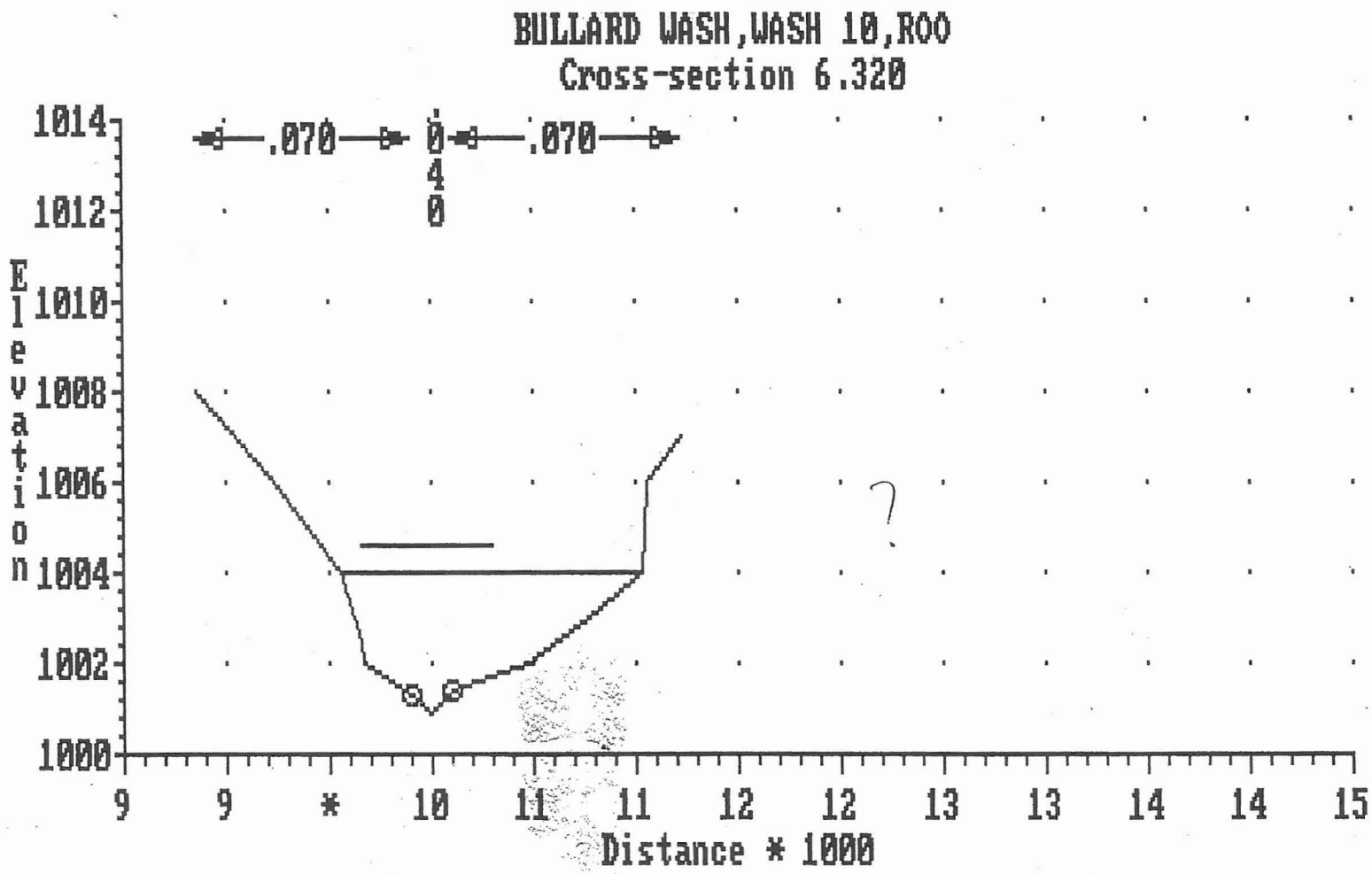
☐ Yes ☐ No

If yes, the amount submitted is $ _____.

or

- This request is for a project that is for public benefit and is intended to reduce the flood hazard to existing development in identified flood hazard areas as opposed to planned floodplain development.

☒ Yes ☐ No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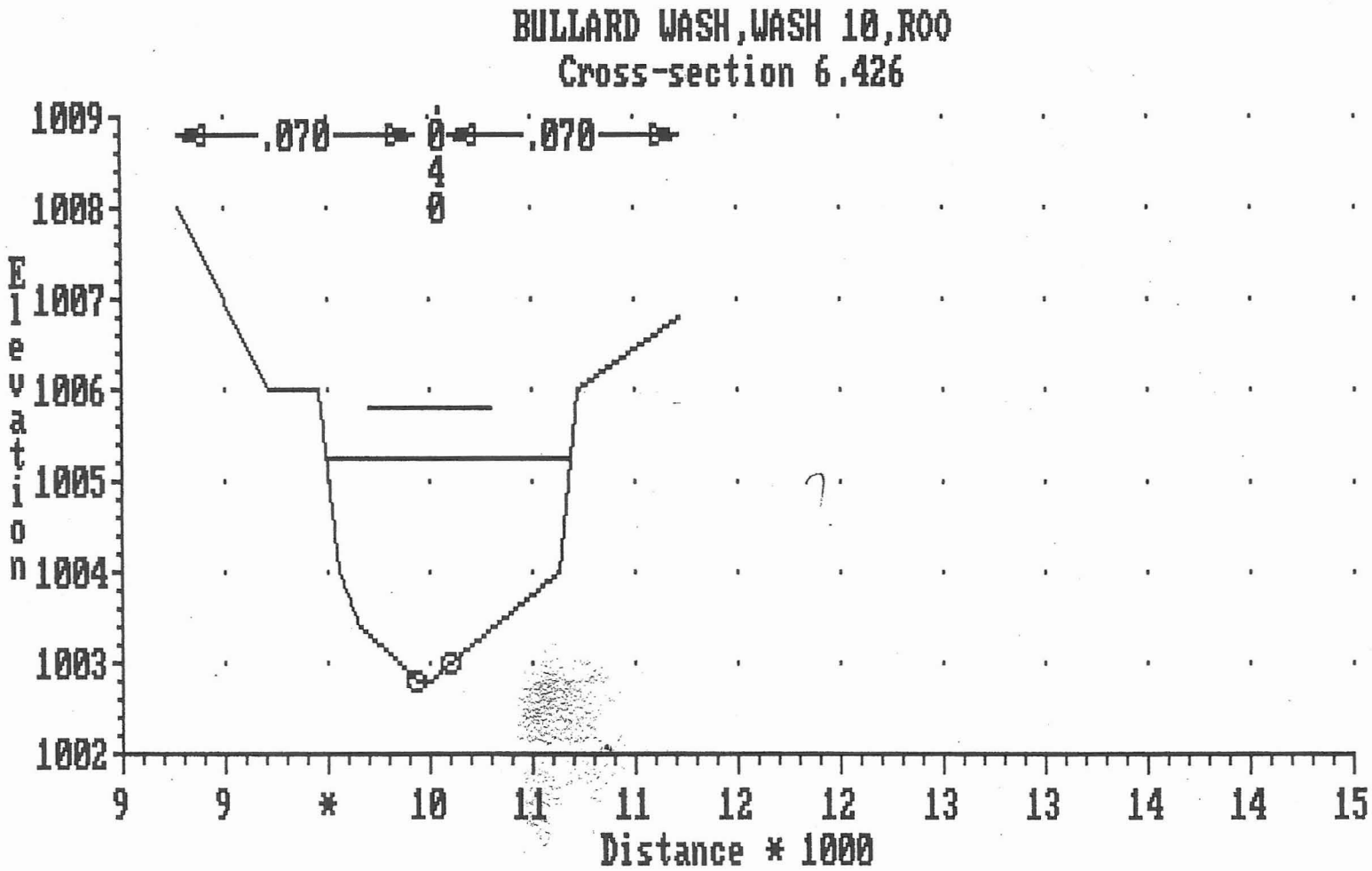
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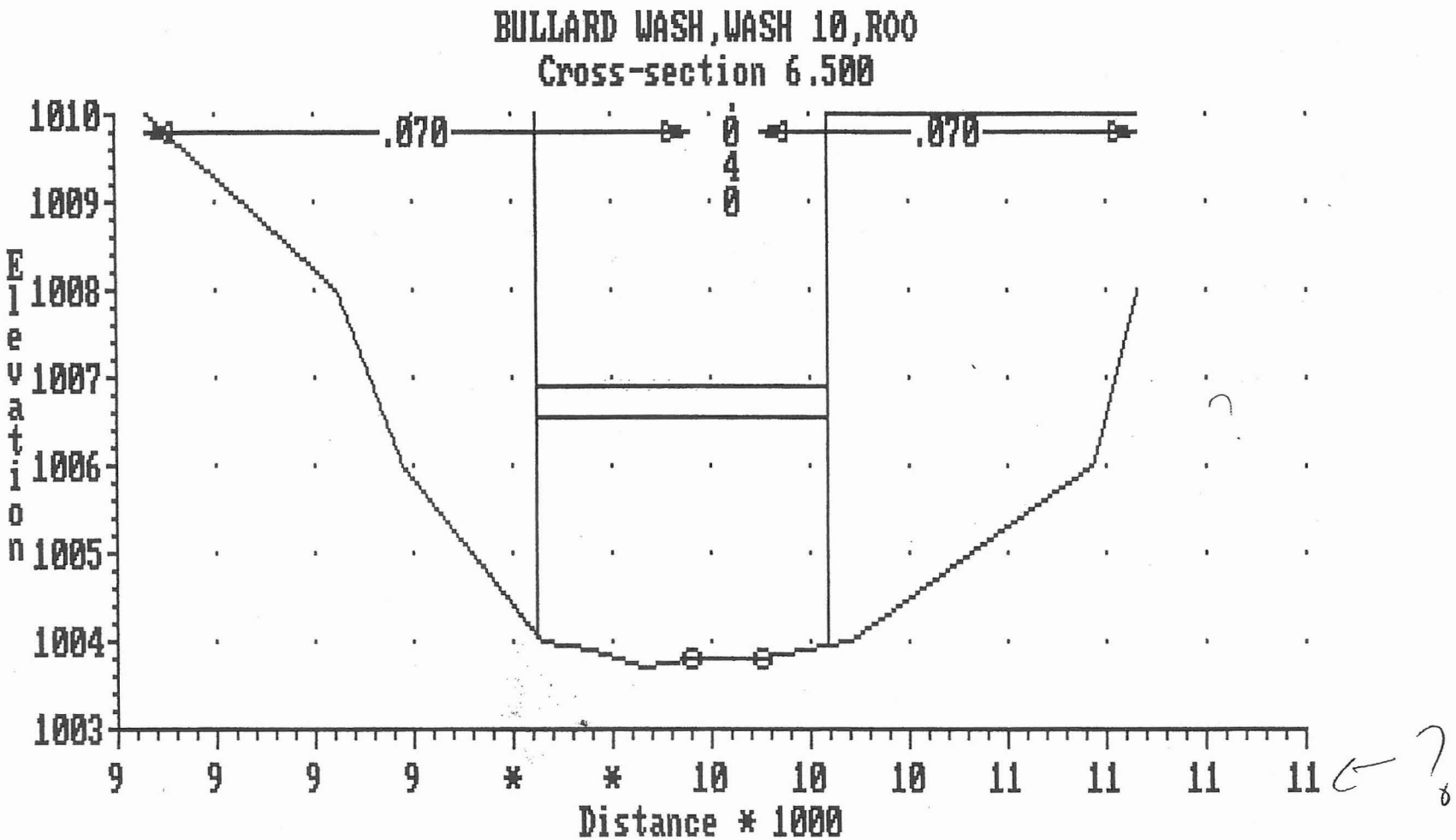
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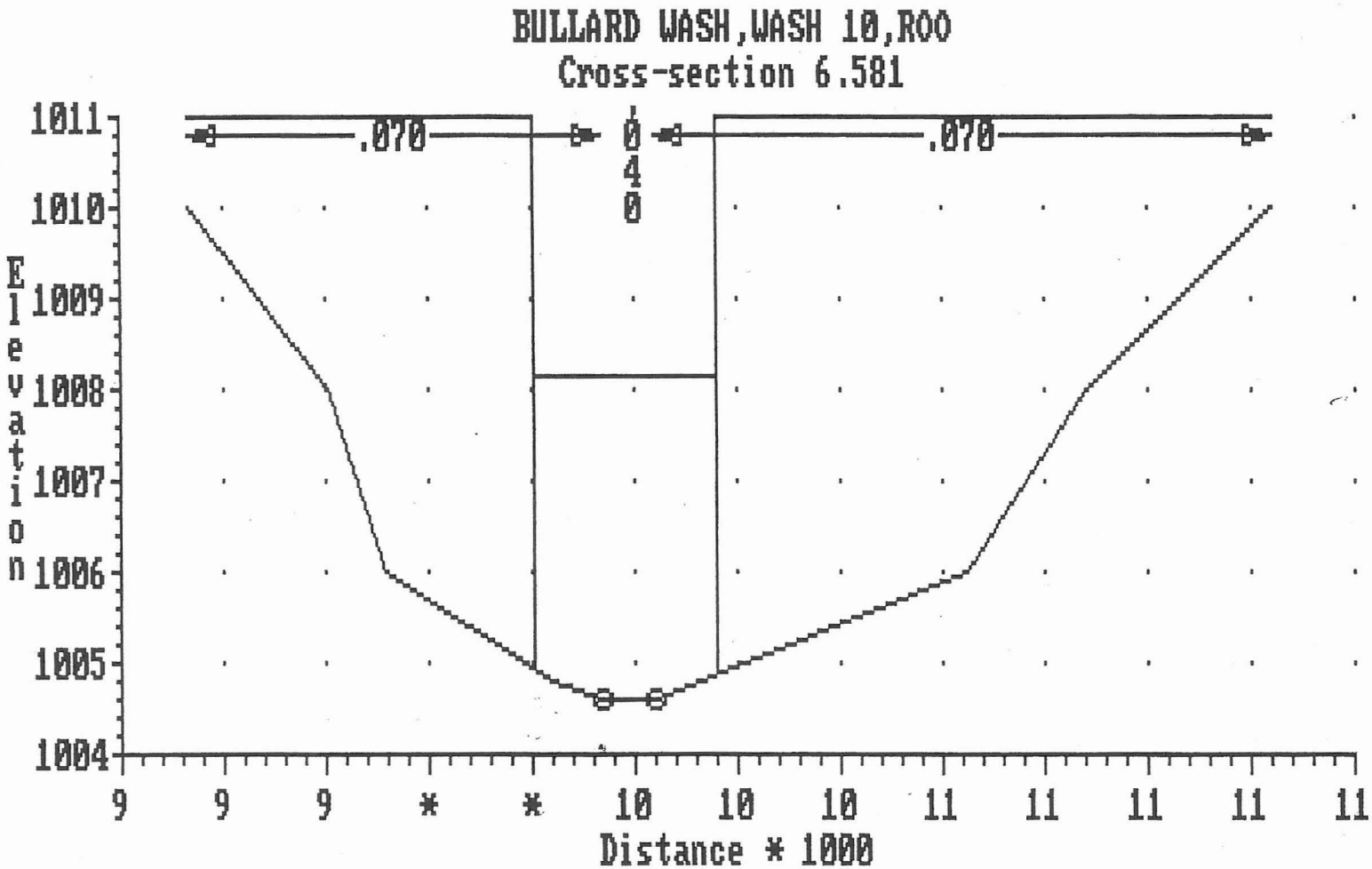
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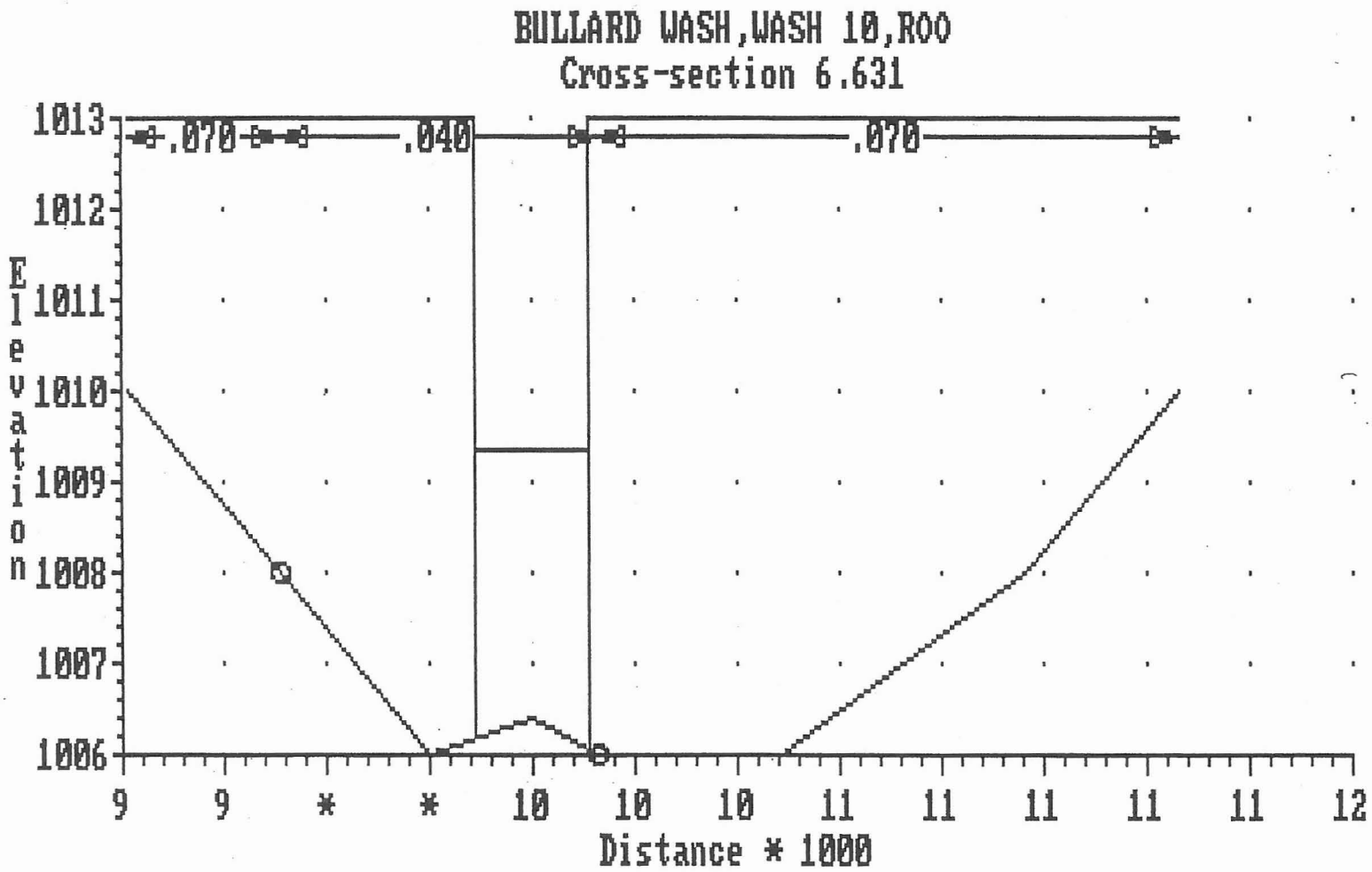
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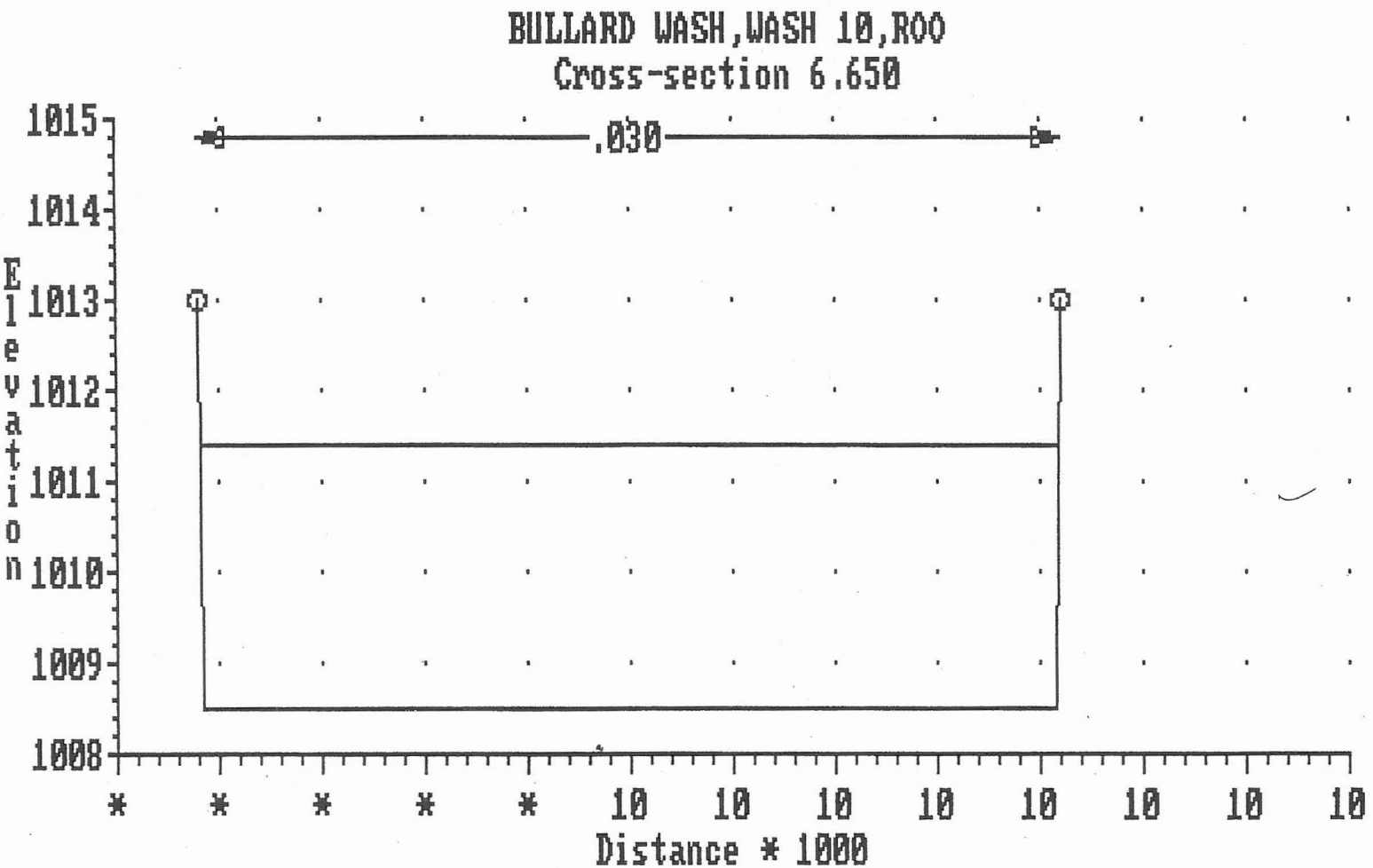
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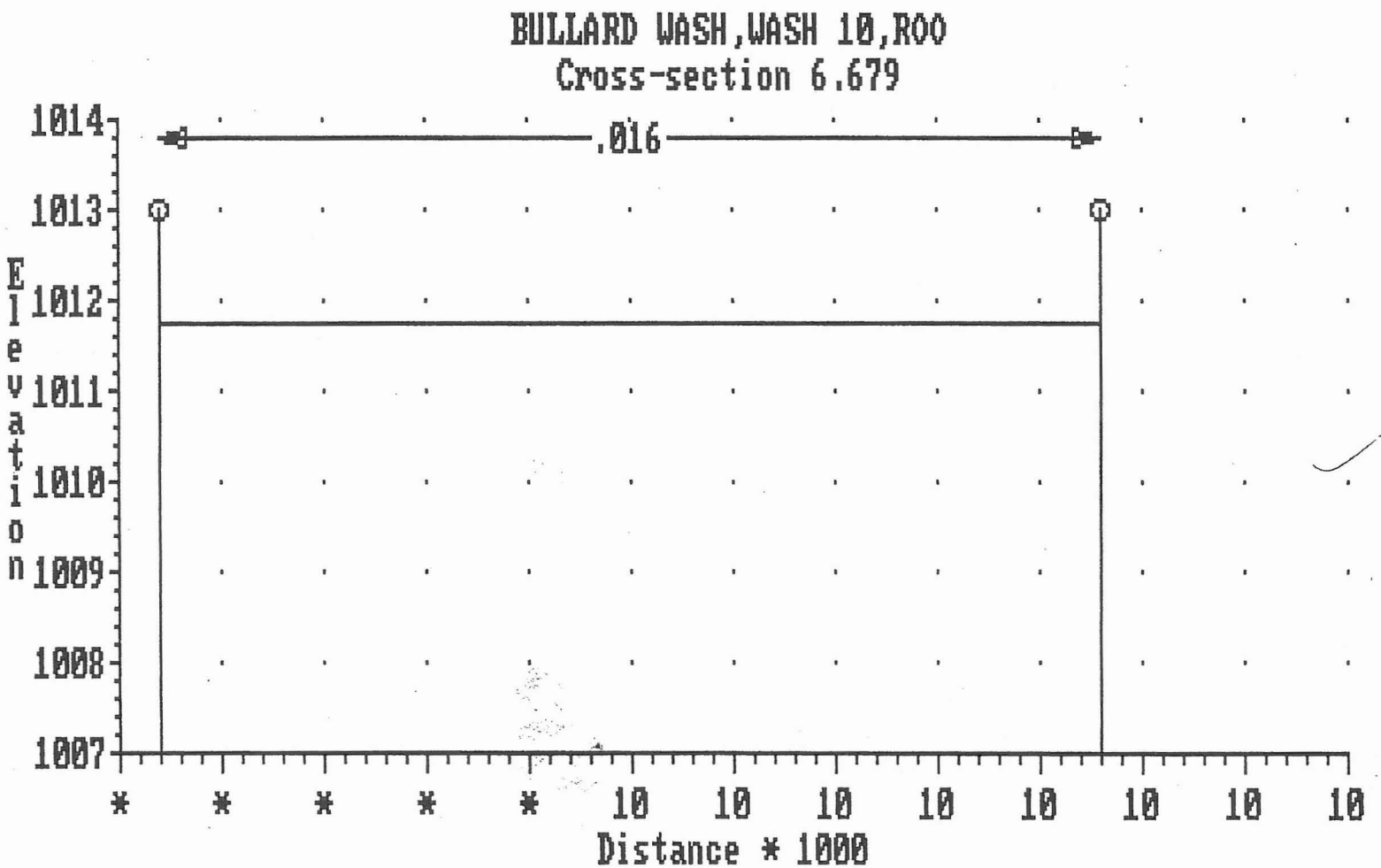
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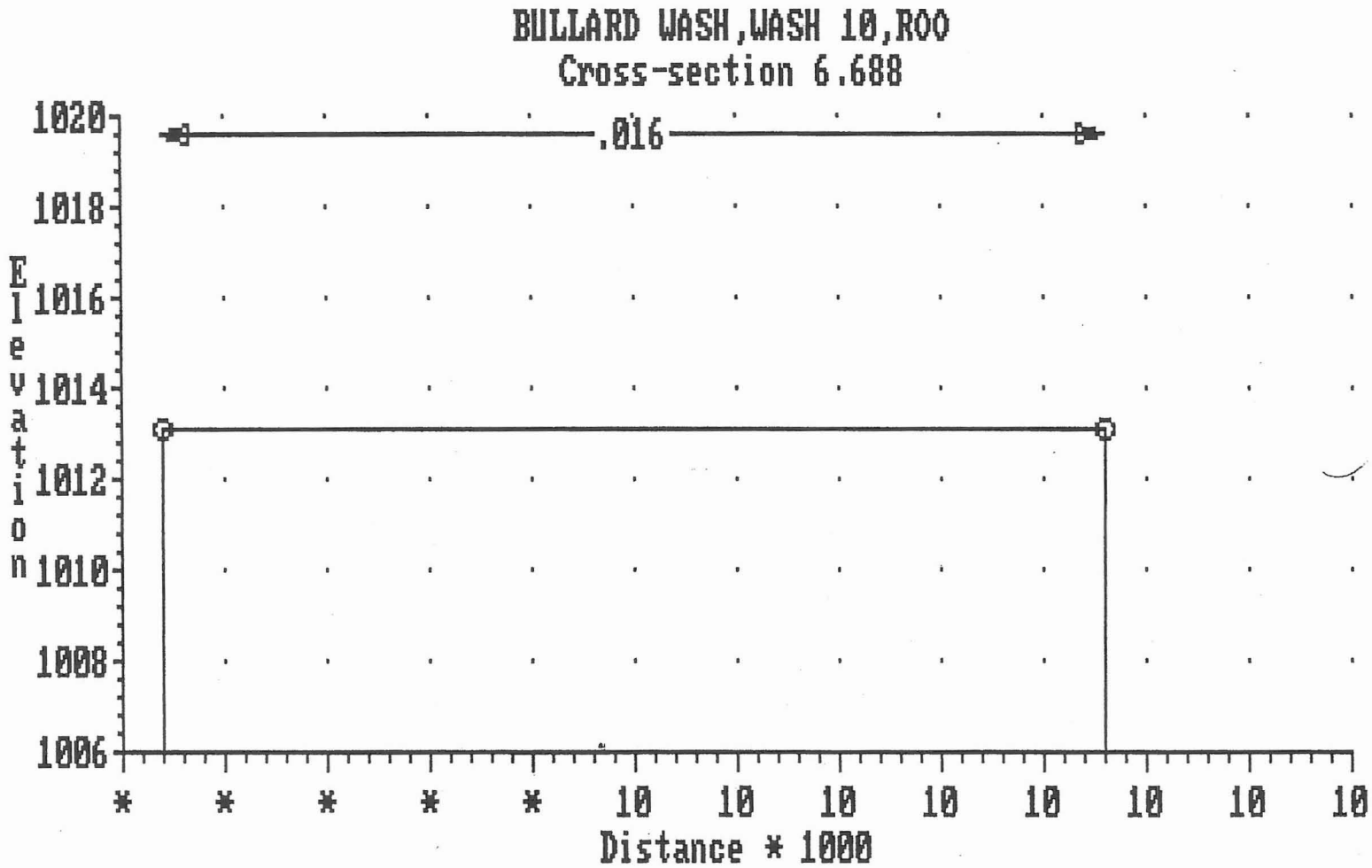
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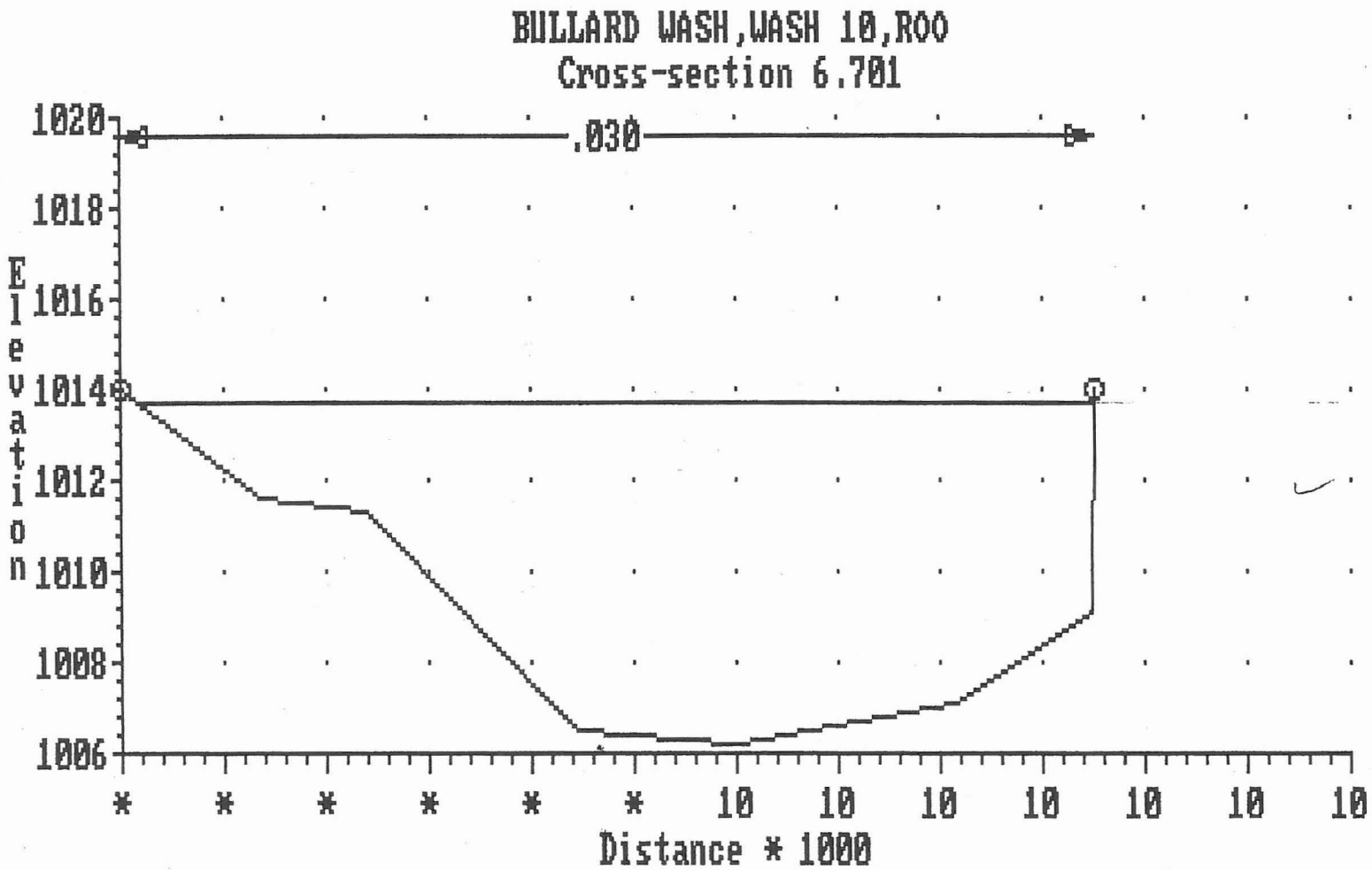
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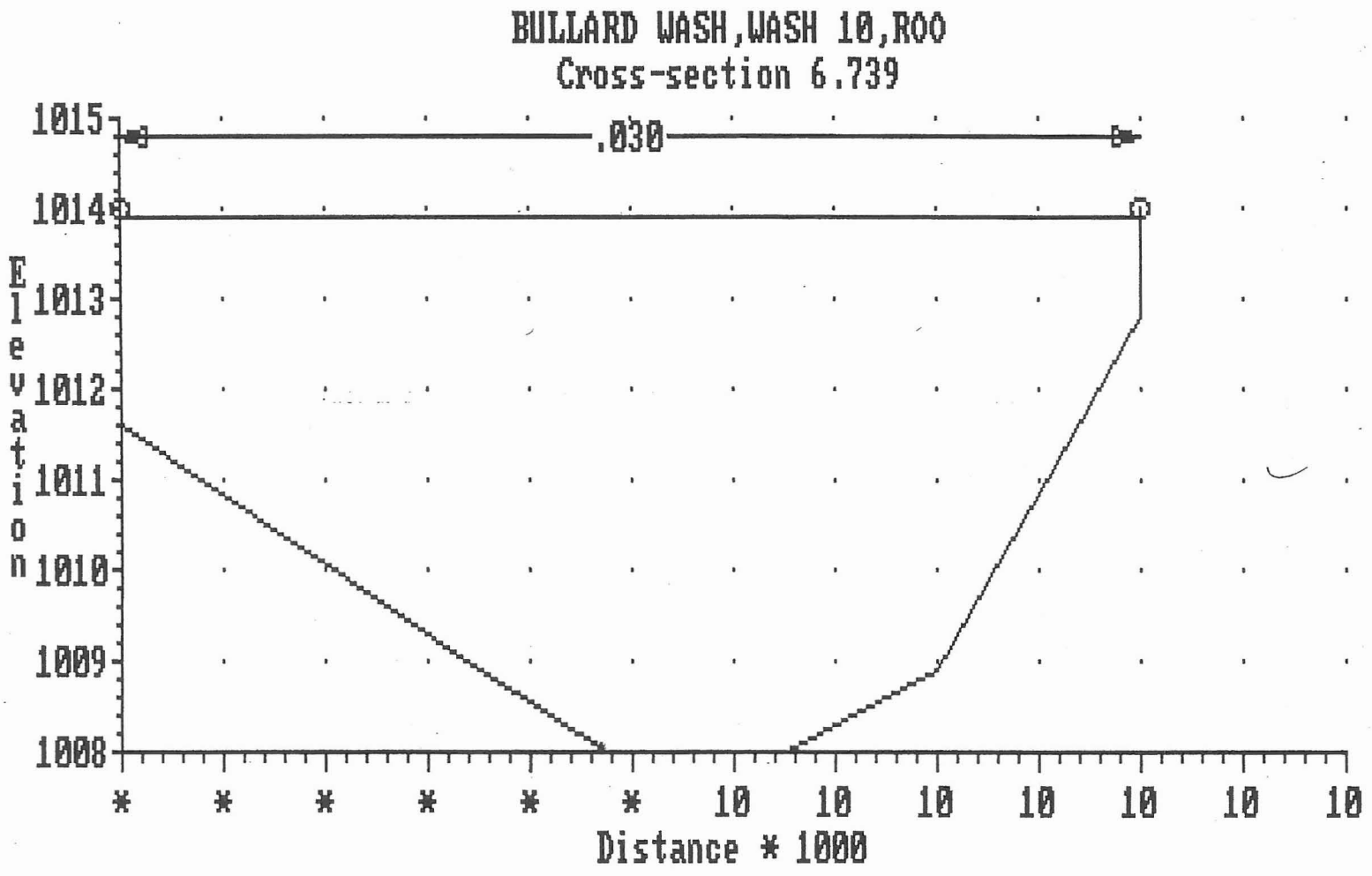
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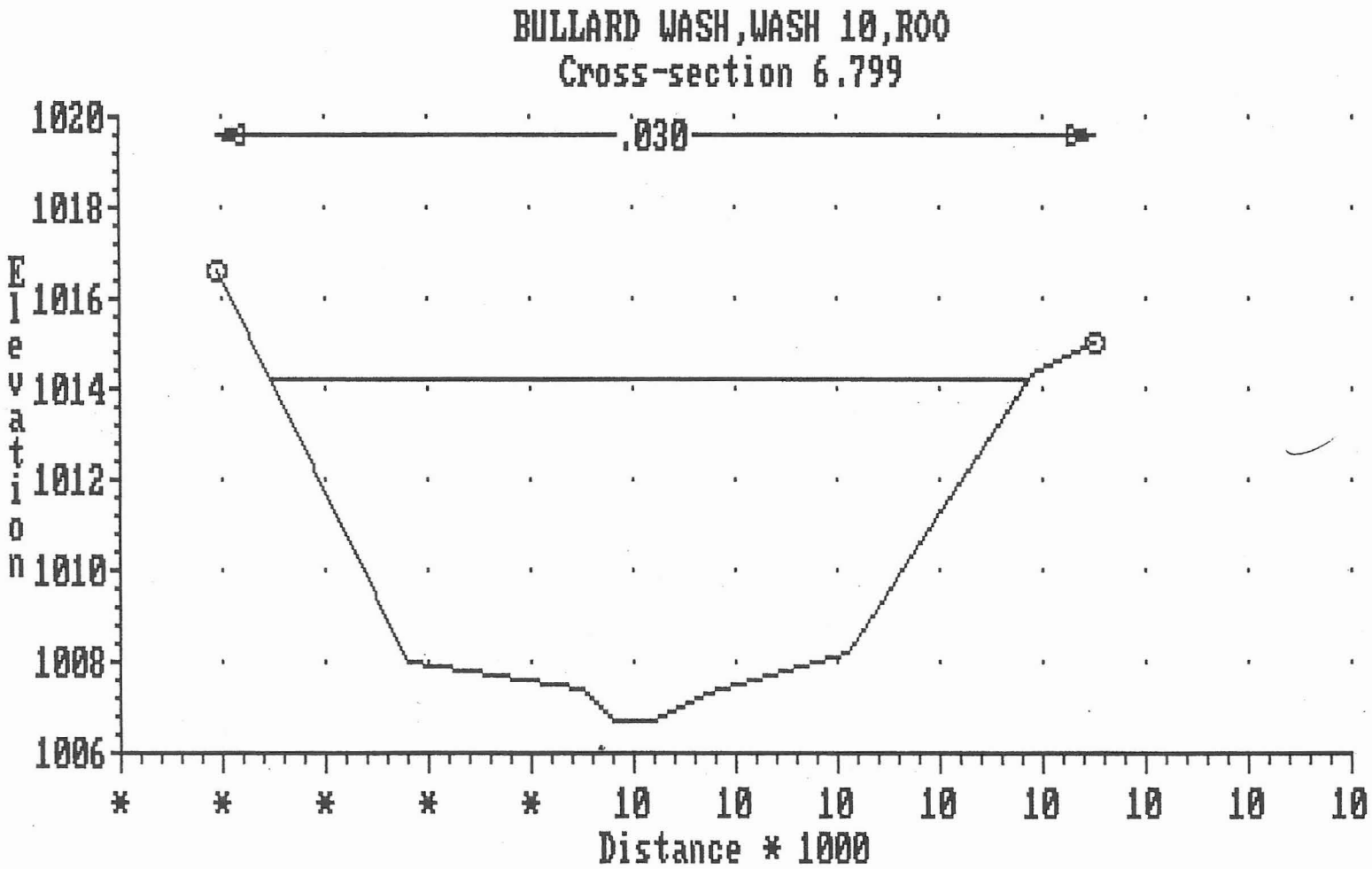
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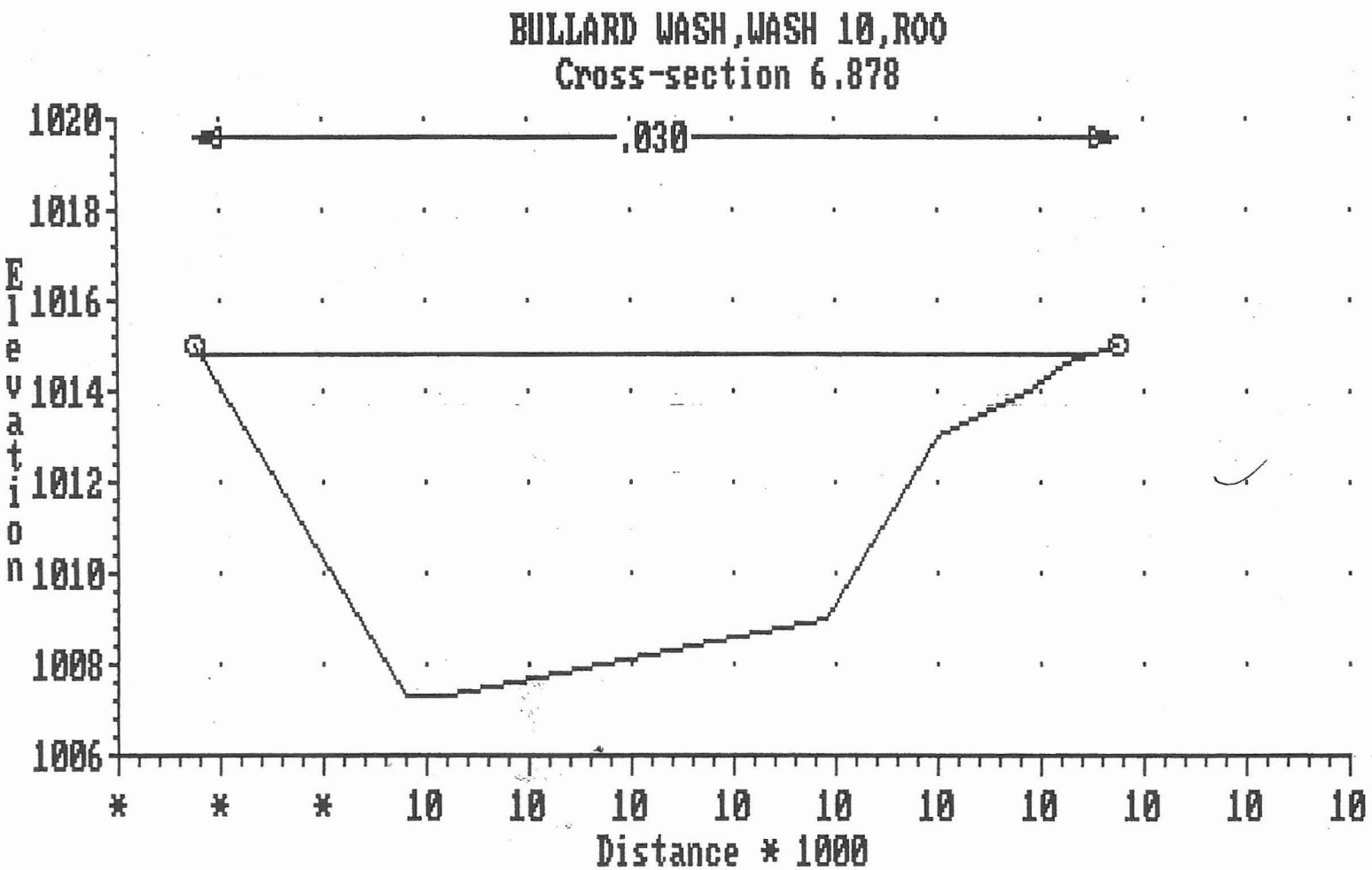
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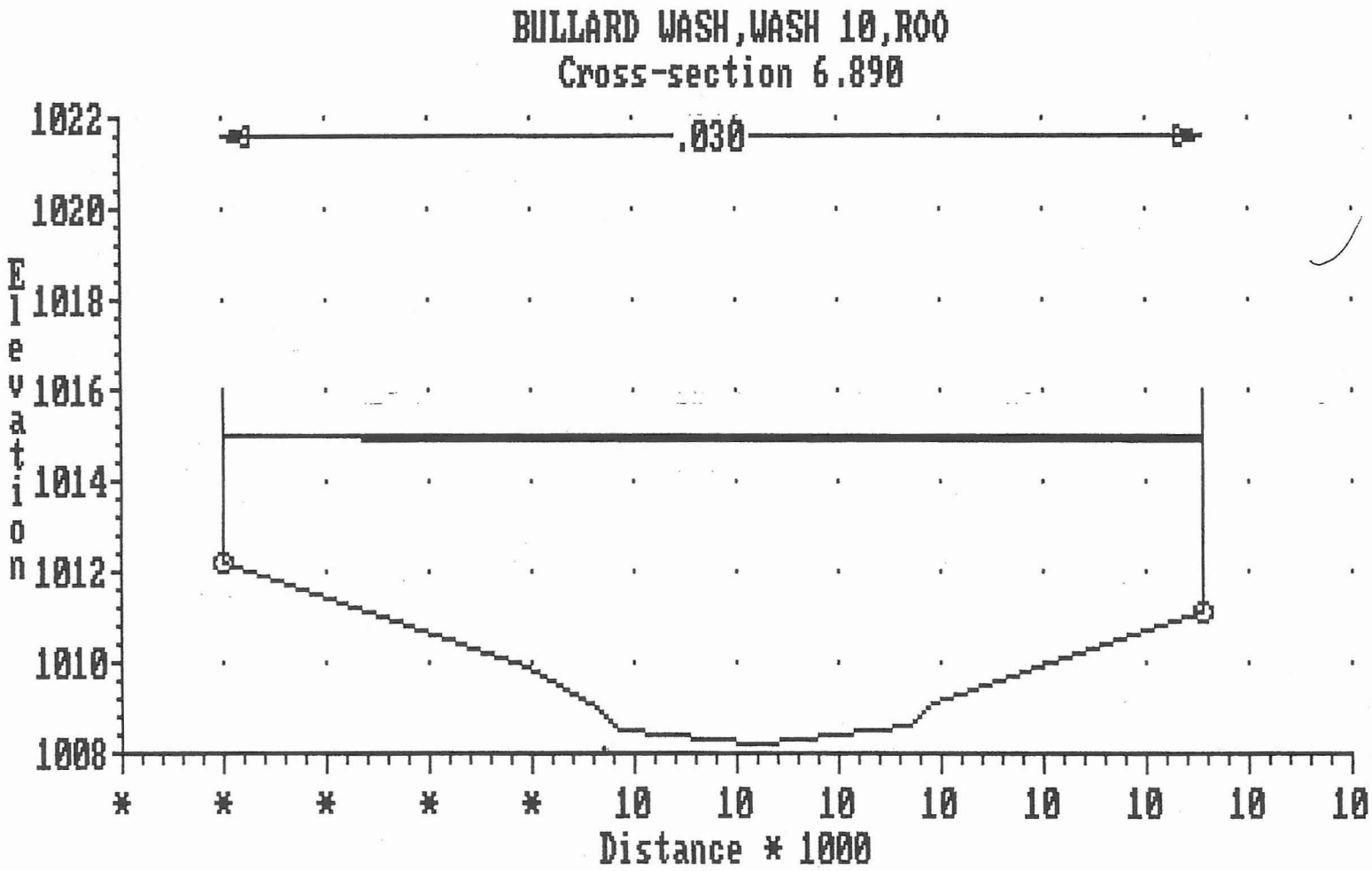
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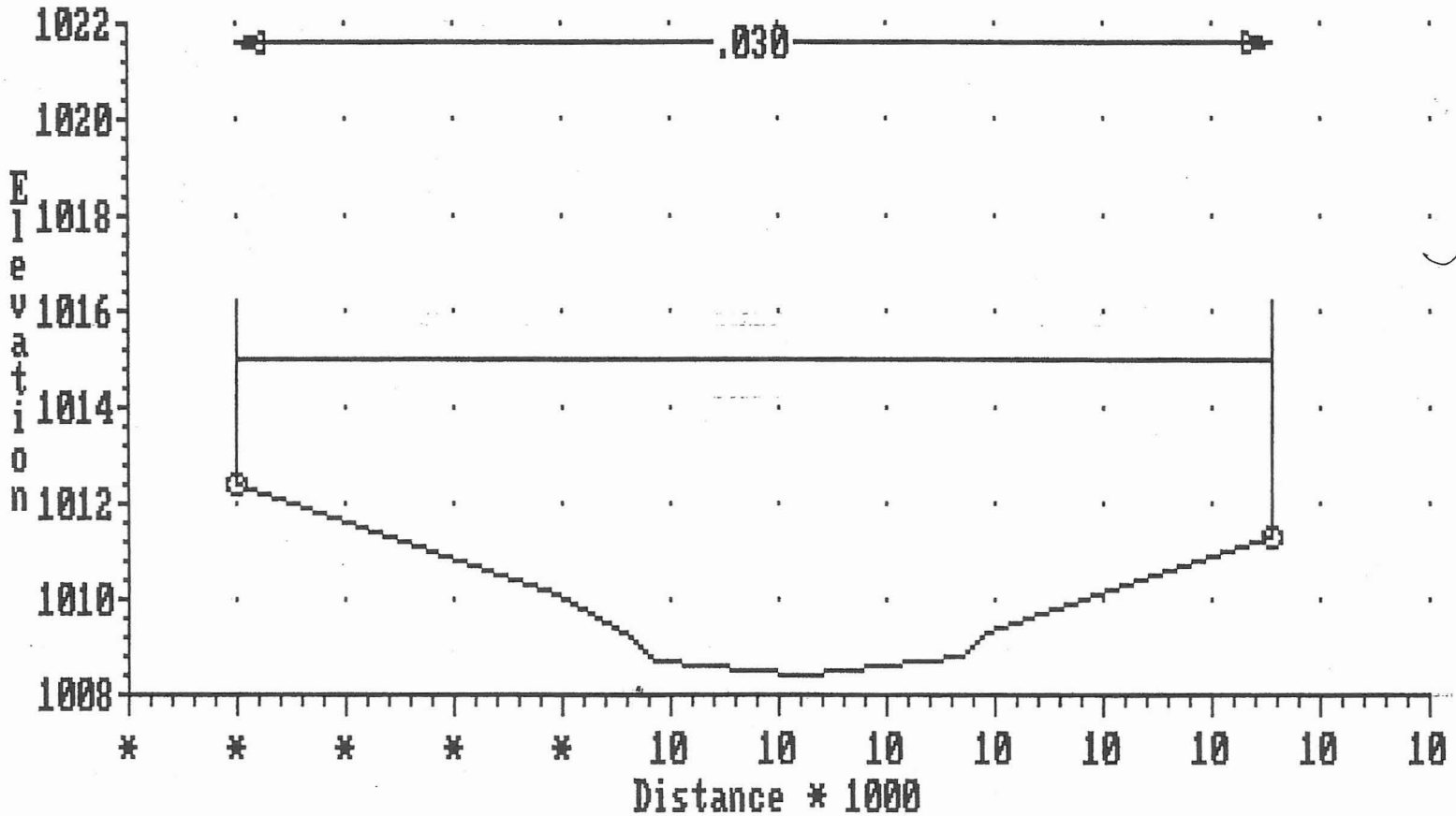

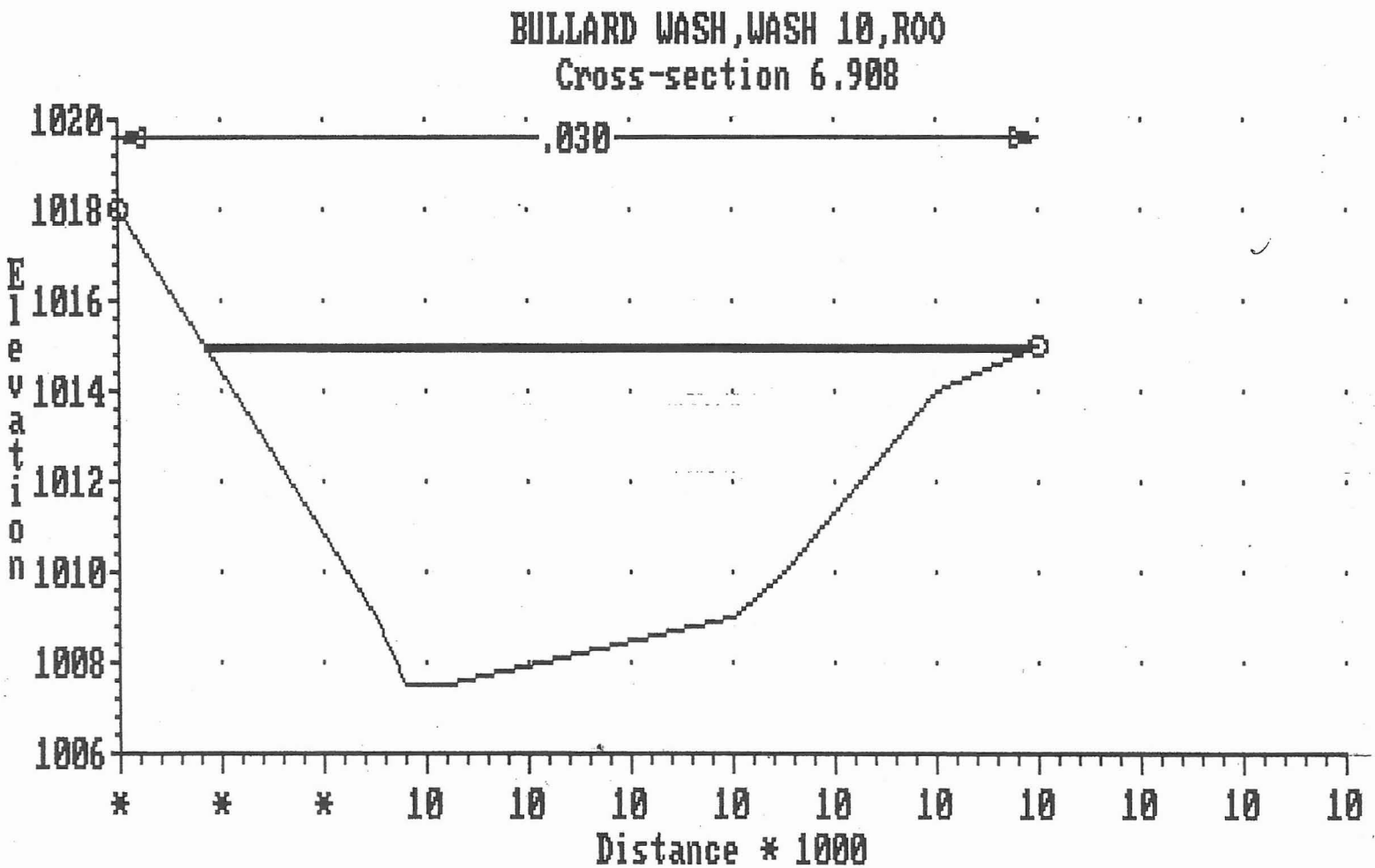
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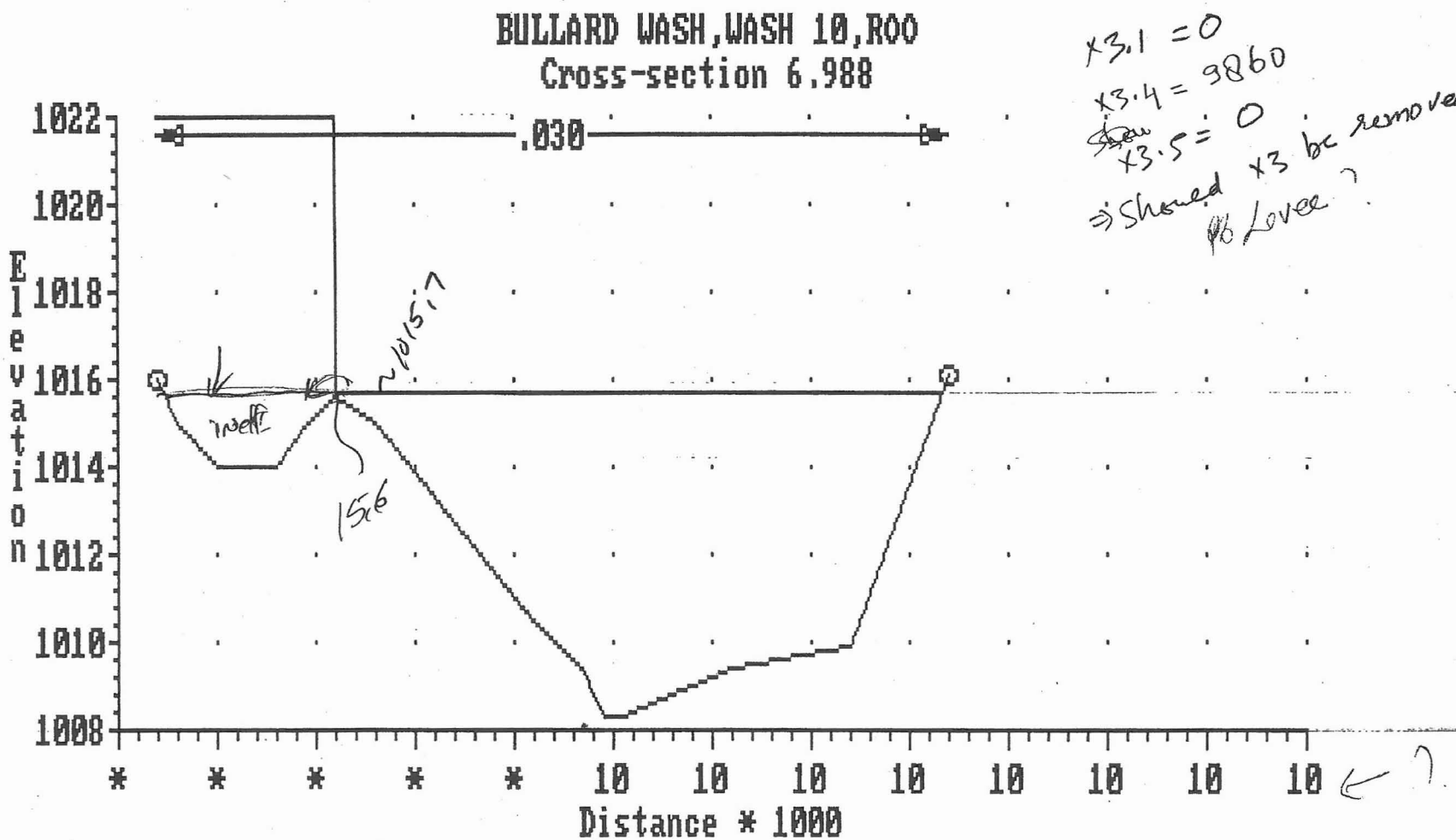

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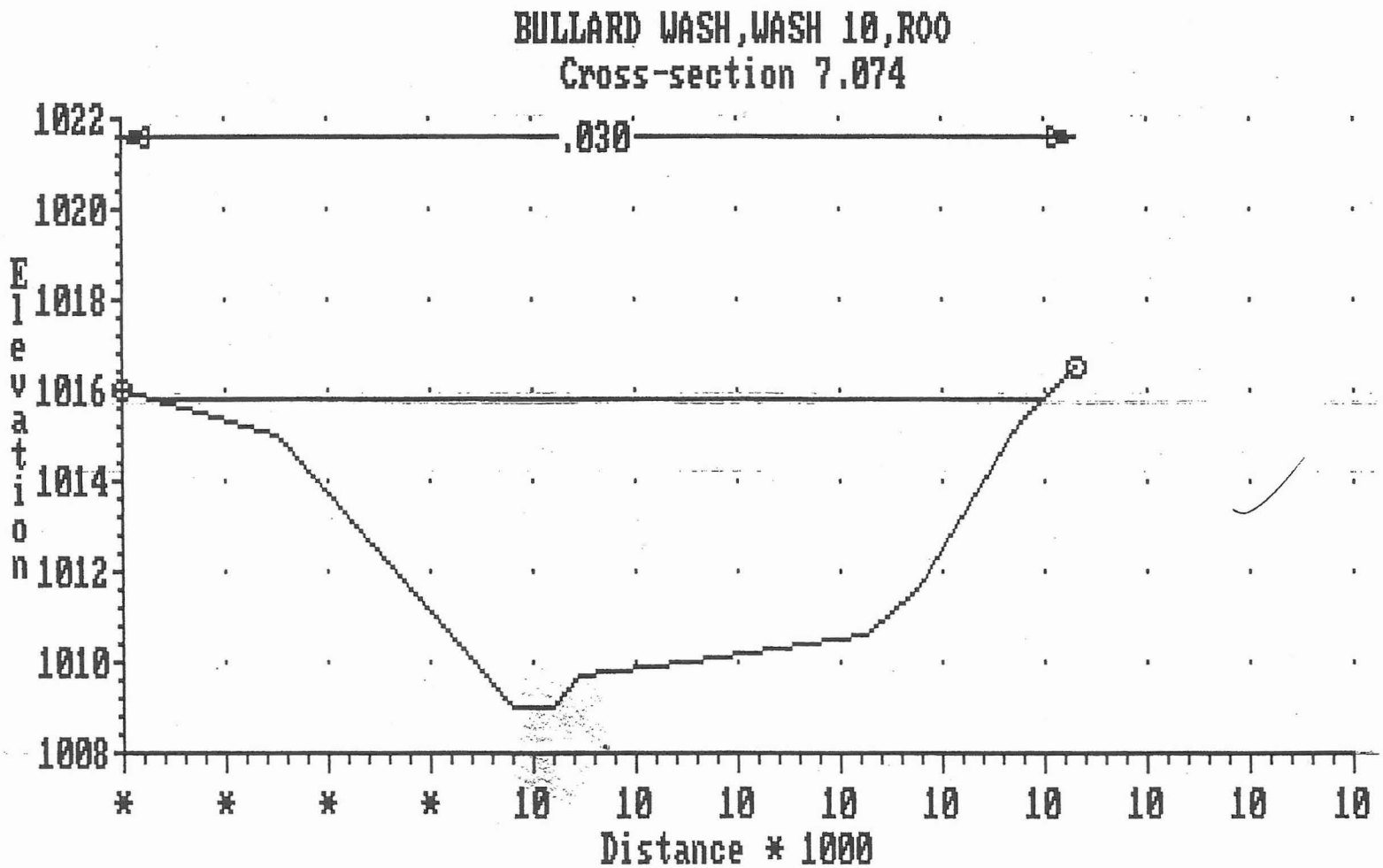
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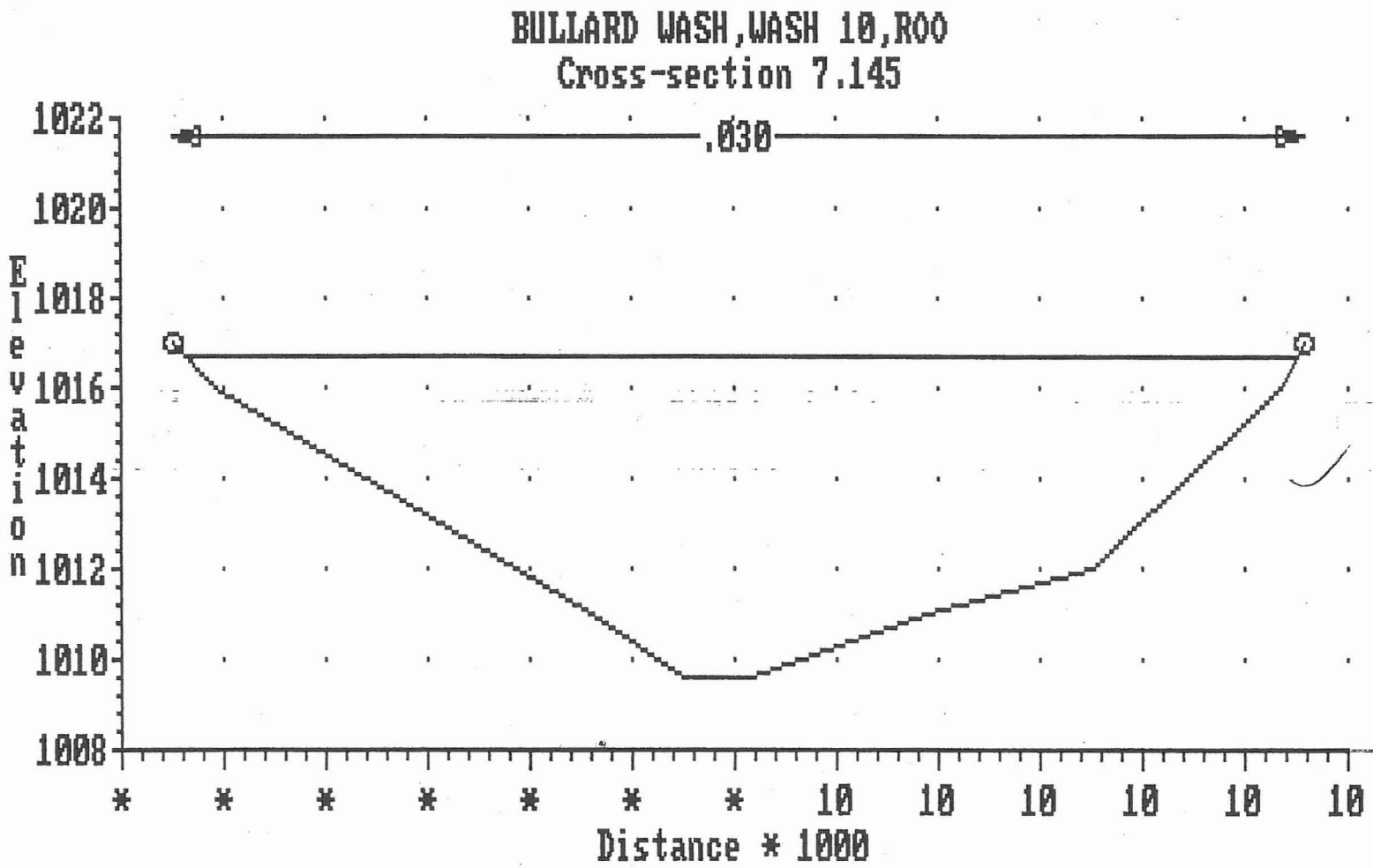
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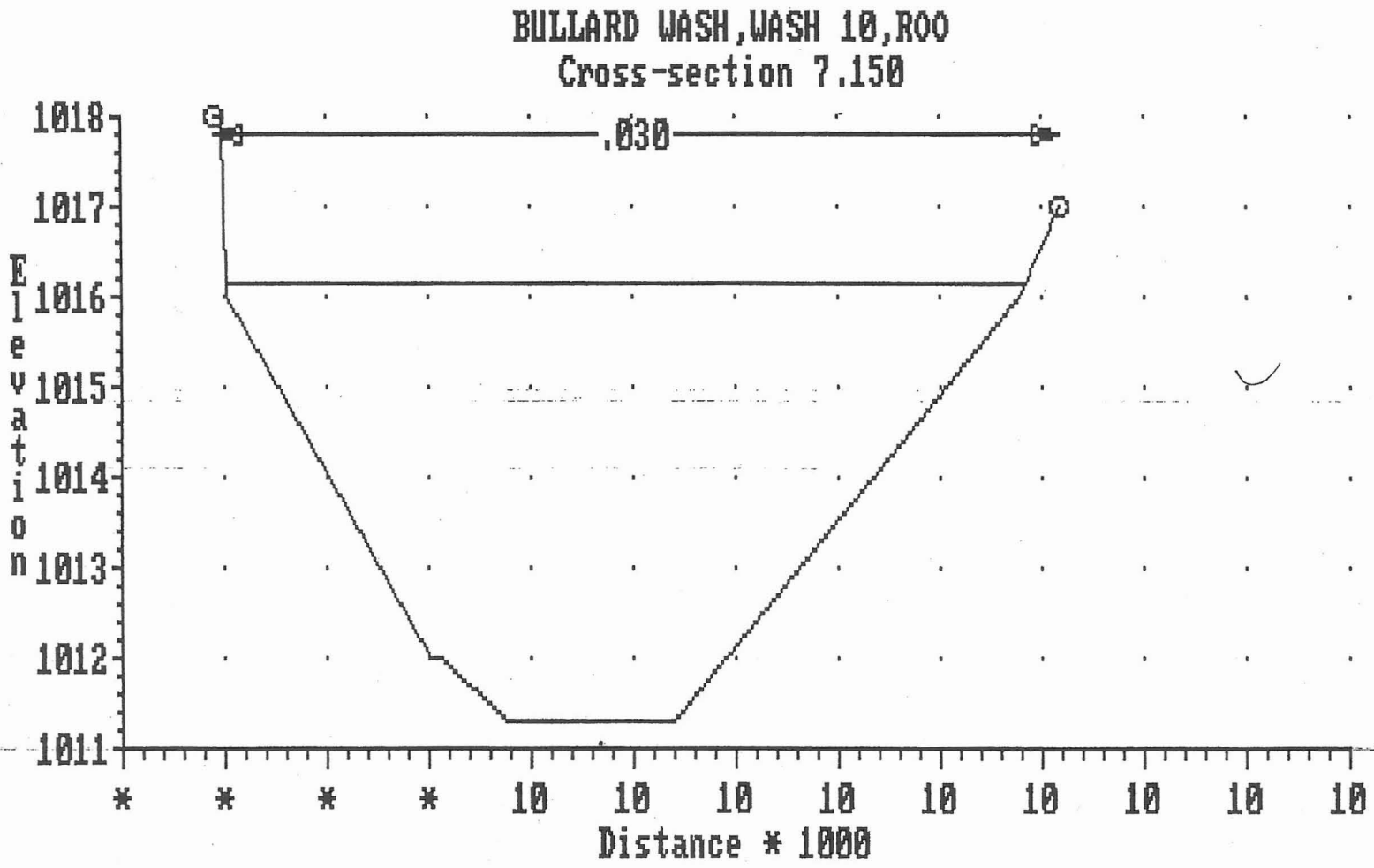
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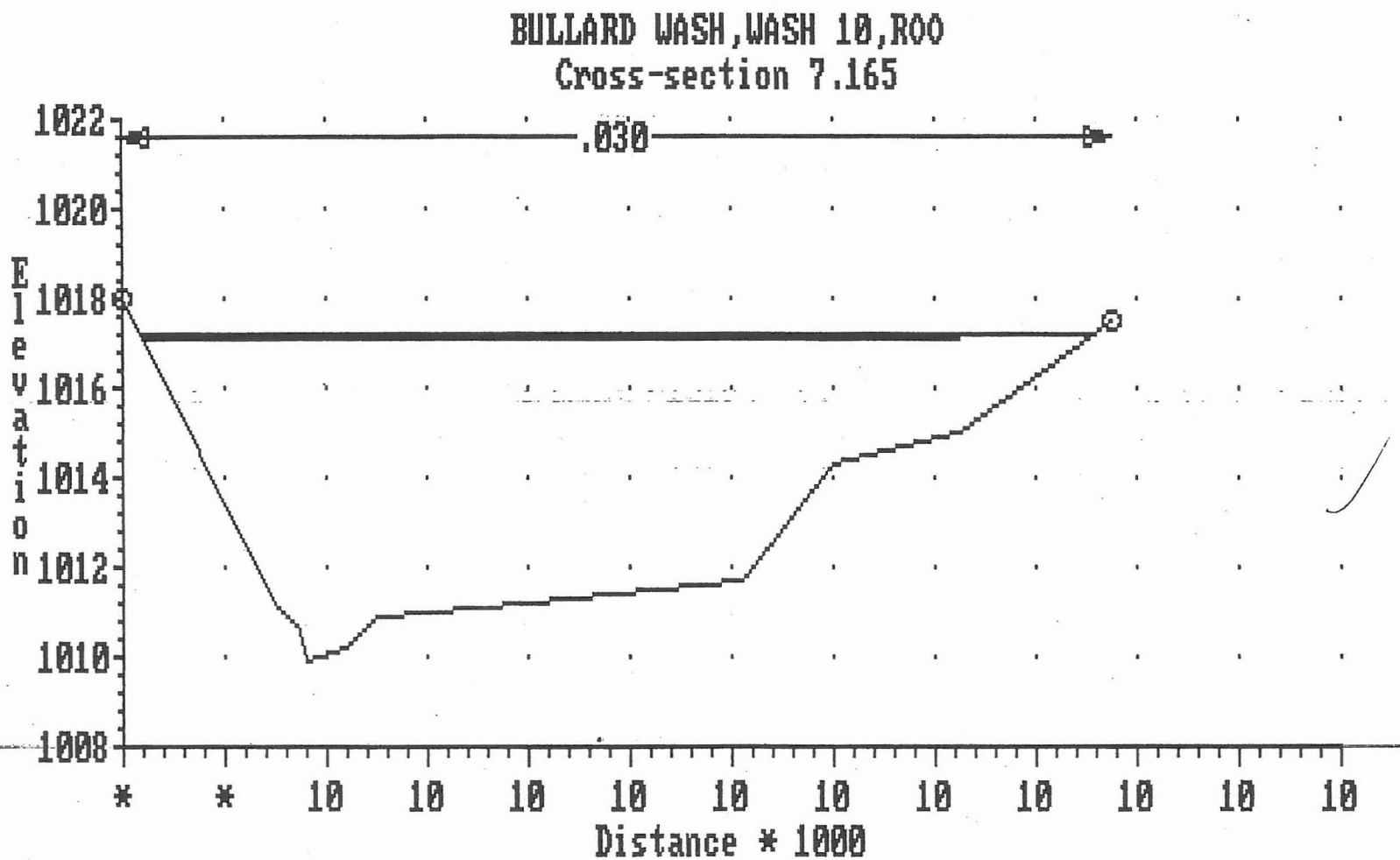
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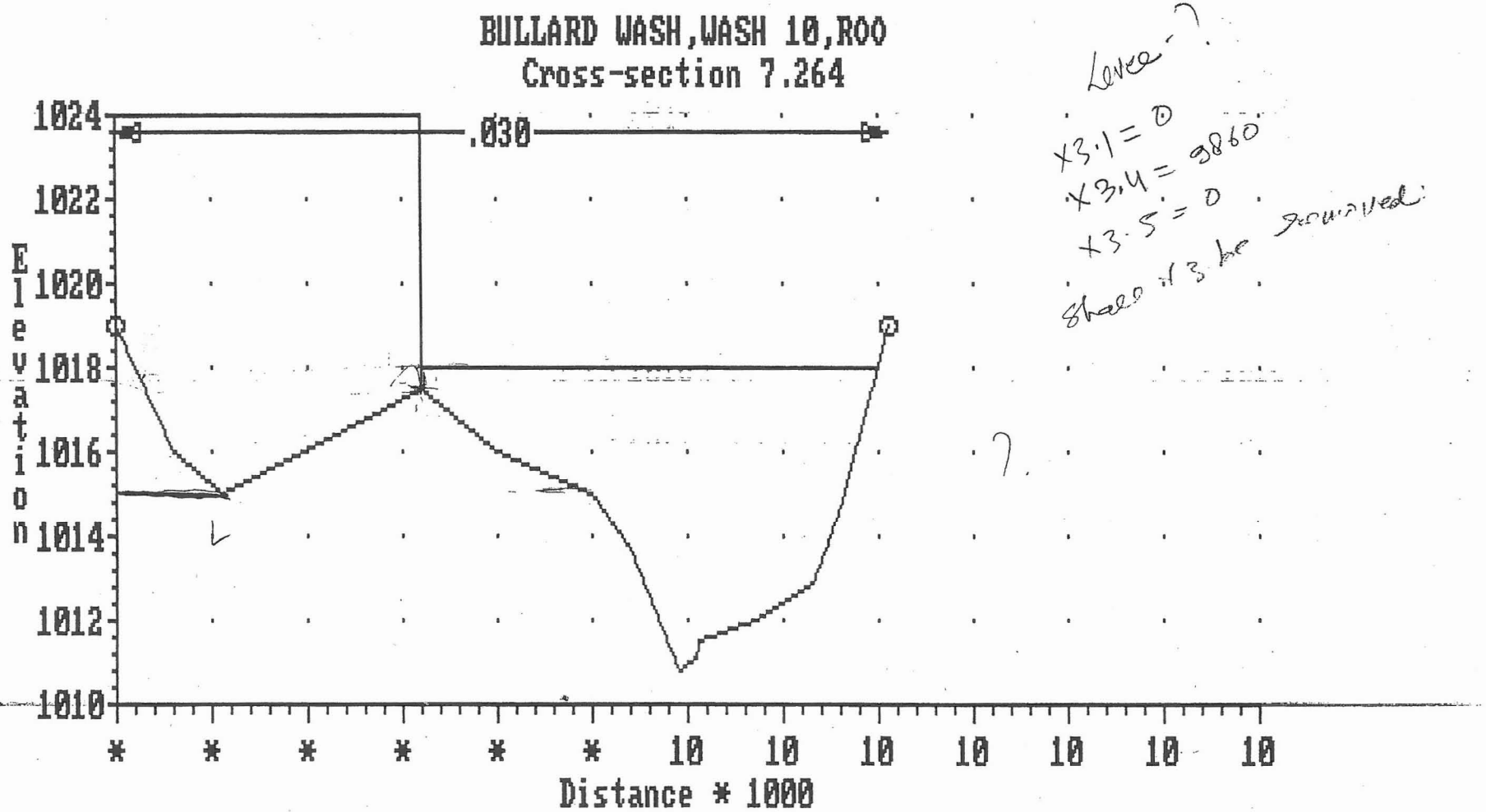

Levee?

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Should X3 be removed?

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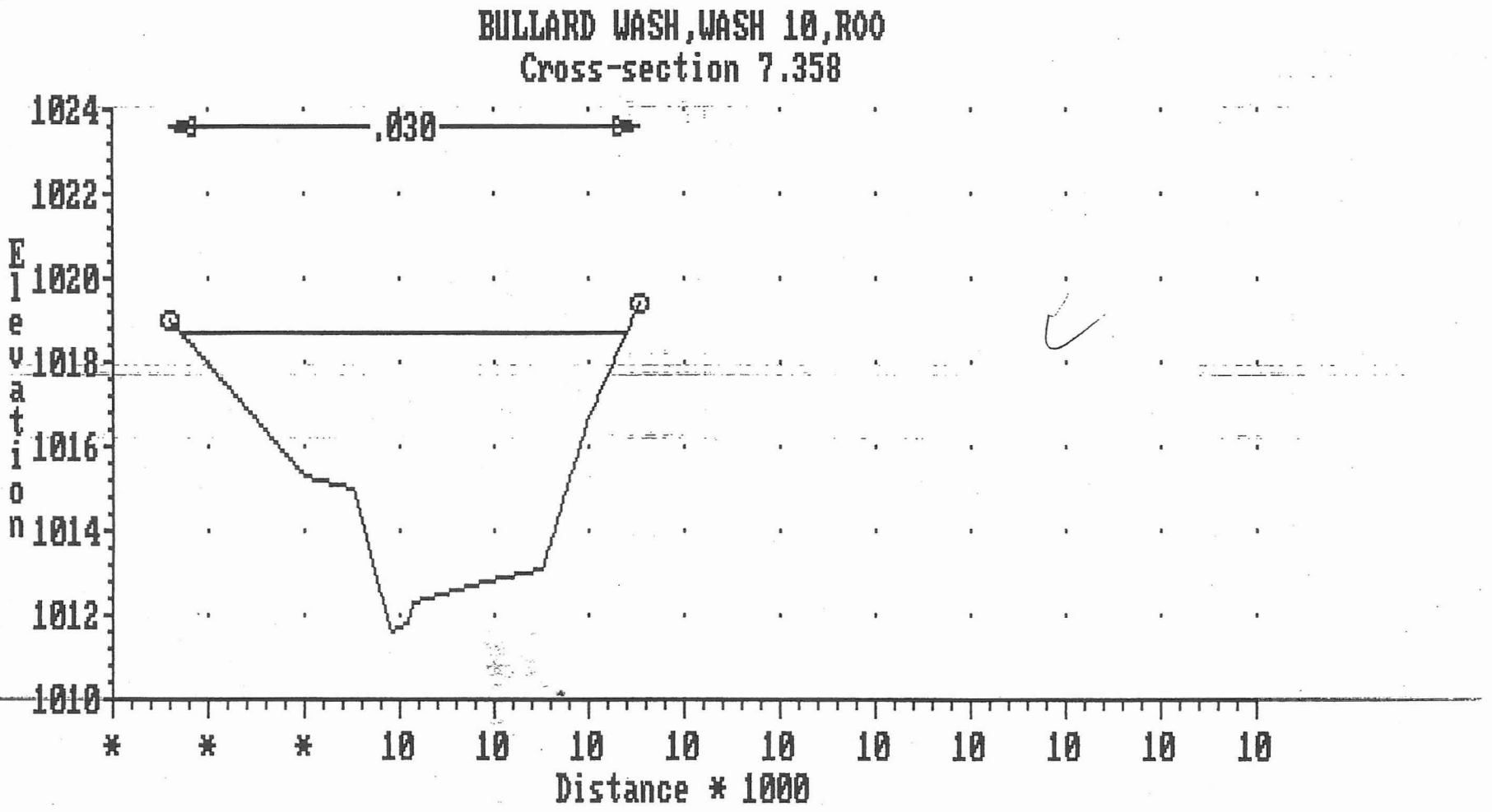
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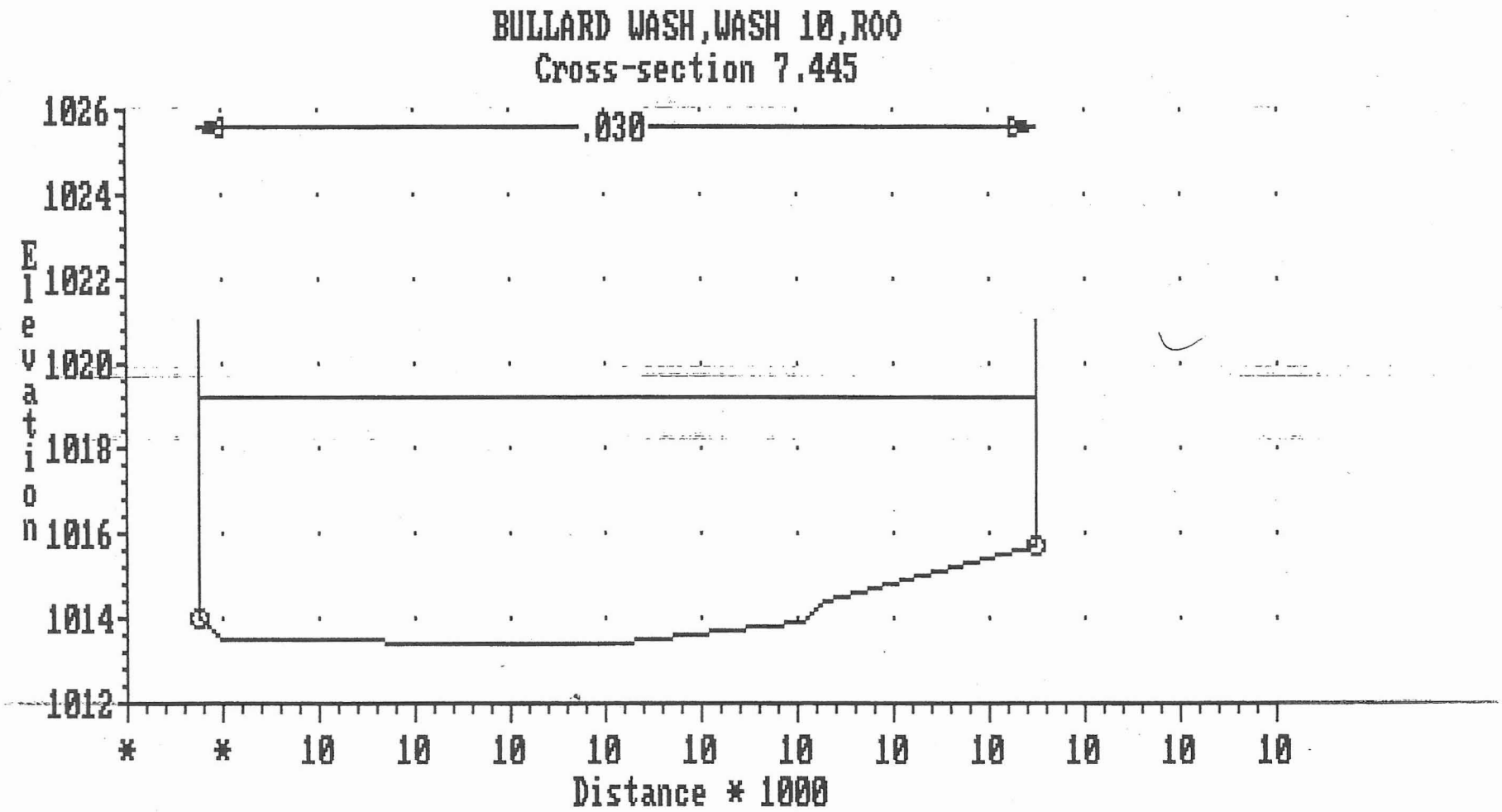
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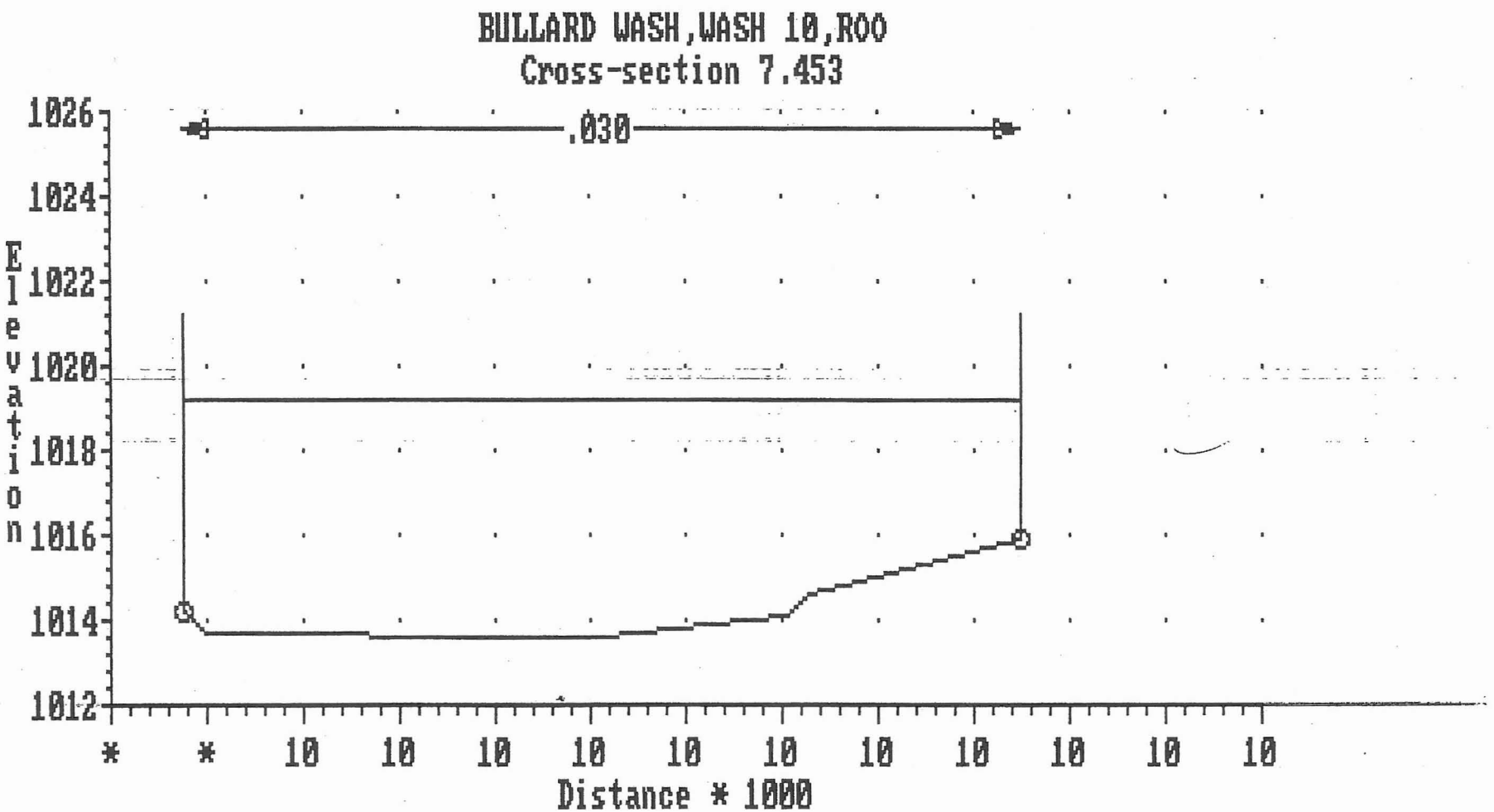
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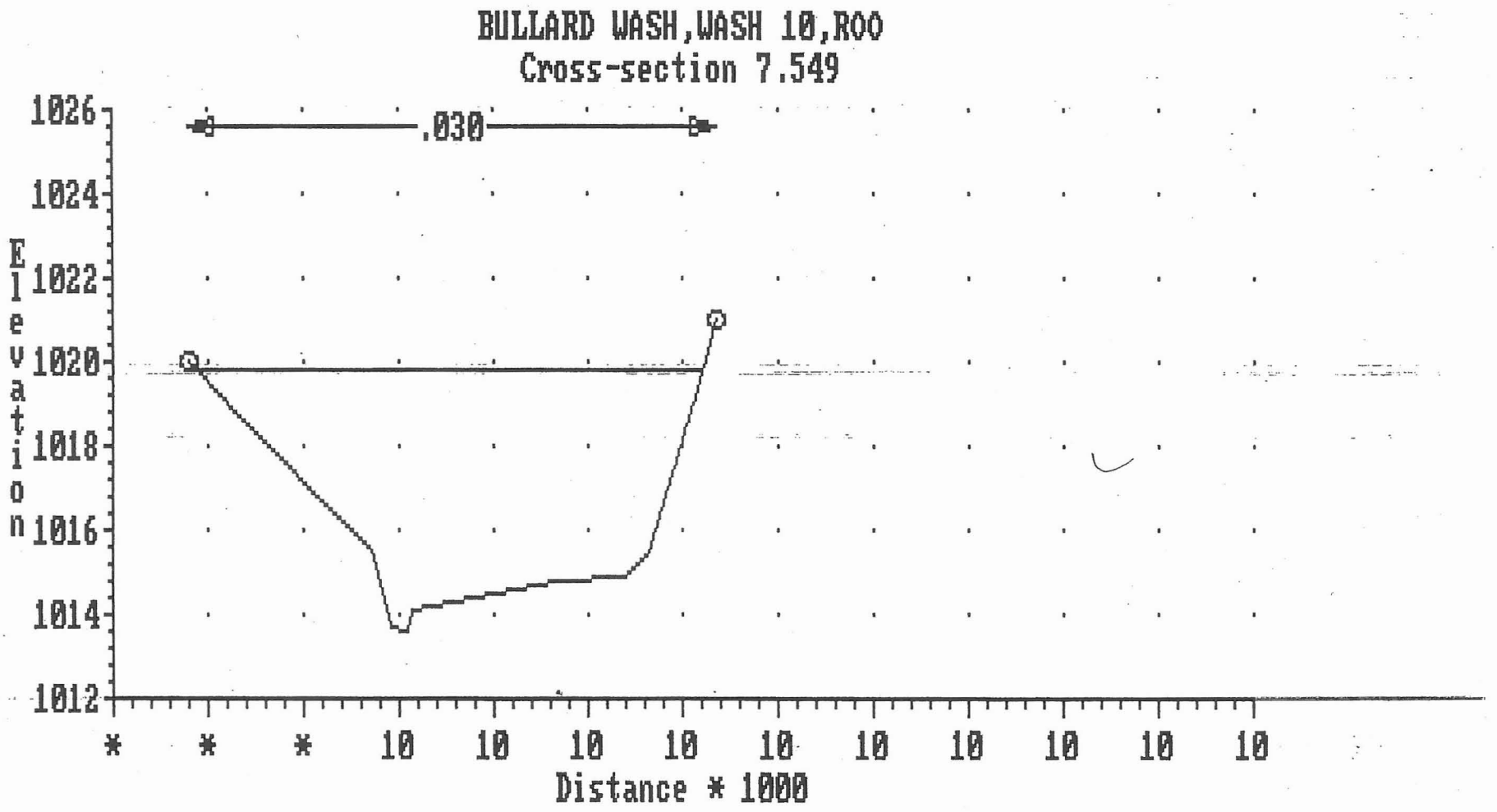
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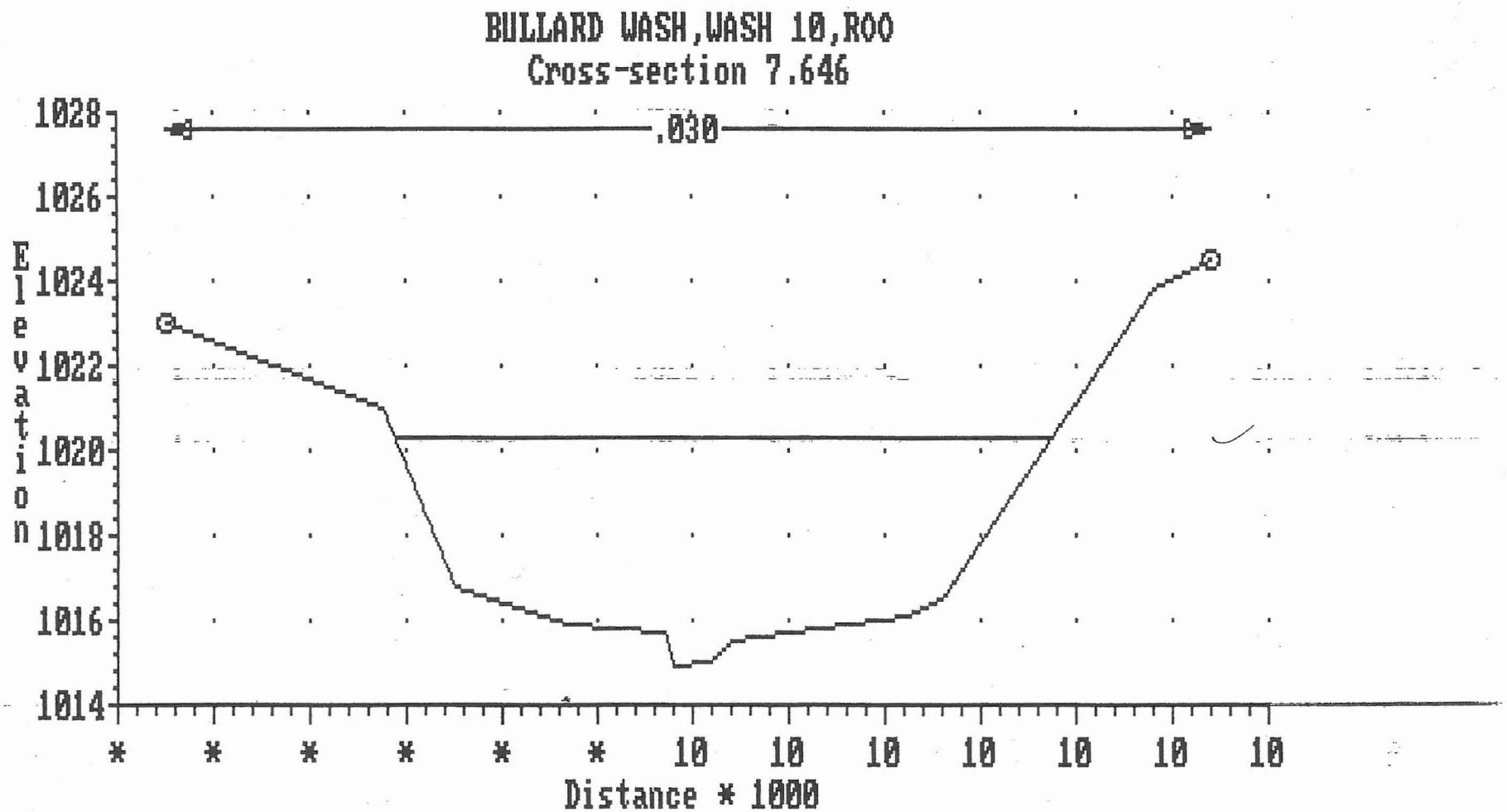
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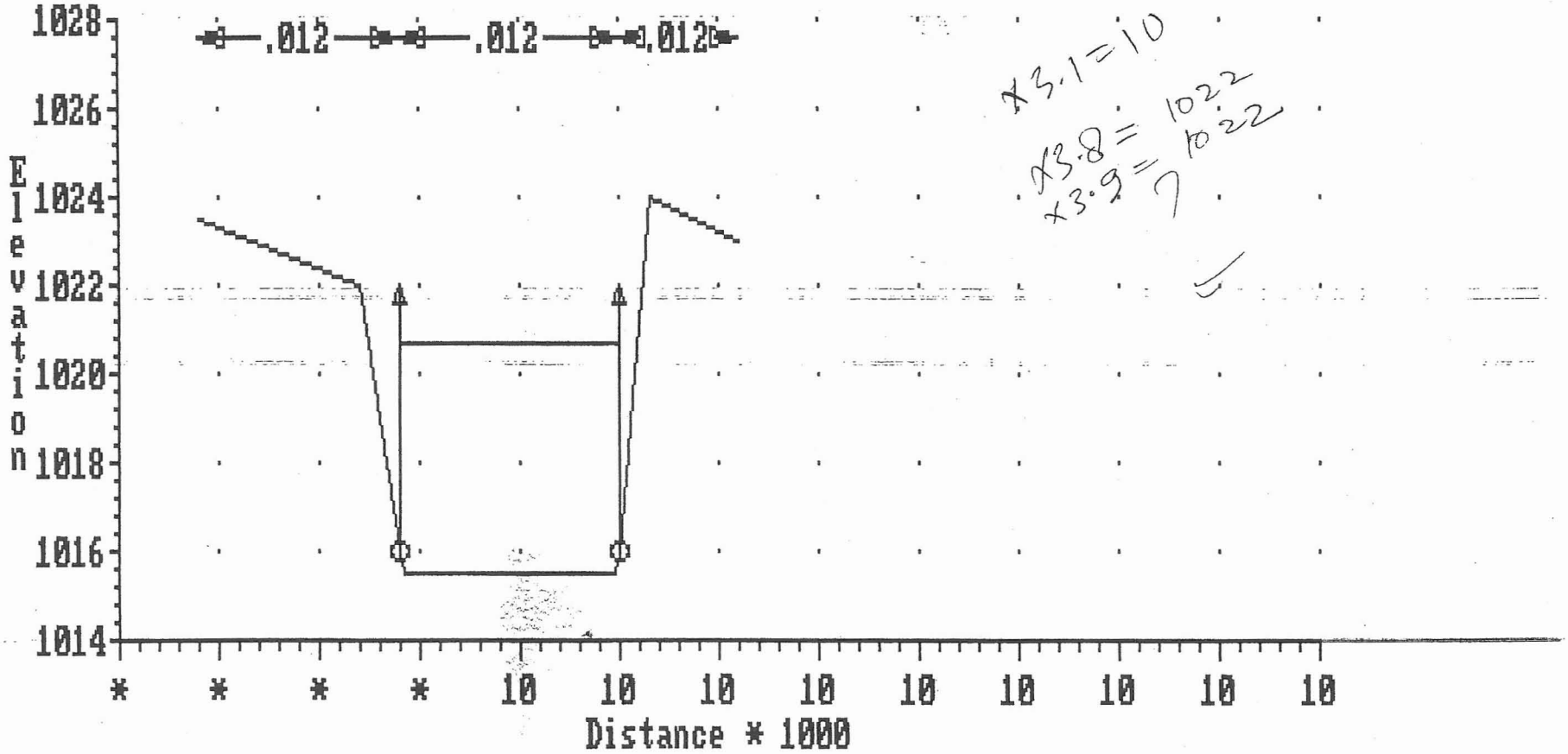
Cross-section 7.680



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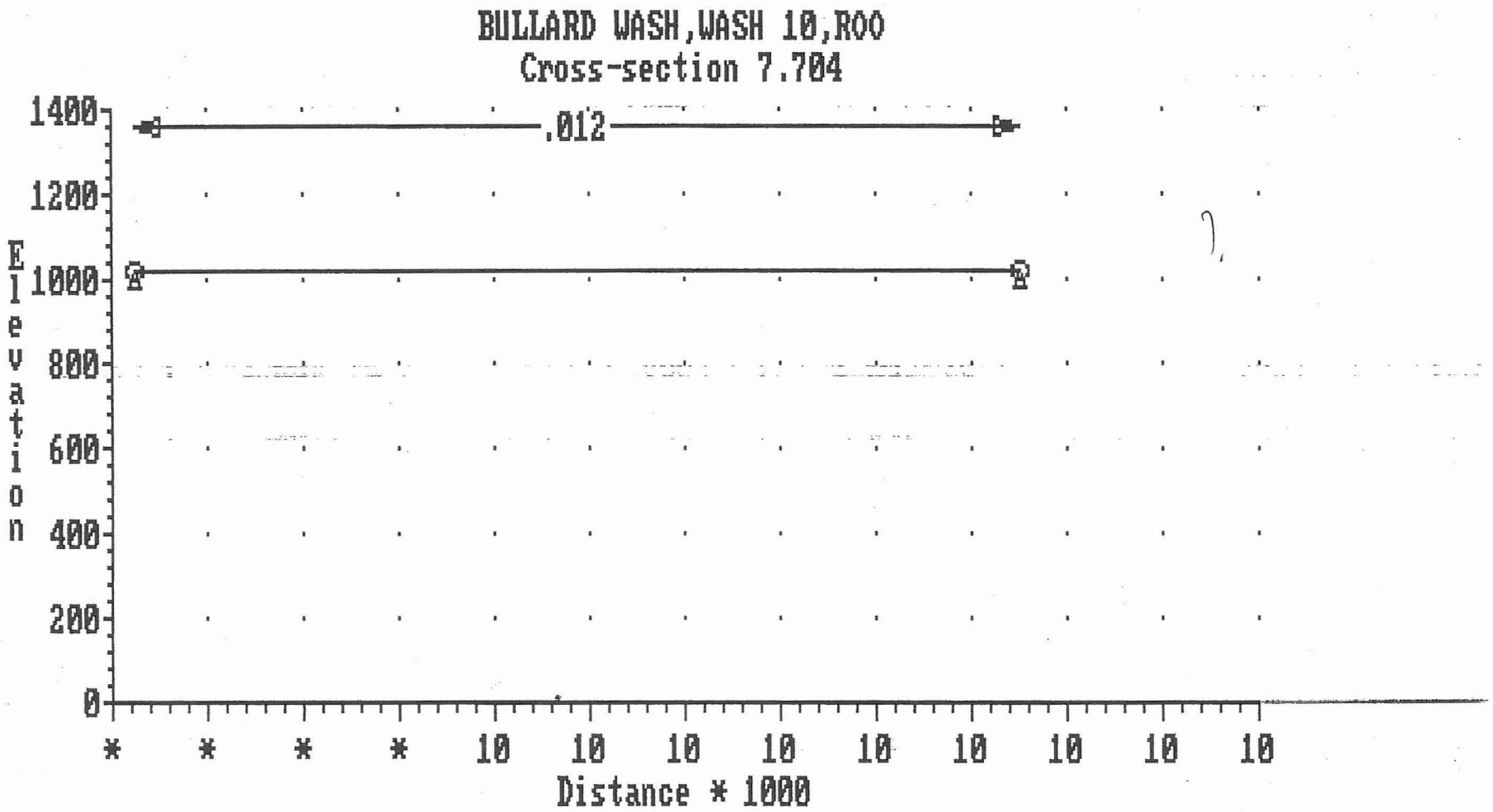
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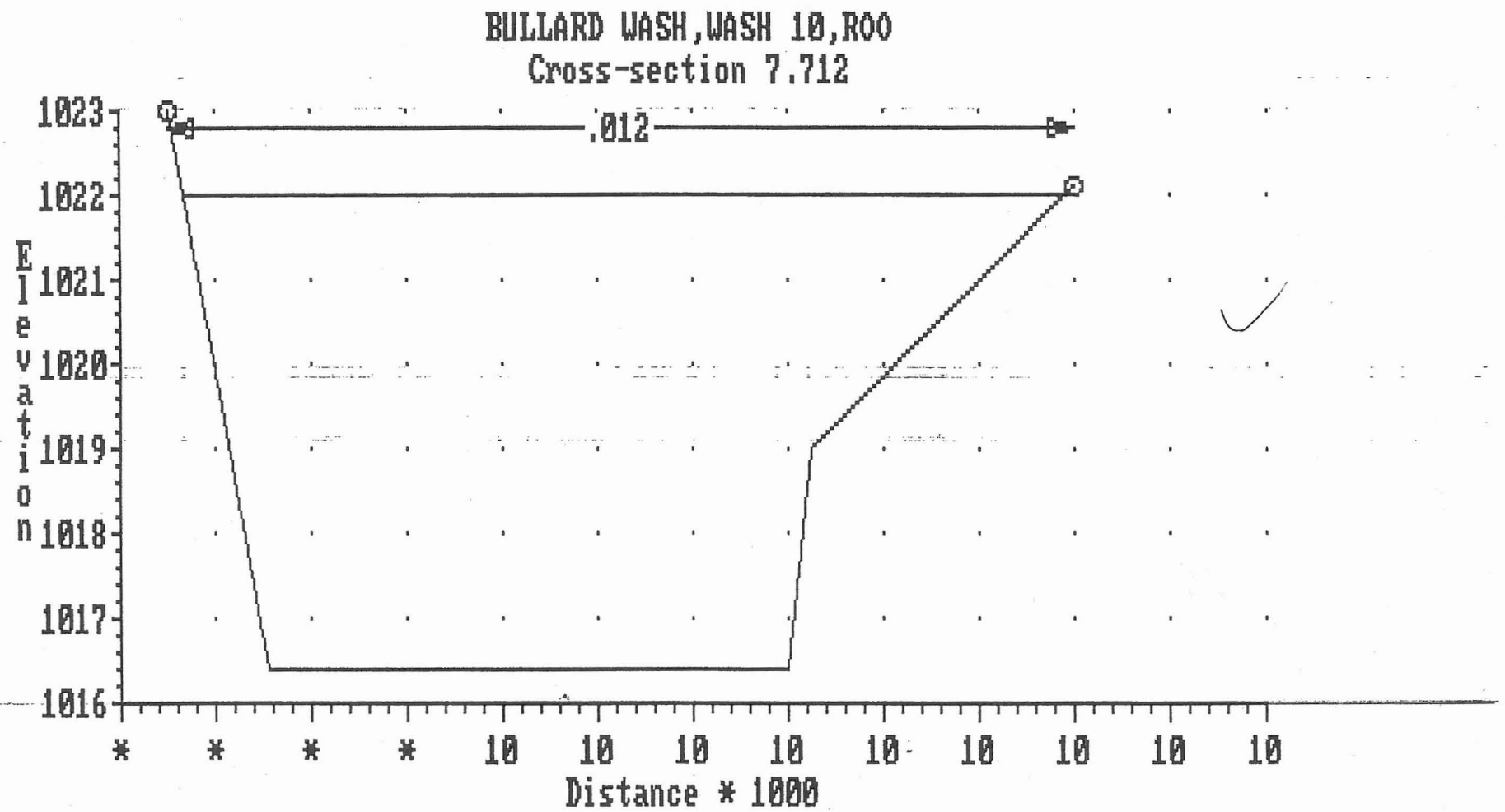
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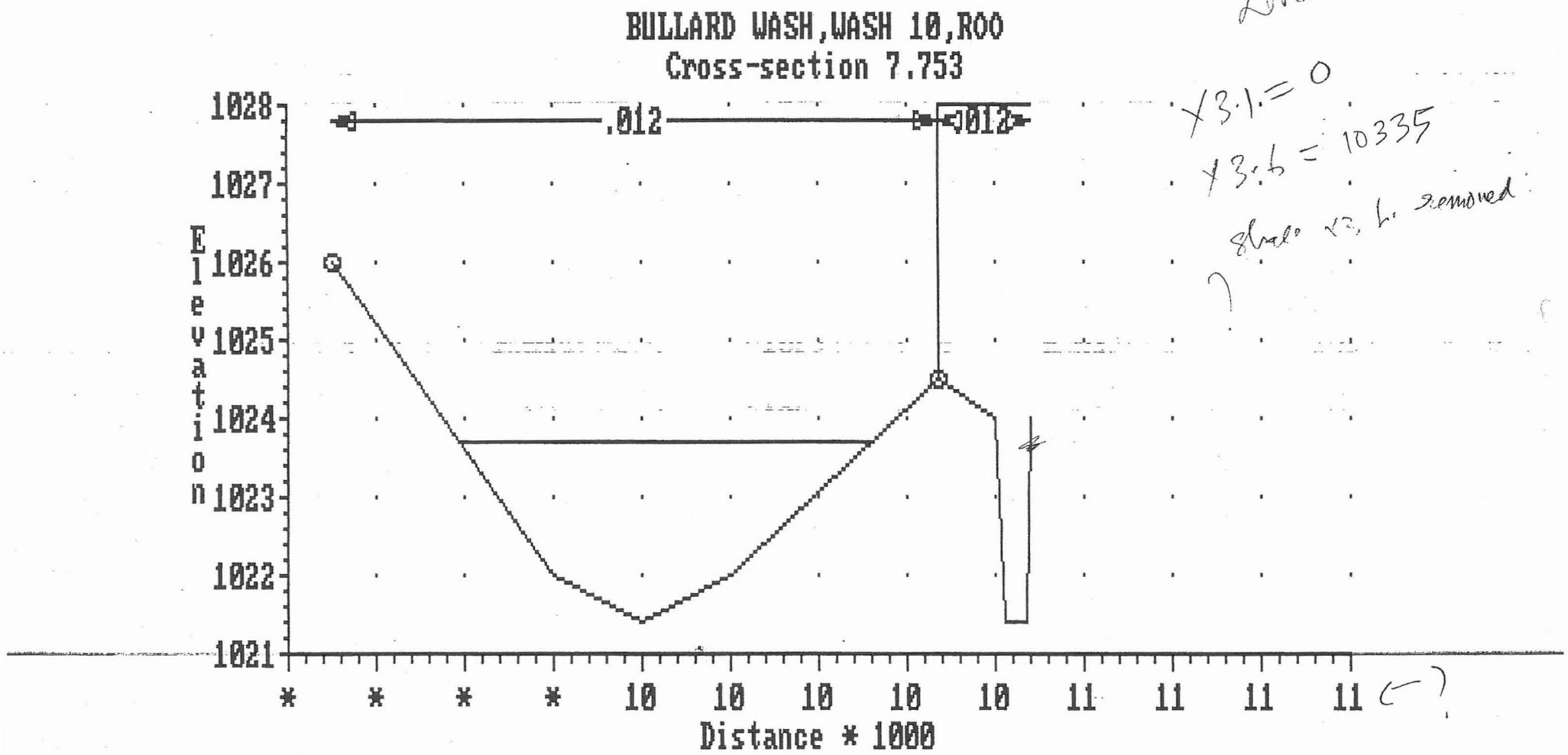

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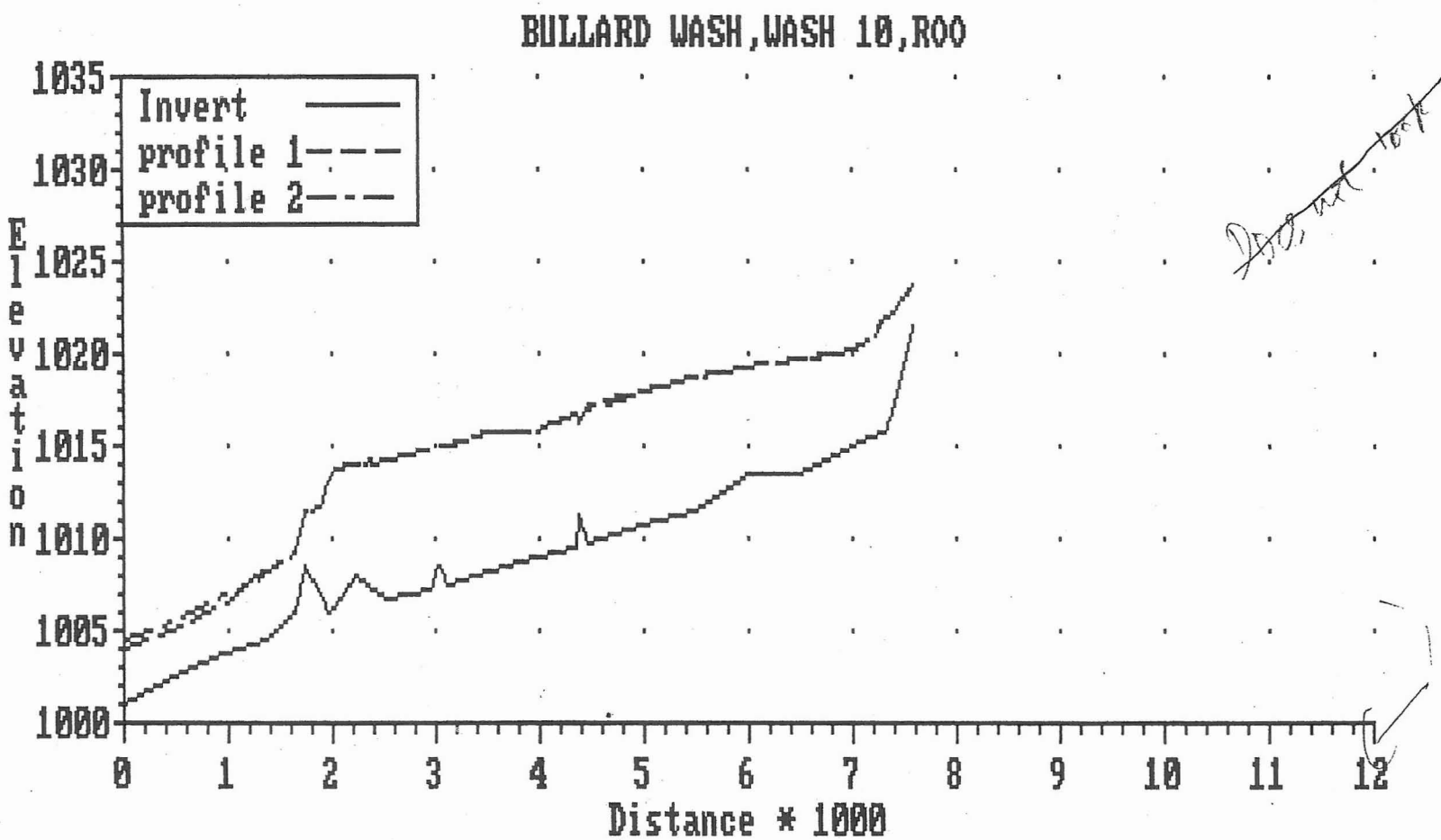
shade X3.6. removed



Do not look right

THIS RUN EXECUTED 25JAN95 00:38:06

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

T1 WHITE TANKS / AGUA FRIA AREA DRAINAGE MASTER STUDY
T2 100 - YEAR STORM EVENT FLOODPLAIN RUN FILE: "BULL-RID.H2I"
T3 BULLARD WASH,WASH 10,ROOSEVELT IRRIGATION DISTRICT CANAL (RID CANAL)
T4 TO INDIAN SCHOOL ROAD REACH. SECTIONS 6.320 - 7.753
T5 100-YEAR FLOODPLAIN PROFILE
T6 PEAK FLOWS ARE FROM WHITE TANKS/AGUA FRIA ADMS HEC1 RUN (WTADMS.24)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
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J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
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J3 VARIABLE CODES FOR SUMMARY PRINTOUT

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42	5	26	0	110	0	200			

QT	2	4662	4662						
NC	.07	.07	.04	.1	.3				
ET			9.1					9650	10300

***NOTE: THIS REACH IS A SEGMENT OF BULLARD WASH (WASH 10)
DEFINED IN THE WHITE TANKS AGUA FRIA AREA DRAINAGE MASTER STUDY.
THE FLOODPLAIN AND FLOODWAY LIMITS WERE LEFT OFF THE CORRESPON-
DING MAPS BECAUSE THIS AREA WAS UNDER CONSTRUCTION AT THE TIME
OF THE STUDY.THIS NOW REFLECTS THE AS BUILT CONDITIONS.***

Q = Q AT CP286 (= 4662 CFS).

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GR	1004	11030	1006	11060	1007	11220				
ET			9.1						9700	10300
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GR	1003.2	9760	1003.0	9860	1002.8	9935	1002.8	10000	1003	10100
GR	1004.0	10635	1006.0	10720	1006.8	11220				

MICHAEL BAKER, JR., INC.
RECEIVED
FEB 1 0 1995
ALEXANDRIA, VIRGINIA

```
ET                          0.4

                Sections 6.500 thru 6.650, manually or by X3 card, are truncated
                lt. and rt. to simulate 1:4 flow expansion d.s. of overchute.
                Floodway delineation is coincident with flow expansion.

X1    6.500       12     9960    10100      390      390      390
X3                              9650                10235
GR     1010     8860     1008     9245     1006     9378   1004.0     9656   1003.9     9760
GR   1003.7     9860   1003.8     9960   1003.8    10000   1003.8    10100   1004.0    10280
GR   1006.0    10775     1008    10860

ET                          0.4
X1    6.581       10     9940    10040      430      430      430
X3                              9805                10160
GR     1010     9135     1008     9405     1006     9515   1004.8     9840   1004.6     9940
GR   1004.6    10000   1004.6    10040     1006    10650   1008.0    10880   1010.0    11240

NC      .07      .07      .04       .1       .3
ET                          0.4
X1    6.631        8     9510    10130      263      263      263
X3                              9891                10109
GR     1010     9215     1008     9510     1006     9800   1006.4    10000   1006.0    10130
GR     1006    10485     1008    10963     1010    11260

NC                          .03
ET                          0.4
X1    6.650        6     9916    10084      100      100      100
GR   1013.0     9916   1008.5     9917   1008.5     9953   1008.5    10073   1008.5    10083
GR   1013.0    10084

NC      .03      .03     .016       .3       .5
QT        2     4703     4703
ET                          0.4

                Q = Q AT CP268        (= 4703 CFS).

                Immediately downstream of RID Canal overchute
                Top of overchute = 1013.0

X1    6.679        5     9954    10046      150      150      150
GR   1013.0     9954   1007.0   9954.1   1007.0    10000   1007.0   10045.9   1013.0    10046

ET                          9.1                                          9954    10046

                Upstream (North) side of RID Canal overchute
                Top of overchute = 1013.0

X1    6.688        5     9954    10046       52       52       52
GR   1013.1     9954   1006.0   9954.1   1006.0    10000   1006.0   10045.9   1013.1    10046
```

```
QT        2      4088      4088
NC      .03       .03       .03        .1        .3

                Q = Q AT 1I268       (= 4088 CFS).

                Section manually truncated at 10070 right to eliminate
                ineffective flow area in the right overbank.

X1    6.701         8      9880     10070        70        70        70
GR   1014.0    9880.0   1011.61      9907   1011.25      9928   1006.49      9969   1006.23     10000
GR   1007.1     10043   1009.12   10069.9      1014     10070


                Future Verde Lane (low water crossing-proposed configuration)
                Section manually truncated at 9880 left and 10080 right to
                eliminate ineffective flow areas in the left and right overbanks

X1    6.739         9      9880     10080       200       200       200
GR   1014.0      9880    1011.6    9880.1    1008.9      9950    1008.0      9975    1008.0     10000
GR   1008.0     10010    1008.9     10040    1012.8   10079.9      1014     10080

X1    6.799         9      9919     10090       319       319       319
GR   1016.6      9919   1008.04      9956   1007.36      9990   1006.68      9996   1006.68     10004
GR   1007.3     10014   1008.21     10042   1014.31     10078    1015.0     10090

ET                          9.1                                                          9955     10110
X1    6.878         8      9955     10135       412       412       412
GR   1015.0      9955   1007.30      9996   1007.30     10004    1009.0     10078    1013.0     10100
GR   1014.0     10118    1014.6     10125   1015.00     10135

ET                          9.1                                                          9947     10111

                Robson Circle South south curb line (small dia. cross pipes
                ignored)
                Section manually truncated at 9920 left and 10130 right to
                eliminate ineffective flow area in overbanks.
                Note 0.91 horz. modification factor

X1    6.890        11      9920     10130       110        20        65      0.91
GR   1016.0    9919.9   1012.16      9920   1009.87      9985   1008.99     10000   1008.50     10005
GR   1008.2     10035    1008.6   10067.5   1009.10   10072.5   1010.12     10100   1011.12     10130
GR   1016.0   10130.1

ET                          9.1                                                          9947     10111

                Robson Circle South north curb line (repeated section)
                Section manually truncated at 9920 left and 10130 right to
                eliminate ineffective flow area in overbanks.
```

Note 0.91 horz. modification factor

X1	6.897	11	9920	10130	40	40	40	0.91	0.2	
GR	1016.0	9919.9	1012.16	9920	1009.87	9985	1008.99	10000	1008.50	10005
GR	1008.2	10035	1008.6	10067.5	1009.10	10072.5	1010.12	10100	1011.12	10130
GR	1016.0	10130.1								

Section manually truncated at 9940 left to eliminate
ineffective flow area in far left overbank.

X1	6.908	8	9940	10120	40	110	55			
GR	1018.0	9940	1009.0	9990	1007.55	9996	1007.55	10004	1009.0	10060
GR	1010.0	10070	1014.0	10100	1015.0	10120				
X1	6.988	15	9770	10170	450	370	425			
X3				9860						
GR	1016.0	9770	1015.0	9780	1014.0	9800	1014.0	9830	1015.0	9845
GR	1015.6	9860	1015.0	9880	1010.41	9961	1009.39	9984	1008.76	9990
GR	1008.3	9996	1008.3	10004	1009.41	10060	1009.91	10120	1016.08	10170
X1	7.074	11	9920	10106	450	470	455			
GR	1016.0	9920	1015.0	9950	1010.23	9987	1009.01	9996	1009.01	10004
GR	1009.7	10009	1010.0	10030	1010.59	10065	1011.58	10075	1015.26	10095
GR	1016.5	10106								

Golf Cart Path
(Small diameter cross culverts ignored)
Note 0.82 horz. modification factor

X1	7.145	9	9870	10140	310	460	375	.82		
GR	1017.0	9870	1016.0	9880	1011.0	9970	1009.60	9992	1009.60	10008
GR	1011.0	10050	1012.0	10090	1016.0	10135	1017.0	10140		

Upstream end of golf cart path (manually truncated at 9940 left
to eliminate ineffective flow area in overbank).
Note 0.82 horz. modification factor

X1	7.150	10	9938	10140	24	24	24	.82		
GR	1018.0	9938	1018.0	9939	1018.0	9940	1016.0	9941	1012.00	9990
GR	1012.0	9992	1011.3	10008	1011.3	10048	1016.0	10130	1017.00	10140
ET			9.1						9960	10125
X1	7.165	11	9960	10155	80	45	80			
GR	1018.0	9960	1011.11	9990	1010.74	9994	1009.86	9996	1010.15	10004
GR	1010.9	10010	1011.18	10040	1011.72	10082	1014.28	10100	1015.0	10125
GR	1017.5	10155								

```
X1    7.264      18      9700     10105      520      520      520
X3                          9860
GR    1019.0     9700    1018.0    9710    1017.0    9720    1016.0    9730    1015.0    9755
GR    1017.0    9840.0   1017.5    9860    1016.0    9900   1015.02    9950   1013.70    9970
GR    1011.3     9991   1010.85    9996    1011.1   10004   1011.49   10006   1012.00   10035
GR    1012.9    10065   1014.71   10080    1019.0   10105

X1    7.358      11     9880.0    10127     500      500      500
GR    1019.0    9880.0   1015.3    9950   1014.95    9975   1012.53    9990   1011.59    9996
GR    1011.8    10004    1012.3   10007   1012.81   10045   1013.06   10075   1016.66   10100
GR    1019.4    10127
```

Robson Cir. North south curb line (small dia. cross pipes ignored)
Section manually truncated at 9975 left and at 10155 right to eliminate ineffective flow area in overbanks.

```
X1    7.445       9      9975     10155     460      500      460      .97
GR    1021.0    9974.9   1014.0    9975   1013.5    9980   1013.37   10050   1013.37   10065
GR    1013.9    10105   1014.43   10110   1015.69   10155   1021.0   10155.1
```

Robson Cir. North north curb line
Section manually truncated at 9975 left and at 10155 right to eliminate ineffective flow area in overbanks.

```
X1    7.453                                40       40       40                0.2

X1    7.549      11      9890     10168     505      505      505
GR    1020.0    9890    1019.0    9910   1015.51   9985    1013.72    9996    1013.6   10004
GR    1014.1    10007   1014.84   10085   1014.91   10120   1015.52   10132   1018.96   10155
GR    1021.0    10168

X1    7.646      12      9890     10108     510      510      510
GR    1023.0    9890    1021.0    9935   1016.83   9950    1015.94    9974   1015.66    9994
GR    1014.9    9996    1015.03   10004   1015.51   10008   1016.11   10045   1016.45   10052
GR    1023.8    10096   1024.54   10108

QT       2      4121     4121
NC     .012     .012     .012      0.3      0.5
```

Q = Q AT CP253 (= 4121 CFS).

Indian School Road Bypass structure 10-10x5 box culvert

```
X1    7.680       8      9940     10050     185      185      185
X3       10                                                     1022     1022
GR    1023.5    9840    1022.0    9920   1016.0    9940   1015.50    9942   1015.50   10048
GR    1016.0    10050   1024.0    10065   1022.96   10110
```

SC	10.012	0.4	3.0		5	10	125	12.1	1015.8	1015.5
X1	7.704	7	9925	10110	125	125	125		.3	
X2			2	1020.8	1023.26					
X3	10							1023.3	1023.3	
BT	2	9925	1023.3		10110	1023.26				
GR	1023.0	9925	1022.0	9930	1016.0	9940	1015.50	9942	1015.50	10048
GR	1016.0	10050	1022.96	10110						
X1	7.712	5	9930	10120	42	20	42			
GR	1023.0	9930	1016.4	9951	1016.4	10060	1019.0	10065	1022.1	10120
X1	7.753	9	9650	10335	270	200	220			
X3						10335				
GR	1026.0	9650	1022.0	9900	1021.4	10000	1022.0	10100	1024.5	10335
GR	1024.0	10400	1021.4	10410	1021.4	10435	1024.0	10440		

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300
*SECNO 6.320

***NOTE: THIS REACH IS A SEGMENT OF BULLARD WASH (WASH 10)
DEFINED IN THE WHITE TANKS AGUA FRIA AREA DRAINAGE MASTER STUDY.
THE FLOODPLAIN AND FLOODWAY LIMITS WERE LEFT OFF THE CORRESPON-
DING MAPS BECAUSE THIS AREA WAS UNDER CONSTRUCTION AT THE TIME
OF THE STUDY.THIS NOW REFLECTS THE AS BUILT CONDITIONS.***

Q = Q AT CP286 (= 4662 CFS).

6.320	3.09	1003.99	.00	1003.99	1004.07	.08	.00	.00	1001.30
4662.0	926.9	1806.9	1928.2	633.3	573.0	1432.2	.0	.0	1001.40
.00	1.46	3.15	1.35	.070	.040	.070	.000	1000.90	9555.70
.001771	0.	0.	0.	0	0	0	.00	1471.74	11027.44

*SECNO 6.426

6.426	2.47	1005.27	.00	.00	1005.37	.10	1.30	.01	1002.80
4662.0	1482.0	1494.1	1685.9	794.9	397.5	981.2	30.9	17.1	1003.00
.06	1.86	3.76	1.72	.070	.040	.070	.000	1002.80	9494.68
.003169	560.	560.	560.	2	0	0	.00	1194.29	10688.97

*SECNO 6.500

3470 ENCROACHMENT STATIONS= 9650.0 10235.0 TYPE= 1 TARGET= 585.000

Sections 6.500 thru 6.650, manually or by X3 card, are truncated
lt. and rt. to simulate 1:4 flow expansion d.s. of overchute.
Floodway delineation is coincident with flow expansion.

6.500	2.85	1006.55	.00	.00	1006.72	.17	1.33	.02	1003.80
4662.0	2087.6	1694.2	880.2	839.8	384.6	360.8	47.8	25.1	1003.80
.10	2.49	4.40	2.44	.070	.040	.070	.000	1003.70	9650.00
.003653	390.	390.	390.	2	0	0	.00	585.00	10235.00

*SECNO 6.581

```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=     9805.0   10160.0  TYPE=      1  TARGET=      355.000
    6.581      3.55   1008.15       .00       .00   1008.44       .29      1.69       .04   1004.60
   4662.0    1415.0    1991.4    1255.6     459.8     354.9     409.3      61.6      29.7   1004.60
      .13      3.08      5.61      3.07      .070      .040      .070      .000   1004.60   9805.00
  .004216      430.      430.      430.         2         0         0       .00    355.00  10160.00


CCHV=     .100 CEHV=     .300
*SECNO 6.631

3470 ENCROACHMENT STATIONS=     9891.0   10109.0  TYPE=      1  TARGET=      218.000
    6.631      3.33   1009.33       .00       .00   1010.08       .75      1.50       .14 100000.00
   4662.0        .0    4662.0        .0        .0     669.0        .0      67.3      31.5 100000.00
      .14       .00      6.97       .00      .000      .040      .000      .000   1006.00   9891.00
  .008200      263.      263.      263.         2         0         0       .00    218.00  10109.00


*SECNO 6.650

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    6.650      2.89   1011.39   1011.39       .00   1012.85      1.45       .89       .21   1013.00
   4662.0        .0    4662.0        .0        .0     482.1        .0      68.7      31.9   1013.00
      .14       .00      9.67       .00      .000      .030      .000      .000   1008.50   9916.36
  .009635      100.      100.      100.        20        11         0       .00    167.29  10083.64


CCHV=     .300 CEHV=     .500
*SECNO 6.679

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.27


               Q = Q AT CP268       (= 4703 CFS).

               Immediately downstream of RID Canal overchute
               Top of overchute = 1013.0

    6.679      4.77   1011.77       .00       .00   1013.56      1.79       .54       .17   1013.00
   4703.0        .0    4703.0        .0        .0     438.1        .0      70.2      32.4   1013.00
      .14       .00     10.73       .00      .000      .016      .000      .000   1007.00   9954.02
  .001896      150.      150.      150.         4         0         0       .00     91.96  10045.98
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.688

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.88

Upstream (North) side of RID Canal overchute
Top of overchute = 1013.0

6.688	7.09	1013.09	.00	.00	1013.90	.81	.05	.29	1013.10
4703.0	.0	4703.0	.0	.0	651.0	.0	70.9	32.5	1013.10
.15	.00	7.22	.00	.000	.016	.000	.000	1006.00	9954.00
.000538	52.	52.	52.	3	0	0	.00	92.00	10046.00

CCHV= .100 CEHV= .300
*SECNO 6.701

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

Q = Q AT 1I268 (= 4088 CFS).

Section manually truncated at 10070 right to eliminate
ineffective flow area in the right overbank.

6.701	7.48	1013.71	.00	.00	1014.00	.28	.05	.05	1014.00
4088.0	.0	4088.0	.0	.0	954.8	.0	72.2	32.7	1014.00
.15	.00	4.28	.00	.000	.030	.000	.000	1006.23	9883.16
.000879	70.	70.	70.	2	0	0	.00	186.83	10069.99

*SECNO 6.739

Future Verde Lane (low water crossing-proposed configuration)
Section manually truncated at 9880 left and 10080 right to
eliminate ineffective flow areas in the left and right overbanks

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
6.739	5.89	1013.89	.00	.00	1014.22	.33	.21	.02	1014.00
4088.0	.0	4088.0	.0	.0	880.5	.0	76.4	33.6	1014.00
.16	.00	4.64	.00	.000	.030	.000	.000	1008.00	9880.00
.001246	200.	200.	200.	2	0	0	.00	199.99	10079.99
*SECNO 6.799									
6.799	7.54	1014.22	.00	.00	1014.66	.44	.41	.03	1016.60
4088.0	.0	4088.0	.0	.0	768.4	.0	82.4	34.9	1015.00
.18	.00	5.32	.00	.000	.030	.000	.000	1006.68	9929.27
.001301	319.	319.	319.	0	0	0	.00	148.23	10077.50
*SECNO 6.878									
6.878	7.51	1014.81	.00	.00	1015.20	.39	.54	.00	1015.00
4088.0	.0	4088.0	.0	.0	815.2	.0	89.9	36.4	1015.00
.20	.00	5.01	.00	.000	.030	.000	.000	1007.30	9955.99
.001322	412.	412.	412.	2	0	0	.00	174.34	10130.33

*SECNO 6.890

Robson Circle South south curb line (small dia. cross pipes ignored)
Section manually truncated at 9920 left and 10130 right to eliminate ineffective flow area in overbanks.
Note 0.91 horz. modification factor

6.890	6.82	1015.02	.00	.00	1015.28	.26	.06	.01	1012.16
4088.0	.0	4088.0	.0	.1	1003.7	.1	91.3	36.7	1011.12
.21	.01	4.07	.15	.030	.030	.030	.000	1008.20	9919.92
.000741	110.	65.	20.	2	0	0	.00	191.24	10111.16

*SECNO 6.897

Robson Circle South north curb line (repeated section)
Section manually truncated at 9920 left and 10130 right to eliminate ineffective flow area in overbanks.
Note 0.91 horz. modification factor

6.897	6.64	1015.04	.00	.00	1015.32	.28	.03	.01	1012.36
4088.0	.0	4088.0	.0	.1	968.9	.1	92.2	36.8	1011.32
.21	.01	4.22	.15	.030	.030	.030	.000	1008.40	9919.93
.000834	40.	40.	40.	2	0	0	.00	191.23	10111.16

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.908

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

Section manually truncated at 9940 left to eliminate
ineffective flow area in far left overbank.

6.908	7.40	1014.95	.00	.00	1015.45	.50	.06	.07	1018.00
4088.0	.0	4088.0	.0	.0	723.9	.0	93.3	37.1	1015.00
.21	.00	5.65	.00	.000	.030	.000	.000	1007.55	9956.93
.001783	40.	55.	110.	2	0	0	.00	162.13	10119.05

*SECNO 6.988

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.98

3470 ENCROACHMENT STATIONS= 9860.0 10170.0 TYPE= 1 TARGET= -9860.000

6.988	7.39	1015.69	.00	.00	1015.82	.13	.34	.04	100000.00
4088.0	.0	4088.0	.0	.0	1406.3	.0	103.6	39.3	100000.00
.25	.00	2.91	.00	.000	.030	.000	.000	1008.30	9860.00
.000454	450.	425.	370.	2	0	0	.00	306.89	10166.89

*SECNO 7.074

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .44

7.074	6.79	1015.80	.00	.00	1016.35	.55	.40	.13	1016.00
4088.0	.0	4088.0	.0	.0	684.3	.0	114.6	41.9	1016.50
.27	.00	5.97	.00	.000	.030	.000	.000	1009.01	9925.83
.002359	450.	455.	470.	2	0	0	.00	174.02	10099.84

*SECNO 7.145

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.44

Golf Cart Path
(Small diameter cross culverts ignored)

Note 0.82 horz. modification factor

7.145	7.07	1016.67	.00	.00	1016.97	.30	.59	.03	1017.00
4088.0	.0	4088.0	.0	.0	931.7	.0	121.5	43.5	1017.00
.30	.00	4.39	.00	.000	.030	.000	.000	1009.60	9872.71
.001131	310.	375.	460.	2	0	0	.00	217.33	10090.04

*SECNO 7.150

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .41

Upstream end of golf cart path (manually truncated at 9940 left
to eliminate ineffective flow area in overbank).
Note 0.82 horz. modification factor

7.150	4.84	1016.14	.00	.00	1017.27	1.13	.05	.25	1018.00
4088.0	.0	4088.0	.0	.0	478.6	.0	121.9	43.6	1017.00
.30	.00	8.54	.00	.000	.030	.000	.000	1011.30	9940.40
.006712	24.	24.	24.	3	0	0	.00	156.22	10096.62

*SECNO 7.165

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.11

7.165	7.31	1017.17	.00	.00	1017.57	.40	.22	.07	1018.00
4088.0	.0	4088.0	.0	.0	806.4	.0	123.1	44.0	1017.50
.30	.00	5.07	.00	.000	.030	.000	.000	1009.86	9963.62
.001509	80.	80.	45.	3	0	0	.00	187.42	10151.03

*SECNO 7.264

3470 ENCROACHMENT STATIONS= 9860.0 10105.0 TYPE= 1 TARGET= -9860.000

7.264	7.17	1018.02	.00	.00	1018.33	.31	.75	.01	100000.00
4088.0	.0	4088.0	.0	.0	913.2	.0	133.4	46.5	100000.00
.34	.00	4.48	.00	.000	.030	.000	.000	1010.85	9860.00
.001378	520.	520.	520.	3	0	0	.00	239.27	10099.27

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 7.358

7.358	7.11	1018.70	.00	.00	1019.01	.31	.68	.00	1019.00
4088.0	.0	4088.0	.0	.0	911.0	.0	143.8	49.2	1019.40
.37	.00	4.49	.00	.000	.030	.000	.000	1011.59	9885.75
.001348	500.	500.	500.	2	0	0	.00	234.31	10120.06

*SECNO 7.445

Robson Cir. North south curb line (small dia. cross pipes ignored)
Section manually truncated at 9975 left and at 10155 right to eliminate ineffective flow area in overbanks.

7.445	5.83	1019.20	.00	.00	1019.50	.30	.49	.00	1014.00
4088.0	.0	4088.0	.0	.2	923.3	.1	153.5	51.4	1015.69
.39	.16	4.43	.15	.030	.030	.030	.000	1013.37	9974.92
.000868	460.	460.	500.	2	0	0	.00	174.74	10149.66

*SECNO 7.453

Robson Cir. North north curb line
Section manually truncated at 9975 left and at 10155 right to eliminate ineffective flow area in overbanks.

7.453	5.65	1019.22	.00	.00	1019.54	.33	.04	.01	1014.20
4088.0	.0	4088.0	.0	.2	892.1	.1	154.3	51.5	1015.89
.40	.16	4.58	.15	.030	.030	.030	.000	1013.57	9974.93
.000973	40.	40.	40.	2	0	0	.00	174.73	10149.66

*SECNO 7.549

7.549	6.22	1019.82	.00	.00	1020.07	.24	.51	.01	1020.00
4088.0	.0	4088.0	.0	.0	1031.3	.0	165.5	54.1	1021.00
.43	.00	3.96	.00	.000	.030	.000	.000	1013.60	9893.56
.001059	505.	505.	505.	2	0	0	.00	266.93	10160.49

*SECNO 7.646

3301 HV CHANGED MORE THAN HVINS

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .49

7.646	5.38	1020.28	.00	.00	1021.26	.98	.98	.22	1023.00
4088.0	.0	4088.0	.0	.0	514.9	.0	174.5	56.5	1024.54
.45	.00	7.94	.00	.000	.030	.000	.000	1014.90	9937.58
.004455	510.	510.	510.	2	0	0	.00	137.38	10074.95

CCHV= .300 CEHV= .500
*SECNO 7.680

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.41

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1022.00 ELREA= 1022.00

Q = Q AT CP253 (= 4121 CFS).

Indian School Road Bypass structure 10-10x5 box culvert

7.680	5.16	1020.66	.00	.00	1021.48	.82	.17	.05	1016.00
4121.0	.0	4121.0	.0	.0	566.6	.0	176.8	57.0	1016.00
.46	.00	7.27	.00	.000	.012	.000	.000	1015.50	9940.00
.000388	185.	185.	185.	2	0	0	.00	110.00	10050.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	10	.012	.40	3.00	.00	5.00	10.00	125.00	12	1	1015.80	1015.50

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE 1 - WINGWALLS FLARED 45 DEGREES (1:1); INLET NOT SKEWED

*SECNO 7.704

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1021.899 EGOC = 1022.416 PCWSE= 1020.659 ELTRD= 1023.260

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.49

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1021.90	1022.42	.94	0.	4121.	4.801	500.0	1023.26	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1023.30 ELREA= 1023.30

7.704	6.26	1022.06	.00	.00	1022.42	.36	.94	.00	1023.30
4121.0	.0	4121.0	.0	.0	858.3	.0	178.9	57.4	1023.26
.46	.00	4.80	.00	.000	.012	.000	.000	1015.80	9930.40
.000175	125.	125.	125.	2	0	0	.00	169.26	10099.66

*SECNO 7.712

7.712	5.62	1022.02	.00	.00	1022.47	.45	.01	.05	1023.00
4121.0	.0	4121.0	.0	.0	765.6	.0	179.7	57.6	1022.10
.47	.00	5.38	.00	.000	.012	.000	.000	1016.40	9933.11
.000289	42.	42.	20.	2	0	0	.00	185.49	10118.60

*SECNO 7.753
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10335.0 TYPE= 1 TARGET= 10335.000

7.753	2.29	1023.69	1023.69	.00	1024.37	.68	.13	.12	1076.00
4121.0	.0	4121.0	.0	.0	621.3	.0	183.2	59.2	100000.00
.48	.00	6.63	.00	.000	.012	.000	.000	1021.40	9794.41
.001947	270.	220.	200.	20	18	0	.00	464.41	10258.81

PROFILE FOR STREAM BULLARD WASH,WASH 10,ROO

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

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ELEVATION  1001.     1006.     1011.     1016.     1021.     1026.     1031.     1036.     1041.     1046.
    SECNO  CUMDIS

     6.32      0.  IL    E  . M      .         .         .         .         .         .         .         .         .
              50.  IL   WE  . M      .         .         .         .         .         .         .         .         .
             100.  CIR   E  . M      .         .         .         .         .         .         .         .         .
             150.  CIL   E  . M      .         .         .         .         .         .         .         .         .
             200.  CIL   E  . M      .         .         .         .         .         .         .         .         .
             250.  C I  WE  . M      .         .         .         .         .         .         .         .         .
             300.  C IR   E  . M      .         .         .         .         .         .         .         .         .
             350.  C IL   E  . M      .         .         .         .         .         .         .         .         .
             400.  C  I   E  . M      .         .         .         .         .         .         .         .         .
             450.  C  IR  E  . M      .         .         .         .         .         .         .         .         .
             500.  C  IR  WE. M      .         .         .         .         .         .         .         .         .
             550.  C   I   E. M      .         .         .         .         .         .         .         .         .
     6.43    600.  C   I   E. M      .         .         .         .         .         .         .         .         .
             650.  C   I   E. M      .         .         .         .         .         .         .         .         .
             700.  C   IR  WE M      .         .         .         .         .         .         .         .         .
             750.  C   IL   E  M      .         .         .         .         .         .         .         .         .
             800.  C   I   E  M      .         .         .         .         .         .         .         .         .
             850.  C   I   WE M      .         .         .         .         .         .         .         .         .
             900.  C   I   .E  M      .         .         .         .         .         .         .         .         .
     6.50    950.  C    I  .WE M      .         .         .         .         .         .         .         .         .
            1000.  C    I  . E  M      .         .         .         .         .         .         .         .         .
            1050.  C    I  . E  M      .         .         .         .         .         .         .         .         .
            1100.  C    I  . WE  M      .         .         .         .         .         .         .         .         .
            1150.  C    IL . E  M      .         .         .         .         .         .         .         .         .
            1200.  C     I . WE  M      .         .         .         .         .         .         .         .         .
            1250.  C     I .  E  M      .         .         .         .         .         .         .         .         .
            1300.  C     I .  E  M      .         .         .         .         .         .         .         .         .
            1350.  C     I .  WE  M      .         .         .         .         .         .         .         .         .
     6.58   1400.  C     I .  E  M      .         .         .         .         .         .         .         .         .
            1450.  C      I .  WE M      .         .         .         .         .         .         .         .         L
            1500.  C      I .  WE M      .         .         .         .         .         .         .         .         L
            1550.  C       I.   WEM      .         .         .         .         .         .         .         .         L
            1600.  C        I   W E      .         .         .         .         .         .         .         .         L
     6.63   1650.  C        I    WE      .         .         .         .         .         .         .         .         L
            1700.  C        . I   W.E      .         .         .         .         .         .         .         .         L
     6.65   1750.  .        .  I  .W  E      .         .         .         .         .         .         .         .         .
            1800.  C        . I  .W  E      .         .         .         .         .         .         .         .         .
            1850.  C        . I  .W  LE      .         .         .         .         .         .         .         .         .
     6.68   1900.  C        . I  . W LE      .         .         .         .         .         .         .         .         .
     6.69   1950.  C        I  .  W E      .         .         .         .         .         .         .         .         .
            2000.  C        .I  .  WE      .         .         .         .         .         .         .         .         .
     6.70   2050.  C        .I  .   E      .         .         .         .         .         .         .         .         .
            2100.  C        . I  .   E      .         .         .         .         .         .         .         .         .
            2150.  C        . I  .   E      .         .         .         .         .         .         .         .         .
            2200.  C        . I  .   WE      .         .         .         .         .         .         .         .         .
     6.74   2250.  C        .  I .   WE      .         .         .         .         .         .         .         .         .
            2300.  C        .  I .   WE      .         .         .         .         .         .         .         .         .
            2350.  C        . I  .   WEL      .         .         .         .         .         .         .         .         .
            2400.  C        . I  .   WE L.      .         .         .         .         .         .         .         .         .
            2450.  C        . I  .   WE L.      .         .         .         .         .         .         .         .         .
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       2500.  C        . I       .     ER L        .         .         .         .         .         .         .
6.80   2550.  C        . I       .     WE .L       .         .         .         .         .         .         .
       2600.  C        . I       .     WE .L       .         .         .         .         .         .         .
       2650.  C        . I       .     WE .L       .         .         .         .         .         .         .
       2700.  C        . I       .     WE L        .         .         .         .         .         .         .
       2750.  C        . I       .     WE L        .         .         .         .         .         .         .
       2800.  C        . I       .     WEL.        .         .         .         .         .         .         .
       2850.  C        . I       .      EL.        .         .         .         .         .         .         .
       2900.  C        .  I      .      EL.        .         .         .         .         .         .         .
6.88   2950.  C        .  I      .      WE.        .         .         .         .         .         .         .
       3000.  C        .   I     . R L  WEM        .         .         .         .         .         .         .
6.89   3050.  C        .    I    R  L   WEM        .         .         .         .         .         .         .
6.90   3100.  C        .    I    .R L   WE.M        .         .         .         .         .         .         .
6.91   3150.  C        .  I      .      WE.   L     .         .         .         .         .         .         .
       3200.  C        .  I      .      WE.         .         .         .         .         .         .         L
       3250.  C        .   I     .      WE.         .         .         .         .         .         .         L
       3300.  C        .   I     .       E.         .         .         .         .         .         .         L
       3350.  C        .   I     .       E.         .         .         .         .         .         .         L
       3400.  C        .   I     .      WE          .         .         .         .         .         .         L
       3450.  C        .   I     .      WE          .         .         .         .         .         .         L
       3500.  C        .    I    .      WE          .         .         .         .         .         .         L
6.99   3550.  C        .    I    .       E          .         .         .         .         .         .         L
       3600.  C        .    I    .       E          .         .         .         .         .         .         L
       3650.  C        .    I    .       E          .         .         .         .         .         .         L
       3700.  C        .    I    .       E          .         .         .         .         .         .         L
       3750.  C        .    I    .       E          .         .         .         .         .         .         L
       3800.  C        .     I   .       E          .         .         .         .         .         .         L
       3850.  C        .     I   .      WE          .         .         .         .         .         .         L
       3900.  C        .     I   .      WE          .         .         .         .         .         .         L
       3950.  C        .     I   .      WE          .         .         .         .         .         .         L
7.07   4000.  C        .     I   .      WE          .         .         .         .         .         .         .
       4050.  C        .     I   .      WE          .         .         .         .         .         .         .
       4100.  C        .      I  .      WE          .         .         .         .         .         .         .
       4150.  C        .      I  .      .ER         .         .         .         .         .         .         .
       4200.  C        .      I  .      .WE         .         .         .         .         .         .         .
       4250.  C        .      I  .      .WE         .         .         .         .         .         .         .
       4300.  C        .      I  .      .WE         .         .         .         .         .         .         .
       4350.  C        .      I  .      .WE         .         .         .         .         .         .         .
7.14   4400.  C        .      I  .      . E         .         .         .         .         .         .         .
7.15   4450.  C        .         .I     W REL       .         .         .         .         .         .         .
7.16   4500.  C        .       I .      .  EL       .         .         .         .         .         .         .
       4550.  C        .       I .      .  E        .         .         .         .         .         .         L
       4600.  C        .       I .      .  WE       .         .         .         .         .         .         L
       4650.  C        .       I .      .  WE       .         .         .         .         .         .         L
       4700.  C        .        I.      .  WE       .         .         .         .         .         .         L
       4750.  C        .        I.      .  WEM      .         .         .         .         .         .         L
       4800.  C        .        I.      .   EM      .         .         .         .         .         .         L
       4850.  C        .        I.      .   EM      .         .         .         .         .         .         L
       4900.  C        .        I.      .   WEM     .         .         .         .         .         .         L
       4950.  C        .         I      .   WEM     .         .         .         .         .         .         L
7.26   5000.  C        .         I      .   WEM     .         .         .         .         .         .         L
       5050.  C        .         I      .   WEM     .         .         .         .         .         .         L
       5100.  C        .         I      .    EM     .         .         .         .         .         .         L
       5150.  C        .         I      .    EM     .         .         .         .         .         .         L
       5200.  C        .         I      .    EM     .         .         .         .         .         .         L
       5250.  C        .        .I      .    WE     .         .         .         .         .         .         L
       5300.  C        .        .I      .    WE     .         .         .         .         .         .         L
       5350.  C        .        .I      .    WE     .         .         .         .         .         .         L
       5400.  C        .        .I      .    WE     .         .         .         .         .         .         L
       5450.  C        .        .I      .    WE     .         .         .         .         .         .         L
7.36   5500.  C        .        .I      .     ER    .         .         .         .         .         .         .
       5550.  C        .         . I    .    LEM    .         .         .         .         .         .         .
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      5600. C        .        . I      .  LREM .       .       .       .       .       .
      5650. C        .        . I      . L RWEM .       .       .       .       .       .
      5700. C        .        . I      . L R WEM .       .       .       .       .       .
      5750. C        .        . I      .L R  WEM .       .       .       .       .       .
      5800. C        .        .  I     L R   WE M.       .       .       .       .       .
      5850. C        .        .  I    L.R    WE M.       .       .       .       .       .
      5900. C        .        .  I   L .R    WE  M       .       .       .       .       .
7.45  5950. C        .        .   IL   R      E  M       .       .       .       .       .
7.45  6000. C        .        .   I L  R      E  .M       .       .       .       .       .
      6050. C        .        .   I  L .R     E  M       .       .       .       .       .
      6100. C        .        .   I   L. R    E  M       .       .       .       .       .
      6150. C        .        .   I    L  R   WE M       .       .       .       .       .
      6200. C        .        .   I    .L  R  WE M       .       .       .       .       .
      6250. C        .        .   I    . L  R WEM.       .       .       .       .       .
      6300. C        .        .   I    .  L  RWEM.       .       .       .       .       .
      6350. C        .        .   I    .    L WEM.       .       .       .       .       .
      6400. C        .        .   I    .     L EM.       .       .       .       .       .
      6450. C        .        .   I    .      LER.       .       .       .       .       .
7.55  6500. C        .        .   I    .       E R       .       .       .       .       .
      6550. C        .        .    I   .       WE.R      .       .       .       .       .
      6600. C        .        .    I   .       WE. R     .       .       .       .       .
      6650. C        .        .    I   .       WEL R     .       .       .       .       .
      6700. C        .        .    I   .       WE.L R    .       .       .       .       .
      6750. C        .        .     I  .       W EL  R   .       .       .       .       .
      6800. C        .        .     I  .       W E L R   .       .       .       .       .
      6850. C        .        .     I  .       W E L  R  .       .       .       .       .
      6900. C        .        .     I  .        WE  L  R .       .       .       .       .
      6950. C        .        .      I .        WE  L  R .       .       .       .       .
7.65  7000. C        .        .      I .        W.E  L  R .       .       .       .       .
      7050. C        .        .      I .        WLE RM    .       .       .       .       .
      7100. C        .        .       I.      LRW.E  M   .       .       .       .       .
      7150. C        .        .       I.  L     W.E  M   .       .       .       .       .
7.68  7200. C        .        .       IL         WE  M   .       .       .       .       .
      7250. C        .        .       I.     L   .WE M   .       .       .       .       .
      7300. C        .        .        I         . WE M  .       .       .       .       .
7.70  7350. C        .        .        I         . WE L  .       .       .       .       .
7.71  7400. C        .        .        .I        . WEL   .       .       .       .       .
      7450. C        .        .        . I .     .  WE   .       .     L .       .       R
      7500. C        .        .        .    I   .   WE   .       .       .       . L     R
      7550. C        .        .        .      I .    WE  .       .       .       .       L
7.75  7600. .        .        .        .        .I    WE .       .       .       .       L
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T1      WHITE TANKS / AGUA FRIA AREA DRAINAGE MASTER STUDY
T2      100 - YEAR STORM EVENT   FLOODPLAIN RUN FILE: "10-AVOND.H2I"
T3      BULLARD WASH,WASH 10,ROOSEVELT IRRIGATION DISTRICT CANAL (RID CANAL)
T4      TO INDIAN SCHOOL ROAD REACH. SECTIONS   6.320 - 7.753
T5      (AVONDALE DRAIN) IN GOLF COURSE AREA @ GLOBE PROPERTY
T6      100-YEAR FLOODWAY PROFILE

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

                3                                                          1004.59

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     14                 -1
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= .100 CEHV= .300
*SECNO 6.320

3470 ENCROACHMENT STATIONS= 9650.0 10300.0 TYPE= 1 TARGET= 650.000

***NOTE: THIS REACH IS A SEGMENT OF BULLARD WASH (WASH 10)
DEFINED IN THE WHITE TANKS AGUA FRIA AREA DRAINAGE MASTER STUDY.
THE FLOODPLAIN AND FLOODWAY LIMITS WERE LEFT OFF THE CORRESPON-
DING MAPS BECAUSE THIS AREA WAS UNDER CONSTRUCTION AT THE TIME
OF THE STUDY.THIS NOW REFLECTS THE AS BUILT CONDITIONS.***

Q = Q AT CP286 (= 4662 CFS).

6.320	3.69	1004.59	.00	1003.99	1004.70	.11	.00	.00	1001.30
4662.0	1237.1	2356.9	1068.0	719.8	693.0	606.4	.0	.0	1001.40
.00	1.72	3.40	1.76	.070	.040	.070	.000	1000.90	9650.00
.001598	0.	0.	0.	0	0	0	.00	650.00	10300.00

*SECNO 6.426

3470 ENCROACHMENT STATIONS= 9700.0 10300.0 TYPE= 1 TARGET= 600.000

6.426	2.98	1005.78	.00	1005.27	1005.94	.17	1.22	.02	1002.80
4662.0	1459.1	2048.3	1154.6	633.6	480.6	517.2	23.5	8.0	1003.00
.05	2.30	4.26	2.23	.070	.040	.070	.000	1002.80	9700.00
.003165	560.	560.	560.	2	0	0	.00	600.00	10300.00

*SECNO 6.500

3470 ENCROACHMENT STATIONS= 9650.0 10235.0 TYPE= 1 TARGET= 585.000

Sections 6.500 thru 6.650, manually or by X3 card, are truncated
lt. and rt. to simulate 1:4 flow expansion d.s. of overchute.
Floodway delineation is coincident with flow expansion.

6.500	3.20	1006.90	.00	1006.55	1007.03	.13	1.08	.00	1003.80
4662.0	2088.6	1691.5	881.9	947.3	433.2	407.6	38.8	13.3	1003.80
.09	2.20	3.90	2.16	.070	.040	.070	.000	1003.70	9650.00
.002450	390.	390.	390.	2	0	0	.00	585.00	10235.00

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


*SECNO 6.581

3470 ENCROACHMENT STATIONS=     9805.0   10160.0  TYPE=      1  TARGET=      355.000
     6.581      3.54   1008.14       .00   1008.15   1008.44       .29       1.36       .05   1004.60
    4662.0    1415.0    1991.5    1255.6     459.1     354.3     408.6       53.6      18.0   1004.60
       .12      3.08      5.62      3.07      .070      .040      .070       .000   1004.60   9805.00
   .004238      430.      430.      430.         2         0         0        .00    355.00  10160.00


CCHV=      .100 CEHV=      .300
*SECNO 6.631

3470 ENCROACHMENT STATIONS=     9891.0   10109.0  TYPE=      1  TARGET=      218.000
     6.631      3.33   1009.33       .00   1009.33   1010.08       .75       1.51       .14 100000.00
    4662.0        .0    4662.0        .0        .0     669.1        .0       59.3      19.7 100000.00
       .13       .00      6.97       .00      .000      .040      .000       .000   1006.00   9891.00
   .008197      263.      263.      263.         2         0         0        .00    218.00  10109.00


*SECNO 6.650

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     6.650      2.89   1011.39   1011.39   1011.39   1012.85       1.45        .89       .21   1013.00
    4662.0        .0    4662.0        .0        .0     482.1        .0       60.7      20.2   1013.00
       .13       .00      9.67       .00      .000      .030      .000       .000   1008.50   9916.36
   .009639      100.      100.      100.        19        11         0        .00    167.29  10083.64


CCHV=      .300 CEHV=      .500
*SECNO 6.679
 2800 NAT Q1=    1079.97  WSELK=    1011.77  ENC Q1=    1080.02  WSEL=    1011.77  RATIO=     .0000
 NAT Q1=    1080.  RATIOS LOB, CH, ROB=    .0000  1.0000    .0000  WSEL=    1011.77

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.28


3470 ENCROACHMENT STATIONS=     9954.0   10046.0  TYPE=      4  TARGET=         .000

                Q = Q AT CP268       (= 4703 CFS).
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Immediately downstream of RID Canal overchute
Top of overchute = 1013.0

6.679	4.77	1011.77	.00	1011.77	1013.55	1.79	.54	.17	1063.00
4703.0	.0	4703.0	.0	.0	438.6	.0	62.2	20.6	1013.00
.13	.00	10.72	.00	.000	.016	.000	.000	1007.00	9954.02
.001890	150.	150.	150.	2	0	0	.00	91.96	10045.98

*SECNO 6.688

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.87

3470 ENCROACHMENT STATIONS= 9954.0 10046.0 TYPE= 1 TARGET= 92.000

Upstream (North) side of RID Canal overchute
Top of overchute = 1013.0

6.688	7.08	1013.08	.00	1013.09	1013.89	.81	.05	.29	1063.10
4703.0	.0	4703.0	.0	.0	650.4	.0	62.9	20.7	100000.00
.14	.00	7.23	.00	.000	.016	.000	.000	1006.00	9954.00
.000539	52.	52.	52.	3	0	0	.00	92.00	10046.00

CCHV= .100 CEHV= .300
*SECNO 6.701

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

Q = Q AT 1I268 (= 4088 CFS).

Section manually truncated at 10070 right to eliminate
ineffective flow area in the right overbank.

6.701	7.48	1013.71	.00	1013.71	1013.99	.29	.05	.05	1014.00
4088.0	.0	4088.0	.0	.0	953.8	.0	64.2	20.9	1014.00
.14	.00	4.29	.00	.000	.030	.000	.000	1006.23	9883.22
.000881	70.	70.	70.	2	0	0	.00	186.78	10069.99

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.739

Future Verde Lane (low water crossing-proposed configuration)
Section manually truncated at 9880 left and 10080 right to
eliminate ineffective flow areas in the left and right overbanks

6.739	5.88	1013.88	.00	1013.89	1014.22	.34	.21	.02	1014.00
4088.0	.0	4088.0	.0	.0	879.6	.0	68.4	21.8	1014.00
.15	.00	4.65	.00	.000	.030	.000	.000	1008.00	9880.00
.001250	200.	200.	200.	2	0	0	.00	199.99	10079.99

*SECNO 6.799

6.799	7.54	1014.22	.00	1014.22	1014.66	.44	.41	.03	1016.60
4088.0	.0	4088.0	.0	.0	767.9	.0	74.4	23.1	1015.00
.17	.00	5.32	.00	.000	.030	.000	.000	1006.68	9929.28
.001303	319.	319.	319.	0	0	0	.00	148.20	10077.48

*SECNO 6.878

3470 ENCROACHMENT STATIONS= 9955.0 10110.0 TYPE= 1 TARGET= 155.000

6.878	7.47	1014.77	.00	1014.81	1015.18	.41	.52	.00	1065.00
4088.0	.0	4088.0	.0	.0	796.0	.0	81.8	24.5	100000.00
.19	.00	5.14	.00	.000	.030	.000	.000	1007.30	9956.23
.001224	412.	412.	412.	2	0	0	.00	153.77	10110.00

*SECNO 6.890

3470 ENCROACHMENT STATIONS= 9947.0 10111.0 TYPE= 1 TARGET= 164.000

Robson Circle South south curb line (small dia. cross pipes
ignored)
Section manually truncated at 9920 left and 10130 right to
eliminate ineffective flow area in overbanks.
Note 0.91 horz. modification factor

6.890	6.73	1014.93	.00	1015.02	1015.26	.32	.07	.01	100000.00
4088.0	.0	4088.0	.0	.0	897.5	.0	83.1	24.8	100000.00
.20	.00	4.55	.00	.000	.030	.000	.000	1008.20	9947.00
.000933	110.	65.	20.	2	0	0	.00	164.00	10111.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.897

3470 ENCROACHMENT STATIONS= 9947.0 10111.0 TYPE= 1 TARGET= 164.000

Robson Circle South north curb line (repeated section)
Section manually truncated at 9920 left and 10130 right to
eliminate ineffective flow area in overbanks.
Note 0.91 horz. modification factor

6.897	6.56	1014.96	.00	1015.04	1015.30	.34	.04	.01	100000.00
4088.0	.0	4088.0	.0	.0	870.3	.0	83.9	24.9	100000.00
.20	.00	4.70	.00	.000	.030	.000	.000	1008.40	9947.00
.001031	40.	40.	40.	1	0	0	.00	164.00	10111.00

*SECNO 6.908

Section manually truncated at 9940 left to eliminate
ineffective flow area in far left overbank.

6.908	7.37	1014.92	.00	1014.95	1015.42	.50	.07	.05	1018.00
4088.0	.0	4088.0	.0	.0	718.9	.0	84.9	25.1	1015.00
.20	.00	5.69	.00	.000	.030	.000	.000	1007.55	9957.10
.001813	40.	55.	110.	2	0	0	.00	161.34	10118.44

*SECNO 6.988

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.99

3470 ENCROACHMENT STATIONS= 9860.0 10170.0 TYPE= 1 TARGET= -9860.000

6.988	7.37	1015.67	.00	1015.69	1015.81	.13	.35	.04	100000.00
4088.0	.0	4088.0	.0	.0	1400.4	.0	95.2	27.4	100000.00
.24	.00	2.92	.00	.000	.030	.000	.000	1008.30	9860.00
.000460	450.	425.	370.	2	0	0	.00	306.73	10166.73

*SECNO 7.074

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .44

7.074	6.77	1015.78	.00	1015.80	1016.34	.56	.40	.13	1016.00
4088.0	.0	4088.0	.0	.0	679.5	.0	106.1	29.9	1016.50
.26	.00	6.02	.00	.000	.030	.000	.000	1009.01	9926.65
.002395	450.	455.	470.	3	0	0	.00	172.95	10099.60

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 7.145

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

Golf Cart Path
(Small diameter cross culverts ignored)
Note 0.82 horz. modification factor

7.145	7.06	1016.66	.00	1016.67	1016.96	.30	.60	.03	1017.00
4088.0	.0	4088.0	.0	.0	930.5	.0	113.0	31.6	1017.00
.29	.00	4.39	.00	.000	.030	.000	.000	1009.60	9872.76
.001135	310.	375.	460.	2	0	0	.00	217.26	10090.02

*SECNO 7.150

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .41

Upstream end of golf cart path (manually truncated at 9940 left
to eliminate ineffective flow area in overbank).
Note 0.82 horz. modification factor

7.150	4.83	1016.13	.00	1016.14	1017.27	1.14	.05	.25	1018.00
4088.0	.0	4088.0	.0	.0	477.1	.0	113.4	31.7	1017.00
.29	.00	8.57	.00	.000	.030	.000	.000	1011.30	9940.40
.006775	24.	24.	24.	3	0	0	.00	156.14	10096.54

*SECNO 7.165

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.15

3470 ENCROACHMENT STATIONS= 9960.0 10125.0 TYPE= 1 TARGET= 165.000

7.165	7.26	1017.12	.00	1017.17	1017.56	.44	.22	.07	1068.00
4088.0	.0	4088.0	.0	.0	770.5	.0	114.6	32.0	100000.00
.29	.00	5.31	.00	.000	.030	.000	.000	1009.86	9963.82
.001463	80.	80.	45.	3	0	0	.00	161.17	10125.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 7.264

3470 ENCROACHMENT STATIONS= 9860.0 10105.0 TYPE= 1 TARGET= -9860.000

7.264	7.15	1018.00	.00	1018.02	1018.32	.32	.75	.01	100000.00
4088.0	.0	4088.0	.0	.0	907.6	.0	124.6	34.4	100000.00
.32	.00	4.50	.00	.000	.030	.000	.000	1010.85	9860.00
.001406	520.	520.	520.	2	0	0	.00	239.13	10099.13

*SECNO 7.358

7.358	7.10	1018.69	.00	1018.70	1019.01	.31	.69	.00	1019.00
4088.0	.0	4088.0	.0	.0	910.3	.0	135.0	37.1	1019.40
.35	.00	4.49	.00	.000	.030	.000	.000	1011.59	9885.81
.001351	500.	500.	500.	2	0	0	.00	234.22	10120.03

*SECNO 7.445

Robson Cir. North south curb line (small dia. cross pipes ignored)
Section manually truncated at 9975 left and at 10155 right to eliminate ineffective flow area in overbanks.

7.445	5.82	1019.19	.00	1019.20	1019.50	.30	.49	.00	1014.00
4088.0	.0	4088.0	.0	.2	922.8	.1	144.7	39.2	1015.69
.38	.16	4.43	.15	.030	.030	.030	.000	1013.37	9974.93
.000869	460.	460.	500.	2	0	0	.00	174.73	10149.66

*SECNO 7.453

Robson Cir. North north curb line
Section manually truncated at 9975 left and at 10155 right to eliminate ineffective flow area in overbanks.

7.453	5.65	1019.22	.00	1019.22	1019.54	.33	.04	.01	1014.20
4088.0	.0	4088.0	.0	.2	891.7	.1	145.5	39.4	1015.89
.38	.16	4.58	.15	.030	.030	.030	.000	1013.57	9974.93
.000974	40.	40.	40.	2	0	0	.00	174.73	10149.66

*SECNO 7.549

7.549	6.22	1019.82	.00	1019.82	1020.06	.24	.51	.01	1020.00
4088.0	.0	4088.0	.0	.0	1030.9	.0	156.7	42.0	1021.00
.42	.00	3.97	.00	.000	.030	.000	.000	1013.60	9893.60
.001061	505.	505.	505.	2	0	0	.00	266.88	10160.48

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 7.646

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .49

7.646	5.38	1020.28	.00	1020.28	1021.26	.98	.98	.22	1023.00
4088.0	.0	4088.0	.0	.0	514.8	.0	165.7	44.3	1024.54
.44	.00	7.94	.00	.000	.030	.000	.000	1014.90	9937.58
.004458	510.	510.	510.	2	0	0	.00	137.37	10074.95

CCHV= .300 CEHV= .500
*SECNO 7.680

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.42

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1022.00 ELREA= 1022.00

Q = Q AT CP253 (= 4121 CFS).

Indian School Road Bypass structure 10-10x5 box culvert

7.680	5.16	1020.66	.00	1020.66	1021.48	.82	.17	.05	1016.00
4121.0	.0	4121.0	.0	.0	566.6	.0	168.0	44.9	1016.00
.44	.00	7.27	.00	.000	.012	.000	.000	1015.50	9940.00
.000388	185.	185.	185.	2	0	0	.00	110.00	10050.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	10	.012	.40	3.00	.00	5.00	10.00	125.00	12	1	1015.80	1015.50

CHART 12 - BOX CULVERT; NON-OFFSET FLARED WINGWALLS; 3/4-INCH CHAMFER AT TOP OF INLET
SCALE 1 - WINGWALLS FLARED 45 DEGREES (1:1); INLET NOT SKEWED

*SECNO 7.704

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT OUTLET CONTROL
EGIC = 1021.899 EGOC = 1022.416 PCWSE= 1020.659 ELTRD= 1023.260

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.49

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1021.90	1022.42	.94	0.	4121.	4.802	500.0	1023.26	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1023.30 ELREA= 1023.30

7.704	6.26	1022.06	.00	1022.06	1022.42	.36	.94	.00	1023.30
4121.0	.0	4121.0	.0	.0	858.2	.0	170.1	45.3	1023.26
.45	.00	4.80	.00	.000	.012	.000	.000	1015.80	9930.40
.000175	125.	125.	125.	2	0	0	.00	169.25	10099.65

*SECNO 7.712

7.712	5.62	1022.02	.00	1022.02	1022.47	.45	.01	.05	1023.00
4121.0	.0	4121.0	.0	.0	765.5	.0	170.8	45.4	1022.10
.45	.00	5.38	.00	.000	.012	.000	.000	1016.40	9933.12
.000289	42.	42.	20.	2	0	0	.00	185.48	10118.60

*SECNO 7.753
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= .0 10335.0 TYPE= 1 TARGET= 10335.000

7.753	2.29	1023.69	1023.69	1023.69	1024.37	.68	.13	.12	1076.00
4121.0	.0	4121.0	.0	.0	621.1	.0	174.3	47.1	100000.00
.46	.00	6.63	.00	.000	.012	.000	.000	1021.40	9794.42
.001948	270.	220.	200.	20	18	0	.00	464.36	10258.79

THIS RUN EXECUTED 25JAN95 00:38:36

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BULLARD WASH,WASH 10,ROO

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	SSTA	STCHL	STCHR	ENDST	DIFWSX	TOPWID	DEPTH	ELMIN	10*KS	VCH
	6.320	4662.00	1003.99	9555.70	9900.00	10100.00	11027.44	.00	1471.74	3.09	1000.90	17.71	3.15
	6.320	4662.00	1004.59	9650.00	9900.00	10100.00	10300.00	.00	650.00	3.69	1000.90	15.98	3.40
	6.426	4662.00	1005.27	9494.68	9935.00	10100.00	10688.97	1.28	1194.29	2.47	1002.80	31.69	3.76
	6.426	4662.00	1005.78	9700.00	9935.00	10100.00	10300.00	1.18	600.00	2.98	1002.80	31.65	4.26
	6.500	4662.00	1006.55	9650.00	9960.00	10100.00	10235.00	1.28	585.00	2.85	1003.70	36.53	4.40
	6.500	4662.00	1006.90	9650.00	9960.00	10100.00	10235.00	1.12	585.00	3.20	1003.70	24.50	3.90
	6.581	4662.00	1008.15	9805.00	9940.00	10040.00	10160.00	1.60	355.00	3.55	1004.60	42.16	5.61
	6.581	4662.00	1008.14	9805.00	9940.00	10040.00	10160.00	1.25	355.00	3.54	1004.60	42.38	5.62
	6.631	4662.00	1009.33	9891.00	9510.00	10130.00	10109.00	1.18	218.00	3.33	1006.00	82.00	6.97
	6.631	4662.00	1009.33	9891.00	9510.00	10130.00	10109.00	1.19	218.00	3.33	1006.00	81.97	6.97
*	6.650	4662.00	1011.39	9916.36	9916.00	10084.00	10083.64	2.06	167.29	2.89	1008.50	96.35	9.67
*	6.650	4662.00	1011.39	9916.36	9916.00	10084.00	10083.64	2.06	167.29	2.89	1008.50	96.39	9.67
*	6.679	4703.00	1011.77	9954.02	9954.00	10046.00	10045.98	.38	91.96	4.77	1007.00	18.96	10.73
*	6.679	4703.00	1011.77	9954.02	9954.00	10046.00	10045.98	.38	91.96	4.77	1007.00	18.90	10.72
*	6.688	4703.00	1013.09	9954.00	9954.00	10046.00	10046.00	1.32	92.00	7.09	1006.00	5.38	7.22
*	6.688	4703.00	1013.08	9954.00	9954.00	10046.00	10046.00	1.31	92.00	7.08	1006.00	5.39	7.23
*	6.701	4088.00	1013.71	9883.16	9880.00	10070.00	10069.99	.63	186.83	7.48	1006.23	8.79	4.28
*	6.701	4088.00	1013.71	9883.22	9880.00	10070.00	10069.99	.63	186.78	7.48	1006.23	8.81	4.29
	6.739	4088.00	1013.89	9880.00	9880.00	10080.00	10079.99	.17	199.99	5.89	1008.00	12.46	4.64
	6.739	4088.00	1013.88	9880.00	9880.00	10080.00	10079.99	.17	199.99	5.88	1008.00	12.50	4.65
	6.799	4088.00	1014.22	9929.27	9919.00	10090.00	10077.50	.33	148.23	7.54	1006.68	13.01	5.32
	6.799	4088.00	1014.22	9929.28	9919.00	10090.00	10077.48	.33	148.20	7.54	1006.68	13.03	5.32

	SECNO	Q	CWSEL	SSTA	STCHL	STCHR	ENDST	DIFWSX	TOPWID	DEPTH	ELMIN	10*KS	VCH
	6.878	4088.00	1014.81	9955.99	9955.00	10135.00	10130.33	.59	174.34	7.51	1007.30	13.22	5.01
	6.878	4088.00	1014.77	9956.23	9955.00	10135.00	10110.00	.55	153.77	7.47	1007.30	12.24	5.14
	6.890	4088.00	1015.02	9919.92	9919.99	10111.09	10111.16	.21	191.24	6.82	1008.20	7.41	4.07
	6.890	4088.00	1014.93	9947.00	9919.99	10111.09	10111.00	.17	164.00	6.73	1008.20	9.33	4.55
	6.897	4088.00	1015.04	9919.93	9919.99	10111.09	10111.16	.02	191.23	6.64	1008.40	8.34	4.22
	6.897	4088.00	1014.96	9947.00	9919.99	10111.09	10111.00	.02	164.00	6.56	1008.40	10.31	4.70
*	6.908	4088.00	1014.95	9956.93	9940.00	10120.00	10119.05	-.09	162.13	7.40	1007.55	17.83	5.65
	6.908	4088.00	1014.92	9957.10	9940.00	10120.00	10118.44	-.04	161.34	7.37	1007.55	18.13	5.69
*	6.988	4088.00	1015.69	9860.00	9770.00	10170.00	10166.89	.74	306.89	7.39	1008.30	4.54	2.91
*	6.988	4088.00	1015.67	9860.00	9770.00	10170.00	10166.73	.75	306.73	7.37	1008.30	4.60	2.92
*	7.074	4088.00	1015.80	9925.83	9920.00	10106.00	10099.84	.10	174.02	6.79	1009.01	23.59	5.97
*	7.074	4088.00	1015.78	9926.65	9920.00	10106.00	10099.60	.10	172.95	6.77	1009.01	23.95	6.02
*	7.145	4088.00	1016.67	9872.71	9870.00	10091.40	10090.04	.87	217.33	7.07	1009.60	11.31	4.39
*	7.145	4088.00	1016.66	9872.76	9870.00	10091.40	10090.02	.89	217.26	7.06	1009.60	11.35	4.39
*	7.150	4088.00	1016.14	9940.40	9938.00	10103.64	10096.62	-.53	156.22	4.84	1011.30	67.12	8.54
*	7.150	4088.00	1016.13	9940.40	9938.00	10103.64	10096.54	-.53	156.14	4.83	1011.30	67.75	8.57
*	7.165	4088.00	1017.17	9963.62	9960.00	10155.00	10151.03	1.03	187.42	7.31	1009.86	15.09	5.07
*	7.165	4088.00	1017.12	9963.82	9960.00	10155.00	10125.00	.99	161.17	7.26	1009.86	14.63	5.31
	7.264	4088.00	1018.02	9860.00	9700.00	10105.00	10099.27	.85	239.27	7.17	1010.85	13.78	4.48
	7.264	4088.00	1018.00	9860.00	9700.00	10105.00	10099.13	.88	239.13	7.15	1010.85	14.06	4.50
	7.358	4088.00	1018.70	9885.75	9880.00	10127.00	10120.06	.68	234.31	7.11	1011.59	13.48	4.49
	7.358	4088.00	1018.69	9885.81	9880.00	10127.00	10120.03	.69	234.22	7.10	1011.59	13.51	4.49
	7.445	4088.00	1019.20	9974.92	9975.00	10149.60	10149.66	.50	174.74	5.83	1013.37	8.68	4.43
	7.445	4088.00	1019.19	9974.93	9975.00	10149.60	10149.66	.50	174.73	5.82	1013.37	8.69	4.43
	7.453	4088.00	1019.22	9974.93	9975.00	10149.60	10149.66	.02	174.73	5.65	1013.57	9.73	4.58
	7.453	4088.00	1019.22	9974.93	9975.00	10149.60	10149.66	.02	174.73	5.65	1013.57	9.74	4.58
	7.549	4088.00	1019.82	9893.56	9890.00	10168.00	10160.49	.60	266.93	6.22	1013.60	10.59	3.96
	7.549	4088.00	1019.82	9893.60	9890.00	10168.00	10160.48	.60	266.88	6.22	1013.60	10.61	3.97
*	7.646	4088.00	1020.28	9937.58	9890.00	10108.00	10074.95	.46	137.38	5.38	1014.90	44.55	7.94
*	7.646	4088.00	1020.28	9937.58	9890.00	10108.00	10074.95	.46	137.37	5.38	1014.90	44.58	7.94
*	7.680	4121.00	1020.66	9940.00	9940.00	10050.00	10050.00	.38	110.00	5.16	1015.50	3.88	7.27
*	7.680	4121.00	1020.66	9940.00	9940.00	10050.00	10050.00	.38	110.00	5.16	1015.50	3.88	7.27
*	7.704	4121.00	1022.06	9930.40	9925.00	10110.00	10099.66	1.40	169.26	6.26	1015.80	1.75	4.80
*	7.704	4121.00	1022.06	9930.40	9925.00	10110.00	10099.65	1.40	169.25	6.26	1015.80	1.75	4.80

	SECNO	Q	CWSEL	SSTA	STCHL	STCHR	ENDST	DIFWSX	TOPWID	DEPTH	ELMIN	10*KS	VCH
	7.712	4121.00	1022.02	9933.11	9930.00	10120.00	10118.60	-.04	185.49	5.62	1016.40	2.89	5.38
	7.712	4121.00	1022.02	9933.12	9930.00	10120.00	10118.60	-.04	185.48	5.62	1016.40	2.89	5.38
*	7.753	4121.00	1023.69	9794.41	9650.00	10335.00	10258.81	1.67	464.41	2.29	1021.40	19.47	6.63
*	7.753	4121.00	1023.69	9794.42	9650.00	10335.00	10258.79	1.67	464.36	2.29	1021.40	19.48	6.63

BULLARD WASH,WASH 10,ROO

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	6.320	1003.99	.00	1004.07	1471.74	926.91	1806.94	1928.15	.00	.00	9900.00	10100.00	.00
	6.320	1004.59	.60	1004.70	650.00	1237.10	2356.90	1068.00	650.00	9650.00	9900.00	10100.00	10300.00
	6.426	1005.27	.00	1005.37	1194.29	1481.97	1494.11	1685.91	.00	.00	9935.00	10100.00	.00
	6.426	1005.78	.50	1005.94	600.00	1459.06	2048.32	1154.62	600.00	9700.00	9935.00	10100.00	10300.00
	6.500	1006.55	.00	1006.72	585.00	2087.61	1694.21	880.19	585.00	9650.00	9960.00	10100.00	10235.00
	6.500	1006.90	.35	1007.03	585.00	2088.64	1691.47	881.90	585.00	9650.00	9960.00	10100.00	10235.00
	6.581	1008.15	.00	1008.44	355.00	1415.04	1991.36	1255.60	355.00	9805.00	9940.00	10040.00	10160.00
	6.581	1008.14	-.01	1008.44	355.00	1414.99	1991.45	1255.56	355.00	9805.00	9940.00	10040.00	10160.00
	6.631	1009.33	.00	1010.08	218.00	.00	4662.00	.00	218.00	9891.00	9510.00	10130.00	10109.00
	6.631	1009.33	.00	1010.08	218.00	.00	4662.00	.00	218.00	9891.00	9510.00	10130.00	10109.00
*	6.650	1011.39	.00	1012.85	167.29	.00	4662.00	.00	.00	.00	9916.00	10084.00	.00
*	6.650	1011.39	.00	1012.85	167.29	.00	4662.00	.00	.00	.00	9916.00	10084.00	.00
*	6.679	1011.77	.00	1013.56	91.96	.00	4703.00	.00	.00	.00	9954.00	10046.00	.00
*	6.679	1011.77	.00	1013.55	91.96	.00	4703.00	.00	.00	9954.00	9954.00	10046.00	10046.00
*	6.688	1013.09	.00	1013.90	92.00	.00	4703.00	.00	.00	.00	9954.00	10046.00	.00
*	6.688	1013.08	-.01	1013.89	92.00	.00	4703.00	.00	92.00	9954.00	9954.00	10046.00	10046.00
*	6.701	1013.71	.00	1014.00	186.83	.00	4088.00	.00	.00	.00	9880.00	10070.00	.00
*	6.701	1013.71	-.01	1013.99	186.78	.00	4088.00	.00	.00	.00	9880.00	10070.00	.00
	6.739	1013.89	.00	1014.22	199.99	.00	4088.00	.00	.00	.00	9880.00	10080.00	.00
	6.739	1013.88	.00	1014.22	199.99	.00	4088.00	.00	.00	.00	9880.00	10080.00	.00
	6.799	1014.22	.00	1014.66	148.23	.00	4088.00	.00	.00	.00	9919.00	10090.00	.00
	6.799	1014.22	.00	1014.66	148.20	.00	4088.00	.00	.00	.00	9919.00	10090.00	.00
	6.878	1014.81	.00	1015.20	174.34	.00	4088.00	.00	.00	.00	9955.00	10135.00	.00
	6.878	1014.77	-.04	1015.18	153.77	.00	4088.00	.00	155.00	9955.00	9955.00	10135.00	10110.00
	6.890	1015.02	.00	1015.28	191.24	.00	4087.98	.02	.00	.00	9919.99	10111.09	.00
	6.890	1014.93	-.09	1015.26	164.00	.00	4088.00	.00	164.00	9947.00	9919.99	10111.09	10111.00
	6.897	1015.04	.00	1015.32	191.23	.00	4087.98	.02	.00	.00	9919.99	10111.09	.00
	6.897	1014.96	-.08	1015.30	164.00	.00	4088.00	.00	164.00	9947.00	9919.99	10111.09	10111.00
*	6.908	1014.95	.00	1015.45	162.13	.00	4088.00	.00	.00	.00	9940.00	10120.00	.00
	6.908	1014.92	-.03	1015.42	161.34	.00	4088.00	.00	.00	.00	9940.00	10120.00	.00
*	6.988	1015.69	.00	1015.82	306.89	.00	4088.00	.00	-9860.00	9860.00	9770.00	10170.00	10170.00
*	6.988	1015.67	-.02	1015.81	306.73	.00	4088.00	.00	-9860.00	9860.00	9770.00	10170.00	10170.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	7.074	1015.80	.00	1016.35	174.02	.00	4088.00	.00	.00	.00	9920.00	10106.00	.00
*	7.074	1015.78	-.02	1016.34	172.95	.00	4088.00	.00	.00	.00	9920.00	10106.00	.00
*	7.145	1016.67	.00	1016.97	217.33	.00	4088.00	.00	.00	.00	9870.00	10091.40	.00
*	7.145	1016.66	-.01	1016.96	217.26	.00	4088.00	.00	.00	.00	9870.00	10091.40	.00
*	7.150	1016.14	.00	1017.27	156.22	.00	4088.00	.00	.00	.00	9938.00	10103.64	.00
*	7.150	1016.13	-.01	1017.27	156.14	.00	4088.00	.00	.00	.00	9938.00	10103.64	.00
*	7.165	1017.17	.00	1017.57	187.42	.00	4088.00	.00	.00	.00	9960.00	10155.00	.00
*	7.165	1017.12	-.05	1017.56	161.17	.00	4088.00	.00	165.00	9960.00	9960.00	10155.00	10125.00
	7.264	1018.02	.00	1018.33	239.27	.00	4088.00	.00	-9860.00	9860.00	9700.00	10105.00	10105.00
	7.264	1018.00	-.01	1018.32	239.13	.00	4088.00	.00	-9860.00	9860.00	9700.00	10105.00	10105.00
	7.358	1018.70	.00	1019.01	234.31	.00	4088.00	.00	.00	.00	9880.00	10127.00	.00
	7.358	1018.69	.00	1019.01	234.22	.00	4088.00	.00	.00	.00	9880.00	10127.00	.00
	7.445	1019.20	.00	1019.50	174.74	.03	4087.95	.02	.00	.00	9975.00	10149.60	.00
	7.445	1019.19	.00	1019.50	174.73	.03	4087.95	.02	.00	.00	9975.00	10149.60	.00
	7.453	1019.22	.00	1019.54	174.73	.03	4087.96	.02	.00	.00	9975.00	10149.60	.00
	7.453	1019.22	.00	1019.54	174.73	.03	4087.96	.02	.00	.00	9975.00	10149.60	.00
	7.549	1019.82	.00	1020.07	266.93	.00	4088.00	.00	.00	.00	9890.00	10168.00	.00
	7.549	1019.82	.00	1020.06	266.88	.00	4088.00	.00	.00	.00	9890.00	10168.00	.00
*	7.646	1020.28	.00	1021.26	137.38	.00	4088.00	.00	.00	.00	9890.00	10108.00	.00
*	7.646	1020.28	.00	1021.26	137.37	.00	4088.00	.00	.00	.00	9890.00	10108.00	.00
*	7.680	1020.66	.00	1021.48	110.00	.00	4121.00	.00	.00	.00	9940.00	10050.00	.00
*	7.680	1020.66	.00	1021.48	110.00	.00	4121.00	.00	.00	.00	9940.00	10050.00	.00
*	7.704	1022.06	.00	1022.42	169.26	.00	4121.00	.00	.00	.00	9925.00	10110.00	.00
*	7.704	1022.06	.00	1022.42	169.25	.00	4121.00	.00	.00	.00	9925.00	10110.00	.00
	7.712	1022.02	.00	1022.47	185.49	.00	4121.00	.00	.00	.00	9930.00	10120.00	.00
	7.712	1022.02	.00	1022.47	185.48	.00	4121.00	.00	.00	.00	9930.00	10120.00	.00
*	7.753	1023.69	.00	1024.37	464.41	.00	4121.00	.00	10335.00	.00	9650.00	10335.00	10335.00
*	7.753	1023.69	.00	1024.37	464.36	.00	4121.00	.00	10335.00	.00	9650.00	10335.00	10335.00

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	6.650	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	6.650	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	6.650	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	6.650	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	6.650	PROFILE=	2	MINIMUM SPECIFIC ENERGY
WARNING SECNO=	6.679	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.679	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.688	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.688	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.701	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.701	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.908	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.988	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.988	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.074	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.074	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.145	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.145	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.150	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.150	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.165	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.165	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.646	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.646	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.680	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.680	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.704	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.704	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	7.753	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	7.753	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	7.753	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	7.753	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	7.753	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	7.753	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL

FLOODWAY DATA, BULLARD WASH,WASH 10,ROO
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
6.320	650.	2019.	2.3	1004.6	1004.0	.6
6.426	600.	1631.	2.9	1005.8	1005.3	.5
6.500	585.	1788.	2.6	1006.8	1006.5	.3
6.581	355.	1222.	3.8	1008.1	1008.1	.0
6.631	218.	669.	7.0	1009.3	1009.3	.0
6.650	167.	482.	9.7	1011.4	1011.4	.0
6.679	92.	439.	10.7	1011.8	1011.8	.0
6.688	92.	650.	7.2	1013.1	1013.1	.0
6.701	187.	954.	4.3	1013.7	1013.7	.0
6.739	200.	880.	4.6	1013.9	1013.9	.0
6.799	148.	768.	5.3	1014.2	1014.2	.0
6.878	154.	796.	5.1	1014.8	1014.8	.0
6.890	164.	898.	4.6	1014.9	1015.0	-.1
6.897	164.	870.	4.7	1014.9	1015.0	-.1
6.908	161.	719.	5.7	1015.0	1015.0	.0
6.988	307.	1400.	2.9	1015.7	1015.7	.0
7.074	173.	680.	6.0	1015.8	1015.8	.0
7.145	217.	930.	4.4	1016.7	1016.7	.0
7.150	156.	477.	8.6	1016.1	1016.1	.0
7.165	161.	771.	5.3	1017.2	1017.2	.0
7.264	239.	908.	4.5	1018.0	1018.0	.0
7.358	234.	910.	4.5	1018.7	1018.7	.0
7.445	175.	923.	4.4	1019.2	1019.2	.0
7.453	175.	892.	4.6	1019.2	1019.2	.0
7.549	267.	1031.	4.0	1019.8	1019.8	.0
7.646	137.	515.	7.9	1020.3	1020.3	.0
7.680	110.	567.	7.3	1020.7	1020.7	.0
7.704	169.	858.	4.8	1022.1	1022.1	.0
7.712	185.	766.	5.4	1022.0	1022.0	.0
7.753	464.	621.	6.6	1023.7	1023.7	.0

REVISION	DATE
Extended Floodplain on Bullard Wash from X-section 6.320 to X-section 6.631	1-25-95

MICHAEL BAKER, JR., INC.
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FEB 10 1995
ALEXANDRIA, VIRGINIA

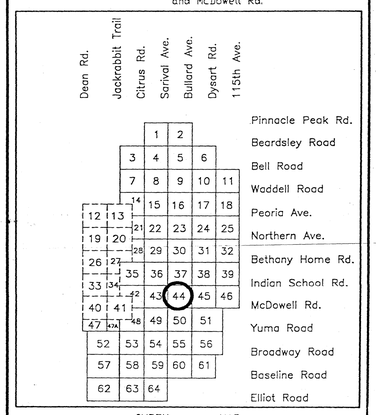
WHITE TANKS/AGUA FRIA

AREA DRAINAGE MASTER STUDY

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

REFERENCE MARKS (RM'S)

NO.	ELEVATION	DESCRIPTION
166	1031.75	Maricopa County Highway Dept. Brass Cap in Hand Hole, Reems Rd. and Indian School Rd.
180	1028.98	Chiseled Square on Top Concrete Headwall at Northwest Corner Intersection of Sarival Ave. and Thomas Rd.
181	1014.46	Maricopa County Highway Dept. Brass Cap in Hand Hole, Reems Rd. and Thomas Rd.
183	1015.69	Brass Cap in Southeast Corner of Bridge on Bullard Ave. over the R.I.D. Canal Stamped- 1983 LS 6450 (R.I.D.-2-33-14)
194	1012.43	'X' Chiseled on Top of Concrete Headwall at Southeast Corner of Intersection of Sarival Ave. and Thomas Rd.
196	1002.53	Brass Cap in Hand Hole, ± 45' South of Intersection of Reems Rd. and McDowell Rd.
197	998.52	'X' Chiseled on Top of Concrete Wing Southeast Corner of Intersection of Bullard Ave. and McDowell Rd.



INDEX MAP

N

400 200 0 400 800 1200

BASE MAP: WHITE TANKS/AGUA FRIA A.D.M.S. TOPOGRAPHIC MAPS
CONTOUR INTERVAL = 2'

LEGEND

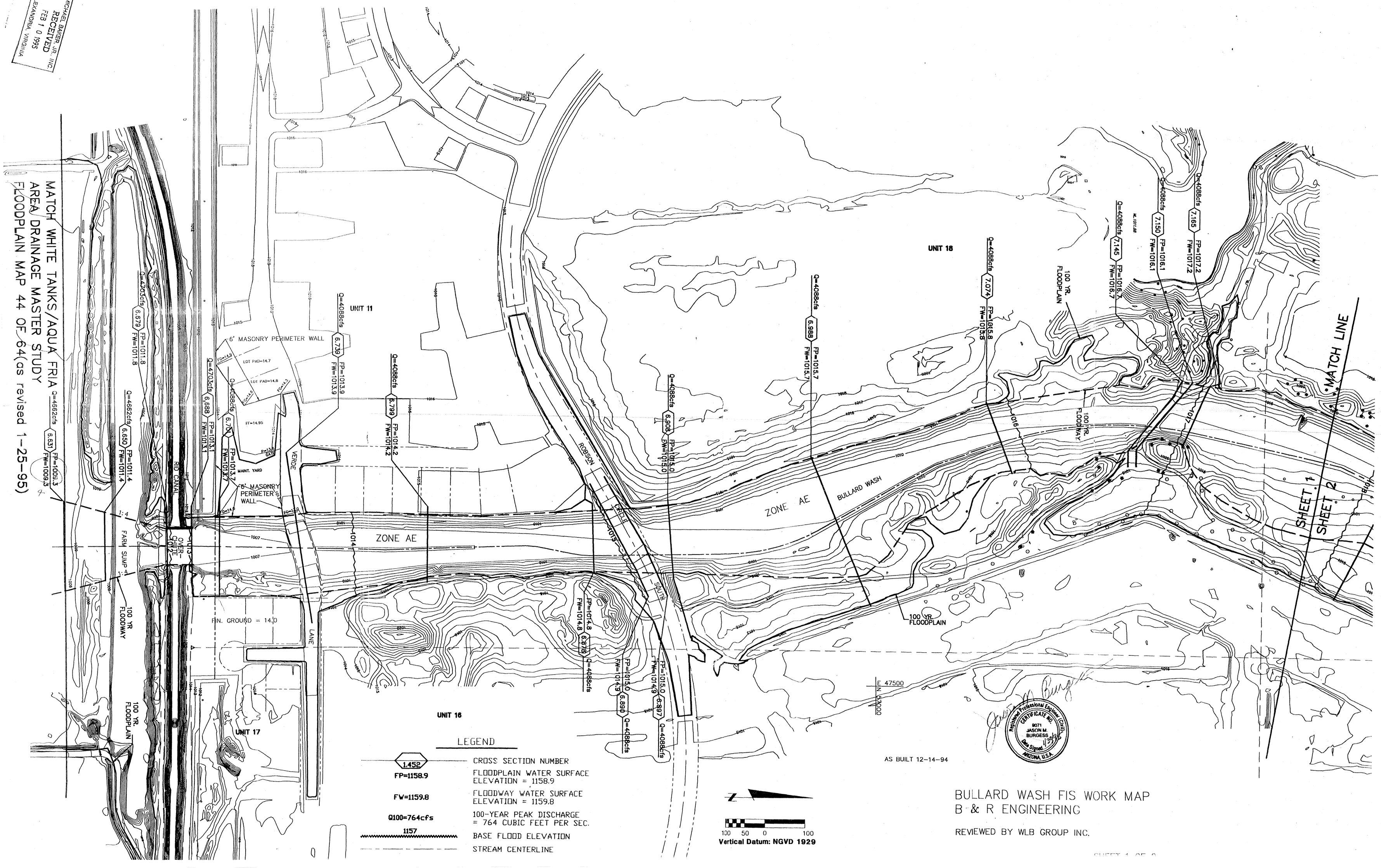
1.452	CROSS SECTION NUMBER
FP=1158.9	FLOODPLAIN WATER SURFACE ELEVATION = 1158.9
FW=1159.8	FLOODWAY WATER SURFACE ELEVATION = 1159.8
Q100=764cfs	100-YEAR PEAK DISCHARGE = 764 CUBIC FEET PER SEC.
1157	BASE FLOOD ELEVATION
	STREAM CENTERLINE
	FLOODWAY BOUNDARY
	FLOODPLAIN BOUNDARY
RM NO. 100	ELEVATION REFERENCE MARK
ZONE AE	FLOOD INSURANCE RATE ZONE

SHEET TITLE: **FLOODPLAIN MAP**

STUDY CONSULTANT: **The WLB Group** INC.

MAPPING COMPANY: Cooper Aerial of Phoenix, Inc.

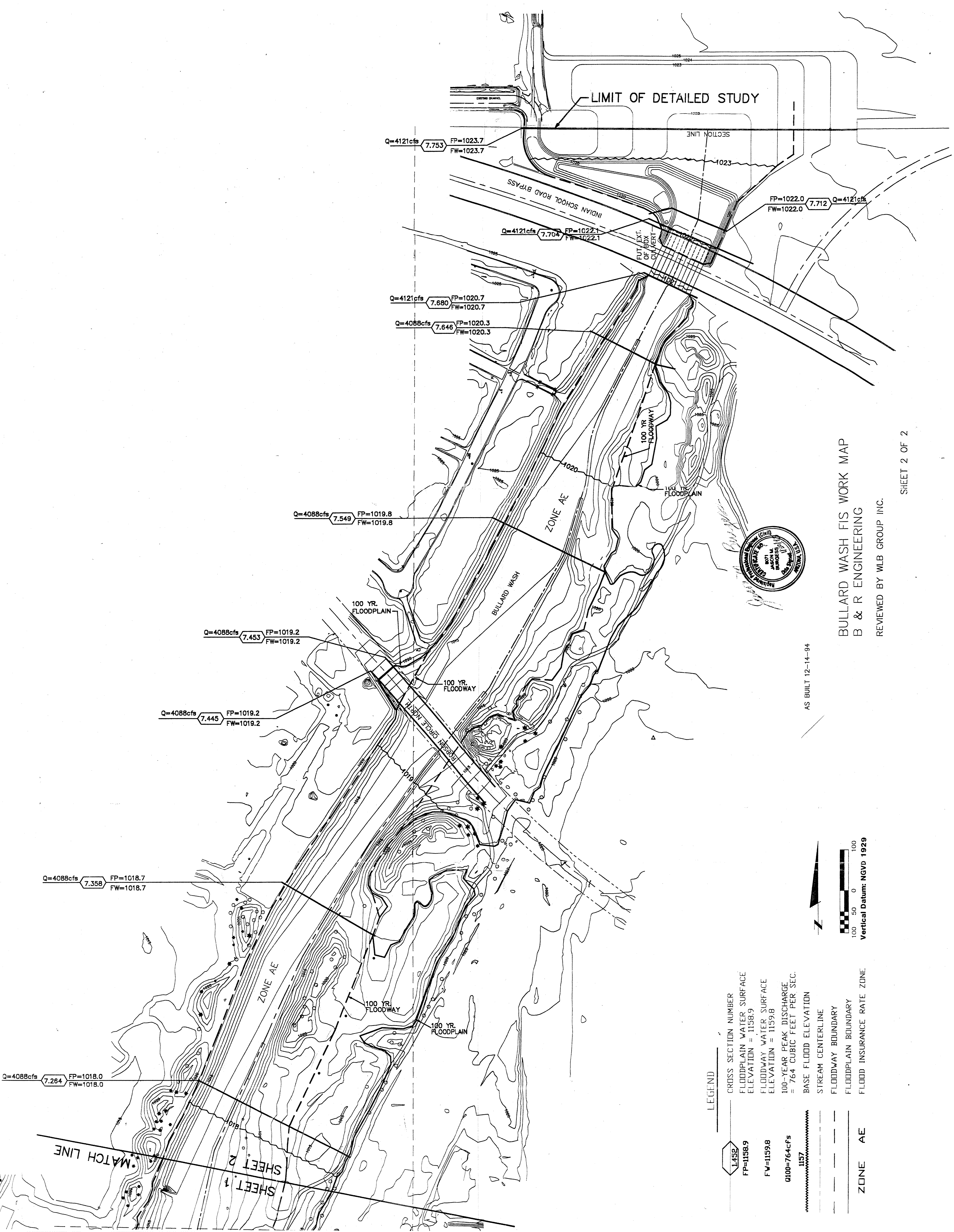
MICHAEL BAKER JR., INC.
RECEIVED
FEB 1 0 1995
ALEXANDRIA, VIRGINIA



BULLARD WASH FIS WORK MAP
B & R ENGINEERING

REVIEWED BY WLB GROUP INC.

SHEET 1 OF 2



BULLARD WASH FIS WORK MAP

B & R ENGINEERING

REVIEWED BY WLB GROUP INC.

SHEET 2 OF 2

AS BUILT 12-14-94

Registered Professional Engineer (Civil) — CERTIFICATE NO. 8071 — JASON M. BURGESS — ARIZONA, U.S.A.

Vertical Datum: NGVD 1929

100 50 0 100

LEGEND

- 1.452 — CROSS SECTION NUMBER
- FP=1158.9 — FLOODPLAIN WATER SURFACE ELEVATION = 1158.9
- FW=1159.8 — FLOODWAY WATER SURFACE ELEVATION = 1159.8
- Q100=764cfs — 100-YEAR PEAK DISCHARGE = 764 CUBIC FEET PER SEC.
- 1157 — BASE FLOOD ELEVATION
- STREAM CENTERLINE
- FLOODWAY BOUNDARY
- FLOODPLAIN BOUNDARY
- ZONE AE — FLOOD INSURANCE RATE ZONE