

Drainage Report

for

LA CUENTISTA SUBDIVISION – Unit II

**A Supplement to the
Drainage Report for La Cuentista Subdivision
Dated November 2003**

Prepared by:

**Wilson & Company, Inc.
4900 Lang Ave NE
Albuquerque, New Mexico 87109
(505) 348-4191**

**January 2007
WCI File No: 0660004701**

**WILSON
& COMPANY**

CITY OF ALBUQUERQUE



January 25, 2007

Dan Aguirre, PE
Wilson & Company
4900 Lang Ave
Albuquerque, NM 87109

Re: La Cuentista Subdivision Unit 2 Drainage Report
Engineer Stamp 1-23-07 (D10/D2)

Dear Mr. Aguirre,

Based upon information provided in your submittal dated 1-24-07, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board has approved the plan, please provide a mylar copy for my signature in order to obtain a Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department, Hydrology section at 768-3654 (Charles Caruso).

Prior to Release of SIA and Financial Guarantees, an Engineer's Certification of this grading plan will be required.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: Chuck Caruso, CoA
file

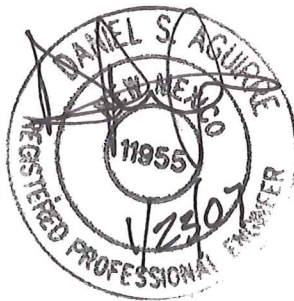
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Prepared by:



**Daniel S. Aguirre, PE
NM #11955**

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Summary

La Cuentista Subdivision - Unit II, a residential development, is Tract C and the second of five bulk land tracts which collectively comprise La Cuentista Subdivision. The 35.47 acres of Unit II (Tract C) is approximately 15% of the total La Cuentista Subdivision. The approved "Drainage Report for La Cuentista Subdivision" dated November 2003 by Wilson & Company, Inc., provides site and existing conditions information.

Drainage

Proposed Conditions/Modification:

Unit II (Tract C) approximately replicates Basin 213 from the approved Drainage Report. This basin is designated to discharge into Pond 4 along with Unit I (Tract A) discharge. Pond 4, located north of Kimmick Dr., along with the outfall structure to the Petroglyph National Monument allowed per agreement with COA Open Space Division, are currently under construction.

Site design of Unit I (Tract A), Unit II (Tract C) and plans for Tract B require modifications to the approved Drainage Report. Basins 201 and 202 make up Tract B, an as yet undesignated unit of La Cuentista. The approved Drainage Report routed Basin 201 flows through Pond 1 and then through Unit I (Tract A) basins into Pond 4. Basin 202 was routed through Basin 213 to Pond 4. Flows from Basin 201 are herein proposed to route through Basin 202 and a newly designated Pond 2. A maximum flow of 15 cfs from Pond 2 will then be directed into Basin 213 via appropriately sized storm drain pipe, with Basin 213 discharging to Pond 4, as previously designed.

Flows from Basin 301 and 302, previously designed to route through storm drain in Kimmick Drive and into Pond 8 will be routed through Basin 214 to Pond 8.

A review and the updating of hydraulic data led to changes to Tables 3 & 4 from the approved Drainage Report. These are presented below. Additionally, a revised **Proposed Conditions: Drainage Basin Map** (Plate 2) is provided herein.

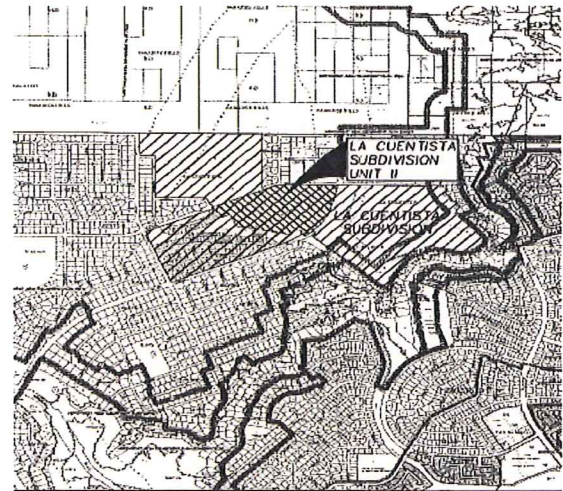


Table 3: Summary of Fully Developed Flows		
Basin	Area (acres)	100_{year}-24_{hour} Peak Flow (Q₁₀₀) cfs
201	22.1	71.8
202	35.0	112.9
203	1.2	4.1
204	5.0	16.4
205	8.8	28.7
206	4.6	14.4
207	2.4	8.2
208	8.5	21.2
209	3.6	12.3
210	2.6	8.0
211	6.2	20.5
212	3.3	9.8
213	40.2	129.3
214	55.1	176.6
215	34.5	110.8
301	43.7	142.6
302	37.3	119.0
303	43.0	137.5
304	69.0	217.1

Table 4: Summary of Discharge Points – Fully Developed		
Pond #		100_{year} 6_{hour} Peak Flow (Q₁₀₀) cfs
4		87
8		106
7		42 (40 Allowable)
Total discharge to Petroglyph NM		235 cfs
10	Calle Norteña/ Piedras Marcadas	15

Unit II Proposed Improvement.

The AHYMO discharge from Basin 213 is 130 cfs (See Appendix A). For design purposes for inlets and onsite storm drain, the sub-basin flows, totaling approximately the 130 cfs, are proportionately distributed based on basin areas. See Appendix B for Unit II hydrology and Sub-Basin Boundary Map.

Conclusion

The development of Unit II has been analyzed in this report. The project's design will adhere to the requirements of the approved Drainage Report dated November 2003 and all developed flows in Unit II will be conveyed to Pond 4, discharge through the required water quality standpipe and outfall structure being constructed as part of Unit I, with ultimate discharge to the Petroglyph National Monument. The system is designed to convey existing offsite flows through the site. Off site drainage basins will be required to detain developed flows as future development occurs.

APPENDIX A

*** LA CUENTISTA SUBDIVISION ***
 *** FULLY DEVELOPED CONDITIONS RUNOFF MODEL - REVISED JANUARY 2007 ***

 *** DESIGN STORM IS THE 100 YEAR - 24 HOUR STORM ***
 *** COA DPM TYPE 2, 24 HOUR STORM WITH A PEAK INTENSITY AT 1.4 HOURS ***

 START TIME = 0

 S 1- COMPUTING RAINFALL ***
 RAINFALL TYPE = 2

RAIN QUARTER = 0.00 INCHES

RAIN ONE = 1.87
 RAIN SIX = 2.20
 RAIN DAY = 2.66
 DT = 0.05 HOURS

 S 2- COMPUTE TP FOR OFFSITE BASIN 301 (SET tp= MIN 0.133 HRS) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=250 FT SLOPE=0.01 K=0.7
 * LENGTH=2500 FT SLOPE=0.02 K=3

S 3- COMPUTE HYD FOR BASIN 301, (assume platted to 5 DU/ACRE, %D=50)

COMPUTE NM HYD ID=1 HYDNO=301 DA=0.068 SQ MI
 PERCENT A=10 B=15 C=25 D=50
 TP=0.133 HOURS MASSRAIN=-1
 PRINT HYD ID=1 CODE=5

*PUNCH HYD ID=1

 S 4- Route HYDROGRAPH 301 through POND 5 (0.30/0.52ac surface/bottom, 2.20AF stor req'd)
 S Historical flow Basin 301 (100% A)= 74.42CFS use 75+/- thru 34" orifice plate
 ROUTE RESERVOIR ID=2 HYD=POND.301.1 INFLOWID=1 CODE=5
 OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)

0	0	0
21.82	0.154	0.5
30.86	0.316	1
37.80	0.486	1.5
43.65	0.665	2
48.80	0.853	2.5
53.46	1.049	3
57.74	1.255	3.5
61.73	1.470	4
65.47	1.694	4.5
69.02	1.928	5
72.38	2.172	5.5
75.60	2.427	6

PRINT HYD ID=2 CODE=1

 S 5- Route POND 5 outflow (BASIN 301) through BASIN 302 via 36"X 1800'RCP
 S (24'/1800'= 0.15 slp) Add to basin 302 at pond 6, (#8)

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.015
 DIAM=3.0 N=0.013

ROUTE MCUNGE ID=3 HYD NO= 301.2 INFLOW ID=2
 DT=0.0 L=1400 FT NS=0 SLOPE=0.015
 PRINT HYD ID=3 CODE=5

P100_24.dat

```
*****
*S*      6- COMPUTE TP FOR BASIN 302 (LET tp= 0.133 MIN)      ***
*COMPUTE LT TP          LCODE=1 NK=3      ISLOPE=0
*                        LENGTH=100 FT     SLOPE=0.02      K=0.7
*                        LENGTH=1700 FT    SLOPE=0.02      K=3
*****
```

```
*S*      7- COMPUTE HYD FOR BASIN 302 (assume replat to 4 DU/Ac, D=42%, use 45%)
*S*      Historical flow (100% A)= 57.95CFS
COMPUTE NM HYD          ID=1      HYDNO=302 DA=0.058 SQ MI
                        PERCENT A=10 B=15 C=30 D=45
                        TP=0.133 HOURS  MASSRAIN=-1
```

```
PRINT HYD              ID=1      CODE=5
```

```
*****
*S*      8- ADD HYDROGRAPHS 301.2 (ROUTED THROUGH 302) AND 302 - INFLOW TO POND 6
```

```
ADD HYD                  ID=2      HYD=302.1      ID=1      ID=3
PRINT HYD                ID=2      CODE=1
*PUNCH HYD                ID=2
```

```
*****
*S*      9- ROUTE HYDROGRAPH 302.1 through POND 6 (0.2/0.4AC surf/bottom, 1.5AF stor
cap)
```

```
*S*      Historical flow- 100% A (Basin 301= 74.42)+(Basin 302= 57.95)= 132.37CFS
*S*      discharge through 48" RCP w/ 45" orifice plate
```

```
ROUTE RESERVOIR          ID=1 HYD=POND.302.2  INFLOWID=2  CODE=5
                        OUTFLOW(CFS)  STORAGE(AC-FT)  ELEV(FT)
                        0              0              0
                        38.23          0.103          0.5
                        54.07          0.213          1.0
                        66.22          0.330          1.5
                        76.46          0.454          2.0
                        85.49          0.585          2.5
                        93.65          0.723          3.0
                        101.15         0.869          3.5
                        108.13         1.023          4.0
                        114.69         1.186          4.5
                        120.90         1.356          5.0
                        126.80         1.535          5.5
                        132.43         1.723          6.0
                        132.43         1.919          6.5
                        132.43         2.125          7.0
```

```
PRINT HYD              ID=1      CODE=1
*****
```

```
*S*      10- Route outflow from POND 6 (BASIN 301 & 302) through
*S*      48"x 2300'RCP (50/2300= 2.2% slp) through Basin 214 TO POND 8
```

```
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=-1  SLP=0.022
                        DIAM=4.0  N=0.013
```

```
ROUTE MCUNGE            ID=2  HYD NO= 302.3  INFLOW ID=1
                        DT=0.0 L=2300 FT NS=0 SLOPE=0.022
```

```
PRINT HYD              ID=2      CODE=5
*****
*S*      76- COMPUTE TP FOR BASIN 214 (Let tp= 0.133= Min.)      ***
```

```
*COMPUTE LT TP          LCODE=1 NK=3      ISLOPE=0
*                        LENGTH=100 FT     SLOPE=0.02      K=0.7
*                        LENGTH=0 FT       SLOPE=0.02      K=2
*                        LENGTH=1250 FT    SLOPE=0.02      K=3
```

P100_24.dat

S 77- COMPUTE HYD FOR BASIN 214
COMPUTE NM HYD ID=1 HYDNO=214 DA=0.086 SQ MI
PERCENT A=10 B=15 C=30 D=45
TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5

S 78- ADD HYDROGRAPHS 302.3 AND 214

ADD HYD ID=3 HYD=214.1 ID=2 ID=1
PRINT HYD ID=3 CODE=1
PUNCH HYD ID=3

S 79- Route HYDROGRAPH 214.1 through POND 8 (1.7/2.2AC surf/btm, 11.3AF
stor.cap.)
ROUTE RESERVOIR

ID=2 HYD=POND.214.2 INFLOWID=3 CODE=5
OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)

0	0	0
40.82	0.859	0.5
57.73	1.738	1
70.71	2.635	1.5
81.64	3.552	2
91.28	4.489	2.5
99.99	5.445	3
108.00	6.421	3.5
115.46	7.417	4
122.47	8.434	4.5
129.09	9.472	5
135.39	10.530	5.5
141.41	11.609	6
141.41	12.710	6.5
141.41	13.831	7

PRINT HYD ID=2 CODE=1

***** FLOW TO MARIPOSA CHANNEL *****

S 11- COMPUTE TP FOR BASIN P-303 (let TP= 0.133 hrs= min) ***
*COMPUTE LT TP LCODE=1 NK=2 ISLOPE=0
* LENGTH=100 FT SLOPE=0.02 K=0.7
* LENGTH=0 FT SLOPE=0.02 K=2
* LENGTH=2000 FT SLOPE=0.02 K=3

S 12- COMPUTE HYD FOR BASIN 303 (assume replat to 4 DU/Ac, D=42%, use 45%)

S BASIN 303 Historical flow (100% A)= 75.29CFS
COMPUTE NM HYD ID=1 HYDNO=303 DA=0.067 SQ MI
PERCENT A=10 B=15 C=30 D=45
TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5
*PUNCH HYD ID=1

S 13- ROUTE HYDROGRAPH 303 THROUGH POND 9 (0.3/0.52AC surface/bottom, 2.11AF
stor. cap.)

S 303 Hist. flow= 75.29CFS, discharge through 36" RCP w/ 34" orifice plate
ROUTE RESERVOIR ID=2 HYD=POND.303.1 INFLOWID=1 CODE=5
OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)

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0	0	0
21.82	0.154	0.5
30.86	0.316	1
37.80	0.486	1.5
43.65	0.665	2
48.80	0.853	2.5
53.46	1.049	3
57.74	1.255	3.5
61.73	1.470	4
65.47	1.694	4.5
69.02	1.928	5
72.38	2.172	5.5
75.60	2.427	6
75.60	2.691	6.5
75.60	2.966	7

PRINT HYD ID=2 CODE=1

 S 14- Route outflow from POND 9 (BASIN 303.1) through 36"x 1300'RCP
 *** (50/1300=3.9% slp) through BASIN 215 to POND 10

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.03
 DIAM=3.0 N=0.013

ROUTE MCUNGE ID=3 HYD NO= 303.2 INFLOW ID=2
 DT=0.0 L=1300 FT NS=0 SLOPE=0.039
 PRINT HYD ID=3 CODE=5

 S 81- COMPUTE TP FOR BASIN P-215 (Let tp= 0.133 Min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2
 * LENGTH=1250 FT SLOPE=0.02 K=3

 S 82- COMPUTE HYD FOR BASIN P-215
 COMPUTE NM HYD ID=1 HYDNO=215 DA=0.054 SQ MI
 PERCENT A=10 B=15 C=30 D=45
 TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5

 S 83- ADD HYDROGRAPHS 303.2 AND 215

ADD HYD ID=2 HYD=215.1 ID=1 ID=3
 PRINT HYD ID=2 CODE=1

 S 85- Route HYDROGRAPH 215.1 through POND 10 (1.0/0.7AC surf/btm, 4.65AF
 stor.cap.)
 ROUTE RESERVOIR ID=1 HYD=POND.215.2 INFLOWID=2 CODE=5

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)
0	0	0
4.39	0.5	0.5
6.21	1.3	1
8.78	2.6	2
10.75	3.9	3
12.42	5.2	4
13.88	6.5	5

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 15.21 7.8 6
 15.21 9.1 7

PRINT HYD ID=1 CODE=1
 * * * * * FLOW TO PIEDRAS MARCADAS * * * * *
 * * * * *
 S 15- COMPUTE TP FOR OFFSITE BASIN 304 Let TP= 0.133 hrs= min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.020 K=0.7
 * LENGTH=3500 FT SLOPE=0.020 K=3

* * * * *
 S 16- Compute HYD for BASIN 304 (ex.platting 2.33+/- DU/Acre => 35%D, use 40%
 S BASIN 304 @ 100% A: Historical flow area= 0.05 sq mi, flow= 41.24cfs
 COMPUTE NM HYD ID=1 HYDNO=304 DA=0.108 SQ MI
 PERCENT A=10 B=15 C=35 D=40
 TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5
 * * * * *
 S 17- Route HYDROGRAPH 304 through POND 7 (H=4.0', 0.40/0.25AC surf/bottom,
 1.14AF stor.
 S cap.). 304 historical: 100% A;area= 0.05 sq mi; flow= 41.24cfs;
 S discharge through 28" orifice plate into 30' RCP
 ROUTE RESERVOIR ID=2 HYD=POND.304.1 INFLOWID=1 CODE=5
 OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)

0	0	0
14.80	0.381	0.5
20.93	0.775	1
25.64	1.182	1.5
29.60	1.602	2
33.10	2.035	2.5
36.26	2.482	3
39.16	2.942	3.5
41.86	3.416	4
41.90	3.904	4.5
42.00	4.407	5

PRINT HYD ID=2 CODE=1
 * * * * * FLOW TO MARIPOSA BASIN * * * * *
 * * * * *
 S 23- COMPUTE TP FOR BASIN P-203 (let TP= 0.133= Min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2
 * LENGTH=3500 FT SLOPE=0.02 K=3
 * * * * *

S 24- COMPUTE HYD FOR BASIN P-203 (2.5 DU/acre, use D=45)
 COMPUTE NM HYD ID=2 HYDNO=203 DA=0.002 SQ MI
 PERCENT A=10 B=15 C=30 D=45
 TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=2 CODE=5
 * * * * *
 S 31- COMPUTE TP FOR BASIN P-204 (Let tp= 0.133= Min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2
 * LENGTH=1250 FT SLOPE=0.02 K=3
 * * * * *

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*** 32- COMPUTE HYD FOR BASIN P-204 (actual 3.3DU/acre, assume 4 DU/Acre=>
*** 42%D, use 45%D)

COMPUTE NM HYD ID=1 HYDNO=204 DA=0.008 SQ MI
PERCENT A=10 B=15 C=30 D=45
TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5

S 84- ADD HYDROGRAPHS 203 AND 204

ADD HYD ID=5 HYD=204.2 ID=1 ID=2

PRINT HYD ID=5 CODE=1

*PUNCH HYD ID=5

S 33- Route HYDROGRAPH 204.2 through BASIN 208 IN 24'X570 LF PIPE

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.04
DIAM=2.0 N=0.013

ROUTE MCUNGE ID=10 HYD NO= 204.3 INFLOW ID=5

DT=0.0 L=570 FT NS=0 SLOPE=0.04

PRINT HYD ID=10 CODE=5

S 34- COMPUTE TP FOR BASIN P-205 (Let tp= 0.133= Min.) ***

*COMPUTE LT TP

LCODE=1 NK=3 ISLOPE=0

* LENGTH=100 FT SLOPE=0.02 K=0.7

* LENGTH=0 FT SLOPE=0.02 K=2

* LENGTH=1250 FT SLOPE=0.02 K=3

S 35- COMPUTE HYD FOR BASIN P-205 (assume 4 DU/Acre=> 42%D, use 45%D)

COMPUTE NM HYD ID=1 HYDNO=205 DA=0.014 SQ MI
PERCENT A=10 B=15 C=30 D=45
TP=0.0 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5

S 36- ROUTE HYDROGRAPH 205 THROUGH PIPE TO CONFLUENCE W/ BASIN 208

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.02
DIAM=4.0 N=0.013

ROUTE MCUNGE ID=2 HYD NO= 205.1 INFLOW ID=1

DT=0.0 L=800 FT NS=0 SLOPE=0.02

PRINT HYD ID=2 CODE=5

S 45- COMPUTE TP FOR BASIN P-208 (Let tp= 0.133= Min.) ***

*COMPUTE LT TP

LCODE=1 NK=3 ISLOPE=0

* LENGTH=100 FT SLOPE=0.02 K=0.7

* LENGTH=0 FT SLOPE=0.02 K=2

* LENGTH=1250 FT SLOPE=0.02 K=3

*** 46- COMPUTE HYD FOR BASIN P-208 (actual 0.4DU/acre=> 10%D, use 20%D)

COMPUTE NM HYD ID=1 HYDNO=208 DA=0.013 SQ MI
PERCENT A=10 B=50 C=20 D=20
TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5

P100_24.dat

*PUNCH HYD ID=1

 S 47- ADD HYDROGRAPHS 205.1 and 208

ADD HYD ID=3 HYD=208.1 ID=1 ID=2
 PRINT HYD ID=3 CODE=1

 S 48- ADD HYDROGRAPHS 204.3 AND 208.1

ADD HYD ID=1 HYD=208.2 ID=3 ID=10
 PRINT HYD ID=1 CODE=1

*S*51- ROUTE ADDED FLOWS AT HYDROGRAPH 208.2 through PIPE TO POND 4
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.025
 DIAM=4.0 N=0.013

ROUTE MCUNGE ID=5 HYD NO= 208.3 INFLOW ID=1
 DT=0.0 L=814 FT NS=0 SLOPE=0.025
 PRINT HYD ID=5 CODE=5

 S 37- COMPUTE TP FOR BASIN P-206 (Let tp= 0.133= Min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2
 * LENGTH=1250 FT SLOPE=0.02 K=3

S 38- COMPUTE HYD FOR BASIN P-206 (assume 4 DU/Acre=> 42%D, use 45%D)
 COMPUTE NM HYD ID=1 HYDNO=206 DA=0.007 SQ MI
 PERCENT A=10 B=15 C=30 D=45
 TP=0.0 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5

 S 59- COMPUTE TP FOR BASIN P-210 (let tp=0.133= Min.) ***

*COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2
 * LENGTH=1250 FT SLOPE=0.02 K=3

S 60- COMPUTE HYD FOR BASIN P-210 (3.0 DU/acre=> 35%D, use 40%D)
 COMPUTE NM HYD ID=2 HYDNO=210 DA=0.004 SQ MI
 PERCENT A=10 B=15 C=35 D=40
 TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=2 CODE=5

 S - ADD HYDROGRAPHS 206 AND 210

ADD HYD ID=3 HYD=210.1 ID=1 ID=2
 PRINT HYD ID=3 CODE=1

 S 62- Compute TP for BASIN P-211 (let tp=0.133= Min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2

```

                                P100_24.dat
*                                LENGTH=1250 FT  SLOPE=0.02      K=3
* * * * *
*S*  63- COMPUTE HYD FOR BASIN P-211 (3.7 DU/acre=> 40%D, use 45%D)
COMPUTE NM HYD      ID=1      HYDNO=211  DA=0.010 SQ MI
                        PERCENT A=10 B=15 C=30 D=45
                        TP=0.133 HOURS  MASSRAIN=-1

PRINT HYD      ID=1      CODE=5
* * * * *
*S*  64- ADD HYDROGRAPHS 210.1 AND 211

ADD HYD      ID=2      HYD=211.1      ID=1      ID=3
PRINT HYD      ID=2      CODE=1
* * * * *
*S*  41- COMPUTE TP FOR BASIN P-207 (Let tp= 0.133= Min.)      ***
*COMPUTE LT TP      LCODE=1 NK=3      ISLOPE=0
*                        LENGTH=100 FT  SLOPE=0.02      K=0.7
*                        LENGTH=0 FT  SLOPE=0.02      K=2
*                        LENGTH=1250 FT  SLOPE=0.02      K=3
* * * * *
*S*  42- COMPUTE HYD FOR BASIN P-207 (actual 3.7DU/acre, assume 4 DU/Acre=>
*                        42%D, use 45%D)
COMPUTE NM HYD      ID=1      HYDNO=207  DA=0.004 SQ MI
                        PERCENT A=10 B=15 C=30 D=45
                        TP=0.0 HOURS  MASSRAIN=-1

PRINT HYD      ID=1      CODE=5
* * * * *
*S*  - ADD HYDROGRAPHS 211.1 AND 207

ADD HYD      ID=3      HYD=207.1      ID=1      ID=2
PRINT HYD      ID=3      CODE=1
* * * * *
*S*  52- Compute TP for BASIN P-209 (Let tp=0.133= Min.)      ***
*COMPUTE LT TP      LCODE=1 NK=3      ISLOPE=0
*                        LENGTH=100 FT  SLOPE=0.02      K=0.7
*                        LENGTH=0 FT  SLOPE=0.02      K=2
*                        LENGTH=1250 FT  SLOPE=0.02      K=3
* * * * *
*S*  53- Compute HYD for BASIN 209 (3.86du/acre=> 41%D, use 45%D)
COMPUTE NM HYD      ID=1      HYDNO=209  DA=0.006 SQ MI
                        PERCENT A=10 B=15 C=30 D=45
                        TP=0.133 HOURS  MASSRAIN=-1

PRINT HYD      ID=1      CODE=5
*PUNCH HYD      ID=1
* * * * *
*S*  - ADD HYDROGRAPHS 207.1 AND 209

ADD HYD      ID=2      HYD=209.1      ID=1      ID=3
PRINT HYD      ID=2      CODE=1
* * * * *
*S*  66- COMPUTE TP FOR BASIN P-212 (Let TP=0.133= Min.)      ***
*COMPUTE LT TP      LCODE=1 NK=3      ISLOPE=0
*                        LENGTH=100 FT  SLOPE=0.02      K=0.7

```

```

                                P100_24.dat
*                               LENGTH=0 FT   SLOPE=0.02       K=2
*                               LENGTH=1250 FT SLOPE=0.02     K=3
* * * * *
*S* 67- Computing HYD for BASIN P-212 (2.5 DU/acre=> 30%D, use 35%D)
COMPUTE NM HYD      ID=1      HYDNO=212  DA=0.005 SQ MI
                        PERCENT A=10 B=15 C=40 D=35
                        TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD          ID=1      CODE=5
* * * * *
*S* 68- ADD HYDROGRAPHS 209.1 AND 212

ADD HYD              ID=3      HYD=212.1      ID=2      ID=1
PRINT HYD            ID=3      CODE=1
*PUNCH HYD           ID=3
* * * * *
*S* 69 ROUTE HYDROGRAPH 212.1 down Kimmick in 48"x 175' RCP to POND 4
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.001
                        DIAM=4.0 N=0.013

ROUTE MCUNGE        ID=2      HYD NO= 212.2  INFLOW ID=3
                        DT=0.0 L=175 FT NS=0 SLOPE=0.001
PRINT HYD           ID=2      CODE=5
* * * * *
*S* 70- Add HYDROGRAPHS 212.2 TO 208.3 (At POND 4)

ADD HYD              ID=6      HYD=212.3      ID=2      ID=5
PRINT HYD            ID=6      CODE=1
*PUNCH HYD           ID=6
* * * * *
*S* 19- COMPUTE TP FOR BASIN 201 (let TP= 0.133= Min.)
***

*COMPUTE LT TP      LCODE=1 NK=3      ISLOPE=0
*                   LENGTH=250 FT     SLOPE=0.01      K=0.7
*                   LENGTH=0 FT       SLOPE=0.02      K=2
*                   LENGTH=1250 FT    SLOPE=0.02      K=3
* * * * *
*S* 20- COMPUTE HYD FOR BASIN P-201 (assume 4 DU/Acre=> 42%D, use 45%D)
COMPUTE NM HYD      ID=1      HYDNO=201  DA=0.035 SQ MI
                        PERCENT A=10 B=15 C=30 D=45
                        TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD          ID=1      CODE=5
*PUNCH HYD         ID=1
* * * * *
*S* 21- Route HYDROGRAPH 201 through POND 1 (0.5/0.25AC surf/btm, 1.65AF stor.
cap)
*S* discharge 15.21cfs through 15" orifice plate route to POND 2
ROUTE RESERVOIR      ID=2 HYD=POND.201.1 INFLOWID=1 CODE=5
                        OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)

                        0          0          0
                        4.39       0.129      0.5
                        6.21       0.265      1
                        7.60       0.408      1.5
                        8.78       0.560      2

```

P100_24.dat

9.82	0.719	2.5
10.75	0.887	3
11.62	1.063	3.5
12.42	1.248	4
13.17	1.441	4.5
13.88	1.644	5
14.56	1.856	5.5
15.21	2.077	6
15.21	2.308	6.5
15.21	2.549	7

PRINT HYD ID=2 CODE=1

 S 22- Route outflow from POND 1 (BASIN 201) in 24"PIPE through BASIN 202 TO
 S NEW POND #2 IN BASIN 202
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=-1 SLP=0.005
 DIAM=2.0 N=0.013

ROUTE MCUNGE ID=3 HYD NO= 201.2 INFLOW ID=2
 DT=0.0 L=1000 FT NS=0 SLOPE=0.001

PRINT HYD ID=3 CODE=5

 S 27- COMPUTE TP FOR BASIN P-202 (set tp= 0.133= Min.) ***
 *COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
 * LENGTH=100 FT SLOPE=0.02 K=0.7
 * LENGTH=0 FT SLOPE=0.02 K=2
 * LENGTH=3500 FT SLOPE=0.02 K=3

 *** 28- COMPUTE HYD FOR BASIN P-202 (assume 4 DU/Acre=> 42%D, use 45%D)
 COMPUTE NM HYD ID=1 HYDNO=202 DA=0.055 SQ MI
 PERCENT A=10 B=15 C=30 D=45
 TP=0.133 HOURS MASSRAIN=-1

PRINT HYD ID=1 CODE=5
 *PUNCH HYD ID=1

 S 28A- Add HYDROGRAPHS 201.2 and 202

ADD HYD ID=2 HYD=202.1 ID=1 ID=3
 PRINT HYD ID=2 CODE=1

 S 29- Route HYDROGRAPH 202.1 Through POND 2 (0.77/0.5AC surf/btm, 3.50AF stor.
 cap.)
 S discharge 15.21cfs through 15" orifice plate into Rosa Parks System
 ROUTE RESERVOIR ID=3 HYD=POND.202.2 INFLOWID=2 CODE=5
 OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)

0	0	0
4.39	0.255	0.5
6.21	0.521	1
7.60	0.797	1.5
8.78	1.084	2
9.82	1.381	2.5
10.75	1.690	3
11.62	2.011	3.5
12.42	2.343	4
13.17	2.687	4.5
13.88	3.043	5
14.56	3.411	5.5

P100_24.dat

15.21	3.792	6
15.21	4.185	6.5
15.21	4.591	7

PRINT HYD ID=3 CODE=1

```

*****
*S* 56A- Compute TP for BASIN 213 (Let tp=0.133= Min.) ***
*COMPUTE LT TP          LCODE=1 NK=3      ISLOPE=0
*          LENGTH=100 FT  SLOPE=0.02      K=0.7
*          LENGTH=0 FT   SLOPE=0.02      K=2
*          LENGTH=1250 FT SLOPE=0.02      K=3

```

```

*S* 56B- COMPUTE HYD FOR BASIN 213 (3.86du/acre=> 41%D, use 45%D)
COMPUTE NM HYD          ID=1      HYDNO=213  DA=0.063 SQ MI
                        PERCENT A=10 B=15 C=30 D=45
                        TP=0.133 HOURS  MASSRAIN=-1

```

PRINT HYD ID=1 CODE=5
*PUNCH HYD ID=1

S 56C- Add HYDROGRAPH 202.2 (outflow from POND 2) and 213

```

ADD HYD          ID=2      HYD=213.1      ID=1      ID=3
PRINT HYD        ID=2      CODE=1
*PUNCH HYD        ID=2

```

```

*S* 56D- Add HYDROGRAPHS 212.3 and 213.1 (INFLOW TO POND 4)
ADD HYD          ID=1      HYD=213.2      ID=2      ID=6
PRINT HYD        ID=1      CODE=1
*PUNCH HYD        ID=1

```

```

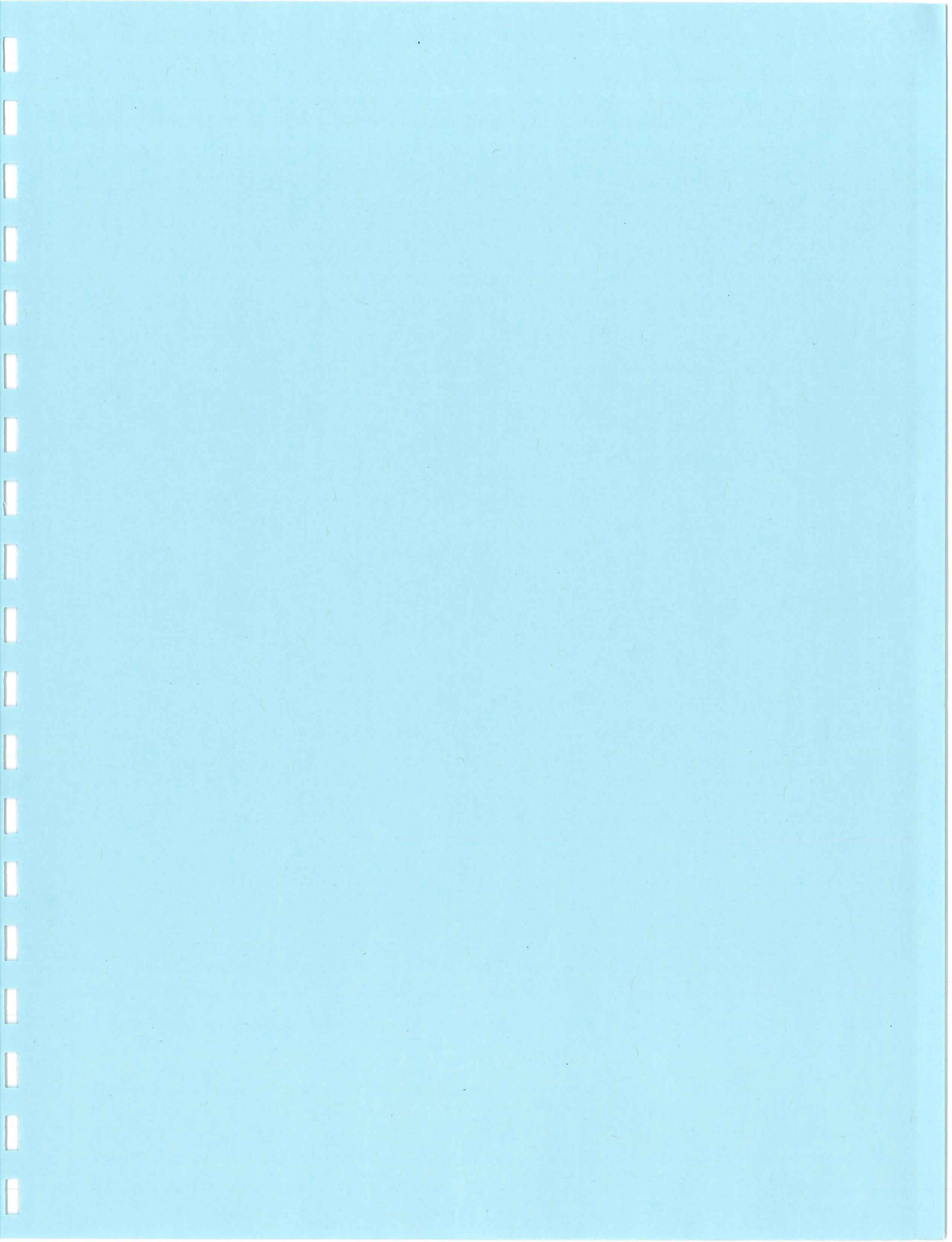
*S* 57- Route BASIN 213.1 through POND 4
ROUTE RESERVOIR          ID=2 HYD=POND.213.3  INFLOWID=1  CODE=5
                        OUTFLOW(CFS)  STORAGE(AC-FT)  ELEV(FT)

```

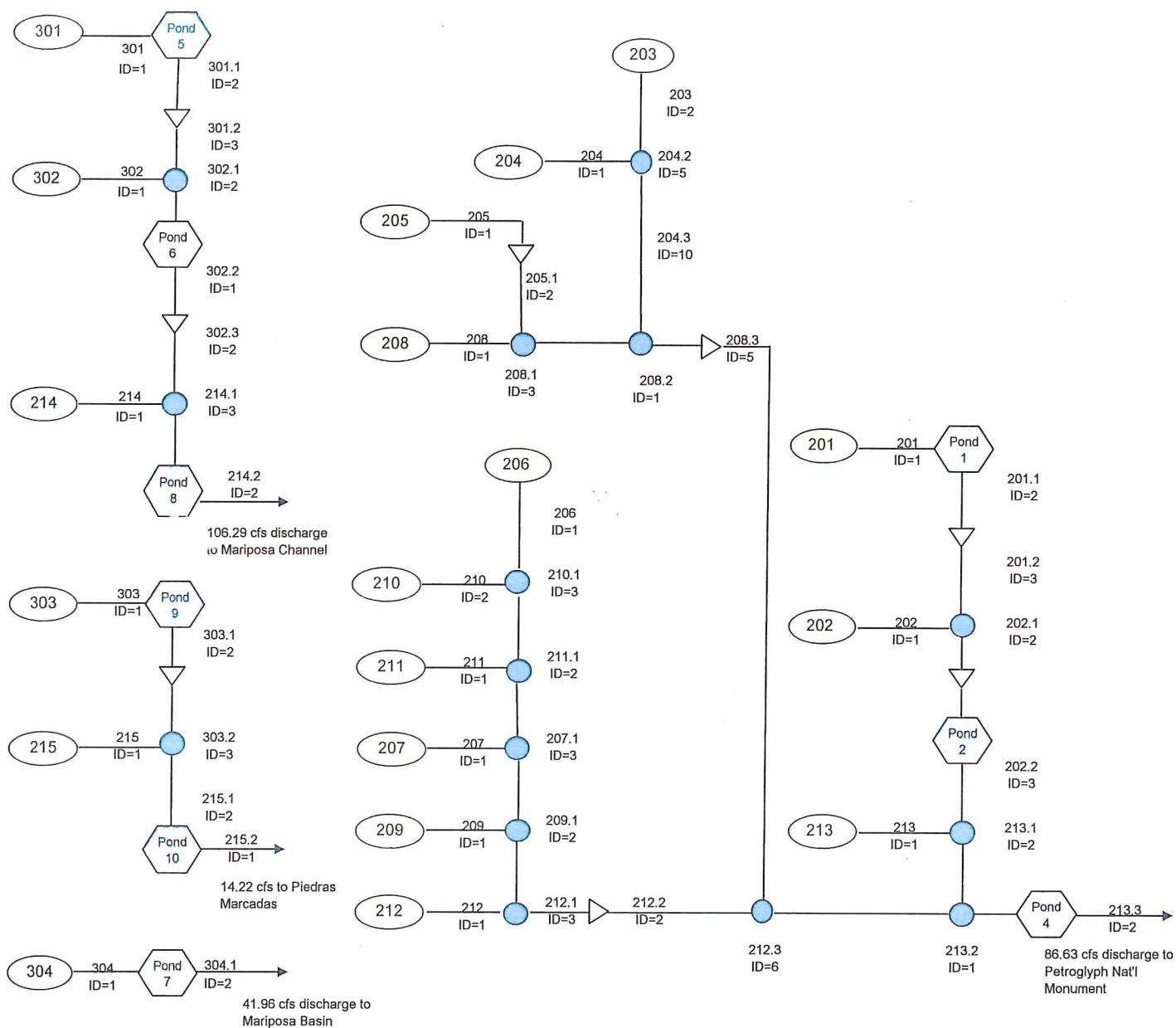
0.0	0.0	5298
71.8	0.82	5299
76.5	1.73	5300
81.0	2.72	5301
85.1	3.80	5302
89.1	4.97	5303
93.0	6.23	5304
96.7	7.58	5305
100.2	9.03	5306

PRINT HYD ID=2 CODE=1

FINISH



La Cuentista; Hydrologic Model Diagram: Fully Developed Conditions - Revised January 2007



KEY



**S*	BASIN 304 @ 100% A: Historical flow area= 0.05 sq mi, flow= 41.24cfs								
COMPUTE NM HYD	304.00 - 1	.10800	217.09	8.321					
**S*	17- Route HYDROGRAPH 304 through POND 7 (H=4.0', 0.40/0.25AC surf/bottom, cap.). 304 historical: 100% A;area= 0.05 sq mi; flow= 41.24cfs; discharge through 28" orifice plate into 30' RCP								
**S*	ROUTE RESERVOIR POND.304.1	1							
S*	23- COMPUTE TP FOR BASIN P-203 (let TP= 0.133= Min.)	.10800	41.96	8.321	*				
**S*	24- COMPUTE HYD FOR BASIN P-203 (2.5 DU/acre, use D=45)								
COMPUTE NM HYD	203.00 - 2	.00200	4.12	.162	***				
**S*	31- COMPUTE TP FOR BASIN P-204 (let tp= 0.133= Min.)	.00200							
COMPUTE NM HYD	204.00 - 1	.00800	16.43	.647					
**S*	84- ADD HYDROGRAPHS 203 AND 204								
ADD HYD	204.20 1& 2 5	.01000	20.55	.809					
**S*	33- Route HYDROGRAPH 204.2 through BASIN 208 IN 24'X570 LF PIPE								
ROUTE MCUNGE	204.30 5 10	.01000	20.45	.809	***				
**S*	34- COMPUTE TP FOR BASIN P-205 (let tp= 0.133= Min.)								
**S*	35- COMPUTE HYD FOR BASIN P-205 (assume 4 DU/Acre=> 42%D, use 45%D)								
COMPUTE NM HYD	205.00 - 1	.01400	28.70	1.133					
**S*	36- Route HYDROGRAPH 205 THROUGH PIPE TO CONFLUENCE W/ BASIN 208								
ROUTE MCUNGE	205.10 1 2	.01400	28.31	1.133	***				
**S*	45- COMPUTE TP FOR BASIN P-208 (let tp= 0.133= Min.)								
COMPUTE NM HYD	208.00 - 1	.01300	21.22	.725					
**S*	47- ADD HYDROGRAPHS 205.1 and 208								
ADD HYD	208.10 1& 2 3	.02700	49.53	1.858					
**S*	48- ADD HYDROGRAPHS 204.3 AND 208.1								
ADD HYD	208.20 3&10 1	.03700	69.98	2.667					
**S*	51- Route ADDED FLOWS AT HYDROGRAPH 208.2 through PIPE TO POND 4								
ROUTE MCUNGE	208.30 1 5	.03700	68.50	2.668	***				
**S*	37- COMPUTE TP FOR BASIN P-206 (let tp= 0.133= Min.)								
**S*	38- COMPUTE HYD FOR BASIN P-206 (assume 4 DU/Acre=> 42%D, use 45%D)								
COMPUTE NM HYD	206.00 - 1	.00700	14.36	.566	***				
**S*	59- COMPUTE TP FOR BASIN P-210 (let tp= 0.133= Min.)								
**S*	60- COMPUTE HYD FOR BASIN P-210 (3.0 DU/acre=> 35%D, use 40%D)								
COMPUTE NM HYD	210.00 - 2	.00400	8.04	.308					
**S*	ADD HYDROGRAPHS 206 AND 210								
ADD HYD	210.10 1& 2 3	.01100	22.40	.875	***				
**S*	62- Compute TP for BASIN P-211 (let tp= 0.133= Min.)								
**S*	63- COMPUTE HYD FOR BASIN P-211 (3.7 DU/acre=> 40%D, use 45%D)								
COMPUTE NM HYD	211.00 - 1	.01000	20.53	.809					
**S*	64- ADD HYDROGRAPHS 210.1 AND 211								
ADD HYD	211.10 1& 3 2	.02100	42.93	1.684	***				
**S*	41- COMPUTE TP FOR BASIN P-207 (let tp= 0.133= Min.)								
**S*	42- COMPUTE HYD FOR BASIN P-207 (actual 3.7DU/acre, assume 4 DU/Acre=> 32.4	8.21							
COMPUTE NM HYD	207.00 - 1	.00400		.324					
**S*	ADD HYDROGRAPHS 211.1 AND 207								
ADD HYD	207.10 1& 2 3	.02500	51.14	2.007	***				
**S*	52- Compute TP for BASIN P-209 (let tp= 0.133= Min.)								
**S*	53- Compute HYD for BASIN 209 (3.86du/acre=> 41%D, use 45%D)								
COMPUTE NM HYD	209.00 - 1	.00600	12.33	.485					
**S*	ADD HYDROGRAPHS 207.1 AND 209								
ADD HYD	209.10 1& 3 2	.03100	63.47	2.493	***				
**S*	66- COMPUTE TP FOR BASIN P-212 (let TP= 0.133= Min.)								

[illegible]

APPENDIX B

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Basil CT
Flow Element	Irregular Chanl
Method	Manning's Forr
Solve For	Channel Depth

Input Data	
Slope	015000 ft/ft
Discharge	11.00 cfs

Options	
Current Roughness Method	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.32 ft
Elevation Range	0.00 to 0.67
Flow Area	4.3 ft²
Wetted Perimeter	30.662 ft
Top Width	30.158 ft
Actual Depth	0.32 ft
Critical Elevation	0.34 ft
Critical Slope	0.009909 ft/ft
Velocity	2.57 ft/s
Velocity Head	0.10 ft
Specific Energy	0.42 ft
Froude Number	1.21
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

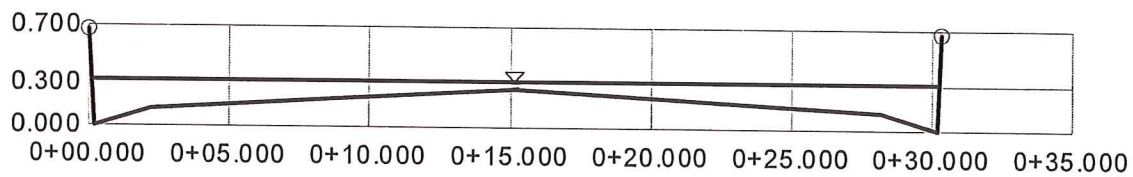
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

Cross Section for Irregular Channel

Project Description	
Worksheet	Basil CT
Flow Element	Irregular Chanl
Method	Manning's Forr
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.019
Slope	0.015000 ft/ft
Water Surface Elev.	0.32 ft
Elevation Range	.00 to 0.67
Discharge	11.00 cfs



V:5.0
H:1
NTS

Worksheet Worksheet for Irregular Channel

Project Description	
Worksheet	Betony Ct
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Input Data	
Slope	020000 ft/ft
Discharge	10.00 cfs

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.30 ft
Elevation Range	0.00 to 0.67
Flow Area	3.7 ft ²
Wetted Perimeter	30.623 ft
Top Width	30.148 ft
Actual Depth	0.30 ft
Critical Elevation	0.33 ft
Critical Slope	0.010114 ft/ft
Velocity	2.70 ft/s
Velocity Head	0.11 ft
Specific Energy	0.41 ft
Froude Number	1.36
Flow Type	supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

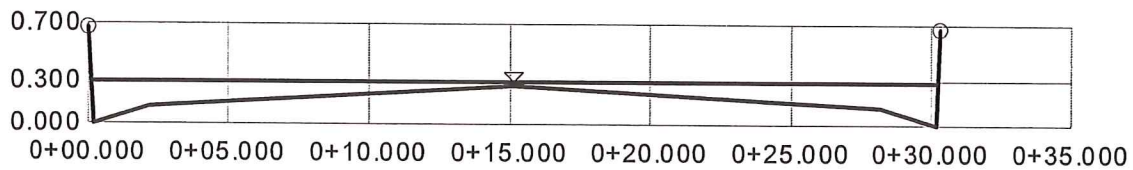
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

Cross Section for Irregular Channel

Project Description	
Worksheet	Betony Ct
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.019
Slope	0.020000 ft/ft
Water Surface Elev.	0.30 ft
Elevation Range	.00 to 0.67
Discharge	10.00 cfs



V:5.0
H:1
NTS

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Redroot/Bucktl
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Input Data	
Slope	056500 ft/ft
Discharge	10.00 cfs

Options	
Current Roughness Method	aved Lotter's Method
Open Channel Weighting	aved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.26 ft
Elevation Range	0.00 to 0.67
Flow Area	2.7 ft²
Wetted Perimeter	30.555 ft
Top Width	30.132 ft
Actual Depth	0.26 ft
Critical Elevation	0.33 ft
Critical Slope	0.010114 ft/ft
Velocity	3.69 ft/s
Velocity Head	0.21 ft
Specific Energy	0.48 ft
Froude Number	2.17
Flow Type	supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

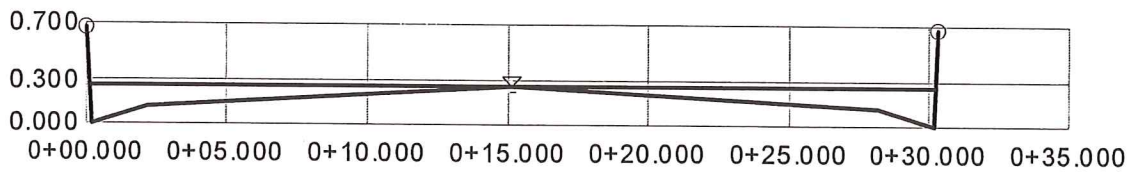
Cross Section for Irregular Channel

Project Description

Worksheet	Redroot/Bucktl
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.019
Slope	0.056500 ft/ft
Water Surface Elev.	0.26 ft
Elevation Range	.00 to 0.67
Discharge	10.00 cfs



V:5.0
H:1
NTS

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Redroot Rd
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Input Data	
Slope	005000 ft/ft
Discharge	16.00 cfs

Options	
Current Roughness Method	aved Lotter's Method
Open Channel Weighting	aved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.42 ft
Elevation Range	.00 to 0.67
Flow Area	7.5 ft ²
Wetted Perimeter	30.880 ft
Top Width	30.211 ft
Actual Depth	0.42 ft
Critical Elevation	0.38 ft
Critical Slope	0.009147 ft/ft
Velocity	2.14 ft/s
Velocity Head	0.07 ft
Specific Energy	0.49 ft
Froude Number	0.76
Flow Type	Subcritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

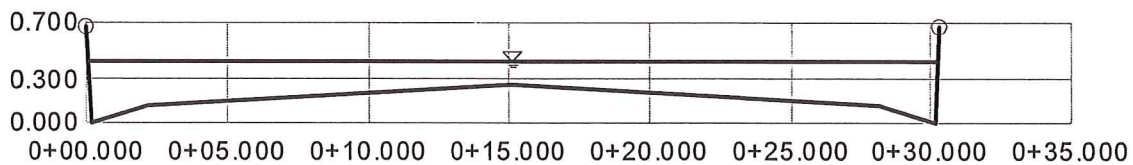
Cross Section for Irregular Channel

Project Description

Worksheet	Redroot Rd
Flow Element	Irregular Chanl
Method	Manning's Forr
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.019
Slope	0.005000 ft/ft
Water Surface Elev.	0.42 ft
Elevation Range	.00 to 0.67
Discharge	16.00 cfs



V:5.0
H:1
NTS

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Buckthorn PI
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Input Data	
Slope	007000 ft/ft
Discharge	14.00 cfs

Options	
Current Roughness Method	aved Lotter's Method
Open Channel Weighting	aved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.38 ft
Elevation Range	.00 to 0.67
Flow Area	6.2 ft ²
Wetted Perimeter	30.795 ft
Top Width	30.190 ft
Actual Depth	0.38 ft
Critical Elevation	0.36 ft
Critical Slope	0.009411 ft/ft
Velocity	2.25 ft/s
Velocity Head	0.08 ft
Specific Energy	0.46 ft
Froude Number	0.87
Flow Type	Subcritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

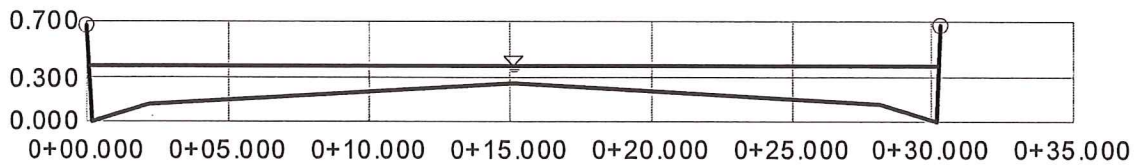
Cross Section for Irregular Channel

Project Description

Worksheet	Buckthorn PI
Flow Element	Irregular Chanl
Method	Manning's Forr
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.019
Slope	0.007000 ft/ft
Water Surface Elev.	0.38 ft
Elevation Range	.00 to 0.67
Discharge	14.00 cfs



V:5.0
H:1
NTS

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Buckthorn/Burr
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.017900 ft/ft
Discharge	12.00 cfs

Options	
Current Roughness Method	Modified Lotter's Method
Open Channel Weighting	Modified Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Manning's Coefficient	0.019
Water Surface Elev.	0.32 ft
Elevation Range	0.00 to 0.67
Flow Area	4.3 ft ²
Wetted Perimeter	30.662 ft
Top Width	30.158 ft
Actual Depth	0.32 ft
Critical Elevation	0.35 ft
Critical Slope	0.009726 ft/ft
Velocity	2.81 ft/s
Velocity Head	0.12 ft
Specific Energy	0.44 ft
Froude Number	1.32
Flow Type	Supercritical

Roughness Segments		
Start Station	End Station	Manning's Coefficient
0+00.000	0+30.334	0.019

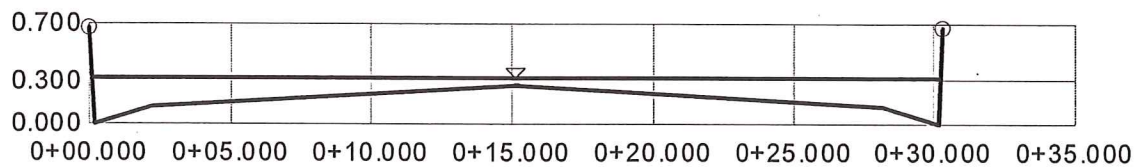
Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

Cross Section for Irregular Channel

Project Description	
Worksheet	Buckthorn/Burr
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.019
Slope	0.017900 ft/ft
Water Surface Elev.	0.32 ft
Elevation Range	.00 to 0.67
Discharge	12.00 cfs



V:5.0
H:1
NTS

Worksheet Worksheet for Irregular Channel

Project Description	
Worksheet	Goldenseal/Bur
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data	
Slope	024000 ft/ft
Discharge	26.00 cfs

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.38 ft
Elevation Range	0.00 to 0.67
Flow Area	6.2 ft ²
Wetted Perimeter	30.796 ft
Top Width	30.190 ft
Actual Depth	0.38 ft
Critical Elevation	0.46 ft
Critical Slope	0.008257 ft/ft
Velocity	4.17 ft/s
Velocity Head	0.27 ft
Specific Energy	0.65 ft
Froude Number	1.62
Flow Type	supercritical

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

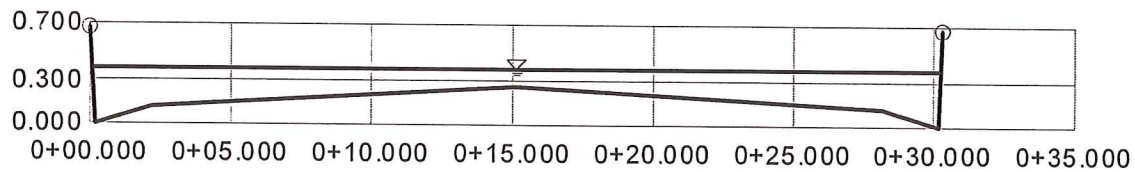
Cross Section for Irregular Channel

Project Description

Worksheet	Goldenseal/Bur
Flow Element	Irregular Chann
Method	Manning's Forr
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.019
Slope	0.024000 ft/ft
Water Surface Elev.	0.38 ft
Elevation Range	.00 to 0.67
Discharge	26.00 cfs



V:5.0
H:1
NTS

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Burdock PI
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	0.034000 ft/ft
Discharge	5.00 cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting	Improved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Manning's Coefficient	0.019
Water Surface Elev.	0.24 ft
Elevation Range	0.00 to 0.67
Flow Area	2.0 ft ²
Wetted Perimeter	26.377 ft
Top Width	25.996 ft
Actual Depth	0.24 ft
Critical Elevation	0.27 ft
Critical Slope	0.011752 ft/ft
Velocity	2.55 ft/s
Velocity Head	0.10 ft
Specific Energy	0.34 ft
Froude Number	1.64
Flow Type	Subcritical

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Manning's Coefficient
0+00.000	0+30.334	0.019

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

Cross Section

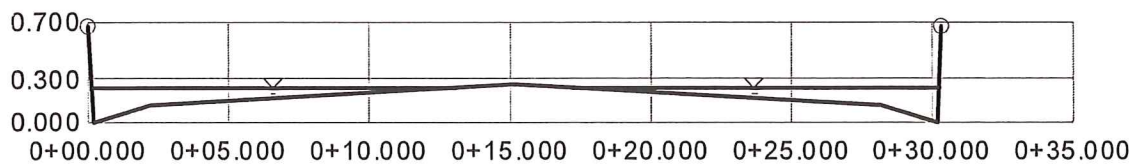
Cross Section for Irregular Channel

Project Description

Worksheet	Burdock PI
Flow Element	Irregular Chanl
Method	Manning's Forr
Solve For	Channel Depth

Section Data

Mannings Coefficient	0.019
Slope	0.034000 ft/ft
Water Surface Elev.	0.24 ft
Elevation Range	.00 to 0.67
Discharge	5.00 cfs



V:5.0
H:1
NTS

Worksheet

Worksheet for Irregular Channel

Project Description	
Worksheet	Firethorn Dr
Flow Element	Irregular Chan
Method	Manning's Forr
Solve For	Channel Depth

Input Data	
Slope	013200 ft/ft
Discharge	2.00 cfs

Options	
Current Roughness Method	aved Lotter's Method
Open Channel Weighting	aved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.019
Water Surface Elev.	0.21 ft
Elevation Range	.00 to 0.67
Flow Area	1.4 ft²
Wetted Perimeter	21.677 ft
Top Width	21.333 ft
Actual Depth	0.21 ft
Critical Elevation	0.21 ft
Critical Slope	0.013365 ft/ft
Velocity	1.44 ft/s
Velocity Head	0.03 ft
Specific Energy	0.25 ft
Froude Number	0.99
Flow Type	Subcritical

Calculation Messages:
Flow is divided.

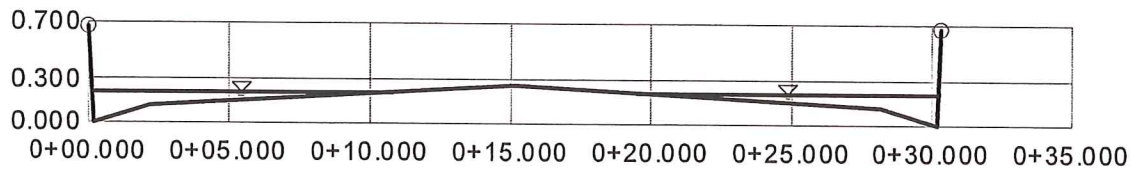
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.000	0+30.334	0.019

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.000	0.670
0+00.167	0.000
0+02.167	0.125
0+15.167	0.260
0+28.167	0.125
0+30.167	0.000
0+30.334	0.670

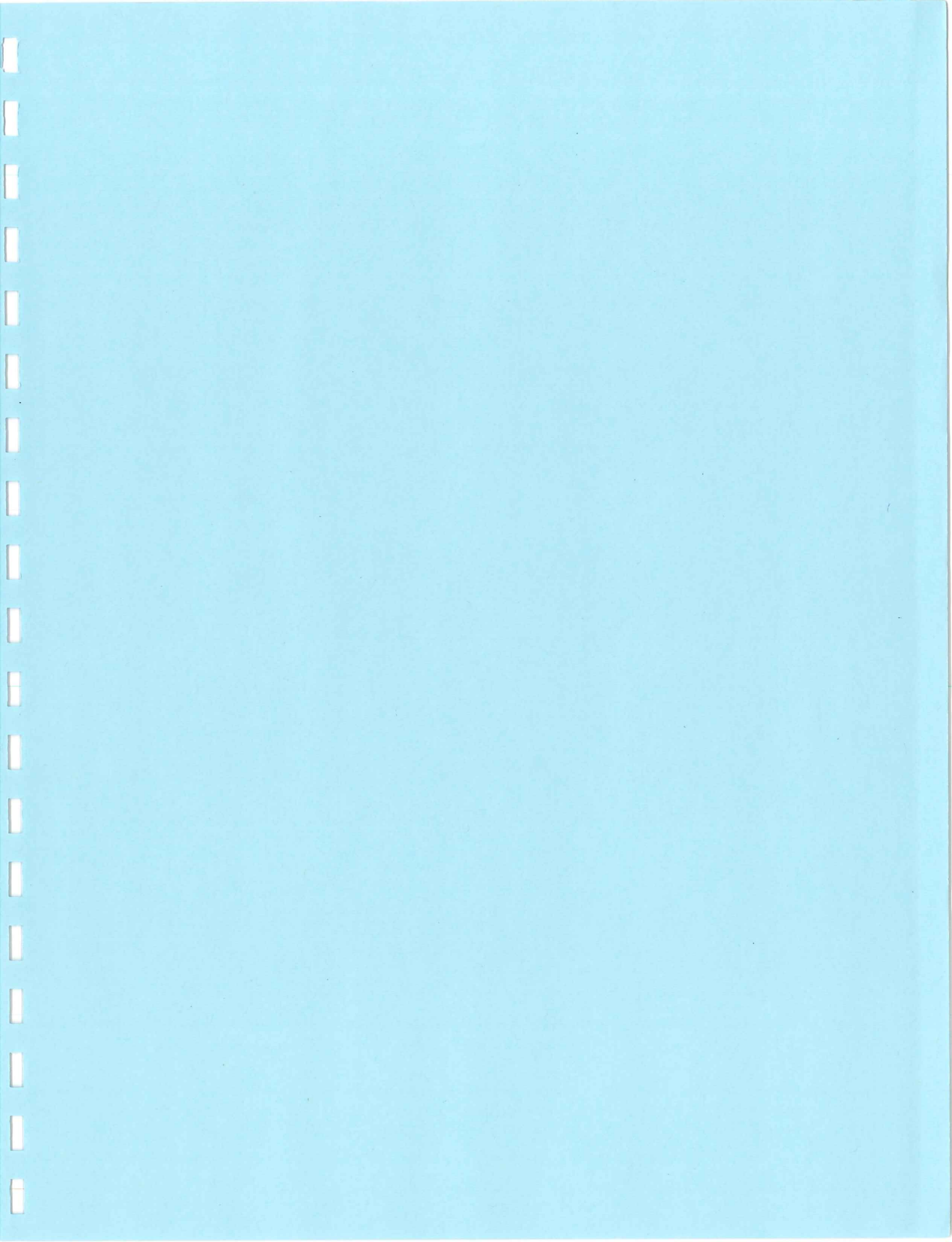
Cross Section Cross Section for Irregular Channel

Project Description	
Worksheet	Firethorn Dr
Flow Element	Irregular Chan
Method	Manning's For
Solve For	Channel Depth

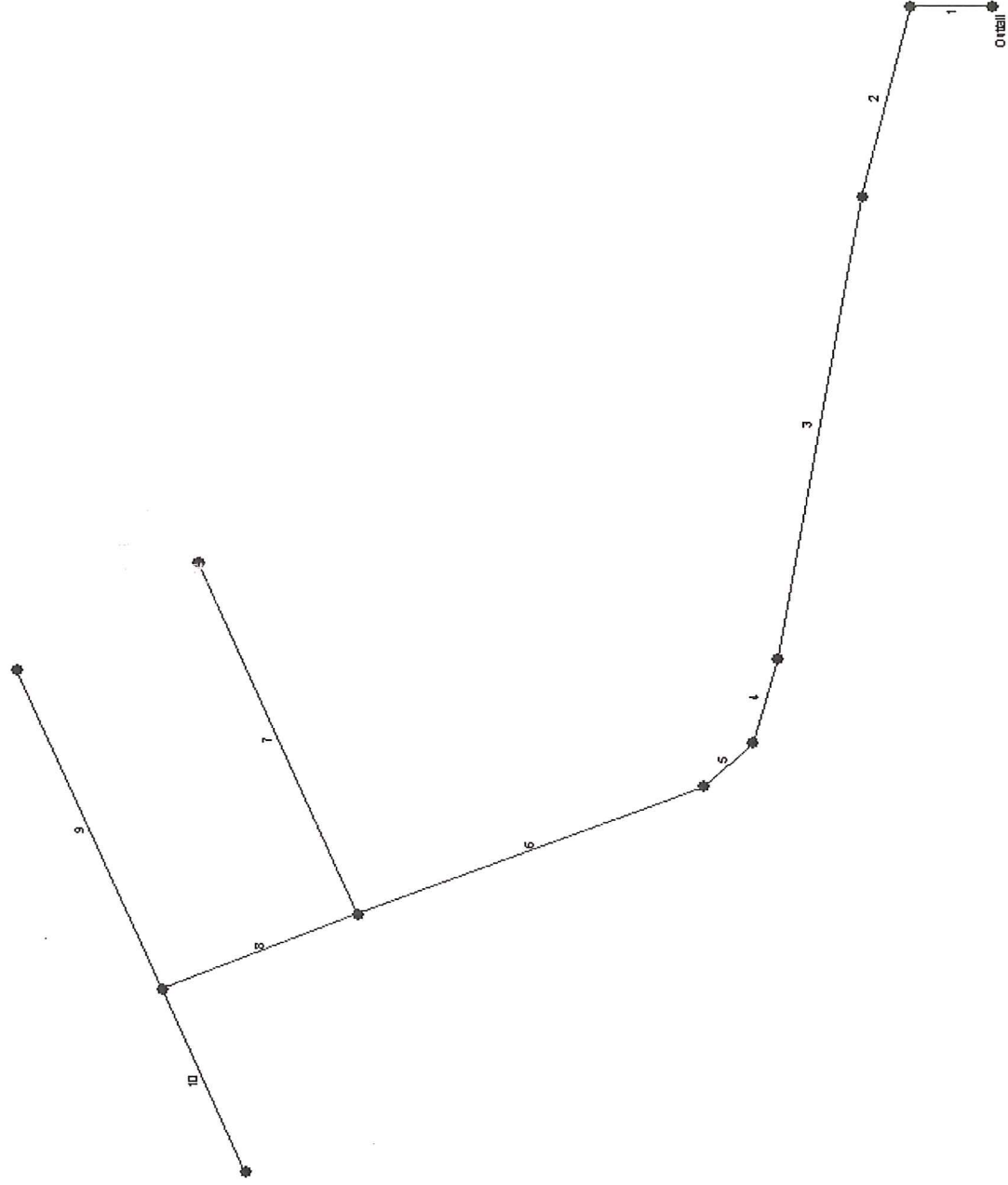
Section Data	
Mannings Coefficient	0.019
Slope	0.013200 ft/ft
Water Surface Elev.	0.21 ft
Elevation Range	.00 to 0.67
Discharge	2.00 cfs



V:5.0
H:1
NTS



Hydraflow Plan View



LA CUENTISTA UNIT II - SD

No. Lines: 10

01-17-2007

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)		
1	54	142.0	5298.00	5301.42	3.42	12.96	10.95	1.87	5303.28	0.609	72.6	5301.39	5304.81	3.42**	12.96	10.95	1.87	5306.67	0.609	0.609	n/a	0.98	1.83
2	48	63.00	5301.39	5306.28	4.00	12.56	5.01	0.39	5306.67	0.192	189	5301.59	5306.65	4.00	12.57	5.01	0.39	5307.04	0.192	0.192	0.363	0.15	0.06
3	42	63.00	5301.59	5306.71	3.50	9.62	6.55	0.67	5307.37	0.392	450	5306.42	5308.85	2.43**	7.13	8.83	1.21	5310.06	0.571	0.482	n/a	0.15	0.18
4	36	63.00	5306.42	5308.85	2.43	6.14	10.27	1.64	5310.49	0.911	84.0	5307.77	5310.30	2.53**	6.36	9.91	1.53	5311.83	0.850	0.881	n/a	0.57	n/a
5	36	63.00	5308.27	5310.59	2.32	5.87	10.74	1.79	5312.38	1.002	60.0	5309.57	5312.10	2.53**	6.36	9.91	1.53	5313.63	0.850	0.926	n/a	0.43	n/a
6	30	39.00	5309.57	5312.64	2.50	4.91	7.95	0.98	5313.63	0.905	330	5323.56	5325.65	2.09**	4.38	8.91	1.23	5326.88	0.876	0.890	n/a	1.00	1.23
7	24	10.00	5323.56	5326.72	2.00	3.14	3.18	0.16	5326.88	0.196	365	5324.17	5327.44	2.00	3.14	3.18	0.16	5327.59	0.195	0.196	0.713	1.00	0.16
8	30	18.00	5323.56	5326.67	2.50	4.91	3.67	0.21	5326.88	0.193	188	5332.53	5333.95	1.42**	2.87	6.27	0.61	5334.56	0.509	0.351	n/a	1.00	0.61
9	24	16.00	5332.53	5334.53	2.00*	3.14	5.09	0.40	5334.93	0.501	332	5333.00	5336.19	2.00	3.14	5.09	0.40	5336.60	0.500	0.501	1.663	1.00	0.40
10	24	2.00	5332.53	5334.55	2.00	3.14	0.64	0.01	5334.56	0.008	190	5332.07	5334.57	2.00	3.14	0.64	0.01	5334.57	0.008	0.008	0.015	1.00	0.01

LA CUENTISTA UNIT II - SD

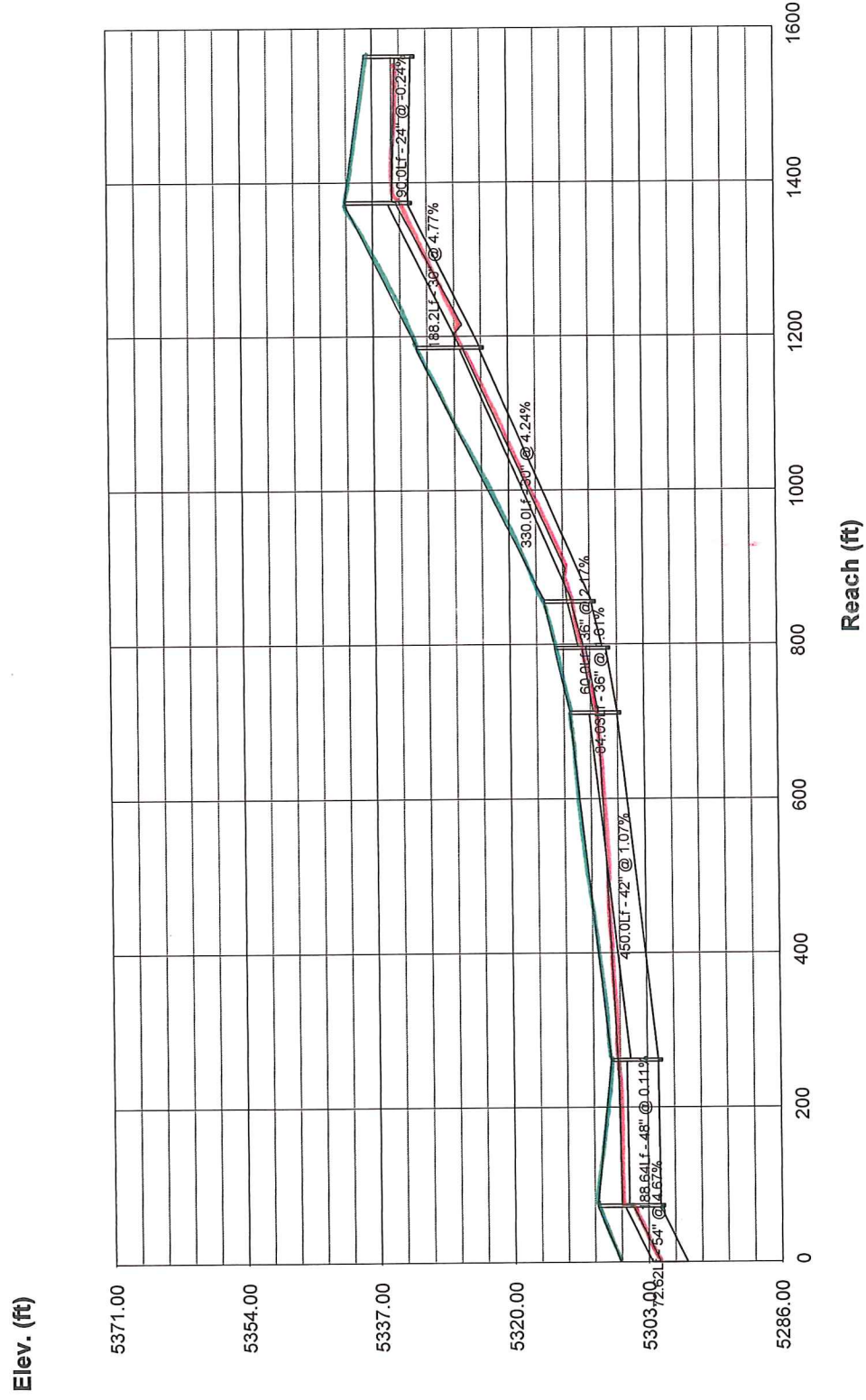
Number of lines: 10

Run Date: 01-17-2007

Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump.

Storm Sewer Profile

Proj. file: ONSITE LA CUENTISTA II-SD_W_UNIT II.stm

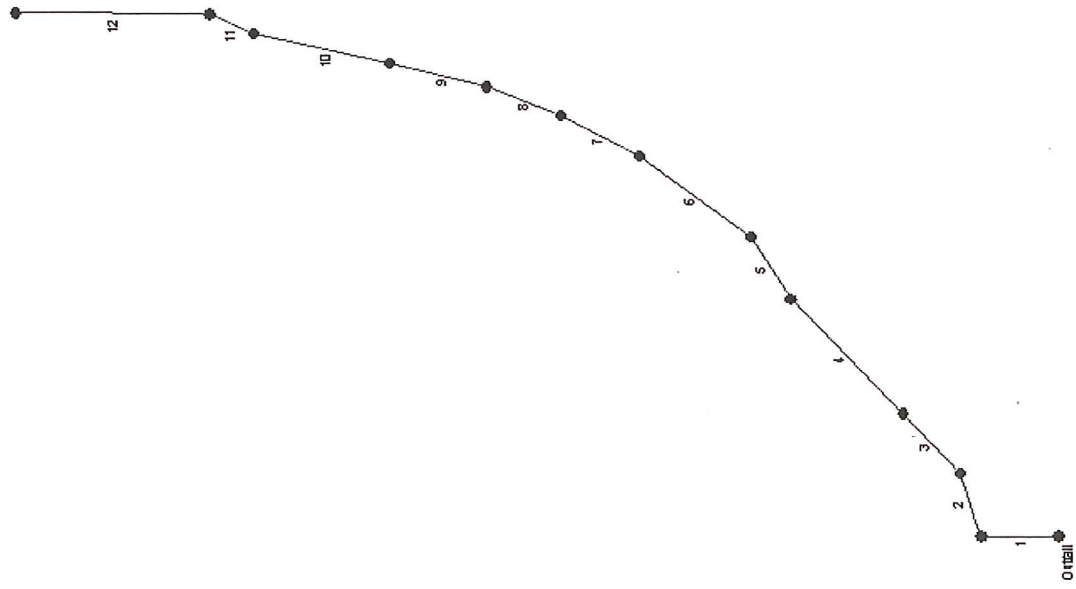


Storm Sewer Summary Report

Page 1

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1		142.0	54 c	72.6	5298.00	5301.39	4.668	5301.42	5304.81	1.83	5304.81	End
2		63.00	48 c	188.6	5301.39	5301.59	0.106	5306.28*	5306.65*	0.06	5306.71	1
3		63.00	42 c	450.0	5301.59	5306.42	1.073	5306.71	5308.85	0.18	5308.85	2
4		63.00	36 c	84.0	5306.42	5307.77	1.607	5308.85	5310.30	n/a	5310.30	3
5		63.00	36 c	60.0	5308.27	5309.57	2.166	5310.59	5312.10	n/a	5312.10	4
6		39.00	30 c	330.0	5309.57	5323.56	4.239	5312.64	5325.65	n/a	5325.65	5
7		10.00	24 c	364.6	5323.56	5324.17	0.167	5326.72*	5327.44*	0.16	5327.59	6
8		18.00	30 c	188.2	5323.56	5332.53	4.766	5326.67	5333.95	n/a	5333.95	6
9		16.00	24 c	332.2	5332.53	5333.00	0.142	5334.53*	5336.19*	0.40	5336.60	8
10		2.00	24 c	190.0	5332.53	5332.07	-0.242	5334.55*	5334.57*	0.01	5334.57	8
LA CUENTISTA UNIT II - SD							Number of lines: 10			Run Date: 01-17-2007		
NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.												

Hydraflow Plan View



LA CUENTISTA II- SD BURDOCK

No. Lines: 12

01-17-2007

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream								Len (ft)	Upstream								Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)		
1	54	125.0	5298.00	5301.21	3.21	12.13	10.31	1.65	5302.86	0.550	72.6	5301.39	5304.60	3.21**	12.13	10.31	1.65	5306.25	0.550	0.550	n/a	0.97	n/a
2	36	63.00	5301.39	5305.01	3.00	7.07	8.91	1.24	5306.25	0.893	66.3	5302.28	5305.61	3.00	7.07	8.91	1.24	5306.84	0.892	0.893	0.591	0.48	0.59
3	36	61.00	5302.28	5306.28	3.00	7.07	8.63	1.16	5307.43	0.837	80.0	5303.08	5306.95	3.00	7.07	8.63	1.16	5308.10	0.837	0.837	0.669	0.15	0.17
4	36	47.00	5303.08	5307.59	3.00	7.07	6.65	0.69	5308.28	0.497	154	5304.12	5308.36	3.00	7.07	6.65	0.69	5309.04	0.497	0.497	0.766	0.24	0.16
5	36	42.00	5304.12	5308.66	3.00	7.07	5.94	0.55	5309.21	0.397	72.7	5304.75	5308.95	3.00	7.07	5.94	0.55	5309.50	0.397	0.397	0.288	0.42	0.23
6	36	42.00	5304.75	5309.18	3.00	7.07	5.94	0.55	5309.73	0.397	130	5305.70	5309.70	3.00	7.07	5.94	0.55	5310.24	0.397	0.397	0.518	0.19	0.10
7	36	42.00	5305.70	5309.80	3.00	7.07	5.94	0.55	5310.35	0.397	84.3	5306.37	5310.13	3.00	7.07	5.94	0.55	5310.68	0.397	0.397	0.334	0.15	0.08
8	36	42.00	5306.37	5310.22	3.00	7.07	5.94	0.55	5310.77	0.397	74.0	5307.25	5310.51	3.00	7.07	5.94	0.55	5311.06	0.397	0.397	0.294	0.17	0.09
9	30	30.00	5307.77	5310.60	2.50	4.91	6.11	0.58	5311.19	0.535	93.4	5308.84	5310.96	2.12	4.44	6.75	0.71	5311.67	0.505	0.520	0.486	0.15	0.11
10	24	4.00	5309.37	5311.70	2.00	3.14	1.27	0.03	5311.72	0.031	130	5310.56	5311.72	1.16	1.90	2.11	0.07	5311.79	0.076	0.054	0.070	0.26	0.02
11	24	4.00	5310.56	5311.74	1.18	1.93	2.07	0.07	5311.81	0.073	45.6	5310.71	5311.76	1.05	1.67	2.40	0.09	5311.85	0.107	0.090	0.041	0.48	0.04
12	24	4.00	5310.71	5311.87	1.16	1.88	2.13	0.07	5311.94	0.078	180	5315.22	5315.93	0.71**	1.00	4.02	0.25	5316.18	0.433	0.255	n/a	1.00	0.25
LA CUENTISTA II- SD BURDOCK			Number of lines: 12															Run Date: 01-17-2007					

LA CUENTISTA II- SD BURDOCK

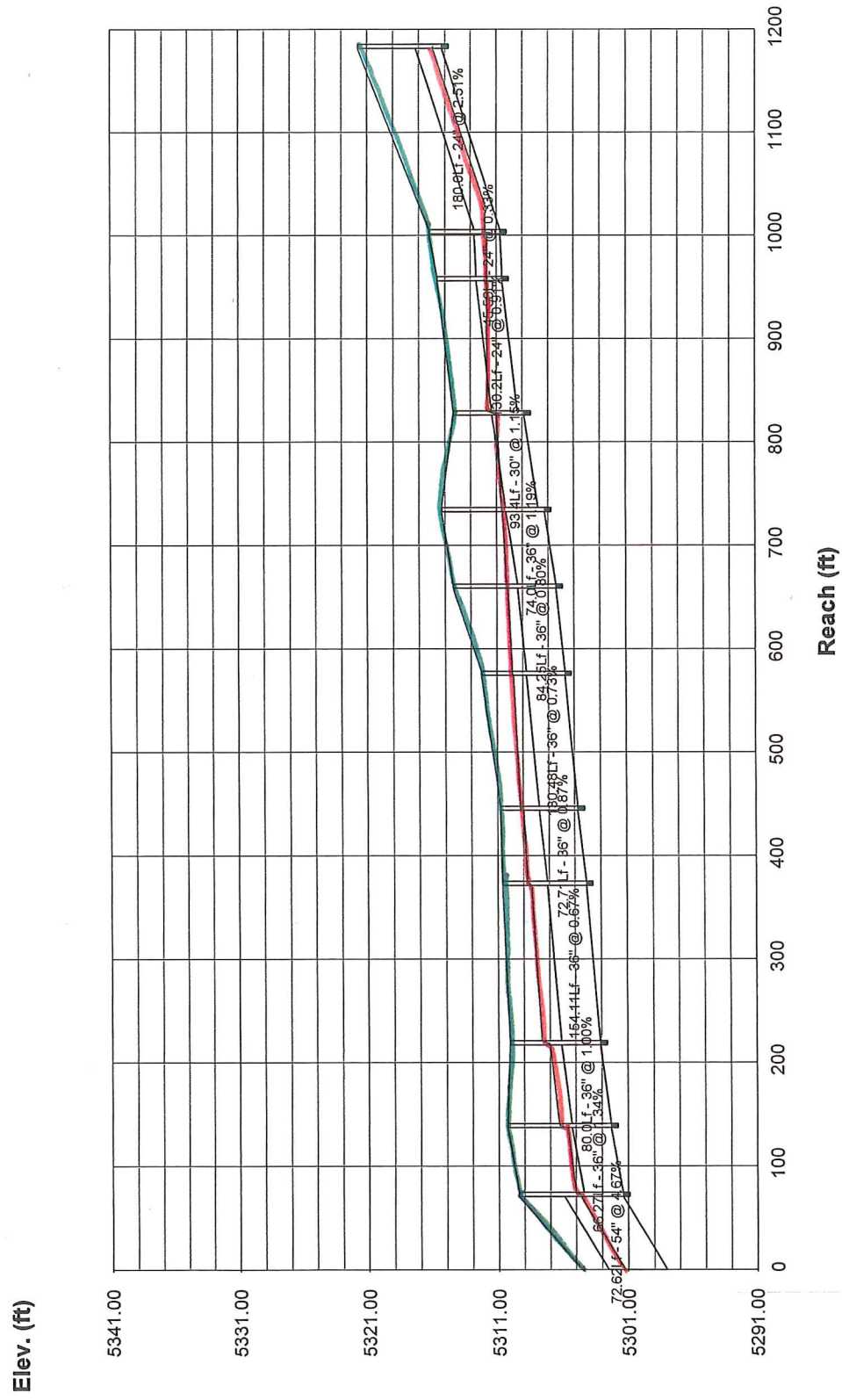
Number of lines: 12

Run Date: 01-17-2007

Notes: ; ** Critical depth.; j-Line contains hyd. jump.

Storm Sewer Profile

Proj. file: ONSITE LA CUENTISTA II-SD_E_UNIT II.stm



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