Drainage Report

for

LA CUENTISTA SUBDIVISION – Unit III

A Supplement to the
Drainage Report for La Cuentista Subdivision
Dated November 2003
&
Drainage Report for La Cuentista Subdivision
Unit II
Dated January 2007

Prepared by:

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

April 2008
WCI File No: 0760002100

WILSON
& COMPANY

CITY OF ALBUQUERQUE

WILSON & COMPANY, INC
RIO RANCHO, NM

May 19, 2008

Brigitte Fuller, P.E.
Wilson & Company, Inc.
4900 Lang Ave NE
Rio Rancho, NM 87124

Re: La Cuentista Unit III Drainage Report and Grading Plan
Engineer's Stamp dated 4-18-08 (D10/D002A)

Dear Mr. Salazar,

Based upon the information provided in your submittal received 4-25-08, the above referenced plan is approved for Preliminary Plat action by the DRB and Work Order. Once that board approves the Grading Plan, please submit a mylar copy for signature in order to obtain a Rough Grading Permit.

Inlets are required on Willowleaf PL to prevent runoff from leaving the street where Willowleaf PL meets Woodbine Rd.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file
Brad Bingham

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

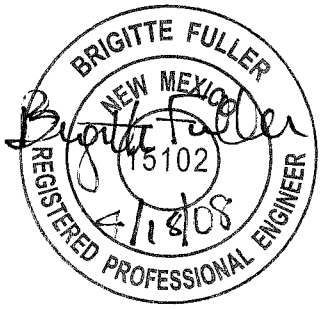
Drainage Report

for

LA CUENTISTA SUBDIVISION – Unit III

A Supplement to the
Drainage Report for La Cuentista Subdivision
Dated November 2003
&
Drainage Report for La Cuentista Subdivision – Unit II
Dated January 2007

Prepared by:



Brigitte Fuller, PE
NM #15102

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

April 2008
WCI File No: 0760002100

Table of Contents

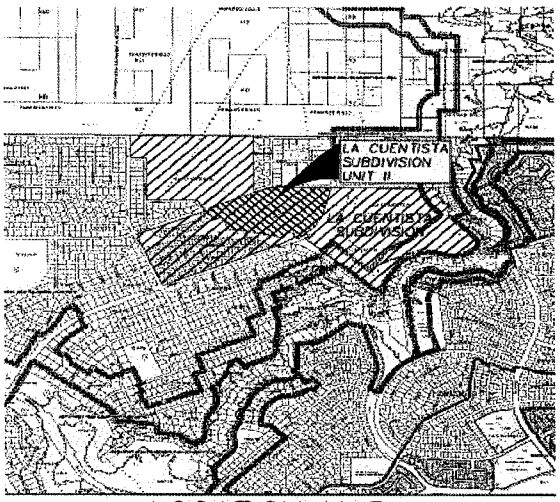
Summary

La Cuentista Subdivision - Unit III (Unit III), a residential development, is identified as Tract D and is the third of five bulk land tracts which collectively comprise La Cuentista Subdivision. The 21.628 acres of Unit III are approximately 10.8% 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 and the approved "Drainage Report for La Cuentista Subdivision-Unit II" dated January 2007 by Wilson & Company, Inc., provides supplemental changes to the original "Drainage Report for La Cuentista Subdivision."

Drainage

Proposed Conditions.

Unit III is a portion of Basin 214 as seen on the revised La Cuentista Subdivision - Proposed Conditions Drainage Basin Map (Plate 2) found in the approved Drainage Report for La Cuentista Subdivision Unit II dated January 2007 and included herein as Plate 2. This basin is designated to ultimately discharge into the Mariposa Channel. The proposed Pond 8, located on Tract E, east of Tract D and to be constructed as part of Unit III development, will discharge an allowable 106 cfs through the Petroglyph National Monument and into the Mariposa Channel.



LOCATION MAP
ZONE ATLAS MAP NO. C-10, C-11

As noted in the approved "Drainage Report for La Cuentista Subdivision Unit II", developed flows from Basin 301 and 302 are collected in Pond 6 to be located north of Rosa Parks Road, with 117 cfs then routed through Basin 214 into Pond 8. The 117 cfs includes flows from Tierra Buena Estates, located north of Basin 214.

Unit III Proposed Improvement.

The Proposed Conditions Drainage Basin Map (Plate 2) indicates that the maximum flow from Basin 214 into Pond 8 is 176.6 cfs. For design purposes for inlets and onsite storm drains, the flows from Unit III proportionately total approximately the 63.3 cfs of the 176.6 cfs. The 63.3 cfs is further proportionately distributed within Unit III based on sub-basin areas, while the remaining flows from Basin 214 will sheet flow into Pond 8. See Appendix A for Unit III hydrology and Sub-Basin Boundary Map.

Conclusion

The development of La Cuentista Subdivision Unit III has been analyzed in this report. The project's design will adhere to the requirements of the approved Drainage Report for La Cuentista Subdivision dated November 2003 and the approved Supplemental Drainage Report dated January 2007. All developed flows in Unit III, along with flows from Basins 301 and 302 routed through Basin 214, will be conveyed to Pond 8 and discharged at a controlled rate, using an appropriate outfall structure, through the Petroglyph National Monument and into the Mariposa Channel.

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	235.0	-139.7	MH	0.00	0.00	0.00	0.0	5271.00	1.28	5274.00	54	Cir	0.013	1.00	5284.32	
2	1	318.4	1.3	MH	0.00	0.00	0.00	0.0	5274.00	3.07	5283.76	48	Cir	0.013	0.15	5289.76	
3	2	233.7	0.0	MH	0.00	0.00	0.00	0.0	5283.76	1.95	5288.32	48	Cir	0.013	1.00	5294.32	(2)
4	3	326.6	90.0	MH	0.00	0.00	0.00	0.0	5288.32	2.85	5297.63	48	Cir	0.013	1.00	5309.00	
5	1	53.0	4.2	MH	2.51	0.00	0.00	0.0	5274.00	12.43	5280.59	18	Cir	0.013	0.15	5284.59	
6	1	58.0	-24.3	MH	2.76	0.00	0.00	0.0	5274.00	10.57	5280.13	18	Cir	0.013	0.47	5284.13	
7	3	53.5	4.2	MH	4.84	0.00	0.00	0.0	5288.32	4.80	5290.89	24	Cir	0.013	0.15	5294.89	
8	7	26.0	-5.4	MH	8.65	0.00	0.00	0.0	5290.89	1.46	5291.27	18	Cir	0.013	1.00	5295.27	
9	3	58.5	-24.2	MH	4.84	0.00	0.00	0.0	5288.32	4.39	5290.89	24	Cir	0.013	0.45	5294.89	
10	9	26.0	23.0	MH	8.65	0.00	0.00	0.0	5290.89	1.46	5291.27	18	Cir	0.013	1.00	5295.27	
11	4	165.6	-90.0	MH	0.00	0.00	0.00	0.0	5297.63	0.81	5298.97	48	Cir	0.013	0.25	5309.00	
12	11	129.0	12.3	MH	0.00	0.00	0.00	0.0	5298.97	0.80	5300.00	48	Cir	0.013	1.00	5306.62	
13	12	160.0	90.0	MH	0.00	0.00	0.00	0.0	5300.00	3.01	5304.81	48	Cir	0.013	0.27	5314.28	
14	13	450.0	-12.9	MH	0.00	0.00	0.00	0.0	5304.81	1.20	5310.19	48	Cir	0.013	0.31	5321.21	
15	14	126.0	-15.4	MH	0.00	0.00	0.00	0.0	5310.19	0.79	5311.18	48	Cir	0.013	1.00	5325.81	
16	15	141.0	-90.0	MH	0.00	0.00	0.00	0.0	5311.18	0.80	5312.31	48	Cir	0.013	0.15	5325.35	
17	16	230.8	0.0	MH	0.00	0.00	0.00	0.0	5312.31	0.80	5314.16	48	Cir	0.013	0.15	5321.81	
18	17	35.0	0.0	MH	0.00	0.00	0.00	0.0	5314.16	0.86	5314.46	48	Cir	0.013	0.43	5321.81	
19	18	30.3	22.3	MH	117.00	0.00	0.00	0.0	5314.46	0.13	5314.50	48	Cir	0.013	1.00	5319.50	
20	6	26.0	24.3	MH	6.69	0.00	0.00	0.0	5280.13	2.15	5280.69	18	Cir	0.013	1.00	5284.69	
21	5	26.0	-4.3	MH	7.15	0.00	0.00	0.0	5280.59	2.88	5281.34	18	Cir	0.013	1.00	5284.84	

LA CUENTISTA UNIT III

Number of lines: 24

Date: 04-17-2008

Storm Sewer Inventory Report

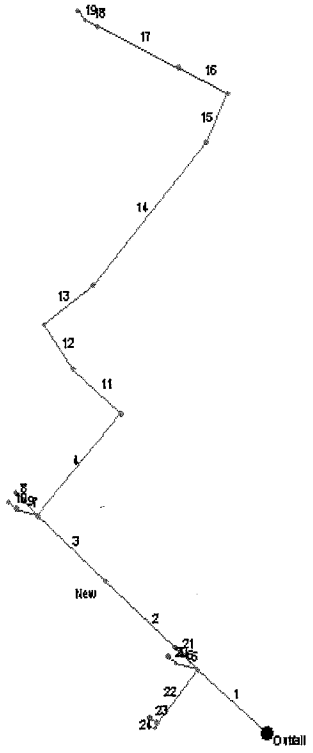
Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
22	1	163.6	-90.0	MH	0.00	0.00	0.00	0.0	5274.00	0.89	5275.45	30	Cir	0.013	0.99	5280.64	
23	22	23.0	79.8	MH	2.05	0.00	0.00	0.0	5275.45	6.26	5276.89	18	Cir	0.013	1.00	5280.89	
24	22	14.5	-14.9	MH	3.25	0.00	0.00	0.0	5275.45	8.55	5276.69	24	Cir	0.013	1.00	5280.69	

LA CUENTISTA UNIT III

Number of lines: 24

Date: 04-17-2008

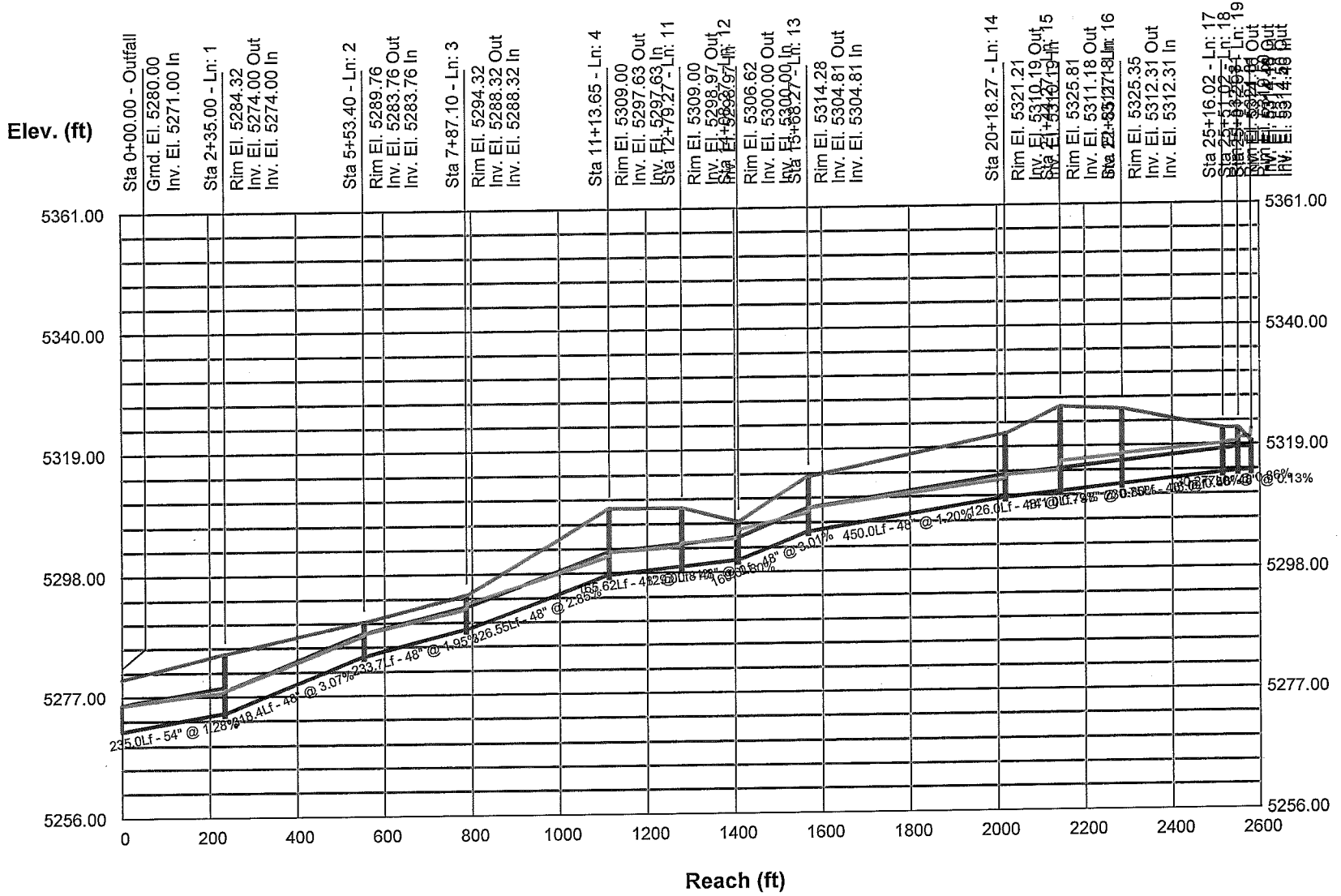
Hydraflow Plan View



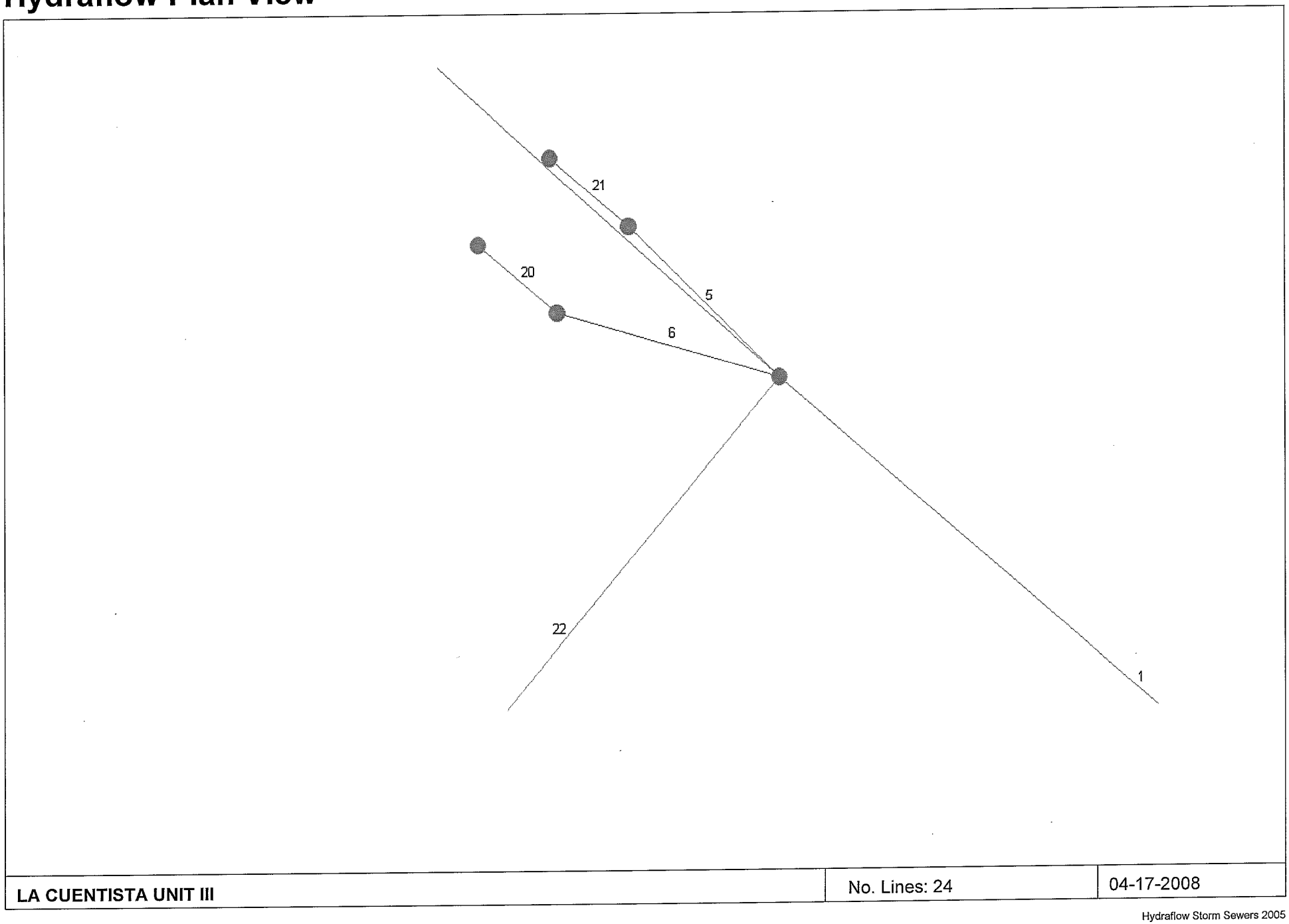
LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008

Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



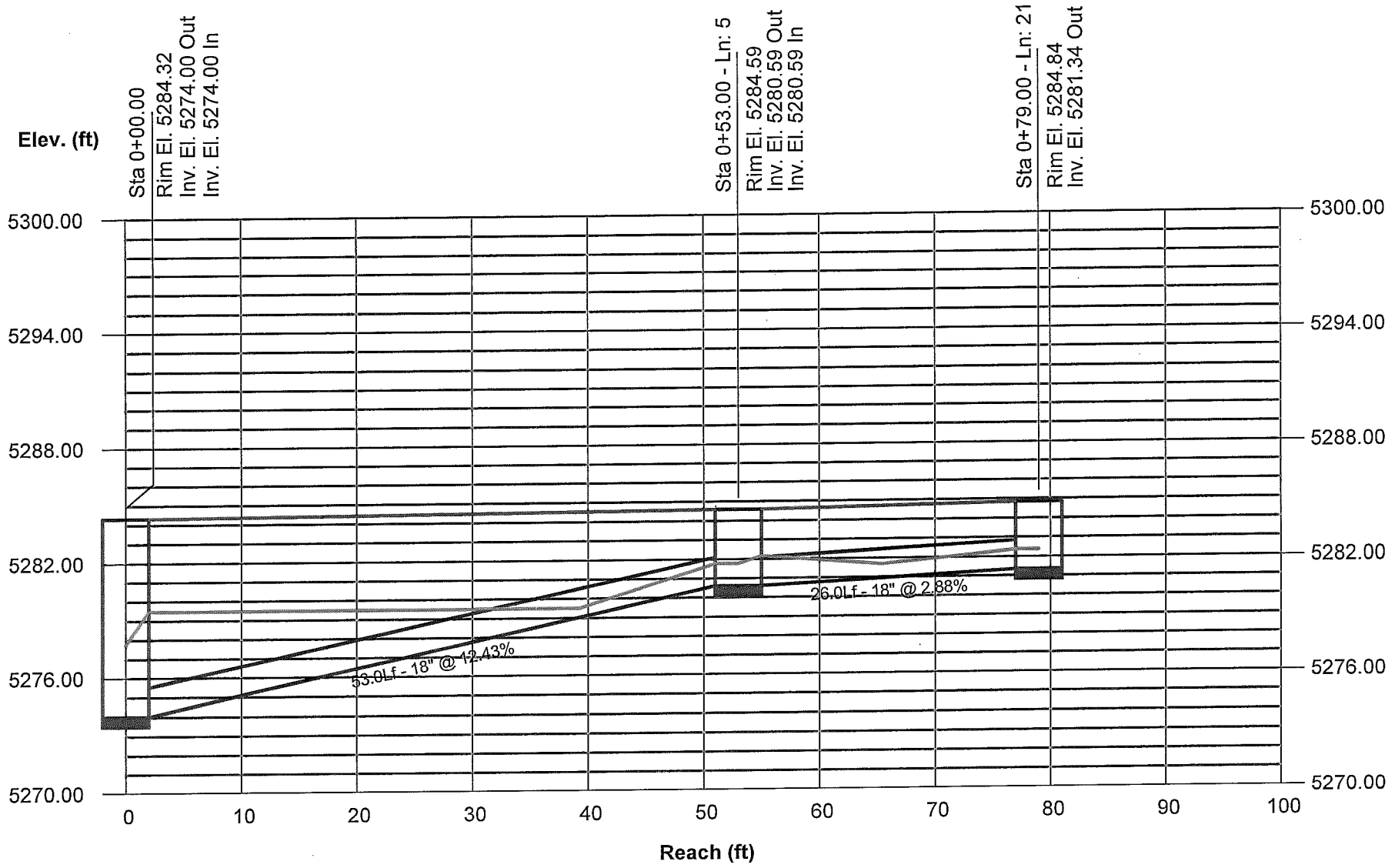
Hydraflow Plan View



LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008

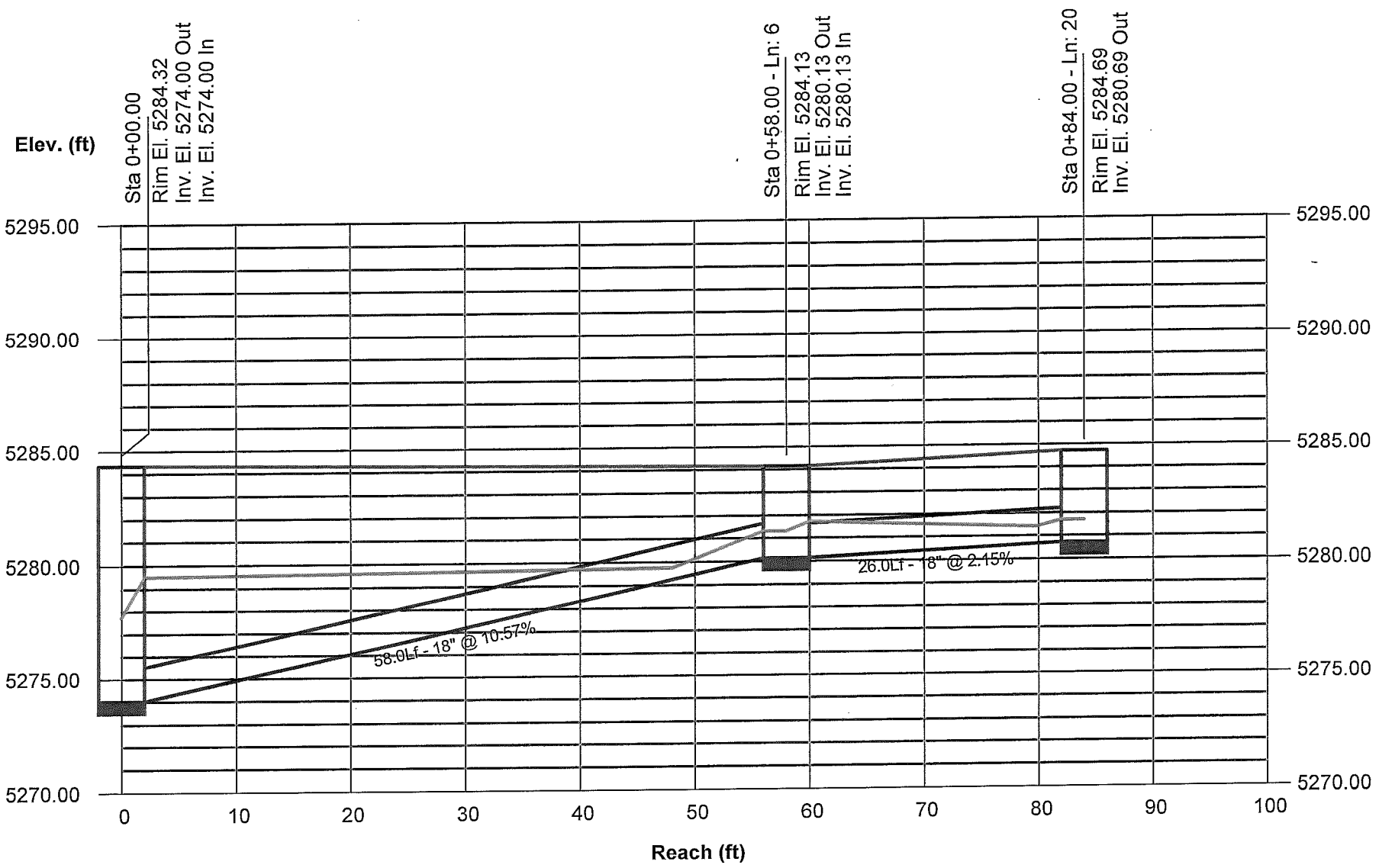
Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm

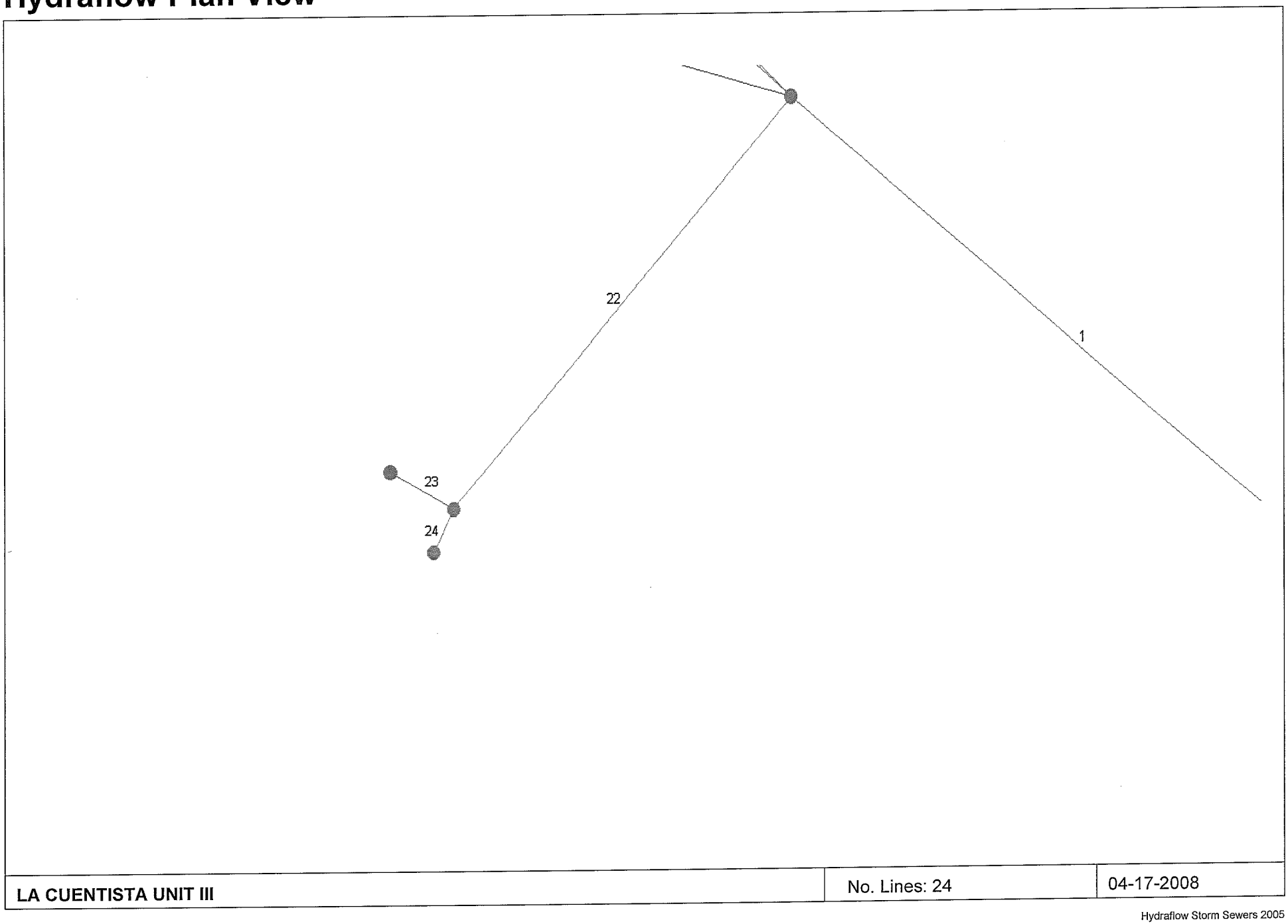


Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



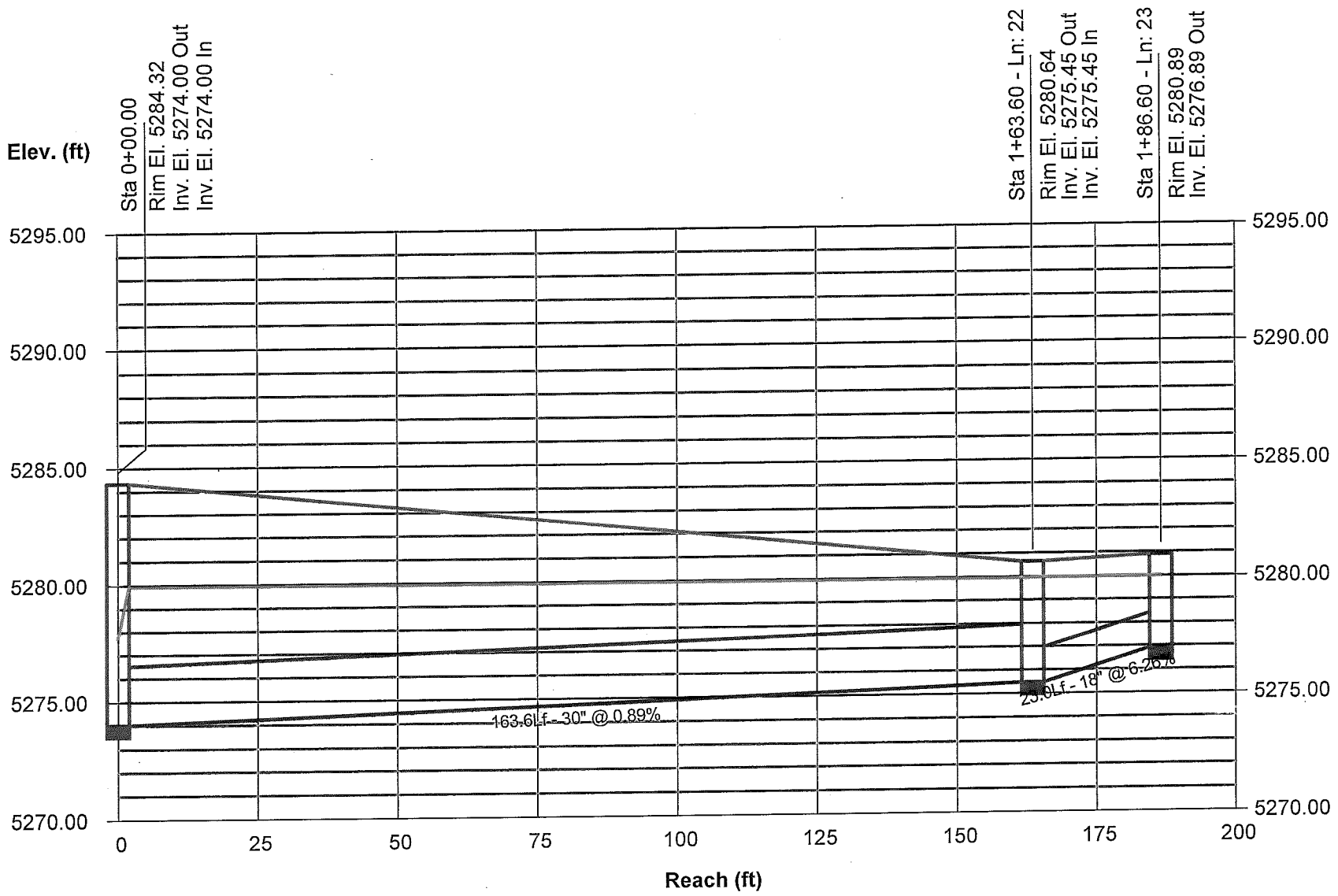
Hydraflow Plan View



LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008

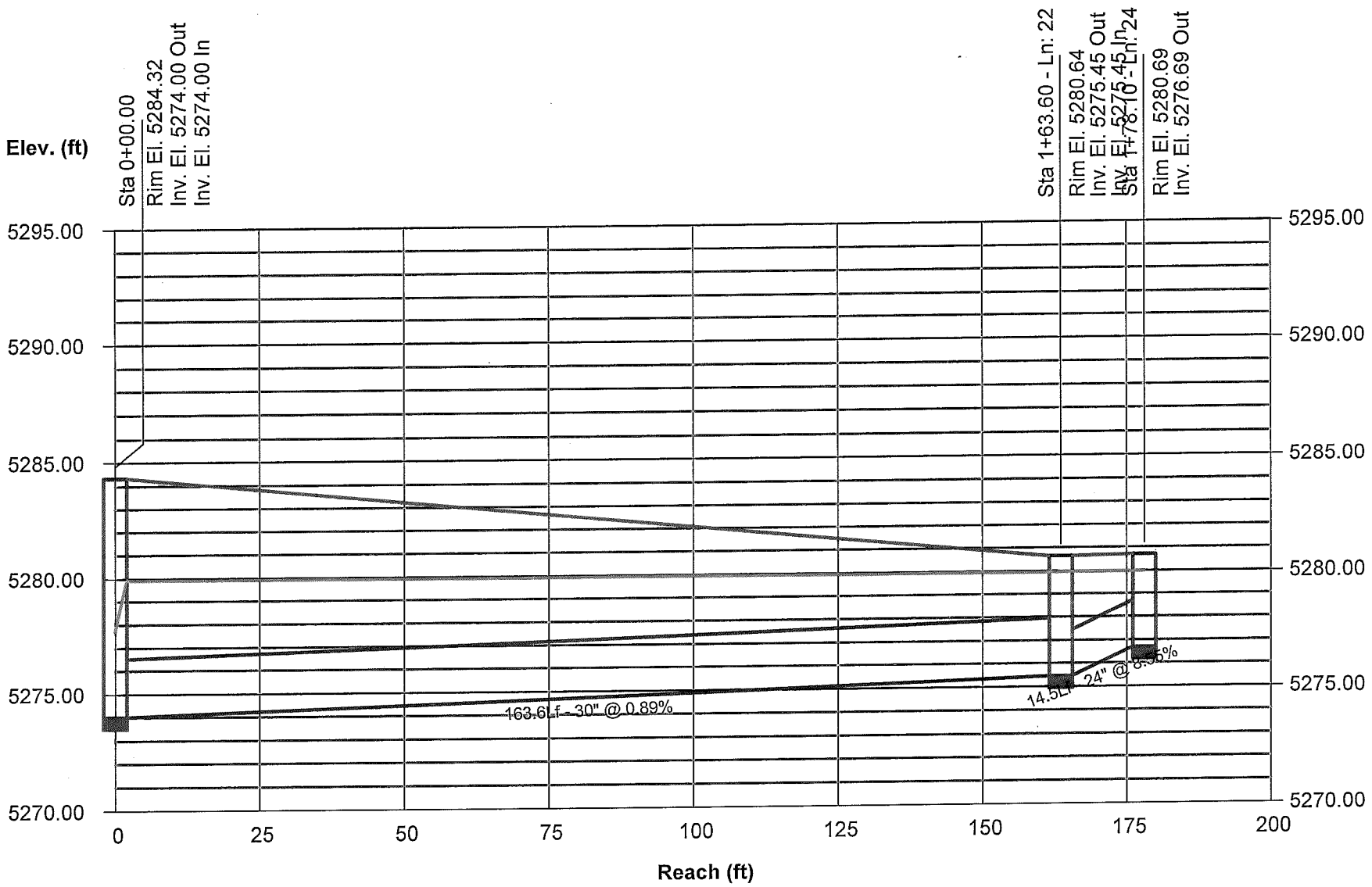
Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm

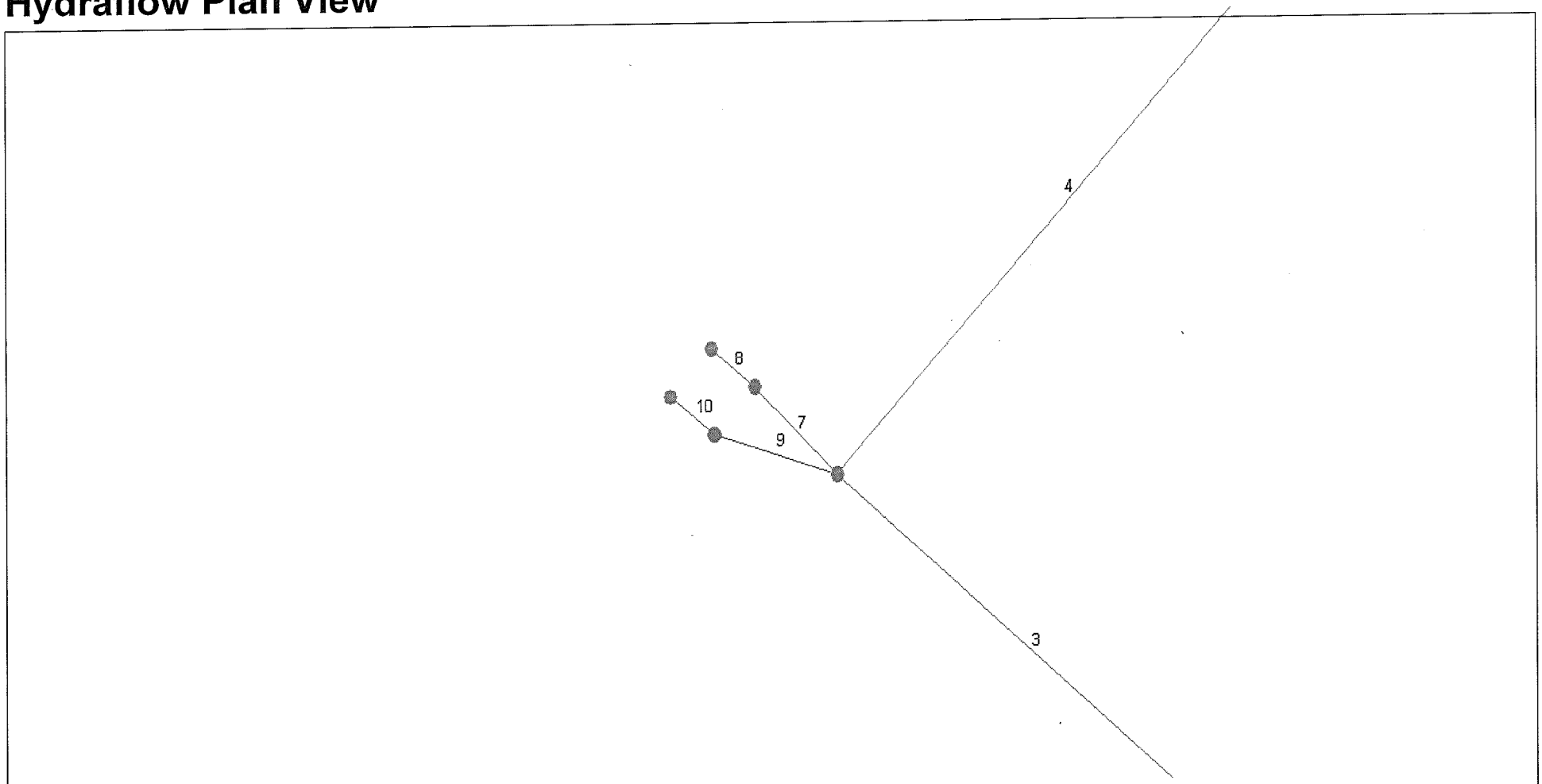


Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



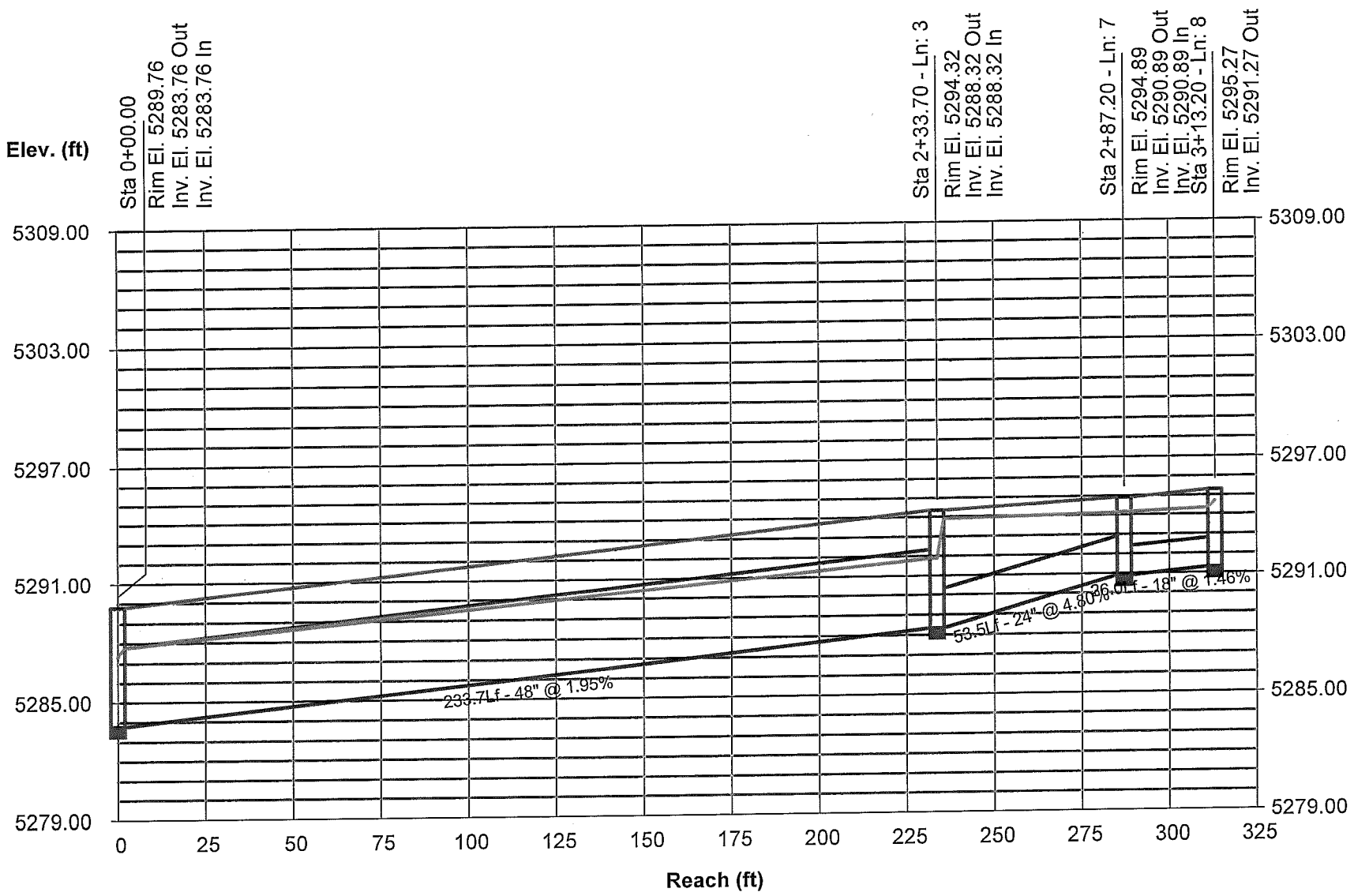
Hydraflow Plan View



LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008

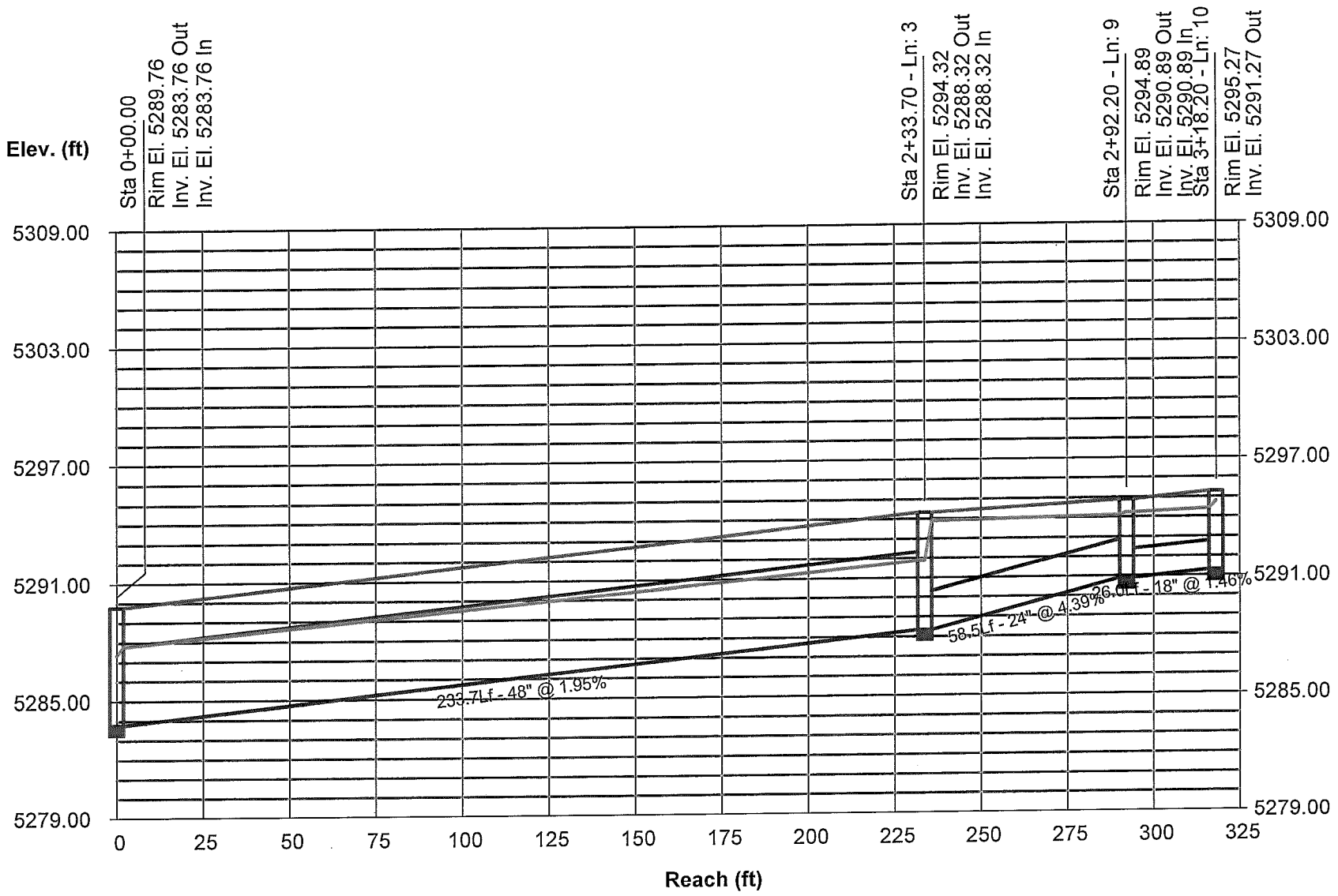
Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



Worksheet for Firethorn Dr

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00700	ft/ft
Discharge	11.54	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.36	ft
Elevation Range	0.00 to 0.67		
Flow Area		5.53	ft²
Wetted Perimeter		30.75	ft
Top Width		30.18	ft
Normal Depth		0.36	ft
Critical Depth		0.34	ft
Critical Slope		0.00980	ft/ft
Velocity		2.09	ft/s
Velocity Head		0.07	ft
Specific Energy		0.43	ft

Worksheet for Firethorn Dr

Results

Froude Number		0.86	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.34	ft
Channel Slope	0.00700	ft/ft
Critical Slope	0.00980	ft/ft

Cross Section for Firethorn Dr

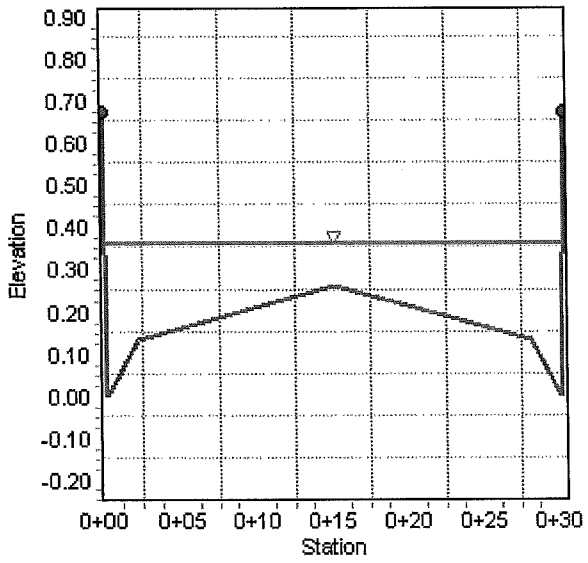
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00700	ft/ft
Normal Depth	0.36	ft
Discharge	11.54	ft^3/s

Cross Section Image



Worksheet for Maidenhair Pl

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00700	ft/ft
Discharge	16.63	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.40	ft
Elevation Range	0.00 to 0.67		
Flow Area		6.91	ft²
Wetted Perimeter		30.84	ft
Top Width		30.20	ft
Normal Depth		0.40	ft
Critical Depth		0.39	ft
Critical Slope		0.00907	ft/ft
Velocity		2.41	ft/s
Velocity Head		0.09	ft
Specific Energy		0.49	ft

Worksheet for Maidenhair Pl

Results

Froude Number	0.89	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.40	ft
Critical Depth	0.39	ft
Channel Slope	0.00700	ft/ft
Critical Slope	0.00907	ft/ft

Cross Section for Maidenhair Pl

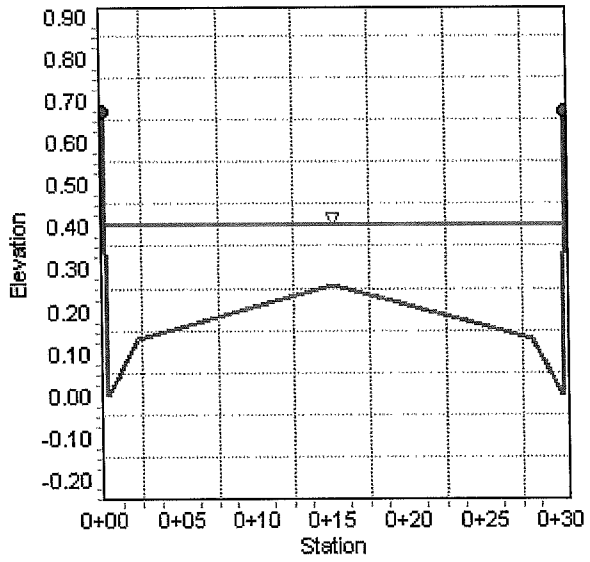
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00700	ft/ft
Normal Depth	0.40	ft
Discharge	16.63	ft^3/s

Cross Section Image



Worksheet for Meadowsweet Pl

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00700	ft/ft
Discharge	11.48	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.36	ft
Elevation Range	0.00 to 0.67		
Flow Area		5.51	ft^2
Wetted Perimeter		30.75	ft
Top Width		30.18	ft
Normal Depth		0.36	ft
Critical Depth		0.34	ft
Critical Slope		0.00982	ft/ft
Velocity		2.08	ft/s
Velocity Head		0.07	ft
Specific Energy		0.43	ft

Worksheet for Meadowsweet Pl

Results

Froude Number	0.86	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.34	ft
Channel Slope	0.00700	ft/ft
Critical Slope	0.00982	ft/ft

Cross Section for Meadowsweet Pl

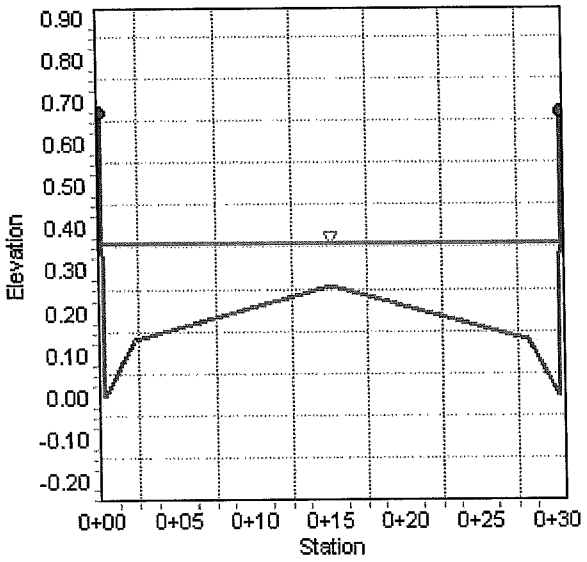
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00700	ft/ft
Normal Depth	0.36	ft
Discharge	11.48	ft^3/s

Cross Section Image



Worksheet for Privet Court

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03000	ft/ft
Discharge	16.63	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.32	ft
Elevation Range	0.00 to 0.67		
Flow Area		4.44	ft²
Wetted Perimeter		30.67	ft
Top Width		30.16	ft
Normal Depth		0.32	ft
Critical Depth		0.39	ft
Critical Slope		0.00907	ft/ft
Velocity		3.74	ft/s
Velocity Head		0.22	ft
Specific Energy		0.54	ft

Worksheet for Privet Court

Results

Froude Number	1.72	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.32	ft
Critical Depth	0.39	ft
Channel Slope	0.03000	ft/ft
Critical Slope	0.00907	ft/ft

Cross Section for Privet Court

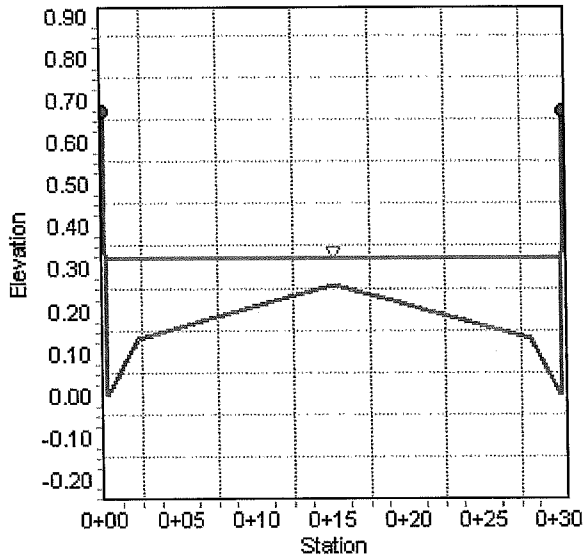
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03000	ft/ft
Normal Depth	0.32	ft
Discharge	16.63	ft³/s

Cross Section Image



Worksheet for Willowleaf Pl

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Discharge	23.83	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.45	ft
Elevation Range	0.00 to 0.67		
Flow Area		8.23	ft^2
Wetted Perimeter		30.93	ft
Top Width		30.22	ft
Normal Depth		0.45	ft
Critical Depth		0.44	ft
Critical Slope		0.00841	ft/ft
Velocity		2.90	ft/s
Velocity Head		0.13	ft
Specific Energy		0.58	ft

Worksheet for Willowleaf PI

Results

Froude Number	0.98	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.45	ft
Critical Depth	0.44	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00841	ft/ft

Cross Section for Willowleaf Pl

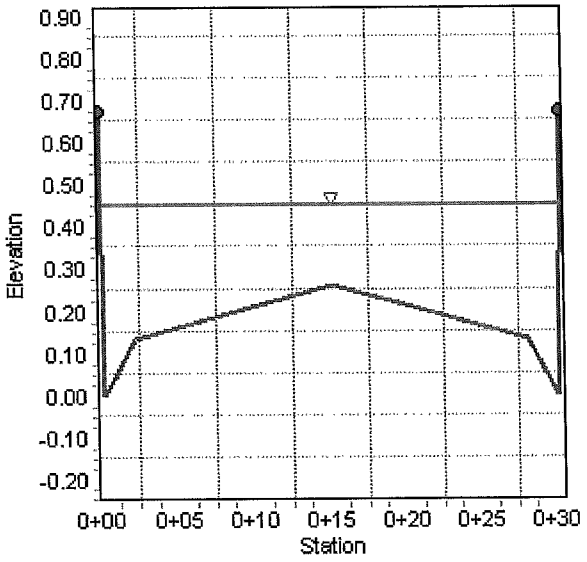
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Normal Depth	0.45	ft
Discharge	23.83	ft^3/s

Cross Section Image



Worksheet for Woodbine Rd

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Discharge	16.63	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.39	ft
Elevation Range	0.00 to 0.67		
Flow Area		6.62	ft²
Wetted Perimeter		30.82	ft
Top Width		30.20	ft
Normal Depth		0.39	ft
Critical Depth		0.39	ft
Critical Slope		0.00907	ft/ft
Velocity		2.51	ft/s
Velocity Head		0.10	ft
Specific Energy		0.49	ft

Worksheet for Woodbine Rd

Results

Froude Number	0.95	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.39	ft
Critical Depth	0.39	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00907	ft/ft

Cross Section for Woodbine Rd

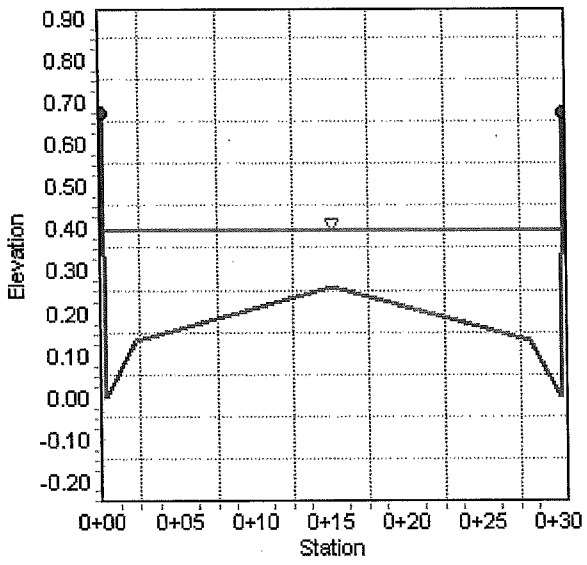
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

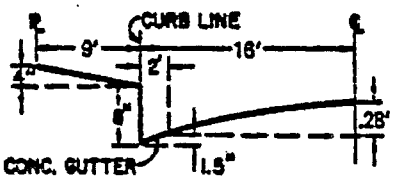
Channel Slope	0.00800	ft/ft
Normal Depth	0.39	ft
Discharge	16.63	ft^3/s

Cross Section Image

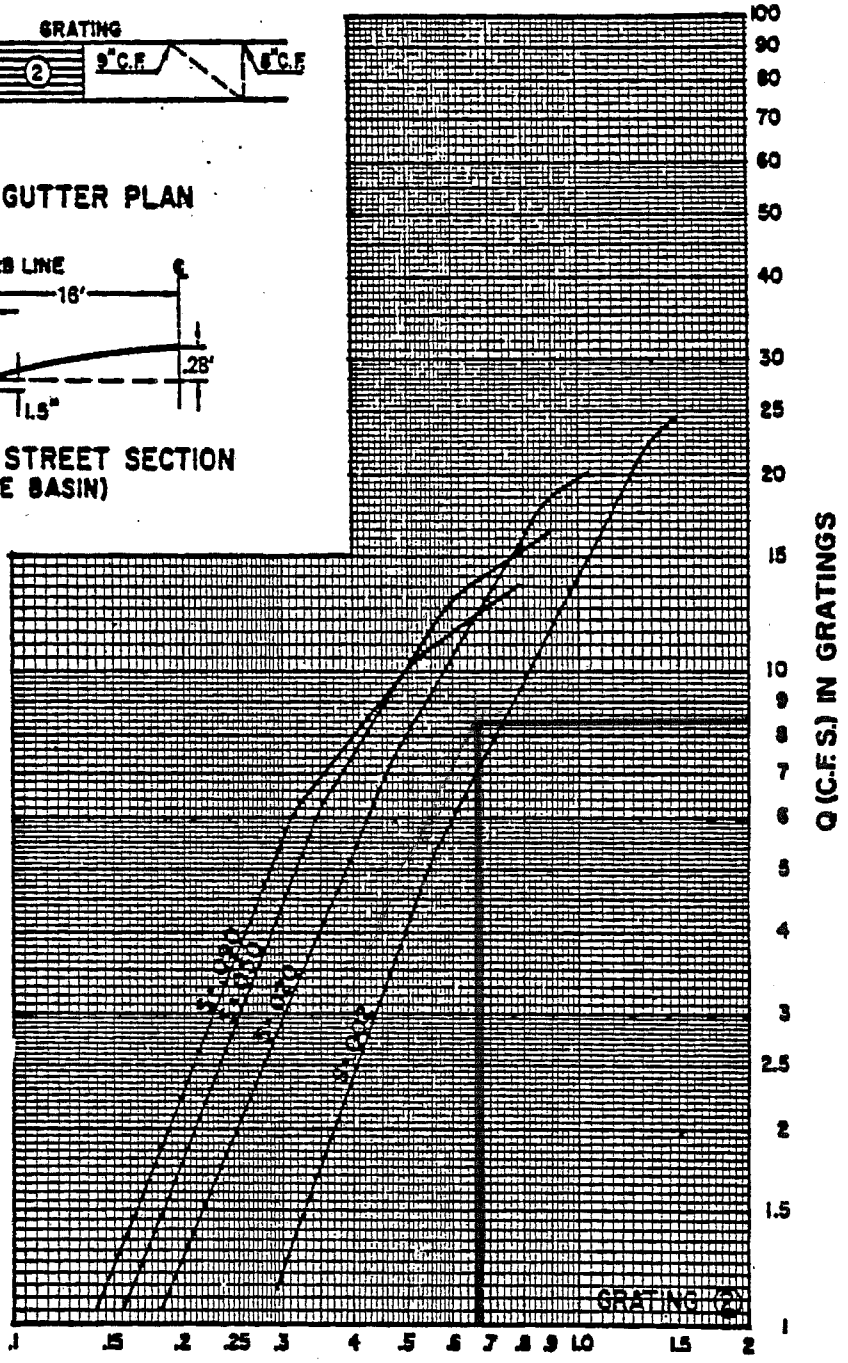


GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'

GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



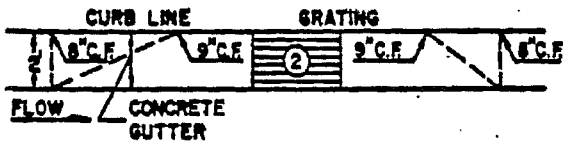
MEADOWSWEET / WOODBINE S= .8%

FLOW = 1/2 x 16.63 = 8.31

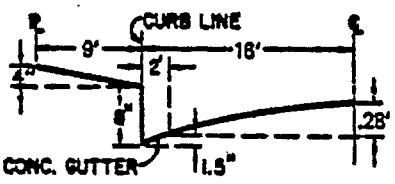
USE 1 - A EACH SIDE

PLATE 22.3 D-5

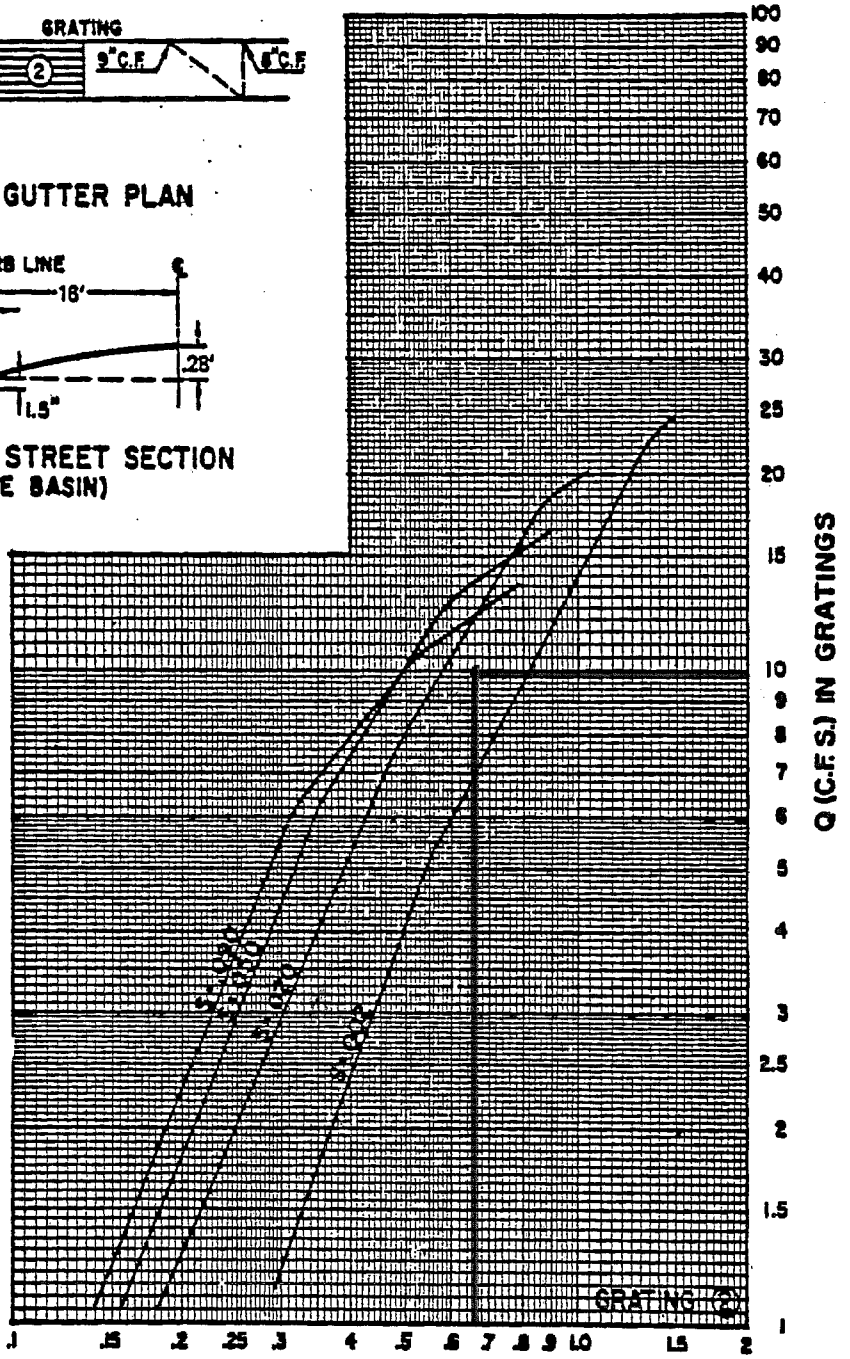
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



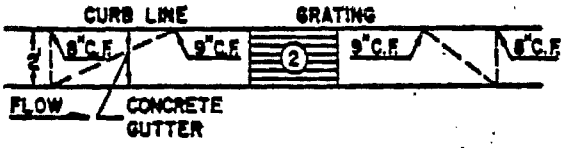
MAIDENHAIR / WOODBINE S = 1.2 %

FLOW = ½ × 23.83 = 11.92

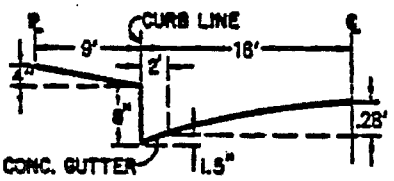
USE 1 - A & 1 - C EACH SIDE

PLATE 22.3 D-5

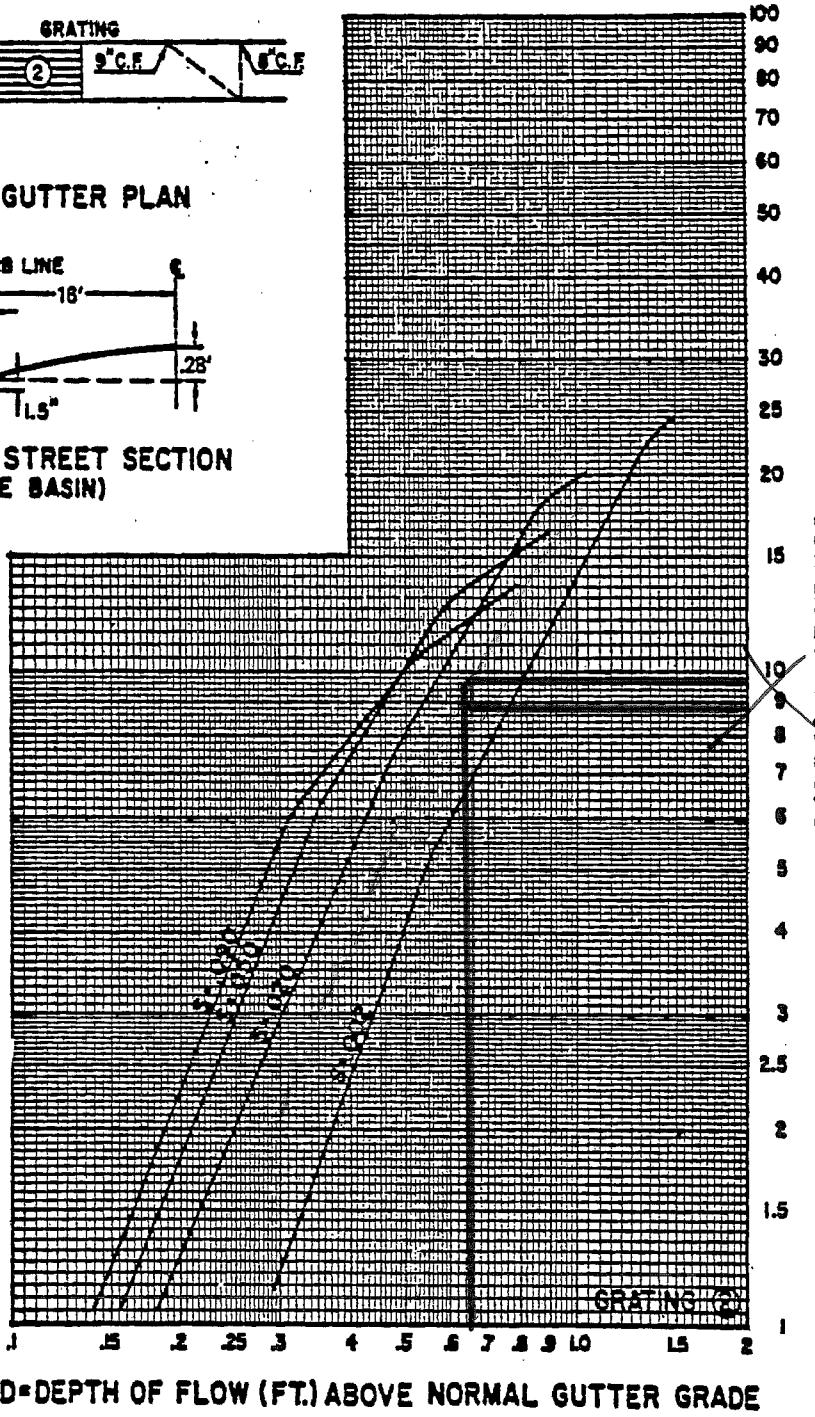
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

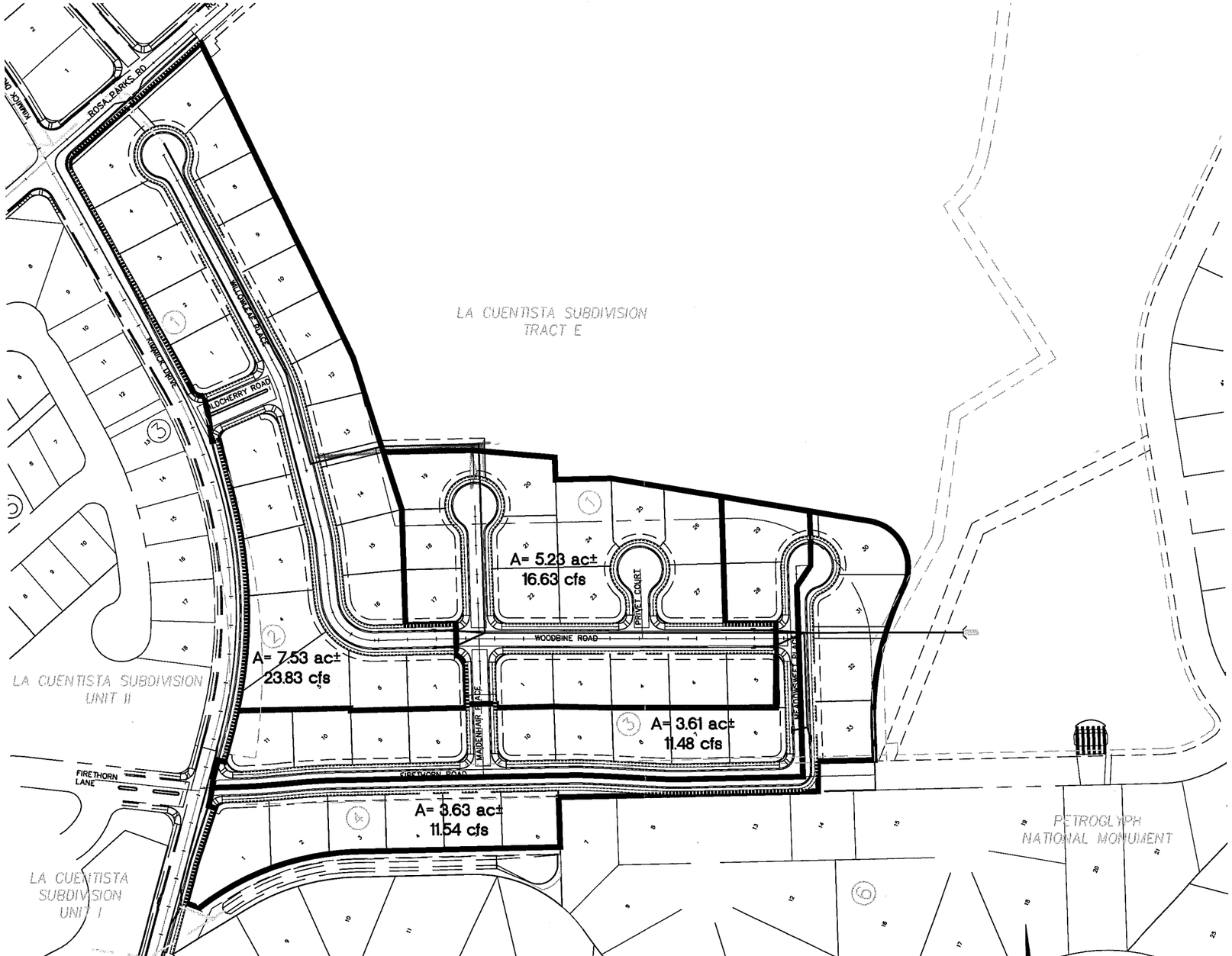


SUMP + 2nd wing on "A" will provide adequate drainage

SUMP - MEADOW SWEET PLACE S= 1.34 LT, .7 RT

FLOW = 11.48 LT
11.54 RT

PLATE 22.3 D-5



LEGEND

SUB-BASIN BOUNDARY

N

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

WILSON & COMPANY
4900 LANG AVE NE
ALBUQUERQUE, NEW MEXICO
87109
(505) 348-4000

LA CUENTISTA SUBDIVISION – UNIT III

BASIN 214
SUB–BASIN BOUNDARY MAP FOR INLET DESIGN

DESIGN	KIS	WCEA NO.0760002100		DATE	APR 2008
DRAWN	OR	PROJECT NO.		SHEET NO.	1 OF 1
CHECK	DSA				

M:\DGS\0760002100\CADD\EXHIBITS\0760021EX02_BASIN BOUNDRIES.dwg\4-23-08