

CITY OF ALBUQUERQUE



Richard J. Berry, Mayor

August 20, 2016

Scott J. Steffen, P.E.
Bohannon Huston
7601 Jefferson NE, Suite 100
Albuquerque, NM, 87109

**RE: Montecito Vistas Units 1-4
Grading & Drainage Plan and Report
Stamp Date 8-16-2016 / Hydrology File: D09D005**

Dear Mr. Steffen:

Based upon the information provided in your submittal received 8-17-2016, the above-referenced is approved for Preliminary Plat and Site Plan for Subdivision.

An ESC Plan will need to be approved before approval can be given for ESC Grading Permit. An approved ESC Plan and ESC Grading Permit are required prior to any grading on this project.

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

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

DRB: 1009506
Orig: Drainage file



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: MONTECITO VISTAS UNITS 1-4 **Building Permit #:** _____ **City Drainage #:** D09/D005
DRB#: 1009506 **EPC#:** _____ **Work Order#:** _____
Legal Description: Tracts 7- 8, 9A-C, 10B-C, 24-25, 26A-B & 27 Volcano Cliffs Subdivision Unit 6 and Tract 14 Volcano Cliffs Subdivision Unit 9
City Address: _____

Engineering Firm: BOHANNAN HUSTON INC **Contact:** SCOTT STEFFEN
Address: 7500 JEFFERSON ST NE COURTYARD I ALBUQUERQUE NM 87109
Phone#: 823-1000 **Fax#:** _____ **E-mail:** SSTEFFEN@BHINC.COM

Owner: PULTE GROUP **Contact:** KEVIN PATTON
Address: 7601 JEFFERSON ST NE STE 320 ALBUQUERQUE NM 87109
Phone#: 505-761-9606 **Fax#:** _____ **E-mail:** _____

Architect: _____ **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

Other Contact: _____ **Contact:** _____
Address: _____
Phone#: _____ **Fax#:** _____ **E-mail:** _____

Check all that Apply:

DEPARTMENT:

☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

☐ ENGINEER/ ARCHITECT CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☒ DRAINAGE REPORT
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
☒ PRELIMINARY PLAT APPROVAL
☒ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 8/17/16 **By:** SCOTT STEFFEN

COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____

DRAINAGE REPORT FOR MONTECITO VISTAS SUBDIVISION UNITS 1 THROUGH 4

MAY 2016

REVISED AUGUST 2016

Prepared for:

Pulte Homes of New Mexico

7601 Jefferson Street NE – Suite 320

Albuquerque, NM 87109

Prepared by:

Bohannon  Huston

Engineering

Spatial Data

Advanced Technologies



**DRAINAGE REPORT
FOR
MONTECITO VISTAS
SUBDIVISION
UNITS 1 THROUGH 4**

**MAY 20, 2016
REVISED AUGUST 16, 2016**

Prepared for:
**PULTE HOMES OF NEW MEXICO
7601 JEFFERSON STREET NE, SUITE 320
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Prepared by:
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COURTYARD I
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Prepared by:

Erica D. Newman *8.16.16*

Erica Newman, E.I.
Design Engineer

Date

Scott J. Steffen *8/16/16*

Scott J. Steffen, P.E.
Project Manager

Date

TABLE OF CONTENTS

I. PURPOSE.....	1
II. CONCEPTS AND METHODOLOGIES	1
III. SITE LOCATION AND CHARACTERISTICS	2
IV. EXISTING HYDRAULIC AND HYDROLOGIC CONDITIONS.....	2
V. DEVELOPED HYDRAULIC AND HYDROLOGIC CONDITIONS.....	3
A. Offsite Flows	3
B. Onsite Flows	4
C. First flush requirements	6
VI. MIDDLE BRANCH OF THE BOCA NEGRA ARROYO.....	6
VII. BOCA NEGRA DETENTION DAM REVIEW	8
VIII. CONCLUSION	9

TABLES

TABLE 1 – MONTECITO WEST ONSITE AND OFFSITE EXISTING CONDITIONS BASIN DATA TABLE.....	3
TABLE 2 – MONTECITO VISTAS ONSITE AND OFFSITE PROPOSED CONDITIONS BASIN DATA TABLE	5
TABLE 3 – FREEBOARD ANALYSIS SUMMARY TABLE	7

APPENDICES

APPENDIX A - EXISTING CONDITIONS AHYMO SUMMARY,
APPENDIX B - DEVELOPED CONDITIONS AHYMO SUMMARY,
APPENDIX C - STREET HYDRAULICS AND STORM DRAIN INLET ANALYSIS
APPENDIX D - OPEN CHANNEL OUTFALL ALTERNATIVE SECTIONS

EXHIBITS

EXHIBIT 1 - PRELIMINARY PLAT
EXHIBIT 2 - OVERALL BASIN MAP
EXHIBIT 3 - ON-SITE BASIN MAP
EXHIBIT 4 - GRADING PLAN
EXHIBIT 5 - STORM DRAIN CAPACITY CALCULATIONS

I. PURPOSE

This report establishes a drainage management plan for the Montecito Vistas Subdivision. The proposed development consists of 136 single family detached residential lots on approximately 36.7 acres which will be developed in four units (Units 1 through 4). This project is located within the Volcano Cliffs Sector Plan area, in northwest Albuquerque, west of the Montecito West Unit 1 Subdivision. Montecito Vistas is in the Boca Negra Arroyo Watershed and drains to the Boca Negra Dam through storm drains in the Vista Vieja Subdivision. This report follows the developed drainage patterns established by the Montecito West Units 1 and 2 Drainage Report, which allows fully developed discharge from the proposed development to the Middle Branch of the Boca Negra Arroyo. This report is submitted in support of grading approval and preliminary plat approval by the DRB.

II. CONCEPTS AND METHODOLOGIES

Drainage conditions were analyzed utilizing the 100-year, 6-hour storm event ($P_{60}=1.72$ in, $P_{360}=2.21$ in, $P_{1440}=2.58$ in), in accordance with the City of Albuquerque DPM. The Arid-lands Hydrologic Model (AHYMO) was utilized to determine peak flow rates for design of the storm drainage improvements within the project. The results are included in Appendices A and B. Street capacity and storm drain inlet calculations supporting this study are located in **Appendix C**.

The overall drainage concept for this project is to match existing capacities of two storm drains at the west boundary of the Vista Vieja Subdivision. The northern storm drain (SD 1) accepts flow from the Middle Branch of the Boca Negra Arroyo and has a capacity of 250 cfs. The southern storm drain (SD 2) accepts surface flow from a low point at the west boundary of Montecito Estates Unit 4 and has a capacity of 62 cfs.

The following documents were referenced in the preparation of this report:

- *Vista Vieja Drainage Report* prepared by Wilson & Company, Inc., dated October 2004.
- *Boca Negra Detention Dam, Final Analysis Report* prepared by Wilson & Company, Inc. dated November 2014.
- *Montecito West Subdivision Units 1 and 2 Drainage Report* prepared by Bohannon Huston, Inc., dated January 2014.
- *Amendment to the Montecito West Subdivision Units 1 and 2 Drainage Report* prepared by Bohannon Huston, Inc., dated March 2014.

The two storm drains were sized to accept flow from Drainage Basin D in the Vista Vieja Drainage Report (VVDR). A third storm drain (SD 3) in Scenic Road on the north side of Vista Vieja was sized to accept flow from Drainage Basin E in the VVDR. The VVDR assumes all residential lands west of Vista Vieja would develop at six dwelling units (DU) per acre. The Volcano Cliffs Sector Development Plan zoned the property in this area to Volcano Cliffs Rural Residential. Development densities are limited to a maximum of 1 DU/gross acre, or the land can be developed as a Private Commons Development which limits the density to 3 DU/gross acres. In addition, the City of Albuquerque has acquired land surrounding the Middle Branch of the Boca Negra Arroyo for permanent open space. As a result, the Vista Vieja hydrologic analysis was revised as part of the *Montecito West Units 1 and 2 Drainage Report* to reflect the current densities allowed and the City owned open space.

The hydrologic analysis presented in this report modifies the AHYMO analysis in the *Amendment to the Montecito West Subdivision Units 1 and 2 Drainage Report* to reflect the changes in land treatments as a result of the proposed development. There have been no changes to the land use west of Montecito West Units 1 and 2 that require incorporation into this analysis.

III. SITE LOCATION AND CHARACTERISTICS

Montecito Vistas Units 1 through 4 will be developed in four units. Units 1 and 2 will consist of the easterly portion of the project and will be constructed at the same time. Units 3 and 4 will consist of the westerly portion of the project and will be constructed at the same time. The entire project will be graded at one time. Access to both units will be from Vista Vieja Avenue NW.

The land comprising Montecito Vistas is currently undeveloped with grades ranging from two percent to twelve percent. The site generally slopes from west to east.

IV. EXISTING HYDRAULIC AND HYDROLOGIC CONDITIONS

Runoff from land to the west of the site (Basin 9-D.2) drains through the Montecito Vistas site. The majority of the runoff from VVDR Basin D is carried by the Middle Branch of the Boca Negra Arroyo north of the site and does not impact the site. Land to the south of Montecito Vistas drains via sheet flow and does not impact the site. The land to the east (Basin 6-D.3) is lower in elevation and does not impact the site.

A summary of the existing offsite and onsite flows is presented in the table below.

**Table 1 – Montecito West Onsite and Offsite Existing Conditions
Basin Data Table**

100 Year – 6 Hour Storm						
Basin ID	Area (AC.)	LAND TREATMENT				Q(100) (CFS)
		A	B	C	D	
OS-D	152.2	95.0%	5.0%	0.0%	0.0%	174.2
15-D	96.4	95.0%	5.0%	0.0%	0.0%	123.9
9-D.1	38.6	95.0%	5.0%	0.0%	0.0%	37.1
6-D.1	28.9	95.0%	5.0%	0.0%	0.0%	34.4
9-D.2	6.2	95.0%	5.0%	0.0%	0.0%	7.6
6-D.2	36.7	95.0%	5.0%	0.0%	0.0%	45.3
6-D.3	11.7	95.0%	5.0%	0.0%	0.0%	14.4
6-D.4	10.1	0.0%	29.0%	29.0%	42.0%	30.6
6-D.5	4.8	0.0%	34.0%	34.0%	32.0%	13.7
6-D.6	4.1	100.0%	0.0%	0.0%	0.0%	5.0
6-D.7	3.4	0.0%	31.0%	30.0%	39.0%	10.0
6-D.8	6.9	0.0%	30.0%	29.0%	41.0%	20.7
A-1.1	53.6	95.0%	5.0%	0.0%	0.0%	48.6
A-1.2	7.7	95.0%	5.0%	0.0%	0.0%	9.4
E-1.1	3.9	95.0%	5.0%	0.0%	0.0%	4.8
E-1.2	0.8	95.0%	5.0%	0.0%	0.0%	1.0
E-1.3	52.0	95.0%	5.0%	0.0%	0.0%	64.6
E-1.4	87.0	95.0%	5.0%	0.0%	0.0%	96.0

V. DEVELOPED HYDRAULIC AND HYDROLOGIC CONDITIONS

The “D” drainage basins from the VVDR were subdivided into basins based on which storm drain system they drain toward. Montecito Vistas falls mainly within Basin 6-D.2 from the *Montecito West Units 1 and 2 Drainage Report*. It also includes a small portion of Basins 9-D.2 and A-1.2. Basins 9-D.2 and 6-D.2 are required to convey discharge to the Middle Branch of the Boca Negra Arroyo in the developed condition per the *Montecito West Units 1 and 2 Drainage Report*.

A. OFFSITE FLOWS

Flows from the “D” Basins (OS-D, 15D, 9-D.1, 6-D.1, and 9-D.2) as shown on the Developed Conditions Basin Map drain to the Middle Branch of the Boca Negra Arroyo and SD 1 (250 cfs capacity). Flow from Montecito Vistas will discharge to the Middle Branch of the Boca Negra Arroyo within Basin 6-D.1. Flow from Basin 9-D.2 will be conveyed through

the project site and discharge to the Middle Branch of the Boca Negra Arroyo. Runoff from Basins 6-D.3 and 6-D.4 through 6-D.7 drain toward SD 2 (62 cfs capacity). The proposed development does not impact the flows to SD 2 and therefore, the analysis from the *Montecito West Units 1 and 2 Drainage Report* for SD 2 remains unchanged in this report.

Offsite flows from the “E” Basins as shown on the Developed Conditions Basin Map do not impact the site. The analysis from the *Montecito West Units 1 and 2 Drainage Report* for the “E” Basins remains unchanged in this report. Allowable discharge from Basins E-1.3 and E-1.4 in the developed condition may be limited due to capacity constraints in the Scenic Road storm drain (capacity=94 cfs). An analysis will be required to determine allowable discharge in these three basins at the time of development. This analysis is beyond the scope of the Montecito Vistas drainage plan.

Offsite flows from the “A” Basins (A-1.1 and A-1.2) as shown on the Developed Conditions Basin Map discharge to the Vista Vieja Avenue Right-of-Way south of Montecito Vistas. Vista Vieja Avenue does not have capacity to additional flows from the “A” Basins. Runoff from Basin A-1.1, including Vista Vieja Avenue, will be required to discharge to the Middle Branch of the Boca Negra Arroyo (SD 1). This will require an analysis at the time of development to show how the flows would get to SD1 and the allowable discharge to the Arroyo such that the downstream capacity of SD1 would not be exceeded and that there would be no impact on the storage volume at the Boca Negra Dam. Runoff from Basin A-1.2, not including Vista Vieja Avenue will be required to discharge to SD2. This will require analysis at the time of development of the on-site detention criteria to meet the allowable discharge to SD2.

B. ONSITE FLOWS

Developed flows from Montecito Vistas will be conveyed via the internal street network, collected by the internal storm drain network, which discharges to the Middle Branch of the Boca Negra Arroyo and SD1. Total flow from Basins 6-D.2A through 6-D.2F is 107.8 cfs. The 250 cfs capacity of SD 1 is adequate to accept fully developed flows from Montecito Vistas Units 1-4. These flows are described in **Appendix A**. For reference, see **Exhibit 2** for basin locations and **Exhibit 3** for the storm drain and inlet locations.

Basin 6-D.2A (32.9 cfs) drains to two Type A single grate inlets (Inlets # 11 and 12) at the east end of Vista Bosquejo Road. These inlets intercept 7.0 cfs each, with 18.9 cfs of by-pass to the southern sump in Basin 6-D.2E. Basin 6-D.2B (31.4 cfs) drains to four Type A single grate inlets (Inlets #5 through 8) at the east end of Vista Dibujo Road. These inlets

intercept 6.5 cfs each, with 5.4 cfs of by-pass to the northern sump in Basin 6-D.2E. Basin 6-D.2C (10.8 cfs) drains Piedra Dibujo Road. Piedra Dibujo Road has sufficient capacity to convey the flows to Vista Luces Street and no inlets are required. The flow from Piedra Dibujo Road is conveyed to the northern sump in Basin 6-D.2E. Basin 6-D.2D (19.4 cfs) drains to two Type A single grate inlets (Inlets #1 and 2) at the east end of Retablo Road. These inlets intercept 5.8 cfs each, with 7.8 cfs of by-pass to the northern sump in Basin 6-D.2E.

The lots in Basin 6-D.2F (8.0 cfs) drain toward the rear of the lots and discharge to a HOA Tract, which has a private drainage system that conveys the flow to the storm drain in Vista Luces Street.

Flow to the Basin 6-D.2E northern sump drain to two Type A single grate inlets (Inlets #3 and 4). These inlets intercept 13.4 cfs each and are in a sump condition. Flow to the Basin 6-D.2E southern sump drain to two Type A single grate inlets (Inlets #9 and 10). These inlets intercept 10.8 cfs each and are in a sump condition. There is no emergency spill way for either the northern or southern sumps, therefore the inlets have been sized to capture two times the 100-year storm event as shown in **Appendix B**.

A summary of the developed offsite and onsite flows is presented in the table below.

**Table 2 – Montecito Vistas Onsite and Offsite Proposed Conditions
Basin Data Table**

100 Year – 6 Hour Storm						
Basin ID	Area (AC.)	LAND TREATMENT				Q(100) (CFS)
		A	B	C	D	
OS-D	152.2	95.0%	5.0%	0.0%	0.0%	174.2
15-D	96.4	68.0%	8.0%	8.0%	16.0%	177.2
9-D.1	38.6	37.0%	16.0%	16.0%	31.0%	68.6
6-D.1	29.4	66.0%	9.0%	9.0%	16.0%	39.2
9-D.2	8.0	30.0%	18.0%	18.0%	34.0%	15.6
6-D.2A	10.9	0.0%	29.5%	29.5%	41.0%	32.9
6-D.2B	10.9	0.0%	29.0%	29.0%	42.0%	31.4
6-D.2C	3.8	0.0%	34.0%	34.0%	32.0%	10.8
6-D.2D	6.9	0.0%	34.5%	34.5%	31.0%	19.4
6-D.2E	1.5	0.0%	30.5%	30.5%	39.0%	4.6
6-D.2F	2.7	0.0%	30.5%	30.5%	39.0%	8.0
6-D.3	11.7	30.0%	18.0%	18.0%	34.0%	29.6
6-D.4	9.1	0.0%	29.0%	29.0%	42.0%	27.6
6-D.5	4.8	0.0%	34.0%	34.0%	32.0%	13.7

6-D.6	4.1	100.0%	0.0%	0.0%	0.0%	5.0
6-D.7	4.1	0.0%	31.0%	30.0%	39.0%	12.3
6.-D.8	6.9	0.0%	30.0%	29.0%	41.0%	20.7
A-1.1	53.9	90.0%	5.0%	5.0%	0.0%	51.2
A-1.2	14.1	30.0%	18.0%	18.0%	34.0%	20.4
E-1.1	3.9	30.0%	18.0%	18.0%	34.0%	9.9
E-1.2	0.8	0.0%	29.0%	29.0%	42.0%	2.3
E-1.3	52.0	52.0%	16.0%	16.0%	16.0%	102.3
E-1.4	87.0	60.0%	13.0%	13.0%	14.0%	144.7

C. FIRST FLUSH REQUIREMENTS

This project is required to meet the first flush requirements of the new City Drainage Ordinance. The first flush requirement will be met with on lot ponding and is calculated as 0.34 in. (0.44 in. - 0.1 in. initial abstraction) times the roof area that can drain to the on lot pond (taken as one half the pad area). There are two pad sizes, 45 feet x 85 feet and 50 feet x 85 feet, in this project, with a first flush requirement of 54 and 60 cubic feet, respectively.

First flush will be accommodated by a combination of ponding between the back of curb and sidewalk, supplemented by onsite front yard ponding on each lot. 42 cubic-feet per lot can be stored in the landscape strip between the sidewalk and curb within the Right-of-Way. As a result, a maximum of 18 cubic-feet per lot of ponding (60 cubic-feet required minus 42 cubic-feet) is needed within the lot itself. This on-lot storage can be accomplished by a small bermed pond at the low side of each lot in front of the pad (for lots draining toward the street) and consists of either an 8-inch or 12-inch berm. This on-lot front yard pond will be constructed as part of the landscaping by the building contractor.

For lots within Basins 6-D.2f, backyard ponds will be utilized to capture the first flush as these lots drain toward the rear of the lot. All lots which drain thru the lot backyards have backyard ponding due to the placement of the wall “turn block” 4 inches above finished grade. This provides 74 cubic-feet of storage, while the required first flush storage is 54 cubic-feet and 60 cubic-feet for each of the two lot sizes. Therefore, the first flush storage requirements are met by backyard ponding utilizing an elevated turn block.

VI. MIDDLE BRANCH OF THE BOCA NEGRA ARROYO

The Montecito Vistas storm drain discharges to an open channel at the northeast corner of the development. The open channel conveys the flow to the Middle Branch of the Boca

Negra Arroyo. The design flow rate for the channel is 108 cfs. The channel will be approximately 455 feet in length with an elevation drop of 2.96 feet, with a slope of 0.65%.

Within the project area, there is a significant amount of underlying basalt. Therefore, the design of this channel will utilize this existing basalt to maintain the natural aesthetics of the landscape, as well as to reduce the use of additional materials. The existing basalt will be blasted incrementally to achieve the desired channel shape. Two different channel sections are proposed: a 1:1 sloped trapezoidal channel and a rectangular channel. Both channels will have a minimum width of 15 feet to allow for maintenance vehicle access. Each proposed option accounts for a particular efficiency aspect: flow conveyance (trapezoidal) and ease of construction (rectangular). Typical layouts of these two channel options are shown in sections A and B, see **Appendix D**.

The expected velocity and depth of flow within the channel was determined for the 100-yr. 6-hr. storm in the Hydraflow Express Extension for Autodesk AutoCAD Civil 3D. Since the channel shape will be blasted out of the existing basalt, a Manning's roughness coefficient value of 0.045 was assumed. According to the City of Albuquerque Development Process Manual, Volume II, this value represents grouted riprap or exposed rock.

Using the output from the Manning's calculations and the hydraulic design criteria from the COA DPM, the required freeboard and total channel depth were determined. For rectangular channels with flow depths of greater than 1.0 feet and average flow velocities of less than 35 fps, the required freeboard is 2.0 ft. For trapezoidal channels, freeboard equation (1) from the DPM was selected: $Freeboard(ft) = 1.0 + .025Vd^{1/3}$. Accounting for freeboard, the total depth for the rectangular channel is 4 feet and the trapezoidal channel, 3 feet. A summary of input and output values for the freeboard calculations are listed in **Table 3**.

Table 3 – Freeboard Analysis Summary Table

Channel Shape	Bottom Width	Side Slopes	Channel Slope	n-value	Q Total	Water Depth (1)	Velocity (1)	Required Freeboard	Total Required Depth (2)
	(ft.)	(ft./ft.)			(cfs)	(ft.)	(ft./s)	(ft.)	(ft.)
Rectangular	15	--	0.65%	0.045	108	2.0	3.6	2.0	4.0
Trapezoidal	15	1	0.65%	0.045	108	1.8	3.5	1.1	2.9

The length of this channel is such that it provides adequate outlet scour protection for the discharge from the storm drain. The channel will be designed to tie into the Middle Branch of the Boca Negra Arroyo.

In addition to the design of the subdivision outfall, it was necessary to analyze its effects on the Middle Branch of the Boca Negra Arroyo. The arroyo runs along the northern edge of the subdivision, collects runoff from the outfall, then enters a storm drain approximately 1,400 feet downstream at the west end of the Vista Vieja Subdivision. Due to the downstream constraints, it was crucial to determine whether the Vista Vieja storm drain would still be able to convey the peak flow from the Middle Branch of the Boca Negra Arroyo, as well as the additional flow from the Montecito West outfall. The peak flow through the arroyo is 232 cfs and occurs 2 hours after the start of the storm. The peak Montecito Vistas outfall flow is 108 cfs and occurs after 1.5 hours. The peak flow from the outfall will enter the arroyo half an hour earlier than the peak coming down the arroyo. As such, the combined flow in the Boca Negra Arroyo only increases to 238 cfs at a time of 2 hours. Although the outfall flow is significant in comparison to the arroyo peak flow (nearly half), its overall effect will be negligible (less than 3%) because of the time gap between the two peaks.

VII. BOCA NEGRA DETENTION DAM REVIEW

The overall drainage concept for this project is to match existing capacities of two storm drains at the west boundary of the Vista Vieja Subdivision. The northern storm drain (SD 1) accepts flow from the Middle Branch of the Boca Negra Arroyo and has a capacity of 250 cfs. The southern storm drain (SD 2) accepts surface flow from a low point at the west boundary of Montecito Estates Unit 4 and has a capacity of 62 cfs. The Boca Negra Detention Dam Final Analysis Report (FAR) evaluates the fully developed conditions, which are shown in Plate 4 of the FAR. The basins discharging to SD1 and SD2 correspond to FAR basin 83 and 83A, respectively. In the FAR fully developed condition model the 100-year peak discharge from Basins 83 and 83A are 250.4 cfs and 60.3 cfs respectively and the 100-year runoff volume from Basin 83 and 83A are 18.7 acre-feet and 7.53 acre-feet, respectively. Due to constraints SD 2, a portion of Basin 83A was redirected to the Middle Branch of the Boca Negra Arroyo (Basin 83 outfall) as part of the *Montecito West Subdivision Units 1 and 2 Drainage Report*.

The drainage analysis presented in this report results in a 100-year peak discharge and runoff volume at Analysis Point 2 (SD 2) of 236.9 cfs and 20.0 acre-feet, respectively. The 100-year peak discharge and runoff volume at Analysis Point 1 (SD 1), 60.7 cfs and 2.1 acre-feet, respectively, remain unchanged from the *Montecito West Subdivision Units 1 and 2 Drainage Report*. The flows from these two storm drains combine in the Vista Vieja

Subdivision and discharge to the Boca Negra Dam at FAR IP6. The combined peak discharge, 297.6 cfs, and runoff volume, 22.1 acre-feet, are less than the allowed peak discharge, 310.7 cfs, and runoff volume, 26.2 acre-feet, in the FAR fully developed condition. Therefore, the proposed Montecito Vistas development does not have a negative impact on the Boca Negra Dam.

VIII. CONCLUSION

This drainage report updates the drainage concept outlined in the approved *Montecito West Subdivision Units 1 and 2 Drainage Report*, which defined the allowable discharge from lands to the west of the Vista Vieja Subdivision. This plan reanalyzes the Montecito West Units 1 and 2 Drainage Analysis based on the proposed development, maintaining the plan for future development of land to the west of Montecito West. The proposed drainage plan for Montecito Vistas can be safely conveyed by the existing and proposed improvements in this drainage plan. Erosion and dust control, consisting of erosion control berms, silt fencing and sedimentation basins, are proposed to mitigate soil washing or blowing into paved streets, storm drains, and existing developed areas. This drainage plan maintains the overall drainage pattern of the area and allows for the safe management of storm runoff in the fully developed condition as well as interim conditions.

APPENDICES

**APPENDIX A: EXISTING CONDITIONS AHYMO
SUMMARY, OUTPUT, AND INPUT
FILES**

**APPENDIX B: DEVELOPED CONDITIONS AHYMO
SUMMARY, OUTPUT, AND INPUT
FILES**

**APPENDIX C: STREET HYDRAULICS AND
STORM DRAIN INLET ANALYSIS**

**APPENDIX D: OPEN CHANNEL OUTFALL
ALTERNATIVE SECTIONS**

**APPENDIX A -
EXISTING CONDITIONS AHYMO SUMMARY,
OUTPUT, AND INPUT FILES**

```

*S THE VISTA VIEJA SUBDIVISION DRAINAGE BASIN (D) EXISTING
*S 100 YEAR - 6 HOUR STORM
*S
* REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS
*
*CONVERT TO NMHYMO
START TIME=0.0 HR PUNCH CODE=0
*****
LOCATION NM
*
*****
*
*****
*100 YEAR - 6 HOUR
RAINFALL TYPE=1 RAIN QUARTER=0
          RAIN ONE=1.72 IN RAIN SIX=2.21 IN
          RAIN DAY=2.58 IN DT=0.033333 HRS

*S
*S
*S      *****
*S      * COMPUTE OFFSITE "D" BASINS *
*S      *****
*S
*S
*S
*S COMPUTE BASIN OS-D *****
*
COMPUTE LT TP      LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                   NK=3 ISLOPE=-1
                   LENGTH=400 FT SLOPE=0.0750 K=0.7
                   LENGTH=700 FT SLOPE=0.04286 K=2.0
                   LENGTH=2900 FT SLOPE=0.03793 K=3.0

COMPUTE NM HYD      ID=17 HYD=OS_D AREA=0.2378 SQ MI
                   PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
                   TP=0.0 HR MASS RAIN=-1
PRINT HYD           ID=17 CODE=1
*
*S ROUTE OS-D THRU 15-D IN CHANNEL NO.15*****
*
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                   MIN ELEV=0 MAX ELEV=3.80
                   CH SLOPE=0.038 FP SLOPE=0.038
                   N=0.038 DIST=32.0
                   DIST ELEV      DIST ELEV
                   0.0 5.0 6.0 0.0
                   26.0 0.0 32.0 5.0

ROUTE MCUNGE        ID=50 HYD=100.01 INFLOW ID=17 DT=0HR L=4900
                   NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0
PRINT HYD           ID=50 CODE=1
*
*S COMPUTE BASIN 15-D *****
*S
*
COMPUTE LT TP      LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                   NK=3 ISLOPE=-1
                   LENGTH=400 FT SLOPE=0.050 K=0.7
                   LENGTH=500 FT SLOPE=0.020 K=2.0
                   LENGTH=1200 FT SLOPE=0.02167 K=3.0

COMPUTE NM HYD      ID=15 HYD=15_D AREA=0.1506 SQ MI
                   PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
                   TP=0.0 HR MASS RAIN=-1
PRINT HYD           ID=15 CODE=1
*
*S ADD SUB-BASIN OS-D TO SUB-BASIN 15-D*****
ADD HYD             ID=33 HYD NO=101.0 ID I=15 ID II=50
PRINT HYD           ID=33 CODE=1
*
*S ROUTE 15-D/OS-D THRU 9-D.1 IN CHANNEL NO.9*****
*

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COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=3.80
                      CH SLOPE=0.038  FP SLOPE=0.038
                      N=0.038  DIST=32.0
                      DIST  ELEV          DIST  ELEV
                        0.0      5.0        6.0      0.0
                        26.0     0.0       32.0     5.0

ROUTE MCUNGE          ID=40  HYD=100.01  INFLOW ID=33  DT=0HR  L=4900
                      NS=0  SLOPE=.038  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD             ID=40          CODE=1
*
*S COMPUTE BASIN 9-D.1 *****
*
COMPUTE LT TP         LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                      NK=3  ISLOPE=-1
                      LENGTH=400 FT  SLOPE=0.0084  K=0.7
                      LENGTH=0 FT  SLOPE=0.0  K=2.0
                      LENGTH=1600 FT  SLOPE=0.0250  K=3.0

COMPUTE NM HYD        ID=9  HYD=9_D.1  AREA=0.0603 SQ MI
                      PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                      TP=0.0 HR  MASS RAIN=-1
PRINT HYD             ID=9  CODE=1
*
*S ADD 15-D/OS-D TO SUB-BASIN 9-D.1 *****
ADD HYD               ID=44  HYD NO=104.0  ID I=40  ID II=9
PRINT HYD             ID=44  CODE=1
*
*S ROUTE 9-D.1/15-D/9-D.1 THRU 6-D.1 IN CHANNEL NO.6 *****
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=3.80
                      CH SLOPE=0.038  FP SLOPE=0.038
                      N=0.038  DIST=32.0
                      DIST  ELEV          DIST  ELEV
                        0.0      5.0        6.0      0.0
                        26.0     0.0       32.0     5.0

ROUTE MCUNGE          ID=30  HYD=104.1  INFLOW ID=44  DT=0HR  L=4900
                      NS=0  SLOPE=.038  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD             ID=30          CODE=1
*
*S COMPUTE BASIN 6-D.1 *****
*
COMPUTE LT TP         LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                      NK=3  ISLOPE=-1
                      LENGTH=400 FT  SLOPE=0.05  K=0.7
                      LENGTH=0 FT  SLOPE=0.0084  K=2.0
                      LENGTH=2800 FT  SLOPE=0.03286  K=3.0

COMPUTE NM HYD        ID=6  HYD=6_D.1  AREA=0.0459 SQ MI
                      PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                      TP=0.0 HR  MASS RAIN=-1
PRINT HYD             ID=6  CODE=1
*S
*S ADD SUB-BASIN (OS-D,15-D,9-D.1) TO SUB-BASIN 6-D.1 TO GET AP_OFF *****
*S
ADD HYD               ID=55  HYD NO=AP_OFF  ID I=30  ID II=6
PRINT HYD             ID=55  CODE=1
*
*S COMPUTE BASIN 9-D.2 *****
*
COMPUTE LT TP         LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                      NK=1  ISLOPE=0
                      LENGTH=1800 FT  SLOPE=0.0372  K=3.0
                      Kn=.021  CR=.5

COMPUTE NM HYD        ID=5  HYD=9_D.2  AREA=0.00967 SQ MI

```

```

                PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
                TP=0.0 HR MASS RAIN=-1
                ID=5 CODE=20
PRINT HYD
*
*S ROUTE 9D.2 FLOW THRU 1200' OF CHANNEL *****
*
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=0 MAX ELEV=3.80
CH SLOPE=0.0433 FP SLOPE=0.0433
N=0.038 DIST=32.0
DIST ELEV DIST ELEV
0.0 5.0 6.0 0.0
26.0 0.0 32.0 5.0

ROUTE MCUNGE ID=6 HYD=100.01 INFLOW ID=5 DT=0HR L=1200
NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0
PRINT HYD ID=6 CODE=1
*
*S COMPUTE BASIN 6-D.2*****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=1 ISLOPE=0
LENGTH=1200 FT SLOPE=0.0433 K=3.0
Kn=.021 CR=.5

COMPUTE NM HYD ID=7 HYD=6_D.2 AREA=0.057362 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1
PRINT HYD ID=7 CODE=20
*
*S ADD ROUTE 9D.2 TO 6D.2 TO GET 6_9D.2 *****
ADD HYD ID=8 HYD NO=6_9D.2 ID I=6 ID II=7
PRINT HYD ID=8 CODE=1
*
*S COMPUTE BASIN 6-D.3*****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=1 ISLOPE=0
LENGTH=600 FT SLOPE=0.0433 K=3.0
Kn=.021 CR=.5

COMPUTE NM HYD ID=9 HYD=6_D.3 AREA=0.018277 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1
PRINT HYD ID=9 CODE=20
*
*S
*S
*S
*S
*S * COMPUTE OFFSITE "A" BASINS *
*S
*S
*S COMPUTE BASIN A-1.1 *****
*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=3 ISLOPE=-1
LENGTH=400 FT SLOPE=0.0340 K=0.7
LENGTH=1600 FT SLOPE=0.0361 K=2.0
LENGTH=2800 FT SLOPE=0.0346 K=3.0

COMPUTE NM HYD ID=60 HYD=A_1.1 AREA=0.08421 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1
PRINT HYD ID=60 CODE=20
*
*S COMPUTE BASIN A-1.2 *****
*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=1 ISLOPE=0

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LENGTH=3200 FT  SLOPE=0.0325 K=3.0
Kn=.021  CR=.5

COMPUTE NM HYD      ID=65 HYD=A_1.2  AREA=0.01196 SQ MI
                    PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=65      CODE=20
*
*S ADD A-1.1 TO A-2.2 TO GET FLOW IN VISTA VIEJA AVENUE *****
ADD HYD             ID=66  HYD NO=A_1.1_1.2 ID I=60 ID II=65
PRINT HYD           ID=66  CODE=1
*
*S
*S *****
*S * COMPUTE OFFSITE "E" BASINS *
*S *****
*S
*S
*S COMPUTE BASIN E-1.1 *****
*
COMPUTE NM HYD      ID=21 HYD=1_E.1  AREA=0.006128  PER A=95.0 PER B=5.0
                    PER C=0.0 PER D=0.0 TP=0.13333  RAINFALL=-1
PRINT HYD           ID=21  CODE=1
*
*S COMPUTE BASIN E-1.3 *****
*

COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                    NK=1  ISLOPE=0
                    LENGTH=3800 FT  SLOPE=0.0325 K=3.0
                    Kn=.021  CR=.5

COMPUTE NM HYD      ID=70 HYD=E_1.3  AREA=0.08120 SQ MI
                    PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=70      CODE=20
*
*S COMPUTE BASIN E-1.4 *****
*

COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                    NK=1  ISLOPE=0
                    LENGTH=5200 FT  SLOPE=0.0325 K=3.0
                    Kn=.021  CR=.5

COMPUTE NM HYD      ID=75 HYD=E_1.4  AREA=0.13593 SQ MI
                    PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=75      CODE=20
*
*S
*S *****
*S * COMPUTE ONSITE BASINS*
*S *****
*S
*S
*S
*S COMPUTE BASIN 6-D.4 *****
*
COMPUTE NM HYD      ID=2 HYD=6_D.4  AREA=0.015778  PER A=95.0 PER B=5.0
                    PER C=0.0 PER D=0.0 TP=0.13333  RAINFALL=-1
PRINT HYD           ID=2  CODE=1
*
*S COMPUTE BASIN 6-D.5 *****
COMPUTE NM HYD      ID=3 HYD=6_D.5  AREA=0.007522  PER A=95.0 PER B=5.0
                    PER C=0.0 PER D=0.0 TP=0.13333  RAINFALL=-1
PRINT HYD           ID=3  CODE=1
*
*S COMPUTE BASIN 6-D.6 *****
COMPUTE NM HYD      ID=4 HYD=6_D.6  AREA=0.006441  PER A=100 PER B=0
                    PER C=0 PER D=0 TP=0.13333  RAINFALL=-1
PRINT HYD           ID=4  CODE=1
*

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*S COMPUTE BASIN 6-D.7 *****
COMPUTE NM HYD      ID=1 HYD=6_D.7 AREA=0.005236 PER A=95.0 PER B=5.0
                    PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*S COMPUTE BASIN 6-D.8 *****
COMPUTE NM HYD      ID=20 HYD=6_D.8 AREA=0.010762 PER A=95.0 PER B=0.0
                    PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=20 CODE=1
*
*S COMPUTE BASIN E-1.2 *****
COMPUTE NM HYD      ID=22 HYD=1_E.2 AREA=0.001177 PER A=95.0 PER B=5.0
                    PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=22 CODE=1
*
*S ADD 6_D.4 TO 6_D.7 *****
ADD HYD             ID=11 HYD NO=6D.4_7 ID I=2 ID II=1
PRINT HYD           ID=11 CODE=1
*
*S ADD 6_D.5 TO 6_D.6 *****
ADD HYD             ID=12 HYD NO=6D.5_6 ID I=3 ID II=4
PRINT HYD           ID=12 CODE=1
*
*S ADD 6_D.4_7 TO 6_D.5_6 ***** TO GET PROJECT SITE DISCHARGE TO AP_1*****
ADD HYD             ID=25 HYD NO=6D.5_6 ID I=11 ID II=12
PRINT HYD           ID=25 CODE=1
*

*S
*S
*S
*S
*S
*S
*S
*S ANALYSIS POINT 2, MIDDLE BRANCH BOCA NEGRA (NORTHERN STORM DRAIN)
*
*S ADD 6D.8 TO NEW AP_OFF TO GET AP#2 AT MIDDLE BRANCH BOCA NEGRA ARROYO ***
*
ADD HYD             ID=24 HYD NO=AP_2 ID I=55 ID II=20
PRINT HYD           ID=24 CODE=1
*
*S ANALYSIS POINT 1, SOUTHERN STORM DRAIN TO VISTA VIEJA SUBDIVISION *****
*
*S ADD 6D.3 TO 6D.4_7 TO GET AP_1 *****
*
ADD HYD             ID=14 HYD NO=AP_1 ID I=25 ID II=9
PRINT HYD           ID=14 CODE=1
*
*S ANALYSIS POINT 3, DISCHARGE FROM VILLA REAL RD TO SCENIC RD STORM DRAIN *
*
*S ADD E_1.1 TO E_1.2 TO GET AP_3
*
ADD HYD             ID=23 HYD NO=AP_3 ID I=21 ID II=22
PRINT HYD           ID=23 CODE=1
*S
FINISH

```

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AHYMO PROGRAM (AHYMO_97) - - Version: 1997.02c
  RUN DATE (MON/DAY/YR) = 04/12/2016
  START TIME (HR:MIN:SEC) = 17:01:35 USER NO.= AHYMO-S-9702c1BohanHu-AH
  INPUT FILE = DEV_Cond.HYM

*S THE VISTA VIEJA SUBDIVISION DRAINAGE BASIN (D) EXISTING
*S 100 YEAR - 6 HOUR STORM
*S
* REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS
*
*CONVERT TO NMHYMO
START TIME=0.0 HR PUNCH CODE=0
*****
LOCATION NM
  Soil infiltration values (LAND FACTORS) for this location are not available.
  The following default values were used.
  Land Treatment Initial Abstr.(in) Unif. Infilt.(in/hour)
    A 0.65 1.67
    B 0.50 1.25
    C 0.35 0.83
    D 0.10 0.04
*
*****
*
*****
*100 YEAR - 6 HOUR
RAINFALL TYPE=1 RAIN QUARTER=0
          RAIN ONE=1.72 IN RAIN SIX=2.21 IN
          RAIN DAY=2.58 IN DT=0.033333 HRS

      COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
      DT = .033333 HOURS END TIME = 5.999940 HOURS
      .0000 .0038 .0077 .0116 .0157 .0198 .0240
      .0283 .0327 .0372 .0418 .0465 .0514 .0564
      .0615 .0667 .0722 .0777 .0835 .0894 .0956
      .1019 .1085 .1153 .1224 .1298 .1375 .1456
      .1541 .1630 .1724 .1772 .1823 .1877 .1994
      .2255 .2658 .3235 .4024 .5059 .6380 .8025
      1.0032 1.1888 1.2665 1.3321 1.3904 1.4435 1.4924
      1.5378 1.5802 1.6199 1.6573 1.6926 1.7260 1.7575
      1.7874 1.8158 1.8427 1.8682 1.8924 1.8987 1.9047
      1.9104 1.9159 1.9212 1.9264 1.9314 1.9362 1.9409
      1.9454 1.9499 1.9542 1.9584 1.9626 1.9666 1.9706
      1.9744 1.9782 1.9820 1.9856 1.9892 1.9927 1.9962
      1.9996 2.0030 2.0063 2.0095 2.0127 2.0159 2.0190
      2.0221 2.0251 2.0281 2.0311 2.0340 2.0368 2.0397
      2.0425 2.0453 2.0480 2.0507 2.0534 2.0561 2.0587
      2.0613 2.0639 2.0665 2.0690 2.0715 2.0740 2.0764
      2.0789 2.0813 2.0837 2.0860 2.0884 2.0907 2.0930
      2.0953 2.0976 2.0998 2.1021 2.1043 2.1065 2.1087
      2.1108 2.1130 2.1151 2.1172 2.1193 2.1214 2.1235
      2.1256 2.1276 2.1297 2.1317 2.1337 2.1357 2.1377
      2.1396 2.1416 2.1435 2.1455 2.1474 2.1493 2.1512
      2.1531 2.1549 2.1568 2.1587 2.1605 2.1623 2.1642
      2.1660 2.1678 2.1696 2.1714 2.1731 2.1749 2.1766
      2.1784 2.1801 2.1819 2.1836 2.1853 2.1870 2.1887
      2.1904 2.1920 2.1937 2.1954 2.1970 2.1987 2.2003
      2.2020 2.2036 2.2052 2.2068 2.2084 2.2100

*S
*S *****
*S * COMPUTE OFFSITE "D" BASINS *
*S *****
*S
*S
*S
*S COMPUTE BASIN OS-D *****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
              NK=3 ISLOPE=-1
              LENGTH=400 FT SLOPE=0.0750 K=0.7
              LENGTH=700 FT SLOPE=0.04286 K=2.0
              LENGTH=2900 FT SLOPE=0.03793 K=3.0

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
          LENGTH (FT) SLOPE (FT/FT) COMPOSITE K
SHEET FLOW PORTION 400.0 .075000 .7000
SHALLOW FLOW PORTION 700.0 .042860 2.0000
CHANNEL FLOW PORTION 2900.0 .037930 3.0000
TOTAL BASIN 4000.0 .042500 2.2199

```

*S ROUTE 0S-D THRU 15-D IN CHANNEL NO.15*****

RATING	CURVE	VALLEY	SECTION	1.0	
WATER		FLOW		FLOW	TOP
SURFACE		AREA		RATE	WIDTH
ELEV		SQ FT		CFS	FT
.00		.00		.00	20.00
.20		4.05		10.42	20.48
.40		8.19		33.08	20.96
.60		12.43		65.02	21.44
.80		16.77		105.07	21.92
1.00		21.20		152.51	22.40
1.20		25.73		206.87	22.88
1.40		30.35		267.81	23.36
1.60		35.07		335.06	23.84
1.80		39.89		408.42	24.32
2.00		44.80		487.74	24.80
2.20		49.81		572.90	25.28
2.40		54.91		663.81	25.76
2.60		60.11		760.37	26.24
2.80		65.41		862.54	26.72
3.00		70.80		970.27	27.20
3.20		76.29		1083.52	27.68
3.40		81.87		1202.26	28.16
3.60		87.55		1326.48	28.64
3.80		93.33		1456.17	29.12

INFLOW END= 196	TABLE PTS= 20		
DT= .033333	QMED= 87.10	CKMED= 9.2361	
WIDTH MED= 21.70	NREACH= 9	DX= 544.44	

2

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 5 OCCURRED 5 TIMES. AVERAGE NUMBER ITERATIONS = 1.0847
 DEPTH (FT) AREA (SQ FT) Q (CFS) TRAVEL TIME(HR) WIDTH (FT) ck (FPS) VEL (FPS) C D C1 C2 C3 Q-M (CFS) C1-M C2-M C3-M
 .00 .0 .0 .720 20.0 4.54 1.21 1.000 .000 1.000 .000 .000 .0 1.000 .000 .000
 .20 4.0 10.4 .529 20.5 4.51 2.57 .995 .005 .995 .000 .005 3.3 .998 .000 .002
 .40 8.2 33.1 .337 21.0 4.61 4.04 1.017 .017 .984 .016 .000 20.5 .990 .010 .000
 .60 12.4 65.0 .260 21.4 4.68 5.23 1.031 .031 .970 .030 .000 48.0 .977 .023 .000
 .80 16.8 105.1 .217 21.9 4.76 6.27 1.049 .049 .954 .046 .000 84.1 .962 .038 .000
 1.00 21.2 152.5 .189 22.4 4.85 7.19 1.068 .068 .936 .064 .000 127.9 .945 .055 .000
 1.20 25.7 206.9 .169 22.9 4.94 8.04 1.088 .088 .919 .081 .000 178.9 .928 .072 .000
 1.40 30.4 267.8 .154 23.4 5.04 8.82 1.110 .110 .901 .099 .000 236.6 .910 .090 .000
 1.60 35.1 335.1 .142 23.8 5.14 9.55 1.132 .132 .883 .117 .000 300.7 .892 .108 .000
 1.80 39.9 408.4 .133 24.3 5.24 10.24 1.155 .155 .866 .134 .000 371.1 .874 .126 .000
 2.00 44.8 487.7 .125 24.8 5.34 10.89 1.178 .178 .849 .151 .000 447.4 .857 .143 .000
 2.20 49.8 572.9 .118 25.3 5.45 11.50 1.201 .201 .833 .167 .000 529.7 .841 .159 .000
 2.40 54.9 663.8 .113 25.8 5.55 12.09 1.224 .224 .817 .183 .000 617.8 .825 .175 .000
 2.60 60.1 760.4 .108 26.2 5.66 12.65 1.247 .247 .802 .198 .000 711.5 .809 .191 .000
 2.80 65.4 862.5 .103 26.7 5.77 13.19 1.271 .271 .787 .213 .000 810.9 .794 .206 .000
 3.00 70.8 970.3 .099 27.2 5.87 13.70 1.294 .294 .773 .227 .000 915.8 .780 .220 .000
 3.20 76.3 1083.5 .096 27.7 5.97 14.20 1.317 .317 .759 .241 .000 1026.3 .766 .234 .000
 3.40 81.9 1202.3 .093 28.2 6.08 14.68 1.340 .340 .747 .253 .000 1142.4 .753 .247 .000
 3.60 87.6 1326.5 .090 28.6 6.18 15.15 1.362 .362 .734 .266 .000 1263.8 .740 .260 .000
 3.80 93.3 1456.2 .087 29.1 6.28 15.60 1.385 .385 .722 .278 .000 1390.8 .728 .272 .000
 MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 32 TIMES. AVERAGE NUMBER ITERATIONS = 1.0610
 Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
 PRINT HYD ID=50 CODE=1

PARTIAL HYDROGRAPH 100.01

RUNOFF VOLUME = .41646 INCHES = 5.2818 ACRE-FEET
 PEAK DISCHARGE RATE = 170.91 CFS AT 1.833 HOURS BASIN AREA = .2378 SQ. MI.

*
 *S COMPUTE BASIN 15-D *****
 *S
 *
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=3 ISLOPE=-1
 LENGTH=400 FT SLOPE=0.050 K=0.7
 LENGTH=500 FT SLOPE=0.020 K=2.0
 LENGTH=1200 FT SLOPE=0.02167 K=3.0

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	400.0	.050000	.7000
SHALLOW FLOW PORTION	500.0	.020000	2.0000
CHANNEL FLOW PORTION	1200.0	.021670	3.0000
TOTAL BASIN	2100.0	.026669	1.8265

TIME OF CONCENTRATION (HRS)= .1956 TIME TO PEAK (HRS)= .1304 LAG TIME (HRS)= .1467

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
 REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000 TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

COMPUTE NM HYD ID=15 HYD=15_D AREA=0.1506 SQ MI
 PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
 TP=0.0 HR MASS RAIN=-1
 TIME TO PEAK (hrs)= .1333
 K = .156112HR TP = .133333HR K/TP RATIO = 1.170843 SHAPE CONSTANT, N = 3.029245
 UNIT PEAK = 321.00 CFS UNIT VOLUME = .9998 B = 284.20 P60 = 1.7200
 AREA = .150600 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=15 CODE=1
 HYDROGRAPH FROM AREA 15_D

RUNOFF VOLUME = .41961 INCHES = 3.3703 ACRE-FEET
 PEAK DISCHARGE RATE = 123.91 CFS AT 1.500 HOURS BASIN AREA = .1506 SQ. MI.

*
 *S ADD SUB-BASIN OS-D TO SUB-BASIN 15-D*****
 ADD HYD ID=33 HYD NO=101.0 ID I=15 ID II=50
 PRINT HYD ID=33 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = .41768 INCHES = 8.6520 ACRE-FEET
 PEAK DISCHARGE RATE = 193.73 CFS AT 1.800 HOURS BASIN AREA = .3884 SQ. MI.

*
 *S ROUTE 15-D/OS-D THRU 9-D.1 IN CHANNEL NO.9*****

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=0 MAX ELEV=3.80
 CH SLOPE=0.038 FP SLOPE=0.038
 N=0.038 DIST=32.0
 DIST ELEV DIST ELEV
 0.0 5.0 6.0 0.0
 26.0 0.0 32.0 5.0

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	20.00
.20	4.05	10.42	20.48
.40	8.19	33.08	20.96
.60	12.43	65.02	21.44
.80	16.77	105.07	21.92
1.00	21.20	152.51	22.40
1.20	25.73	206.87	22.88
1.40	30.35	267.81	23.36
1.60	35.07	335.06	23.84
1.80	39.89	408.42	24.32
2.00	44.80	487.74	24.80
2.20	49.81	572.90	25.28
2.40	54.91	663.81	25.76
2.60	60.11	760.37	26.24
2.80	65.41	862.54	26.72
3.00	70.80	970.27	27.20
3.20	76.29	1083.52	27.68
3.40	81.87	1202.26	28.16
3.60	87.55	1326.48	28.64
3.80	93.33	1456.17	29.12

ROUTE MCUNGE ID=40 HYD=100.01 INFLOW ID=33 DT=0HR L=4900
 NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0

INFLOW END= 209 TABLE PTS= 20
 DT=.033333 QMED= 96.87 CKMED= 9.2361
 WIDTH MED= 21.82 NREACH= 9 DX= 544.44

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	4.54	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	4.51	2.57	.995	.005	.995	.000	.005	3.3	.998	.000	.002
.40	8.2	33.1	.337	21.0	6.59	4.04	1.451	.012	.991	.188	-.179	20.5	.992	.098	-.090
.60	12.4	65.0	.260	21.4	8.44	5.23	1.860	.017	.988	.305	-.293	48.0	.989	.253	-.242
.80	16.8	105.1	.217	21.9	10.01	6.27	2.206	.023	.986	.381	-.366	84.1	.987	.346	-.332
1.00	21.2	152.5	.189	22.4	11.39	7.19	2.510	.029	.984	.435	-.418	127.9	.985	.409	-.394
1.20	25.7	206.9	.169	22.9	12.62	8.04	2.781	.035	.982	.476	-.458	178.9	.983	.456	-.439
1.40	30.4	267.8	.154	23.4	13.73	8.82	3.027	.040	.980	.508	-.488	236.6	.981	.493	-.474
1.60	35.1	335.1	.142	23.8	14.76	9.55	3.253	.046	.979	.535	-.513	300.7	.979	.522	-.501
1.80	39.9	408.4	.133	24.3	15.71	10.24	3.462	.052	.977	.557	-.534	371.1	.978	.546	-.524
2.00	44.8	487.7	.125	24.8	16.59	10.89	3.657	.057	.976	.576	-.551	447.4	.976	.567	-.543
2.20	49.8	572.9	.118	25.3	17.42	11.50	3.840	.063	.974	.592	-.566	529.7	.975	.584	-.559
2.40	54.9	663.8	.113	25.8	18.20	12.09	4.012	.068	.973	.606	-.579	617.8	.974	.599	-.573
2.60	60.1	760.4	.108	26.2	18.94	12.65	4.175	.074	.972	.619	-.591	711.5	.972	.613	-.585
2.80	65.4	862.5	.103	26.7	19.65	13.19	4.330	.079	.971	.630	-.601	810.9	.971	.625	-.596
3.00	70.8	970.3	.099	27.2	20.32	13.70	4.478	.085	.969	.640	-.610	915.8	.970	.635	-.605
3.20	76.3	1083.5	.096	27.7	20.96	14.20	4.620	.090	.968	.650	-.618	1026.3	.969	.645	-.614
3.40	81.9	1202.3	.093	28.2	21.58	14.68	4.756	.096	.967	.658	-.626	1142.4	.968	.654	-.622
3.60	87.6	1326.5	.090	28.6	22.17	15.15	4.886	.101	.966	.666	-.632	1263.8	.967	.662	-.629
3.80	93.3	1456.2	.087	29.1	22.62	15.60	4.985	.107	.965	.672	-.637	1390.8	.966	.670	-.635

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 5 OCCURRED 6 TIMES. AVERAGE NUMBER ITERATIONS = 1.1254

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	4.54	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	4.51	2.57	.995	.005	.995	.000	.005	3.3	.998	.000	.002
.40	8.2	33.1	.337	21.0	6.51	4.04	1.017	.017	.984	.016	.000	20.5	.990	.010	.000
.60	12.4	65.0	.260	21.4	8.48	5.23	1.031	.031	.970	.030	.000	48.0	.977	.023	.000
.80	16.8	105.1	.217	21.9	10.01	6.27	1.049	.049	.954	.046	.000	84.1	.962	.038	.000
1.00	21.2	152.5	.189	22.4	11.39	7.19	1.068	.068	.936	.064	.000	127.9	.945	.055	.000
1.20	25.7	206.9	.169	22.9	12.62	8.04	1.088	.088	.919	.081	.000	178.9	.928	.072	.000
1.40	30.4	267.8	.154	23.4	13.73	8.82	1.110	.110	.901	.099	.000	236.6	.910	.090	.000
1.60	35.1	335.1	.142	23.8	14.76	9.55	1.132	.132	.883	.117	.000	300.7	.892	.108	.000
1.80	39.9	408.4	.133	24.3	15.71	10.24	1.155	.155	.866	.134	.000	371.1	.874	.126	.000
2.00	44.8	487.7	.125	24.8	16.59	10.89	1.178	.178	.849	.151	.000	447.4	.857	.143	.000
2.20	49.8	572.9	.118	25.3	17.42	11.50	1.201	.201	.833	.167	.000	529.7	.841	.159	.000

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2.40 54.9 663.8 .113 25.8 5.55 12.09 1.224 .224 .817 .183 .000 617.8 .825 .175 .000
2.60 60.1 760.4 .108 26.2 5.66 12.65 1.247 .247 .802 .198 .000 711.5 .809 .191 .000
2.80 65.4 862.5 .103 26.7 5.77 13.19 1.271 .271 .787 .213 .000 810.9 .794 .206 .000
3.00 70.8 970.3 .099 27.2 5.87 13.70 1.294 .294 .773 .227 .000 915.8 .780 .220 .000
3.20 76.3 1083.5 .096 27.7 5.97 14.20 1.317 .317 .759 .241 .000 1026.3 .766 .234 .000
3.40 81.9 1202.3 .093 28.2 6.08 14.68 1.340 .340 .747 .253 .000 1142.4 .753 .247 .000
3.60 87.6 1326.5 .090 28.6 6.18 15.15 1.362 .362 .734 .266 .000 1263.8 .740 .260 .000
3.80 93.3 1456.2 .087 29.1 6.28 15.60 1.385 .385 .722 .278 .000 1390.8 .728 .272 .000
MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 51 TIMES. AVERAGE NUMBER ITERATIONS = 1.0922
Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
PRINT HYD ID=40 CODE=1

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PARTIAL HYDROGRAPH 100.01

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RUNOFF VOLUME = .41549 INCHES = 8.6067 ACRE-FEET
PEAK DISCHARGE RATE = 191.16 CFS AT 2.100 HOURS BASIN AREA = .3884 SQ. MI.

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*
*S COMPUTE BASIN 9-D.1 *****
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COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=3 ISLOPE=-1
LENGTH=400 FT SLOPE=0.0084 K=0.7
LENGTH=0 FT SLOPE=0.0 K=2.0
LENGTH=1600 FT SLOPE=0.0250 K=3.0

```

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

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SCS UPLAND METHOD FACTORS
LENGTH (FT) SLOPE (FT/FT) COMPOSITE K
SHEET FLOW PORTION 400.0 .008400 .7000
SHALLOW FLOW PORTION .0 .010000 2.0000
CHANNEL FLOW PORTION 1600.0 .025000 3.0000
TOTAL BASIN 2000.0 .021680 1.4138

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TIME OF CONCENTRATION (HRS)= .2669 TIME TO PEAK (HRS)= .1779 LAG TIME (HRS)= .2002

```

COMPUTE NM HYD ID=9 HYD=9_D.1 AREA=0.0603 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1

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TIME TO PEAK (hrs)= .1779

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K = .221270HR TP = .177925HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 91.767 CFS UNIT VOLUME = .9997 B = 270.77 P60 = 1.7200
AREA = .060300 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

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PRINT HYD ID=9 CODE=1

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HYDROGRAPH FROM AREA 9_D.1

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RUNOFF VOLUME = .41961 INCHES = 1.3494 ACRE-FEET
PEAK DISCHARGE RATE = 37.07 CFS AT 1.567 HOURS BASIN AREA = .0603 SQ. MI.

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*
*S ADD 15-D/OS-D TO SUB-BASIN 9-D.1 *****
ADD HYD ID=44 HYD NO=104.0 ID I=40 ID II=9
PRINT HYD ID=44 CODE=1

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PARTIAL HYDROGRAPH 104.00

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RUNOFF VOLUME = .41604 INCHES = 9.9561 ACRE-FEET
PEAK DISCHARGE RATE = 195.43 CFS AT 2.100 HOURS BASIN AREA = .4487 SQ. MI.

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*
*S ROUTE 9-D.1/15-D/9-D.1 THRU 6-D.1 IN CHANNEL NO.6 *****
*

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COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=0 MAX ELEV=3.80
CH SLOPE=0.038 FP SLOPE=0.038
N=0.038 DIST=32.0
DIST ELEV DIST ELEV
0.0 5.0 6.0 0.0
26.0 0.0 32.0 5.0

```

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	20.00
.20	4.05	10.42	20.48
.40	8.19	33.08	20.96
.60	12.43	65.02	21.44
.80	16.77	105.07	21.92
1.00	21.20	152.51	22.40
1.20	25.73	206.87	22.88
1.40	30.35	267.81	23.36
1.60	35.07	335.06	23.84
1.80	39.89	408.42	24.32
2.00	44.80	487.74	24.80
2.20	49.81	572.90	25.28
2.40	54.91	663.81	25.76
2.60	60.11	760.37	26.24
2.80	65.41	862.54	26.72
3.00	70.80	970.27	27.20
3.20	76.29	1083.52	27.68
3.40	81.87	1202.26	28.16
3.60	87.55	1326.48	28.64
3.80	93.33	1456.17	29.12

ROUTE MCUNGE ID=30 HYD=104.1 INFLOW ID=44 DT=0HR
NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0

INFLOW END= 218 TABLE PTS= 20
DT= .033333 QMED= 97.72 CKMED= 9.2361
WIDTH MED= 21.83 NREACH= 9 DX= 544.44

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	4.54	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	4.51	2.57	.995	.005	.995	.000	.005	3.3	.998	.000	.002
.40	8.2	33.1	.337	21.0	6.59	4.04	1.451	.012	.991	.188	-.179	20.5	.992	.098	-.090
.60	12.4	65.0	.260	21.4	8.44	5.23	1.860	.017	.988	.305	-.293	48.0	.989	.253	-.242
.80	16.8	105.1	.217	21.9	10.01	6.27	2.206	.023	.986	.381	-.366	84.1	.987	.346	-.332
1.00	21.2	152.5	.189	22.4	11.39	7.19	2.510	.029	.984	.435	-.418	127.9	.985	.409	-.394
1.20	25.7	206.9	.169	22.9	12.62	8.04	2.781	.035	.982	.476	-.458	178.9	.983	.456	-.439
1.40	30.4	267.8	.154	23.4	13.73	8.82	3.027	.040	.980	.508	-.488	236.6	.981	.493	-.474
1.60	35.1	335.1	.142	23.8	14.76	9.55	3.253	.046	.979	.535	-.513	300.7	.979	.522	-.501
1.80	39.9	408.4	.133	24.3	15.71	10.24	3.462	.052	.977	.557	-.534	371.1	.978	.546	-.524
2.00	44.8	487.7	.125	24.8	16.59	10.89	3.657	.057	.976	.576	-.551	447.4	.976	.567	-.543
2.20	49.8	572.9	.118	25.3	17.42	11.50	3.840	.063	.974	.592	-.566	529.7	.975	.584	-.559
2.40	54.9	663.8	.113	25.8	18.20	12.09	4.012	.068	.973	.606	-.579	617.8	.974	.599	-.573
2.60	60.1	760.4	.108	26.2	18.94	12.65	4.175	.074	.972	.619	-.591	711.5	.972	.613	-.585
2.80	65.4	862.5	.103	26.7	19.65	13.19	4.330	.079	.971	.630	-.601	810.9	.971	.625	-.596
3.00	70.8	970.3	.099	27.2	20.32	13.70	4.478	.085	.969	.640	-.610	915.8	.970	.635	-.605
3.20	76.3	1083.5	.096	27.7	20.96	14.20	4.620	.090	.968	.650	-.618	1026.3	.969	.645	-.614
3.40	81.9	1202.3	.093	28.2	21.58	14.68	4.756	.096	.967	.658	-.626	1142.4	.968	.654	-.622
3.60	87.6	1326.5	.090	28.6	22.17	15.15	4.886	.101	.966	.666	-.632	1263.8	.967	.662	-.629
3.80	93.3	1456.2	.087	29.1	22.62	15.60	4.985	.107	.965	.672	-.637	1390.8	.966	.670	-.635

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 4 OCCURRED 19 TIMES. AVERAGE NUMBER ITERATIONS = 1.1491

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	4.54	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	4.51	2.57	.995	.005	.995	.000	.005	3.3	.998	.000	.002
.40	8.2	33.1	.337	21.0	4.61	4.04	1.017	.017	.984	.016	.000	20.5	.990	.010	.000
.60	12.4	65.0	.260	21.4	4.68	5.23	1.031	.031	.970	.030	.000	48.0	.977	.023	.000
.80	16.8	105.1	.217	21.9	4.76	6.27	1.049	.049	.954	.046	.000	84.1	.962	.038	.000
1.00	21.2	152.5	.189	22.4	4.85	7.19	1.068	.068	.936	.064	.000	127.9	.945	.055	.000
1.20	25.7	206.9	.169	22.9	4.94	8.04	1.088	.088	.919	.081	.000	178.9	.928	.072	.000
1.40	30.4	267.8	.154	23.4	5.04	8.82	1.110	.110	.901	.099	.000	236.6	.910	.090	.000
1.60	35.1	335.1	.142	23.8	5.14	9.55	1.132	.132	.883	.117	.000	300.7	.892	.108	.000
1.80	39.9	408.4	.133	24.3	5.24	10.24	1.155	.155	.866	.134	.000	371.1	.874	.126	.000
2.00	44.8	487.7	.125	24.8	5.34	10.89	1.178	.178	.849	.151	.000	447.4	.857	.143	.000
2.20	49.8	572.9	.118	25.3	5.45	11.50	1.201	.201	.833	.167	.000	529.7	.841	.159	.000
2.40	54.9	663.8	.113	25.8	5.55	12.09	1.224	.224	.817	.183	.000	617.8	.825	.175	.000
2.60	60.1	760.4	.108	26.2	5.66	12.65	1.247	.247	.802	.198	.000	711.5	.809	.191	.000
2.80	65.4	862.5	.103	26.7	5.77	13.19	1.271	.271	.787	.213	.000	810.9	.794	.206	.000
3.00	70.8	970.3	.099	27.2	5.87	13.70	1.294	.294	.773	.227	.000	915.8	.780	.220	.000
3.20	76.3	1083.5	.096	27.7	5.97	14.20	1.317	.317	.759	.241	.000	1026.3	.766	.234	.000
3.40	81.9	1202.3	.093	28.2	6.08	14.68	1.340	.340	.747	.253	.000	1142.4	.753	.247	.000
3.60	87.6	1326.5	.090	28.6	6.18	15.15	1.362	.362	.734	.266	.000	1263.8	.740	.260	.000
3.80	93.3	1456.2	.087	29.1	6.28	15.60	1.385	.385	.722	.278	.000	1390.8	.728	.272	.000

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 34 TIMES. AVERAGE NUMBER ITERATIONS = 1.1057

Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3

PRINT HYD ID=30 CODE=1

PARTIAL HYDROGRAPH 104.10

RUNOFF VOLUME = .41446 INCHES = 9.9182 ACRE-FEET
PEAK DISCHARGE RATE = 190.86 CFS AT 2.367 HOURS BASIN AREA = .4487 SQ. MI.


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*S COMPUTE BASIN 6-D.1 *****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                        NK=3  ISLOPE=-1
                        LENGTH=400 FT  SLOPE=0.05 K=0.7
                        LENGTH=0 FT  SLOPE=0.0084 K=2.0
                        LENGTH=2800 FT  SLOPE=0.03286 K=3.0

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
SHEET FLOW PORTION      400.0      .050000      .7000
SHALLOW FLOW PORTION      .0      .000000      .0000
CHANNEL FLOW PORTION      2800.0      .032860      3.0000
TOTAL BASIN      3200.0      .035003      2.2201

TIME OF CONCENTRATION (HRS)= .2140      TIME TO PEAK (HRS)= .1427      LAG TIME (HRS)= .1605

COMPUTE NM HYD          ID=6  HYD=6_D.1  AREA=0.0459 SQ MI
                        PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                        TP=0.0 HR  MASS RAIN=-1

TIME TO PEAK (hrs)= .1427

K = .177428HR  TP = .142672HR  K/TP RATIO = 1.243613  SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 87.113 CFS  UNIT VOLUME = .9994  B = 270.77  P60 = 1.7200
AREA = .045900 SQ MI  IA = .64250 INCHES  INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD          ID=6  CODE=1

HYDROGRAPH FROM AREA 6_D.1

RUNOFF VOLUME = .41961 INCHES = 1.0272 ACRE-FEET
PEAK DISCHARGE RATE = 34.45 CFS AT 1.533 HOURS  BASIN AREA = .0459 SQ. MI.

*S
*S ADD SUB-BASIN (0S-D,15-D,9-D.1) TO SUB-BASIN 6-D.1 TO GET AP_OFF *****
*S

ADD HYD          ID=55  HYD NO=AP_OFF ID I=30 ID II=6
PRINT HYD          ID=55  CODE=1

HYDROGRAPH FROM AREA AP_OFF

RUNOFF VOLUME = .41493 INCHES = 10.9453 ACRE-FEET
PEAK DISCHARGE RATE = 192.56 CFS AT 2.367 HOURS  BASIN AREA = .4946 SQ. MI.

*
*S COMPUTE BASIN 9-D.2 *****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                        NK=1  ISLOPE=0
                        LENGTH=1800 FT  SLOPE=0.0372 K=3.0
                        Kn=.021  CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
SHEET FLOW PORTION      .0      .000000      .0000
SHALLOW FLOW PORTION      .0      .000000      .0000
CHANNEL FLOW PORTION      1800.0      .037200      3.0000
TOTAL BASIN      1800.0      .037200      3.0000

TIME OF CONCENTRATION (HRS)= .0864      TIME TO PEAK (HRS)= .0576      LAG TIME (HRS)= .0648

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000      TIME TO PEAK (HRS)= .1333      LAG TIME (HRS)= .1500

COMPUTE NM HYD          ID=5  HYD=9_D.2  AREA=0.00967 SQ MI
                        PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                        TP=0.0 HR  MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

```

```

K = .165815HR    TP = .133333HR    K/TP RATIO = 1.243613    SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 19.638 CFS    UNIT VOLUME = .9988    B = 270.77    P60 = 1.7200
AREA = .009670 SQ MI    IA = .64250 INCHES    INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD          ID=5          CODE=20

                                HYDROGRAPH FROM AREA 9_D.2

TIME    FLOW          TIME    FLOW          TIME    FLOW          TIME    FLOW          TIME    FLOW
HRS     CFS           HRS     CFS           HRS     CFS           HRS     CFS           HRS     CFS
.000    .0            1.333    .0            2.667    .2            4.000    .0
.667    .0            2.000    .7            3.333    .0

RUNOFF VOLUME = .41961 INCHES = .2164 ACRE-Feet
PEAK DISCHARGE RATE = 7.63 CFS AT 1.533 HOURS    BASIN AREA = .0097 SQ. MI.

*
*S ROUTE 9D.2 FLOW THRU 1200' OF CHANNEL *****
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                     MIN ELEV=0  MAX ELEV=3.80
                     CH SLOPE=0.0433  FP SLOPE=0.0433
                     N=0.038  DIST=32.0
                     DIST  ELEV          DIST  ELEV
                     0.0      5.0        6.0      0.0
                     26.0     0.0       32.0     5.0

                                RATING CURVE VALLEY SECTION 1.0
                                WATER    FLOW    FLOW    TOP
                                SURFACE  AREA  RATE  WIDTH
                                ELEV     SQ FT  CFS    FT
                                .00      .00    .00    20.00
                                .20      4.05    11.12  20.48
                                .40      8.19    35.31  20.96
                                .60     12.43    69.41  21.44
                                .80     16.77   112.16  21.92
                                1.00     21.20   162.80  22.40
                                1.20     25.73   220.83  22.88
                                1.40     30.35   285.88  23.36
                                1.60     35.07   357.66  23.84
                                1.80     39.89   435.97  24.32
                                2.00     44.80   520.65  24.80
                                2.20     49.81   611.55  25.28
                                2.40     54.91   708.59  25.76
                                2.60     60.11   811.67  26.24
                                2.80     65.41   920.73  26.72
                                3.00     70.80  1035.72  27.20
                                3.20     76.29  1156.61  27.68
                                3.40     81.87  1283.37  28.16
                                3.60     87.55  1415.97  28.64
                                3.80     93.33  1554.41  29.12

ROUTE MCUNGE          ID=6  HYD=100.01  INFLOW ID=5  DT=0HR  L=1200
                     NS=0  SLOPE=.038  MATCODE=0  REGCODE=0  CCODE=0

INFLOW END= 139          TABLE PTS= 20
DT= .033333          QMED= 3.82  CKMED= 2.7482
WIDTH MED= 20.16      NREACH= 8  DX= 150.00

DEPTH  AREA  Q  TRAVEL  WIDTH  ck  VEL  C  D  C1  C2  C3  Q-M  C1-M  C2-M  C3-M
(FT)  (SQ FT)  (CFS)  TIME(HR)  (FT)  (FPS)  (FPS)
.00    .0    .0    .165  20.0  1.25  1.29  1.000  .000  1.000  .000  .000  .0  1.000  .000  .000
.20    4.0  11.1  .121  20.5  4.53  2.75  3.622  .021  .991  .569  -.560  3.5  .994  .397  -.391
.40    8.2  35.3  .077  21.0  7.03  4.31  5.624  .042  .987  .700  -.687  21.9  .989  .650  -.639
.60   12.4  69.4  .060  21.4  9.01  5.58  7.206  .063  .985  .758  -.743  51.2  .986  .733  -.719
.80   16.8  112.2  .050  21.9  10.68  6.69  8.548  .084  .983  .792  -.775  89.8  .984  .777  -.760
1.00  21.2  162.8  .043  22.4  12.15  7.68  9.723  .105  .981  .815  -.796  136.6  .982  .805  -.786
1.20  25.7  220.8  .039  22.9  13.47  8.58  10.775  .126  .979  .832  -.811  191.0  .980  .824  -.804
1.40  30.4  285.9  .035  23.4  14.66  9.42  11.729  .146  .977  .845  -.822  252.6  .978  .839  -.817
1.60  35.1  357.7  .033  23.8  15.76  10.20  12.604  .167  .976  .855  -.831  321.0  .976  .850  -.826
1.80  39.9  436.0  .030  24.3  16.77  10.93  13.414  .188  .974  .863  -.837  396.1  .975  .859  -.834
2.00  44.8  520.6  .029  24.8  17.71  11.62  14.169  .208  .973  .870  -.843  477.6  .974  .867  -.840
2.20  49.8  611.6  .027  25.3  18.60  12.28  14.877  .228  .972  .876  -.847  565.4  .972  .873  -.845
2.40  54.9  708.6  .026  25.8  19.43  12.90  15.544  .248  .970  .881  -.851  659.4  .971  .878  -.849
2.60  60.1  811.7  .025  26.2  20.22  13.50  16.176  .268  .969  .885  -.855  759.5  .970  .883  -.853
2.80  65.4  920.7  .024  26.7  20.97  14.08  16.777  .288  .968  .889  -.857  865.6  .969  .887  -.856
3.00  70.8  1035.7  .023  27.2  21.69  14.63  17.350  .308  .967  .893  -.860  977.6  .968  .891  -.859
3.20  76.3  1156.6  .022  27.7  22.37  15.16  17.899  .328  .966  .896  -.862  1095.6  .966  .894  -.861
3.40  81.9  1283.4  .021  28.2  23.03  15.68  18.425  .347  .965  .899  -.864  1219.4  .965  .897  -.863
3.60  87.6  1416.0  .021  28.6  23.67  16.17  18.932  .367  .964  .901  -.865  1349.1  .964  .900  -.865
3.80  93.3  1554.4  .020  29.1  24.14  16.66  19.313  .388  .963  .903  -.866  1484.6  .963  .903  -.866

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 4 OCCURRED 5 TIMES.  AVERAGE NUMBER ITERATIONS = 1.0447
DEPTH  AREA  Q  TRAVEL  WIDTH  ck  VEL  C  D  C1  C2  C3  Q-M  C1-M  C2-M  C3-M
(FT)  (SQ FT)  (CFS)  TIME(HR)  (FT)  (FPS)  (FPS)

```

.00	.0	.0	.165	20.0	1.25	1.29	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	11.1	.121	20.5	1.34	2.75	1.071	.071	.934	.066	.000	3.5	.977	.023	.000
.40	8.2	35.3	.077	21.0	1.50	4.31	1.197	.197	.835	.165	.000	21.9	.884	.116	.000
.60	12.4	69.4	.060	21.4	1.67	5.58	1.339	.339	.747	.253	.000	51.2	.789	.211	.000
.80	16.8	112.2	.050	21.9	1.85	6.69	1.484	.484	.674	.326	.000	89.8	.708	.292	.000
1.00	21.2	162.8	.043	22.4	2.03	7.68	1.627	.627	.615	.385	.000	136.6	.643	.357	.000
1.20	25.7	220.8	.039	22.9	2.21	8.58	1.767	.767	.566	.434	.000	191.0	.589	.411	.000
1.40	30.4	285.9	.035	23.4	2.38	9.42	1.903	.903	.526	.474	.000	252.6	.545	.455	.000
1.60	35.1	357.7	.033	23.8	2.54	10.20	2.035	1.035	.491	.509	.000	321.0	.508	.492	.000
1.80	39.9	436.0	.030	24.3	2.70	10.93	2.163	1.163	.462	.538	.000	396.1	.476	.524	.000
2.00	44.8	520.6	.029	24.8	2.86	11.62	2.288	1.288	.437	.563	.000	477.6	.449	.551	.000
2.20	49.8	611.6	.027	25.3	3.01	12.28	2.409	1.409	.415	.585	.000	565.4	.426	.574	.000
2.40	54.9	708.6	.026	25.8	3.16	12.90	2.527	1.527	.396	.604	.000	659.4	.405	.595	.000
2.60	60.1	811.7	.025	26.2	3.30	13.50	2.643	1.643	.378	.622	.000	759.5	.387	.613	.000
2.80	65.4	920.7	.024	26.7	3.44	14.08	2.755	1.755	.363	.637	.000	865.6	.370	.630	.000
3.00	70.8	1035.7	.023	27.2	3.58	14.63	2.865	1.865	.349	.651	.000	977.6	.356	.644	.000
3.20	76.3	1156.6	.022	27.7	3.72	15.16	2.973	1.973	.336	.664	.000	1095.6	.343	.657	.000
3.40	81.9	1283.4	.021	28.2	3.85	15.68	3.078	2.078	.325	.675	.000	1219.4	.330	.670	.000
3.60	87.6	1416.0	.021	28.6	3.98	16.17	3.181	2.181	.314	.686	.000	1349.1	.319	.681	.000
3.80	93.3	1554.4	.020	29.1	4.10	16.66	3.282	2.282	.305	.695	.000	1484.6	.309	.691	.000

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 2 OCCURRED 158 TIMES. AVERAGE NUMBER ITERATIONS = 1.0353
 Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
 PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 100.01

RUNOFF VOLUME = .41743 INCHES = .2153 ACRE-FEET
 PEAK DISCHARGE RATE = 7.59 CFS AT 1.767 HOURS BASIN AREA = .0097 SQ. MI.

*
 *S COMPUTE BASIN 6-D.2*****
 *

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=1 ISLOPE=0
 LENGTH=1200 FT SLOPE=0.0433 K=3.0
 Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	ADJUSTED SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	.0	.000000	.0000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	1200.0	.043003	3.0000
TOTAL BASIN	1200.0	.043003	3.0000

TIME OF CONCENTRATION (HRS)= .0536 TIME TO PEAK (HRS)= .0357 LAG TIME (HRS)= .0402

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.

REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000 TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

COMPUTE NM HYD ID=7 HYD=6_D.2 AREA=0.057362 SQ MI
 PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
 TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .165815HR TP = .133333HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
 UNIT PEAK = 116.49 CFS UNIT VOLUME = .9994 B = 270.77 P60 = 1.7200
 AREA = .057362 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=7 CODE=20

HYDROGRAPH FROM AREA 6_D.2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.667	1.1	4.000	.1	5.333	.0
.667	.0	2.000	4.2	3.333	.3	4.667	.0		

RUNOFF VOLUME = .41961 INCHES = 1.2837 ACRE-FEET
 PEAK DISCHARGE RATE = 45.25 CFS AT 1.533 HOURS BASIN AREA = .0574 SQ. MI.

*
 *S ADD ROUTE 9D.2 TO 6D.2 TO GET 6_9D.2 *****
 ADD HYD ID=8 HYD NO=6_9D.2 ID I=6 ID II=7
 PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA 6_9D.2

```

RUNOFF VOLUME = .41929 INCHES = 1.4990 ACRE-FEET
PEAK DISCHARGE RATE = 45.25 CFS AT 1.533 HOURS BASIN AREA = .0670 SQ. MI.

*
*S COMPUTE BASIN 6-D.3*****
*
COMPUTE LT TP          LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                        NK=1 ISLOPE=0
                        LENGTH=600 FT SLOPE=0.0433 K=3.0
                        Kn=.021 CR=.5

TC AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT)          ADJUSTED SLOPE (FT/FT) COMPOSITE K
SHEET FLOW PORTION    .0          .000000          .0000
SHALLOW FLOW PORTION .0          .000000          .0000
CHANNEL FLOW PORTION  600.0       .043003          3.0000
TOTAL BASIN           600.0       .043003          3.0000

TIME OF CONCENTRATION (HRS)= .0268    TIME TO PEAK (HRS)= .0179    LAG TIME (HRS)= .0201

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000    TIME TO PEAK (HRS)= .1333    LAG TIME (HRS)= .1500

COMPUTE NM HYD          ID=9 HYD=6_D.3 AREA=0.018277 SQ MI
                        PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
                        TP=0.0 HR MASS RAIN=-1
TIME TO PEAK (hrs)= .1333
K = .165815HR TP = .133333HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 37.117 CFS UNIT VOLUME = .9991 B = 270.77 P60 = 1.7200
AREA = .018277 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD              ID=9 CODE=20
                        HYDROGRAPH FROM AREA 6_D.3
TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 1.333 .0 2.667 .3 4.000 .0
.667 .0 2.000 1.3 3.333 .1 4.667 .0

RUNOFF VOLUME = .41961 INCHES = .4090 ACRE-FEET
PEAK DISCHARGE RATE = 14.42 CFS AT 1.533 HOURS BASIN AREA = .0183 SQ. MI.

*
*S
*S
*S
*S *****
*S * COMPUTE OFFSITE "A" BASINS *
*S *****
*S
*S
*S COMPUTE BASIN A-1.1 *****
*
COMPUTE LT TP          LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                        NK=3 ISLOPE=-1
                        LENGTH=400 FT SLOPE=0.0340 K=0.7
                        LENGTH=1600 FT SLOPE=0.0361 K=2.0
                        LENGTH=2800 FT SLOPE=0.0346 K=3.0

BASIN LONGER THAN 4000.0 FT AND ALL BASIN LAG FACTORS NOT SPECIFIED
USE Kn= .0160 AND Lca/L= .50000

TC AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT)          SLOPE (FT/FT)          COMPOSITE K
SHEET FLOW PORTION    400.0          .034000          .7000
SHALLOW FLOW PORTION 1600.0       .036100          2.0000
CHANNEL FLOW PORTION  2800.0       .034600          3.0000
TOTAL BASIN           4800.0       .035050          2.0799

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LAG EQUATION FACTORS:      Kn= .0160      TOTAL BASIN LENGTH (FT)= 4800.0
TOTAL BASIN SLOPE (FT/FT)= .035050      CENTROID LENGTH (FT)= 2400.0

TIME OF CONCENTRATION (HRS)= .2889      TIME TO PEAK (HRS)= .1926      LAG TIME (HRS)= .2167

COMPUTE NM HYD      ID=60 HYD=A_1.1 AREA=0.08421 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1926

K = .236043HR TP = .192581HR K/TP RATIO = 1.225680 SHAPE CONSTANT, N = 2.904595
UNIT PEAK = 119.79 CFS UNIT VOLUME = .9998 B = 273.95 P60 = 1.7200
AREA = .084210 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD      ID=60 CODE=20

HYDROGRAPH FROM AREA A_1.1

TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 2.000 10.5 4.000 .4 6.000 .0
.667 .0 2.667 2.4 4.667 .1 6.667 .0
1.333 .0 3.333 .9 5.333 .1

RUNOFF VOLUME = .41961 INCHES = 1.8845 ACRE-Feet
PEAK DISCHARGE RATE = 48.62 CFS AT 1.567 HOURS BASIN AREA = .0842 SQ. MI.

*
*S COMPUTE BASIN A-1.2 *****
*

COMPUTE LT TP      LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=1 ISLOPE=0
LENGTH=3200 FT SLOPE=0.0325 K=3.0
Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT) SLOPE (FT/FT) COMPOSITE K
SHEET FLOW PORTION .0 .000000 .0000
SHALLOW FLOW PORTION .0 .000000 .0000
CHANNEL FLOW PORTION 3200.0 .032500 3.0000
TOTAL BASIN 3200.0 .032500 3.0000

TIME OF CONCENTRATION (HRS)= .1644      TIME TO PEAK (HRS)= .1096      LAG TIME (HRS)= .1233

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000      TIME TO PEAK (HRS)= .1333      LAG TIME (HRS)= .1500

COMPUTE NM HYD      ID=65 HYD=A_1.2 AREA=0.01196 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .165815HR TP = .133333HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 24.289 CFS UNIT VOLUME = .9989 B = 270.77 P60 = 1.7200
AREA = .011960 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD      ID=65 CODE=20

HYDROGRAPH FROM AREA A_1.2

TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 1.333 .0 2.667 .2 4.000 .0
.667 .0 2.000 .9 3.333 .1 4.667 .0

RUNOFF VOLUME = .41961 INCHES = .2677 ACRE-Feet
PEAK DISCHARGE RATE = 9.44 CFS AT 1.533 HOURS BASIN AREA = .0120 SQ. MI.

*
*S ADD A-1.1 TO A-2.2 TO GET FLOW IN VISTA VIEJA AVENUE *****
ADD HYD      ID=66 HYD NO=A_1.1_1.2 ID I=60 ID II=65
PRINT HYD      ID=66 CODE=1

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HYDROGRAPH FROM AREA A_1.1_1.2

RUNOFF VOLUME = .41961 INCHES = 2.1522 ACRE-FEET
PEAK DISCHARGE RATE = 57.28 CFS AT 1.567 HOURS BASIN AREA = .0962 SQ. MI.

*
*S
*S *****
*S * COMPUTE OFFSITE "E" BASINS *
*S *****
*S
*S
*S COMPUTE BASIN E-1.1 *****
*
COMPUTE NM HYD ID=21 HYD=1_E.1 AREA=0.006128 PER A=95.0 PER B=5.0
PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1

K = .165811HR TP = .133330HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 12.445 CFS UNIT VOLUME = .9984 B = 270.77 P60 = 1.7200
AREA = .006128 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=21 CODE=1

HYDROGRAPH FROM AREA 1_E.1

RUNOFF VOLUME = .41961 INCHES = .1371 ACRE-FEET
PEAK DISCHARGE RATE = 4.84 CFS AT 1.533 HOURS BASIN AREA = .0061 SQ. MI.

*
*S COMPUTE BASIN E-1.3 *****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=1 ISLOPE=0
LENGTH=3800 FT SLOPE=0.0325 K=3.0
Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT) SLOPE (FT/FT) COMPOSITE K
SHEET FLOW PORTION .0 .000000 .0000
SHALLOW FLOW PORTION .0 .000000 .0000
CHANNEL FLOW PORTION 3800.0 .032500 3.0000
TOTAL BASIN 3800.0 .032500 3.0000

TIME OF CONCENTRATION (HRS)= .1952 TIME TO PEAK (HRS)= .1301 LAG TIME (HRS)= .1464

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000 TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

COMPUTE NM HYD ID=70 HYD=E_1.3 AREA=0.08120 SQ MI
PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .163755HR TP = .133333HR K/TP RATIO = 1.228167 SHAPE CONSTANT, N = 2.899273
UNIT PEAK = 166.56 CFS UNIT VOLUME = .9996 B = 273.50 P60 = 1.7200
AREA = .081200 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=70 CODE=20

HYDROGRAPH FROM AREA E_1.3

TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 1.333 .0 2.667 1.5 4.000 .1 5.333 .0
.667 .0 2.000 5.9 3.333 .4 4.667 .0

RUNOFF VOLUME = .41961 INCHES = 1.8172 ACRE-FEET
PEAK DISCHARGE RATE = 64.60 CFS AT 1.533 HOURS BASIN AREA = .0812 SQ. MI.

*

```

```

*S COMPUTE BASIN E-1.4 *****
*
COMPUTE LT TP          LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                        NK=1 ISLOPE=0
                        LENGTH=5200 FT SLOPE=0.0325 K=3.0
                        Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
                        LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
SHEET FLOW PORTION      .0              .000000              .0000
SHALLOW FLOW PORTION    .0              .000000              .0000
CHANNEL FLOW PORTION     5200.0          .032500              3.0000
TOTAL BASIN              5200.0          .032500              3.0000

LAG EQUATION FACTORS:   Kn= .0210      TOTAL BASIN LENGTH (FT)= 5200.0
TOTAL BASIN SLOPE (FT/FT)= .032500    CENTROUD LENGTH (FT)= 2600.0

TIME OF CONCENTRATION (HRS)= .2385    TIME TO PEAK (HRS)= .1590    LAG TIME (HRS)= .1789

COMPUTE NM HYD          ID=75 HYD=E_1.4 AREA=0.13593 SQ MI
                        PER A=95.0 PER B=5.0 PER C=0.0 PER D=0.0
                        TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1590

K = .188113HR TP = .159019HR K/TP RATIO = 1.182960 SHAPE CONSTANT, N = 3.000461
UNIT PEAK = 240.93 CFS UNIT VOLUME = .9999 B = 281.86 P60 = 1.7200
AREA = .135930 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD              ID=75 CODE=20

HYDROGRAPH FROM AREA E_1.4

TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 1.333 .0 2.667 3.1 4.000 .3 5.333 .0
.667 .0 2.000 11.3 3.333 1.0 4.667 .1 6.000 .0

RUNOFF VOLUME = .41961 INCHES = 3.0420 ACRE-FEET
PEAK DISCHARGE RATE = 96.02 CFS AT 1.533 HOURS BASIN AREA = .1359 SQ. MI.

*
*S
*S *****
*S *COMPUTE ONSITE BASINS*
*S *****
*S
*S
*S
*S
*S COMPUTE BASIN 6-D.4 *****
*
COMPUTE NM HYD          ID=2 HYD=6_D.4 AREA=0.015778 PER A=95.0 PER B=5.0
                        PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1

K = .165811HR TP = .133330HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 32.043 CFS UNIT VOLUME = .9991 B = 270.77 P60 = 1.7200
AREA = .015778 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD              ID=2 CODE=1

HYDROGRAPH FROM AREA 6_D.4

RUNOFF VOLUME = .41961 INCHES = .3531 ACRE-FEET
PEAK DISCHARGE RATE = 12.45 CFS AT 1.533 HOURS BASIN AREA = .0158 SQ. MI.

*
*S COMPUTE BASIN 6-D.5 *****
*
COMPUTE NM HYD          ID=3 HYD=6_D.5 AREA=0.007522 PER A=95.0 PER B=5.0
                        PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1

K = .165811HR TP = .133330HR K/TP RATIO = 1.243613 SHAPE CONSTANT, N = 2.866780
UNIT PEAK = 15.276 CFS UNIT VOLUME = .9986 B = 270.77 P60 = 1.7200
AREA = .007522 SQ MI IA = .64250 INCHES INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD              ID=3 CODE=1

```

```

                                HYDROGRAPH FROM AREA 6_D.5

RUNOFF VOLUME =      .41961 INCHES      =      .1683 ACRE-FEET
PEAK DISCHARGE RATE =      5.94 CFS      AT      1.533 HOURS      BASIN AREA =      .0075 SQ. MI.

*
*S COMPUTE BASIN 6-D.6 *****
COMPUTE NM HYD      ID=4 HYD=6_D.6 AREA=0.006441 PER A=100 PER B=0
                                PER C=0 PER D=0 TP=0.13333 RAINFALL=-1

      K =      .167503HR      TP =      .133330HR      K/TP RATIO =      1.256304      SHAPE CONSTANT, N =      2.840823
      UNIT PEAK =      12.975 CFS      UNIT VOLUME =      .9983      B =      268.58      P60 = 1.7200
      AREA =      .006441 SQ MI      IA =      .65000 INCHES      INF =      1.67000 INCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =      .033333

PRINT HYD      ID=4      CODE=1

                                HYDROGRAPH FROM AREA 6_D.6

RUNOFF VOLUME =      .41046 INCHES      =      .1410 ACRE-FEET
PEAK DISCHARGE RATE =      4.95 CFS      AT      1.533 HOURS      BASIN AREA =      .0064 SQ. MI.

*
*S COMPUTE BASIN 6-D.7 *****
COMPUTE NM HYD      ID=1 HYD=6_D.7 AREA=0.005236 PER A=95.0 PER B=5.0
                                PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1

      K =      .165811HR      TP =      .133330HR      K/TP RATIO =      1.243613      SHAPE CONSTANT, N =      2.866780
      UNIT PEAK =      10.634 CFS      UNIT VOLUME =      .9981      B =      270.77      P60 = 1.7200
      AREA =      .005236 SQ MI      IA =      .64250 INCHES      INF =      1.64900 INCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =      .033333

PRINT HYD      ID=1      CODE=1

                                HYDROGRAPH FROM AREA 6_D.7

RUNOFF VOLUME =      .41961 INCHES      =      .1172 ACRE-FEET
PEAK DISCHARGE RATE =      4.14 CFS      AT      1.533 HOURS      BASIN AREA =      .0052 SQ. MI.

*
*S COMPUTE BASIN 6-D.8 *****
COMPUTE NM HYD      ID=20 HYD=6_D.8 AREA=0.010762 PER A=95.0 PER B=0.0
                                PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1
      *****WARNING***** SUM OF TREATMENT TYPES DOES NOT EQUAL 100 PERCENT OR TOTAL AREA

      K =      .167503HR      TP =      .133330HR      K/TP RATIO =      1.256304      SHAPE CONSTANT, N =      2.840823
      UNIT PEAK =      21.679 CFS      UNIT VOLUME =      .9987      B =      268.58      P60 = 1.7200
      AREA =      .010762 SQ MI      IA =      .65000 INCHES      INF =      1.67000 INCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =      .033333

PRINT HYD      ID=20      CODE=1

                                HYDROGRAPH FROM AREA 6_D.8

RUNOFF VOLUME =      .41046 INCHES      =      .2356 ACRE-FEET
PEAK DISCHARGE RATE =      8.27 CFS      AT      1.533 HOURS      BASIN AREA =      .0108 SQ. MI.

*
*S COMPUTE BASIN E-1.2 *****
COMPUTE NM HYD      ID=22 HYD=1_E.2 AREA=0.001177 PER A=95.0 PER B=5.0
                                PER C=0.0 PER D=0.0 TP=0.13333 RAINFALL=-1

      K =      .165811HR      TP =      .133330HR      K/TP RATIO =      1.243613      SHAPE CONSTANT, N =      2.866780
      UNIT PEAK =      2.3903 CFS      UNIT VOLUME =      .9933      B =      270.77      P60 = 1.7200
      AREA =      .001177 SQ MI      IA =      .64250 INCHES      INF =      1.64900 INCHES PER HOUR
      RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =      .033333

PRINT HYD      ID=22      CODE=1

                                HYDROGRAPH FROM AREA 1_E.2

RUNOFF VOLUME =      .41961 INCHES      =      .0263 ACRE-FEET
PEAK DISCHARGE RATE =      .93 CFS      AT      1.533 HOURS      BASIN AREA =      .0012 SQ. MI.

```



```

*
*S ADD 6_D.4 TO 6_D.7 *****
ADD HYD          ID=11    HYD NO=6D.4_7 ID I=2 ID II=1
PRINT HYD        ID=11    CODE=1

                                HYDROGRAPH FROM AREA 6D.4_7

RUNOFF VOLUME =      .41960 INCHES      =      .4703 ACRE-FEET
PEAK DISCHARGE RATE =      16.58 CFS    AT    1.533 HOURS    BASIN AREA =    .0210 SQ. MI.

*
*S ADD 6_D.5 TO 6_D.6 *****
ADD HYD          ID=12    HYD NO=6D.5_6 ID I=3 ID II=4
PRINT HYD        ID=12    CODE=1

                                HYDROGRAPH FROM AREA 6D.5_6

RUNOFF VOLUME =      .41539 INCHES      =      .3093 ACRE-FEET
PEAK DISCHARGE RATE =      10.89 CFS    AT    1.533 HOURS    BASIN AREA =    .0140 SQ. MI.

*
*S ADD 6_D.4_7 TO 6_D.5_6          TO GET PROJECT SITE DISCHARGE TO AP_1*****
ADD HYD          ID=25    HYD NO=6D.5_6 ID I=11 ID II=12
PRINT HYD        ID=25    CODE=1

                                HYDROGRAPH FROM AREA 6D.5_6

RUNOFF VOLUME =      .41792 INCHES      =      .7796 ACRE-FEET
PEAK DISCHARGE RATE =      27.48 CFS    AT    1.533 HOURS    BASIN AREA =    .0350 SQ. MI.

*

*S
*S          *****
*S          * COMPUTE ANALYSIS POINTS *
*S          *****
*S
*S
*S
*S
*S
*S
*S ANALYSIS POINT 2, MIDDLE BRANCH BOCA NEGRA (NORTHERN STORM DRAIN)
*
*S ADD 6D.8 TO NEW AP_OFF TO GET AP#2 AT MIDDLE BRANCH BOCA NEGRA ARROYO ***
*
ADD HYD          ID=24    HYD NO=AP_2 ID I=55 ID II=20
PRINT HYD        ID=24    CODE=1

                                HYDROGRAPH FROM AREA AP_2

RUNOFF VOLUME =      .41484 INCHES      =      11.1809 ACRE-FEET
PEAK DISCHARGE RATE =      192.93 CFS    AT    2.367 HOURS    BASIN AREA =    .5054 SQ. MI.

*
*S ANALYSIS POINT 1, SOUTHERN STORM DRAIN TO VISTA VIEJA SUBDIVISION *****
*
*S ADD 6D.3 TO 6D.4_7 TO GET AP_1 *****
*
ADD HYD          ID=14    HYD NO=AP_1 ID I=25 ID II=9
PRINT HYD        ID=14    CODE=1

                                HYDROGRAPH FROM AREA AP_1

RUNOFF VOLUME =      .41850 INCHES      =      1.1886 ACRE-FEET
PEAK DISCHARGE RATE =      41.90 CFS    AT    1.533 HOURS    BASIN AREA =    .0533 SQ. MI.

*
*S ANALYSIS POINT 3, DISCHARGE FROM VILLA REAL RD TO SCENIC RD STORM DRAIN *
*
*S ADD E_1.1 TO E_1.2 TO GET AP_3
*
ADD HYD          ID=23    HYD NO=AP_3 ID I=21 ID II=22
PRINT HYD        ID=23    CODE=1

```

HYDROGRAPH FROM AREA AP_3

RUNOFF VOLUME = .41960 INCHES = .1635 ACRE-FEET
PEAK DISCHARGE RATE = 5.77 CFS AT 1.533 HOURS BASIN AREA = .0073 SQ. MI.

*S

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 17:01:35

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -
04/12/2016
INPUT FILE = DEV_Cond.HYM

- VERSION: 1997.02c

RUN DATE (MON/DAY/YR) =

USER NO.= AHYMO-S-9702c1BohanHu-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S THE VISTA VIEJA SUBDIVISION DRAINAGE BASIN (D) EXISTING										
*S 100 YEAR - 6 HOUR STORM										
*S										
START										TIME= .00
LOCATION			DEFAULT							
RAINFALL	TYPE= 1									RAIN6= 2.210
*S										

* COMPUTE OFFSITE "D" BASINS *										

*S										
*S										
*S										
*S										
*S										
*S COMPUTE BASIN OS-D *****										
COMPUTE NM HYD	OS_D	-	17	.23780	174.20	5.322	.41961	1.533	1.145	PER IMP= .00
*S ROUTE OS-D THRU 15-D IN CHANNEL NO.15*****										
ROUTE MCUNGE	100.01	17	50	.23780	170.91	5.282	.41646	1.833	1.123	CCODE = .1
*S COMPUTE BASIN 15-D *****										
*S										
COMPUTE NM HYD	15_D	-	15	.15060	123.91	3.370	.41961	1.500	1.286	PER IMP= .00
*S ADD SUB-BASIN OS-D TO SUB-BASIN 15-D*****										
ADD HYD	101.00	15&50	33	.38840	193.73	8.652	.41768	1.800	.779	
*S ROUTE 15-D/OS-D THRU 9-D.1 IN CHANNEL NO.9*****										
ROUTE MCUNGE	100.01	33	40	.38840	191.16	8.607	.41549	2.100	.769	CCODE = .1
*S COMPUTE BASIN 9-D.1 *****										
COMPUTE NM HYD	9_D.1	-	9	.06030	37.07	1.349	.41961	1.567	.961	PER IMP= .00
*S ADD 15-D/OS-D TO SUB-BASIN 9-D.1 *****										
ADD HYD	104.00	40&9	44	.44870	195.43	9.956	.41604	2.100	.681	
*S ROUTE 9-D.1/15-D/9-D.1 THRU 6-D.1 IN CHANNEL NO.6 *****										
ROUTE MCUNGE	104.10	44	30	.44870	190.86	9.918	.41446	2.367	.665	CCODE = .1
*S COMPUTE BASIN 6-D.1 *****										
COMPUTE NM HYD	6_D.1	-	6	.04590	34.45	1.027	.41961	1.533	1.173	PER IMP= .00
*S										
*S ADD SUB-BASIN (OS-D,15-D,9-D.1) TO SUB-BASIN 6-D.1 TO GET AP_OFF *****										
*S										
ADD HYD	AP_OFF	30&6	55	.49460	192.56	10.945	.41493	2.367	.608	
*S COMPUTE BASIN 9-D.2 *****										
COMPUTE NM HYD	9_D.2	-	5	.00967	7.63	.216	.41961	1.533	1.233	PER IMP= .00
*S ROUTE 9D.2 FLOW THRU 1200' OF CHANNEL *****										
ROUTE MCUNGE	100.01	5	6	.00967	7.59	.215	.41743	1.767	1.227	CCODE = .1
*S COMPUTE BASIN 6-D.2*****										
COMPUTE NM HYD	6_D.2	-	7	.05736	45.25	1.284	.41961	1.533	1.232	PER IMP= .00
*S ADD ROUTE 9D.2 TO 6D.2 TO GET 6_9D.2 *****										
ADD HYD	6_9D.2	6&7	8	.06703	45.25	1.499	.41929	1.533	1.055	
*S COMPUTE BASIN 6-D.3*****										
COMPUTE NM HYD	6_D.3	-	9	.01828	14.42	.409	.41961	1.533	1.233	PER IMP= .00
*S										
*S										
*S										
*S *****										

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
*S	* COMPUTE OFFSITE "A" BASINS *									
*S	*****									
*S	*****									
*S	*S COMPUTE BASIN A-1.1 *****									
COMPUTE NM HYD	A_1.1	-	60	.08421	48.62	1.885	.41961	1.567	.902 PER IMP=	.00
*S	*S COMPUTE BASIN A-1.2 *****									
COMPUTE NM HYD	A_1.2	-	65	.01196	9.44	.268	.41961	1.533	1.233 PER IMP=	.00
*S	*S ADD A-1.1 TO A-2.2 TO GET FLOW IN VISTA VIEJA AVENUE *****									
ADD HYD	A_1.1_1.2	60&65	66	.09617	57.28	2.152	.41961	1.567	.931	
*S	*****									
*S	* COMPUTE OFFSITE "E" BASINS *									
*S	*****									
*S	*****									
*S	*S COMPUTE BASIN E-1.1 *****									
COMPUTE NM HYD	1_E.1	-	21	.00613	4.84	.137	.41961	1.533	1.234 PER IMP=	.00
*S	*S COMPUTE BASIN E-1.3 *****									
COMPUTE NM HYD	E_1.3	-	70	.08120	64.60	1.817	.41961	1.533	1.243 PER IMP=	.00
*S	*S COMPUTE BASIN E-1.4 *****									
COMPUTE NM HYD	E_1.4	-	75	.13593	96.02	3.042	.41961	1.533	1.104 PER IMP=	.00
*S	*****									
*S	*COMPUTE ONSITE BASINS*									
*S	*****									
*S	*****									
*S	*****									
*S	*S COMPUTE BASIN 6-D.4 *****									
COMPUTE NM HYD	6_D.4	-	2	.01578	12.45	.353	.41961	1.533	1.233 PER IMP=	.00
*S	*S COMPUTE BASIN 6-D.5 *****									
COMPUTE NM HYD	6_D.5	-	3	.00752	5.94	.168	.41961	1.533	1.233 PER IMP=	.00
*S	*S COMPUTE BASIN 6-D.6 *****									
COMPUTE NM HYD	6_D.6	-	4	.00644	4.95	.141	.41046	1.533	1.202 PER IMP=	.00
*S	*S COMPUTE BASIN 6-D.7 *****									
COMPUTE NM HYD	6_D.7	-	1	.00524	4.14	.117	.41961	1.533	1.234 PER IMP=	.00
*S	*S COMPUTE BASIN 6-D.8 *****									
COMPUTE NM HYD	6_D.8	-	20	.01076	8.27	.236	.41046	1.533	1.201 PER IMP=	.00
*S	*S COMPUTE BASIN E-1.2 *****									
COMPUTE NM HYD	1_E.2	-	22	.00118	.93	.026	.41961	1.533	1.240 PER IMP=	.00
*S	*S ADD 6_D.4 TO 6_D.7 *****									
ADD HYD	6D.4_7	2& 1	11	.02101	16.58	.470	.41960	1.533	1.233	
*S	*S ADD 6_D.5 TO 6_D.6 *****									
ADD HYD	6D.5_6	3& 4	12	.01396	10.89	.309	.41539	1.533	1.219	
*S	*S ADD 6_D.4_7 TO 6_D.5_6 *****									
ADD HYD	6D.5_6	11&12	25	.03498	27.48	.780	.41792	1.533	1.227	
*S	*****									
*S	* COMPUTE ANALYSIS POINTS *									
*S	*****									
*S	*****									
*S	*****									

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 3 NOTATION
*S										
*S										
*S ANALYSIS POINT 2, MIDDLE BRANCH BOCA NEGRA (NORTHERN STORM DRAIN)										
*S ADD 6D.8 TO NEW AP_OFF TO GET AP#2 AT MIDDLE BRANCH BOCA NEGRA ARROYO ***										
ADD HYD		AP_2 55&20	24	.50536	192.93	11.181	.41484	2.367	.597	
*S ANALYSIS POINT 1, SOUTHERN STORM DRAIN TO VISTA VIEJA SUBDIVISION *****										
*S ADD 6D.3 TO 6D.4_7 TO GET AP_1 *****										
ADD HYD		AP_1 25& 9	14	.05325	41.90	1.189	.41850	1.533	1.229	
*S ANALYSIS POINT 3, DISCHARGE FROM VILLA REAL RD TO SCENIC RD STORM DRAIN *										
*S ADD E_1.1 TO E_1.2 TO GET AP_3										
ADD HYD		AP_3 21&22	23	.00731	5.77	.163	.41960	1.533	1.235	
*S										
FINISH										

**APPENDIX B -
DEVELOPED CONDITIONS AHYMO SUMMARY,
OUTPUT, AND INPUT FILES**

```

*S THE VISTA VIEJA SUBDIVISION DRAINAGE BASIN (D) PROPOSED
*S 100 YEAR - 6 HOUR STORM
*S
*S REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS
*
*S MONTECITO WEST DMP UPDATE WITH MONTEICTO VISTA DEVELOPMENT 5/12/16
*
*CONVERT TO NMHYMO
START          TIME=0.0 HR  PUNCH CODE=0
*****
LOCATION NM
*
*****
*
*****
*100 YEAR - 6 HOUR
RAINFALL      TYPE=1  RAIN QUARTER=0
              RAIN ONE=1.72 IN  RAIN SIX=2.21 IN
              RAIN DAY=2.58 IN  DT=0.033333 HRS

*S
*S          *****
*S          *  COMPUTE OFFSITE "D" BASINS  *
*S          *****
*S
*S
*S
*S
*S COMPUTE BASIN OS-D *****
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                  NK=3  ISLOPE=-1
                  LENGTH=400 FT  SLOPE=0.0750 K=0.7
                  LENGTH=700 FT  SLOPE=0.04286 K=2.0
                  LENGTH=2900 FT  SLOPE=0.03793 K=3.0

COMPUTE NM HYD      ID=17  HYD=OS_D  AREA=0.2378 SQ MI
                  PER A=95.0  PER B=5.0  PER C=0.0  PER D=0.0
                  TP=0.0 HR  MASS RAIN=-1
PRINT HYD          ID=17      CODE=1
*
*S ROUTE OS-D THRU 15-D IN CHANNEL NO.15*****
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                  MIN ELEV=0  MAX ELEV=3.80
                  CH SLOPE=0.038  FP SLOPE=0.038
                  N=0.038  DIST=32.0
                  DIST  ELEV          DIST  ELEV
                  0.0      5.0      6.0      0.0
                  26.0     0.0     32.0     5.0

ROUTE MCUNGE        ID=50  HYD=100.01  INFLOW ID=17  DT=0HR  L=4900
                  NS=0  SLOPE=.038  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD          ID=50      CODE=1
*
*S COMPUTE BASIN 15-D *****
*S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                  NK=3  ISLOPE=-1
                  LENGTH=400 FT  SLOPE=0.050 K=0.7
                  LENGTH=500 FT  SLOPE=0.020 K=2.0
                  LENGTH=1200 FT  SLOPE=0.02167 K=3.0

COMPUTE NM HYD      ID=15  HYD=15_D  AREA=0.1506 SQ MI
                  PER A=68.0  PER B=8.0  PER C=8.0  PER D=16.0
                  TP=0.0 HR  MASS RAIN=-1
PRINT HYD          ID=15      CODE=1
*
*S ADD SUB-BASIN OS-D TO SUB-BASIN 15-D*****

```

```

ADD HYD          ID=33  HYD NO=101.0 ID I=15 ID II=50
PRINT HYD        ID=33  CODE=1
*
*S ROUTE 15-D/OS-D THRU 9-D.1 IN CHANNEL NO.9*****
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=3.80
                      CH SLOPE=0.038  FP SLOPE=0.038
                      N=0.038  DIST=32.0
                      DIST  ELEV          DIST  ELEV
                        0.0      5.0      6.0      0.0
                        26.0     0.0     32.0     5.0

ROUTE MCUNGE      ID=40  HYD=100.01  INFLOW ID=33  DT=0HR  L=4900
                      NS=0  SLOPE=.038  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD          ID=40  CODE=1
*
*S COMPUTE BASIN 9-D.1 *****
*S UPDATED TO SHOW 30% OPEN SPACE AND REMOVED 0.0125 SQ MI FROM BASIN
*S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
*
*S LAND TREATMENT CHANGES DUE TO MORE COA OPEN SPACE DUE TO MW UNITS 3-6
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                      NK=3  ISLOPE=-1
                      LENGTH=400 FT  SLOPE=0.0084 K=0.7
                      LENGTH=0 FT  SLOPE=0.0 K=2.0
                      LENGTH=1600 FT  SLOPE=0.0250 K=3.0

COMPUTE NM HYD      ID=9  HYD=9_D.1  AREA=0.0603 SQ MI
                      PER A=40.0  PER B=21.0  PER C=19.0  PER D=20.0
                      TP=0.0 HR  MASS RAIN=-1
PRINT HYD          ID=9  CODE=1
*
*S ADD 15-D/OS-D TO SUB-BASIN 9-D.1 *****
ADD HYD            ID=44  HYD NO=104.0 ID I=40 ID II=9
PRINT HYD          ID=44  CODE=1
*
*S ROUTE 9-D.1/15-D/9-D.1 THRU 6-D.1 IN CHANNEL NO.6 *****
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=0  MAX ELEV=3.80
                      CH SLOPE=0.038  FP SLOPE=0.038
                      N=0.038  DIST=32.0
                      DIST  ELEV          DIST  ELEV
                        0.0      5.0      6.0      0.0
                        26.0     0.0     32.0     5.0

ROUTE MCUNGE      ID=30  HYD=104.1  INFLOW ID=44  DT=0HR  L=4900
                      NS=0  SLOPE=.038  MATCODE=0  REGCODE=0  CCODE=0
PRINT HYD          ID=30  CODE=1
*
*S COMPUTE BASIN 6-D.1 *****
*S UPDATED TO SHOW 30% OPEN SPACE (NON COA OPEN SPACE) AND REMOVED
*S 0.065625 SQ MI FROM BASIN
*
*S LAND TREATMENT CHANGES DUE TO MORE COA OPEN SPACE DUE TO MW UNITS 3-6
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                      NK=3  ISLOPE=-1
                      LENGTH=400 FT  SLOPE=0.05 K=0.7
                      LENGTH=0 FT  SLOPE=0.0084 K=2.0
                      LENGTH=2800 FT  SLOPE=0.03286 K=3.0

COMPUTE NM HYD      ID=6  HYD=6_D.1  AREA=0.0459 SQ MI
                      PER A=85.0  PER B=8.0  PER C=3.0  PER D=4.0
                      TP=0.0 HR  MASS RAIN=-1
PRINT HYD          ID=6  CODE=1
*S
*S ADD SUB-BASIN (OS-D,15-D,9-D.1) TO SUB-BASIN 6-D.1 TO GET AP_OFF *****
*S

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```

ADD HYD          ID=55   HYD NO=AP_OFF ID I=30 ID II=6
PRINT HYD        ID=55   CODE=1
*
*S COMPUTE BASIN 9-D.2 *****
*S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
*
*S DECREASE AREA BY 0.00283 SQ MI, AREA INCORPORATED INTO MW UNITS 3-6
*
COMPUTE LT TP      LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                   NK=1 ISLOPE=0
                   LENGTH=1800 FT SLOPE=0.0372 K=3.0
                   Kn=.021 CR=.5

COMPUTE NM HYD      ID=5   HYD=9_D.2 AREA=0.00967 SQ MI
                   PER A=30.0 PER B=18.0 PER C=18.0 PER D=34.0
                   TP=0.0 HR MASS RAIN=-1

PRINT HYD          ID=5   CODE=20
*
*S ROUTE 9D.2 FLOW THRU 1200' OF CHANNEL *****
*
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
                   MIN ELEV=0 MAX ELEV=3.80
                   CH SLOPE=0.0433 FP SLOPE=0.0433
                   N=0.038 DIST=32.0
                   DIST ELEV      DIST ELEV
                   0.0 5.0 6.0 0.0
                   26.0 0.0 32.0 5.0

ROUTE MCUNGE       ID=7   HYD=100.01 INFLOW ID=5 DT=0HR L=1200
                   NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0
PRINT HYD          ID=7   CODE=1
*
*S COMPUTE BASIN 6-D.2 *****
*S UPDATED TO SHOW 30% OPEN SPACE (NON COA OPEN SPACE)
*
*S BREAK BASIN 6-D.2 INTO SUBBASINS FOR MW UNITS 3-6
*
*COMPUTE LT TP      LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
*                   NK=1 ISLOPE=0
*                   LENGTH=1200 FT SLOPE=0.0433 K=3.0
*                   Kn=.021 CR=.5
*
*COMPUTE NM HYD      ID=7   HYD=6_D.2 AREA=0.047369 SQ MI
*                   PER A=42 PER B=15 PER C=15 PER D=28
*                   TP=0.0 HR MASS RAIN=-1
*PRINT HYD          ID=7   CODE=20
*
*S
*S *****
*S *COMPUTE MONTECITO VISTAS UNITS 1-4 ONSITE BASINS*
*S *****
*S
*S
*S
*S
*S COMPUTE BASIN 6-D.2A *****
*
COMPUTE NM HYD      ID=31 HYD=6_D.2A AREA=0.01709 PER A=0 PER B=29.5
                   PER C=29.5 PER D=41 TP=0.13333 RAINFALL=-1
PRINT HYD          ID=31 CODE=1
*
*S COMPUTE BASIN 6-D.2B *****
COMPUTE NM HYD      ID=32 HYD=6_D.2B AREA=0.016231 PER A=0 PER B=29
                   PER C=29 PER D=42 TP=0.13333 RAINFALL=-1
PRINT HYD          ID=32 CODE=1
*
*S COMPUTE BASIN 6-D.2C *****
COMPUTE NM HYD      ID=33 HYD=6_D.2C AREA=0.005902 PER A=0 PER B=34
                   PER C=34 PER D=32 TP=0.13333 RAINFALL=-1
PRINT HYD          ID=33 CODE=1
*
*S COMPUTE BASIN 6-D.2D *****
COMPUTE NM HYD      ID=34 HYD=6_D.2D AREA=0.01071 PER A=0 PER B=34.5
                   PER C=34.5 PER D=31 TP=0.13333 RAINFALL=-1

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PRINT HYD                ID=34    CODE=1
*
*S COMPUTE BASIN 6-D.2E *****
COMPUTE NM HYD          ID=35 HYD=6_D.2E AREA=0.002415 PER A=0 PER B=30.5
                        PER C=30.5 PER D=39 TP=0.13333 RAINFALL=-1
PRINT HYD                ID=35    CODE=1
*
*S COMPUTE BASIN 6-D.2F *****
COMPUTE NM HYD          ID=36 HYD=6_D.2F AREA=0.004180 PER A=0 PER B=30.5
                        PER C=30.5 PER D=39 TP=0.13333 RAINFALL=-1
PRINT HYD                ID=36    CODE=1
*
*S ADD 9-D.2 TO 6-D.2A *****
ADD HYD                  ID=39      HYD NO=6_9D.2A ID I=7 ID II=31
PRINT HYD                ID=39      CODE=1
*
*S ADD 6-D.2B TO 6_9D.2A *****
ADD HYD                  ID=41      HYD NO=6_9D.2AB ID I=32 ID II=39
PRINT HYD                ID=41      CODE=1
*
*S ADD 6-D.2C TO 6_9D.2AB *****
ADD HYD                  ID=42      HYD NO=6_9D.2ABC ID I=33 ID II=41
PRINT HYD                ID=42      CODE=1
*
*S ADD 6-D.2D TO 6_9D.2ABC *****
ADD HYD                  ID=43      HYD NO=6_9D.2ABCD ID I=34 ID II=42
PRINT HYD                ID=43      CODE=1
*
*S ADD 6-D.2E TO 6_9D.2ABCD *****
ADD HYD                  ID=46      HYD NO=6_D.2ABCDE ID I=35 ID II=43
PRINT HYD                ID=46      CODE=1
*
*S ADD 6-D.2F TO 6_9D.2ABCDE TO GET PROJECT SITE DISCHARGE, AP=6_9D.2*****
ADD HYD                  ID=47      HYD NO=6_9D.2ABCDEF ID I=36 ID II=46
PRINT HYD                ID=47      CODE=1
*
*
*S COMPUTE BASIN 6-D.3*****
*S UPDATED TO SHOW 30% OPEN SPACE
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP            LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                        NK=1 ISLOPE=0
                        LENGTH=600 FT SLOPE=0.0433 K=3.0
                        Kn=.021 CR=.5

COMPUTE NM HYD          ID=9 HYD=6_D.3 AREA=0.018277 SQ MI
                        PER A=30.0 PER B=18 PER C=18 PER D=34
                        TP=0.0 HR MASS RAIN=-1
PRINT HYD                ID=9      CODE=20
*
*S***** ROUTE OFFSITE FLOW THRU 850' OF 36" RCP PIPE
COMPUTE RATING CURVE CID=10 VS NO=1 CODE=-1
                        SLP=0.0273
                        DIA=36 INCHES N=0.013
ROUTE MCUNGE            ID=10 HYD= RT.2AB2 INFLOW ID=9 DT=0HR L=850
                        NS=0 SLOPE=.0273 MATCODE=0 REGCODE=0 CCODE=0
PRINT HYD                ID=10      CODE=1
*S
*S
*S
*S
*S
*S
*
*S COMPUTE BASIN A-1.1 *****
*S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP            LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                        NK=3 ISLOPE=-1
                        LENGTH=400 FT SLOPE=0.0340 K=0.7
                        LENGTH=1600 FT SLOPE=0.0361 K=2.0

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LENGTH=2800 FT  SLOPE=0.0346 K=3.0

COMPUTE NM HYD      ID=60 HYD=A_1.1  AREA=0.08421 SQ MI
                    PER A=90.0  PER B=5.0  PER C=5.0  PER D=0.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=60      CODE=20
*
*S COMPUTE BASIN A-1.2 *****
*S UPDATED TO SHOW 30% OPEN SPACE
*
*S DECREASE AREA BY 0.0101 SQ MI, AREA INCORPORATED INTO MW UNITS 3-6
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                    NK=1  ISLOPE=0
                    LENGTH=3200 FT  SLOPE=0.0325 K=3.0
                    Kn=.021  CR=.5

COMPUTE NM HYD      ID=65 HYD=A_1.2  AREA=0.012613 SQ MI
                    PER A=30.0  PER B=18.0  PER C=18.0  PER D=34.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=65      CODE=20
*
*S ADD A-1.1 TO A-2.2 TO GET FLOW IN VISTA VIEJA AVENUE *****
ADD HYD             ID=66  HYD NO=A_1.1_1.2 ID I=60 ID II=65
PRINT HYD           ID=66      CODE=1
*
*S
*S
*S      * COMPUTE OFFSITE "E" BASINS *
*S
*S
*S
*S COMPUTE BASIN E-1.1 *****
*
COMPUTE NM HYD      ID=21 HYD=1_E.1  AREA=0.006128  PER A=30.0 PER B=18.0
                    PER C=18.0 PER D=34  TP=0.13333  RAINFALL=-1
PRINT HYD           ID=21      CODE=1
*
*S COMPUTE BASIN E-1.3 *****
*S UPDATED TO SHOW 30% OPEN SPACE
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                    NK=1  ISLOPE=0
                    LENGTH=3800 FT  SLOPE=0.0325 K=3.0
                    Kn=.021  CR=.5

COMPUTE NM HYD      ID=70 HYD=E_1.3  AREA=0.08120 SQ MI
                    PER A=52.0  PER B=16.0  PER C=16.0  PER D=16.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=70      CODE=20
*
*S COMPUTE BASIN E-1.4 *****
*S UPDATED TO SHOW 30% OPEN SPACE
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP       LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                    NK=1  ISLOPE=0
                    LENGTH=5200 FT  SLOPE=0.0325 K=3.0
                    Kn=.021  CR=.5

COMPUTE NM HYD      ID=75 HYD=E_1.4  AREA=0.13593 SQ MI
                    PER A=60.0  PER B=13.0  PER C=13.0  PER D=14.0
                    TP=0.0 HR  MASS RAIN=-1
PRINT HYD           ID=75      CODE=20
*
*S
*S
*S      *COMPUTE MONTECITO WEST UNITS 1-2 ONSITE BASINS*
*S

```

```

*S
*S NO CHANGE FROM MONTECITO WEST DMP
*S
*S COMPUTE BASIN 6-D.4 *****
*
COMPUTE NM HYD      ID=2 HYD=6_D.4 AREA=0.015778 PER A=0 PER B=29
                    PER C=29 PER D=42 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=2 CODE=1
*
*S COMPUTE BASIN 6-D.5 *****
COMPUTE NM HYD      ID=3 HYD=6_D.5 AREA=0.007522 PER A=0 PER B=34
                    PER C=34 PER D=32 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=3 CODE=1
*
*S COMPUTE BASIN 6-D.6 *****
COMPUTE NM HYD      ID=4 HYD=6_D.6 AREA=0.006441 PER A=100 PER B=0
                    PER C=0 PER D=0 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=4 CODE=1
*
*S COMPUTE BASIN 6-D.7 *****
COMPUTE NM HYD      ID=1 HYD=6_D.7 AREA=0.005236 PER A=0 PER B=31
                    PER C=30 PER D=39 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*S COMPUTE BASIN 6-D.8 *****
COMPUTE NM HYD      ID=20 HYD=6_D.8 AREA=0.010762 PER A=0 PER B=30
                    PER C=29 PER D=41 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=20 CODE=1
*
*S COMPUTE BASIN E-1.2 *****
COMPUTE NM HYD      ID=22 HYD=1_E.2 AREA=0.001177 PER A=0 PER B=29
                    PER C=29 PER D=42 TP=0.13333 RAINFALL=-1
PRINT HYD           ID=22 CODE=1
*
*S ADD E_1.1 TO E_1.2 *****
ADD HYD             ID=71 HYD NO=E_1.2 ID I=21 ID II=22
PRINT HYD           ID=71 CODE=1
*
*S ADD 6_D.8 TO E_1.1.1.2 TO GET PROJECT SITE DISCHARGE TO AP_2 *****
ADD HYD             ID=72 HYD NO=AP2_ON ID I=71 ID II=20
PRINT HYD           ID=72 CODE=1
*
*S ADD 6_D.4 TO 6_D.7 TO GET PROJECT SITE DISCHARGE TO AP_1 *****
ADD HYD             ID=11 HYD NO=6D.4_7 ID I=2 ID II=1
PRINT HYD           ID=11 CODE=1
*
*S ADD 6_D.5 TO 6_D.6 (RETAINED ONSITE FOR 30.0% RETAINAGE) *****
ADD HYD             ID=12 HYD NO=6D.5_6 ID I=3 ID II=4
PRINT HYD           ID=12 CODE=1
*
*S
*S *****
*S * COMPUTE ANALYSIS POINTS *
*S *****
*S
*S
*S
*S
*S ANALYSIS POINT 2, MIDDLE BRANCH BOCA NEGRA (NORTHERN STORM DRAIN)
*
*S ADD AP_OFF TO 6_9D.2 (DIVERT FLOWS) TO GET NEW AP_OFF *****
*
ADD HYD             ID=25 HYD NO=AP_OFF.NEW ID I=55 ID II=47
PRINT HYD           ID=25 CODE=1
*S
*S ADD AP2_ON TO NEW AP_OFF TO GET AP#2 AT MIDDLE BRANCH BOCA NEGRA ARROYO ***
*
ADD HYD             ID=24 HYD NO=AP_2 ID I=25 ID II=72
PRINT HYD           ID=24 CODE=1
*
*S ANALYSIS POINT 1, SOUTHERN STORM DRAIN TO VISTA VIEJA SUBDIVISION *****
*
*S DIVIDE 6D.3 FOR 30.0% RETAINAGE
DIVIDE HYD          ID=10 PER=-70.0 ID I=12 HYD NO=6D.3_OUT
                    ID II=13 HYD NO=6D.3_RETAIN
*

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```
*S ADD 6D.3_OUT TO 6D.4_7 TO GET AP_1 *****
*
ADD HYD          ID=14    HYD NO=AP_1 ID I=12 ID II=11
PRINT HYD        ID=14    CODE=1
*S
FINISH
```

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      AHYMO PROGRAM (AHYMO_97) -                      - Version: 1997.02c
      RUN DATE (MON/DAY/YR) = 05/12/2016
      START TIME (HR:MIN:SEC) = 09:24:51      USER NO.= AHYMO-S-9702c1BohanHu-AH
      INPUT FILE = DEV_Cond.HYM

*S THE VISTA VIEJA SUBDIVISION DRAINAGE BASIN (D) PROPOSED
*S 100 YEAR - 6 HOUR STORM
*S
*S REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS
*
*S MONTECITO WEST DMP UPDATE WITH MONTEICTO VISTA DEVELOPMENT 5/12/16
*
*CONVERT TO NMHYMO
START      TIME=0.0 HR   PUNCH CODE=0
*****
LOCATION      NM
Soil infiltration values (LAND FACTORS) for this location are not available.
The following default values were used.
Land Treatment      Initial Abstr.(in)      Unif. Infilt.(in/hour)
A      0.65      1.67
B      0.50      1.25
C      0.35      0.83
D      0.10      0.04

*
*****
*
*****
*100 YEAR - 6 HOUR
RAINFALL      TYPE=1      RAIN QUARTER=0
                RAIN ONE=1.72 IN      RAIN SIX=2.21 IN
                RAIN DAY=2.58 IN      DT=0.033333 HRS

      COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
      DT = .033333 HOURS      END TIME = 5.999940 HOURS
      .0000 .0038 .0077 .0116 .0157 .0198 .0240
      .0283 .0327 .0372 .0418 .0465 .0514 .0564
      .0615 .0667 .0722 .0777 .0835 .0894 .0956
      .1019 .1085 .1153 .1224 .1298 .1375 .1456
      .1541 .1630 .1724 .1772 .1823 .1877 .1994
      .2255 .2658 .3235 .4024 .5059 .6380 .8025
      1.0032 1.1888 1.2665 1.3321 1.3904 1.4435 1.4924
      1.5378 1.5802 1.6199 1.6573 1.6926 1.7260 1.7575
      1.7874 1.8158 1.8427 1.8682 1.8924 1.8987 1.9047
      1.9104 1.9159 1.9212 1.9264 1.9314 1.9362 1.9409
      1.9454 1.9499 1.9542 1.9584 1.9626 1.9666 1.9706
      1.9744 1.9782 1.9820 1.9856 1.9892 1.9927 1.9962
      1.9996 2.0030 2.0063 2.0095 2.0127 2.0159 2.0190
      2.0221 2.0251 2.0281 2.0311 2.0340 2.0368 2.0397
      2.0425 2.0453 2.0480 2.0507 2.0534 2.0561 2.0587
      2.0613 2.0639 2.0665 2.0690 2.0715 2.0740 2.0764
      2.0789 2.0813 2.0837 2.0860 2.0884 2.0907 2.0930
      2.0953 2.0976 2.0998 2.1021 2.1043 2.1065 2.1087
      2.1108 2.1130 2.1151 2.1172 2.1193 2.1214 2.1235
      2.1256 2.1276 2.1297 2.1317 2.1337 2.1357 2.1377
      2.1396 2.1416 2.1435 2.1455 2.1474 2.1493 2.1512
      2.1531 2.1549 2.1568 2.1587 2.1605 2.1623 2.1642
      2.1660 2.1678 2.1696 2.1714 2.1731 2.1749 2.1766
      2.1784 2.1801 2.1819 2.1836 2.1853 2.1870 2.1887
      2.1904 2.1920 2.1937 2.1954 2.1970 2.1987 2.2003
      2.2020 2.2036 2.2052 2.2068 2.2084 2.2100

*S
*S      *****
*S      * COMPUTE OFFSITE "D" BASINS *
*S      *****
*S
*S
*S
*S
*S COMPUTE BASIN OS-D *****
*
*S NO CHANGE FROM MONTECITO WEST DMP
*
COMPUTE LT TP      LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
NK=3      ISLOPE=-1
LENGTH=400 FT      SLOPE=0.0750 K=0.7
LENGTH=700 FT      SLOPE=0.04286 K=2.0
LENGTH=2900 FT      SLOPE=0.03793 K=3.0

      Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
SHEET FLOW PORTION      LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
                        400.0      .075000      .7000

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SHALLOW FLOW PORTION      700.0      .042860      2.0000
CHANNEL FLOW PORTION      2900.0      .037930      3.0000
TOTAL BASIN                4000.0      .042500      2.2199

TIME OF CONCENTRATION (HRS)= .2428      TIME TO PEAK (HRS)= .1619      LAG TIME (HRS)= .1821

COMPUTE NM HYD      ID=17      HYD=OS_D      AREA=0.2378 SQ MI
                        PER A=95.0      PER B=5.0      PER C=0.0      PER D=0.0
                        TP=0.0 HR      MASS RAIN=-1

TIME TO PEAK (hrs)= .1619

K = .177858HR      TP = .161864HR      K/TP RATIO = 1.098817      SHAPE CONSTANT, N = 3.216827
UNIT PEAK = 439.34 CFS      UNIT VOLUME = 1.000      B = 299.05      P60 = 1.7200
AREA = .237800 SQ MI      IA = .64250 INCHES      INF = 1.64900 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD      ID=17      CODE=1

HYDROGRAPH FROM AREA OS_D

RUNOFF VOLUME = .41961 INCHES      = 5.3217 ACRE-FEET
PEAK DISCHARGE RATE = 174.20 CFS      AT 1.533 HOURS      BASIN AREA = .2378 SQ. MI.

*
*S ROUTE OS-D THRU 15-D IN CHANNEL NO.15*****
*
COMPUTE RATING CURVE      CID=1      VS NO=1      NO SEGS=1
                        MIN ELEV=0      MAX ELEV=3.80
                        CH SLOPE=0.038      FP SLOPE=0.038
                        N=0.038      DIST=32.0
                        DIST      ELEV
                        0.0      5.0      6.0      0.0
                        26.0      0.0      32.0      5.0

RATING CURVE VALLEY SECTION 1.0
WATER      FLOW      FLOW      TOP
SURFACE      AREA      RATE      WIDTH
ELEV      SQ FT      CFS      FT
.00      .00      .00      20.00
.20      4.05      10.42      20.48
.40      8.19      33.08      20.96
.60      12.43      65.02      21.44
.80      16.77      105.07      21.92
1.00      21.20      152.51      22.40
1.20      25.73      206.87      22.88
1.40      30.35      267.81      23.36
1.60      35.07      335.06      23.84
1.80      39.89      408.42      24.32
2.00      44.80      487.74      24.80
2.20      49.81      572.90      25.28
2.40      54.91      663.81      25.76
2.60      60.11      760.37      26.24
2.80      65.41      862.54      26.72
3.00      70.80      970.27      27.20
3.20      76.29      1083.52      27.68
3.40      81.87      1202.26      28.16
3.60      87.55      1326.48      28.64
3.80      93.33      1456.17      29.12

ROUTE MCUNGE      ID=50      HYD=100.01      INFLOW ID=17      DT=0HR      L=4900
                        NS=0      SLOPE=.038      MATCODE=0      REGCODE=0      CCODE=0

INFLOW END= 196      TABLE PTS= 20
DT= .033333      QMED= 87.10      CKMED= 9.2361
WIDTH MED= 21.70      NREACH= 9      DX= 544.44

DEPTH      AREA      Q      TRAVEL      WIDTH      ck      VEL      C      D      C1      C2      C3      Q-M      C1-M      C2-M      C3-M
(FT)      (SQ FT)      (CFS)      TIME(HR)      (FT)      (FPS)      (FPS)
.00      .0      .0      .720      20.0      4.54      1.21      1.000      .000      1.000      .000      .000      .0      1.000      .000      .000
.20      4.0      10.4      .529      20.5      4.51      2.57      .995      .005      .995      .000      .005      3.3      .998      .000      .002
.40      8.2      33.1      .337      21.0      6.59      4.04      1.451      .012      .991      .188      -.179      20.5      .992      .098      -.090
.60      12.4      65.0      .260      21.4      8.44      5.23      1.860      .017      .988      .305      -.293      48.0      .989      .253      -.242
.80      16.8      105.1      .217      21.9      10.01      6.27      2.206      .023      .986      .381      -.366      84.1      .987      .346      -.332
1.00      21.2      152.5      .189      22.4      11.39      7.19      2.510      .029      .984      .435      -.418      127.9      .985      .409      -.394
1.20      25.7      206.9      .169      22.9      12.62      8.04      2.781      .035      .982      .476      -.458      178.9      .983      .456      -.439
1.40      30.4      267.8      .154      23.4      13.73      8.82      3.027      .040      .980      .508      -.488      236.6      .981      .493      -.474
1.60      35.1      335.1      .142      23.8      14.76      9.55      3.253      .046      .979      .535      -.513      300.7      .979      .522      -.501
1.80      39.9      408.4      .133      24.3      15.71      10.24      3.462      .052      .977      .557      -.534      371.1      .978      .546      -.524
2.00      44.8      487.7      .125      24.8      16.59      10.89      3.657      .057      .976      .576      -.551      447.4      .976      .567      -.543
2.20      49.8      572.9      .118      25.3      17.42      11.50      3.840      .063      .974      .592      -.566      529.7      .975      .584      -.559
2.40      54.9      663.8      .113      25.8      18.20      12.09      4.012      .068      .973      .606      -.579      617.8      .974      .599      -.573
2.60      60.1      760.4      .108      26.2      18.94      12.65      4.175      .074      .972      .619      -.591      711.5      .972      .613      -.585
2.80      65.4      862.5      .103      26.7      19.65      13.19      4.330      .079      .971      .630      -.601      810.9      .971      .625      -.596
3.00      70.8      970.3      .099      27.2      20.32      13.70      4.478      .085      .969      .640      -.610      915.8      .970      .635      -.605

```

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME (HR)	WIDTH (FT)	CK (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	4.54	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	4.51	2.57	.995	.005	.995	.000	.005	3.3	.998	.000	.002
.40	8.2	33.1	.337	21.0	4.61	4.04	1.017	.017	.984	.016	.000	20.5	.990	.010	.000
.60	12.4	65.0	.260	21.4	4.68	5.23	1.031	.031	.970	.030	.000	48.0	.977	.023	.000
.80	16.8	105.1	.217	21.9	4.76	6.27	1.049	.049	.954	.046	.000	84.1	.962	.038	.000
1.00	21.2	152.5	.189	22.4	4.85	7.19	1.068	.068	.936	.064	.000	127.9	.945	.055	.000
1.20	25.7	206.9	.169	22.9	4.94	8.04	1.088	.088	.919	.081	.000	178.9	.928	.072	.000
1.40	30.4	267.8	.154	23.4	5.04	8.82	1.110	.110	.901	.099	.000	236.6	.910	.090	.000
1.60	35.1	335.1	.142	23.8	5.14	9.55	1.132	.132	.883	.117	.000	300.7	.892	.108	.000
1.80	39.9	408.4	.133	24.3	5.24	10.24	1.155	.155	.866	.134	.000	371.1	.874	.126	.000
2.00	44.8	487.7	.125	24.8	5.34	10.89	1.178	.178	.849	.151	.000	447.4	.857	.143	.000
2.20	49.8	572.9	.118	25.3	5.45	11.50	1.201	.201	.833	.167	.000	529.7	.841	.159	.000
2.40	54.9	663.8	.113	25.8	5.55	12.09	1.224	.224	.817	.183	.000	617.8	.825	.175	.000
2.60	60.1	760.4	.108	26.2	5.66	12.65	1.247	.247	.802	.198	.000	711.5	.809	.191	.000
2.80	65.4	862.5	.103	26.7	5.77	13.19	1.271	.271	.787	.213	.000	810.9	.794	.206	.000
3.00	70.8	970.3	.099	27.2	5.87	13.70	1.294	.294	.773	.227	.000	915.8	.780	.220	.000
3.20	76.3	1083.5	.096	27.7	5.97	14.20	1.317	.317	.759	.241	.000	1026.3	.766	.234	.000
3.40	81.9	1202.3	.093	28.2	6.08	14.68	1.340	.340	.747	.253	.000	1142.4	.753	.247	.000
3.60	87.6	1326.5	.090	28.6	6.18	15.15	1.362	.362	.734	.266	.000	1263.8	.740	.260	.000
3.80	93.3	1456.2	.087	29.1	6.28	15.60	1.385	.385	.722	.278	.000	1390.8	.728	.272	.000

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 5 OCCURRED 5 TIMES. AVERAGE NUMBER ITERATIONS = 1.0847
 EQUATIONS SOLVED WITH TWO PASSES: FIRST USING THE PONCE CORRECTION TO C1, SECOND USING THE FREAD CORRECTION TO C1, C2 AND C3
 PRINT HYD ID=50 CODE=1

PARTIAL HYDROGRAPH 100.01

RUNOFF VOLUME = .41646 INCHES = 5.2818 ACRE-Feet
 PEAK DISCHARGE RATE = 170.91 CFS AT 1.833 HOURS BASIN AREA = .2378 SQ. MI.

*
 *S COMPUTE BASIN 15-D *****
 *S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
 *
 *S NO CHANGE FROM MONTECITO WEST DMP
 *

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=3 ISLOPE=-1
 LENGTH=400 FT SLOPE=0.050 K=0.7
 LENGTH=500 FT SLOPE=0.020 K=2.0
 LENGTH=1200 FT SLOPE=0.02167 K=3.0

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	400.0	.050000	.7000
SHALLOW FLOW PORTION	500.0	.020000	2.0000
CHANNEL FLOW PORTION	1200.0	.021670	3.0000
TOTAL BASIN	2100.0	.026669	1.8265

TIME OF CONCENTRATION (HRS)= .1956 TIME TO PEAK (HRS)= .1304 LAG TIME (HRS)= .1467

TIME TO PEAK COMPUTED TO BE LESS THAN 0.13333 HOUR MINIMUM VALUE.

REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000 TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

COMPUTE NM HYD ID=15 HYD=15_D AREA=0.1506 SQ MI
 PER A=68.0 PER B=8.0 PER C=8.0 PER D=16.0
 TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .074766HR TP = .133333HR K/TP RATIO = .560746 SHAPE CONSTANT, N = 6.852773
 UNIT PEAK = 92.933 CFS UNIT VOLUME = .9995 B = 514.24 P60 = 1.7200
 AREA = .024096 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .149923HR TP = .133333HR K/TP RATIO = 1.124422 SHAPE CONSTANT, N = 3.146704
 UNIT PEAK = 278.54 CFS UNIT VOLUME = .9999 B = 293.57 P60 = 1.7200
 AREA = .126504 SQ MI IA = .60714 INCHES INF = 1.55000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=15 CODE=1

HYDROGRAPH FROM AREA 15_D

RUNOFF VOLUME = .70193 INCHES = 5.6378 ACRE-FEET
 PEAK DISCHARGE RATE = 177.15 CFS AT 1.500 HOURS BASIN AREA = .1506 SQ. MI.

*
 *S ADD SUB-BASIN OS-D TO SUB-BASIN 15-D*****
 ADD HYD ID=33 HYD NO=101.0 ID I=15 ID II=50
 PRINT HYD ID=33 CODE=1
 PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = .52715 INCHES = 10.9196 ACRE-FEET
 PEAK DISCHARGE RATE = 213.08 CFS AT 1.800 HOURS BASIN AREA = .3884 SQ. MI.

*
 *S ROUTE 15-D/OS-D THRU 9-D.1 IN CHANNEL NO.9*****
 *

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=0 MAX ELEV=3.80
 CH SLOPE=0.038 FP SLOPE=0.038
 N=0.038 DIST=32.0
 DIST ELEV DIST ELEV
 0.0 5.0 6.0 0.0
 26.0 0.0 32.0 5.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	20.00
.20	4.05	10.42	20.48
.40	8.19	33.08	20.96
.60	12.43	65.02	21.44
.80	16.77	105.07	21.92
1.00	21.20	152.51	22.40
1.20	25.73	206.87	22.88
1.40	30.35	267.81	23.36
1.60	35.07	335.06	23.84
1.80	39.89	408.42	24.32
2.00	44.80	487.74	24.80
2.20	49.81	572.90	25.28
2.40	54.91	663.81	25.76
2.60	60.11	760.37	26.24
2.80	65.41	862.54	26.72
3.00	70.80	970.27	27.20
3.20	76.29	1083.52	27.68
3.40	81.87	1202.26	28.16
3.60	87.55	1326.48	28.64
3.80	93.33	1456.17	29.12

ROUTE MCUNGE ID=40 HYD=100.01 INFLOW ID=33 DT=0HR L=4900
 NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0

INFLOW END= 220 TABLE PTS= 20
 DT= .033333 QMED= 106.54 CKMED= 10.7047
 WIDTH MED= 21.93 NREACH= 8 DX= 612.50

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	5.10	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	5.08	2.57	.996	.004	.996	.000	.004	3.3	.999	.000	.001
.40	8.2	33.1	.337	21.0	6.59	4.04	1.290	.010	.991	.131	-.122	20.5	.993	.040	-.032
.60	12.4	65.0	.260	21.4	8.44	5.23	1.653	.015	.988	.251	-.239	48.0	.990	.197	-.187
.80	16.8	105.1	.217	21.9	10.01	6.27	1.961	.021	.986	.329	-.315	84.1	.987	.293	-.280
1.00	21.2	152.5	.189	22.4	11.39	7.19	2.231	.026	.984	.386	-.370	127.9	.985	.359	-.344
1.20	25.7	206.9	.169	22.9	12.62	8.04	2.472	.031	.982	.429	-.411	178.9	.983	.408	-.392
1.40	30.4	267.8	.154	23.4	13.73	8.82	2.691	.036	.981	.463	-.444	236.6	.982	.447	-.428
1.60	35.1	335.1	.142	23.8	14.76	9.55	2.892	.041	.979	.491	-.471	300.7	.980	.478	-.458
1.80	39.9	408.4	.133	24.3	15.71	10.24	3.077	.046	.978	.515	-.493	371.1	.978	.503	-.482
2.00	44.8	487.7	.125	24.8	16.59	10.89	3.251	.051	.976	.535	-.511	447.4	.977	.525	-.502
2.20	49.8	572.9	.118	25.3	17.42	11.50	3.413	.056	.975	.552	-.527	529.7	.976	.544	-.519
2.40	54.9	663.8	.113	25.8	18.20	12.09	3.566	.061	.974	.568	-.541	617.8	.974	.560	-.535
2.60	60.1	760.4	.108	26.2	18.94	12.65	3.711	.066	.972	.581	-.554	711.5	.973	.575	-.548
2.80	65.4	862.5	.103	26.7	19.65	13.19	3.849	.071	.971	.593	-.565	810.9	.972	.587	-.559
3.00	70.8	970.3	.099	27.2	20.32	13.70	3.981	.075	.970	.604	-.575	915.8	.971	.599	-.570
3.20	76.3	1083.5	.096	27.7	20.96	14.20	4.106	.080	.969	.614	-.583	1026.3	.970	.609	-.579
3.40	81.9	1202.3	.093	28.2	21.58	14.68	4.227	.085	.968	.624	-.592	1142.4	.968	.619	-.587
3.60	87.6	1326.5	.090	28.6	22.17	15.15	4.343	.090	.967	.632	-.599	1263.8	.967	.628	-.595
3.80	93.3	1456.2	.087	29.1	22.62	15.60	4.431	.095	.966	.638	-.604	1390.8	.966	.636	-.602

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 5 OCCURRED 1 TIMES. AVERAGE NUMBER ITERATIONS = 1.1658

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
---------------	-----------------	------------	--------------------	---------------	-------------	--------------	---	---	----	----	----	--------------	------	------	------

.00	.0	.0	.720	20.0	5.10	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	5.08	2.57	.996	.004	.996	.000	.004	3.3	.999	.000	.001
.40	8.2	33.1	.337	21.0	5.17	4.04	1.013	.013	.987	.013	.000	20.5	.992	.008	.000
.60	12.4	65.0	.260	21.4	5.23	5.23	1.025	.025	.976	.024	.000	48.0	.982	.018	.000
.80	16.8	105.1	.217	21.9	5.30	6.27	1.039	.039	.963	.037	.000	84.1	.969	.031	.000
1.00	21.2	152.5	.189	22.4	5.38	7.19	1.054	.054	.948	.052	.000	127.9	.956	.044	.000
1.20	25.7	206.9	.169	22.9	5.47	8.04	1.071	.071	.934	.066	.000	178.9	.941	.059	.000
1.40	30.4	267.8	.154	23.4	5.56	8.82	1.089	.089	.919	.081	.000	236.6	.926	.074	.000
1.60	35.1	335.1	.142	23.8	5.65	9.55	1.107	.107	.903	.097	.000	300.7	.911	.089	.000
1.80	39.9	408.4	.133	24.3	5.75	10.24	1.126	.126	.888	.112	.000	371.1	.896	.104	.000
2.00	44.8	487.7	.125	24.8	5.84	10.89	1.145	.145	.874	.126	.000	447.4	.881	.119	.000
2.20	49.8	572.9	.118	25.3	5.94	11.50	1.164	.164	.859	.141	.000	529.7	.866	.134	.000
2.40	54.9	663.8	.113	25.8	6.04	12.09	1.183	.183	.845	.155	.000	617.8	.852	.148	.000
2.60	60.1	760.4	.108	26.2	6.14	12.65	1.203	.203	.831	.169	.000	711.5	.838	.162	.000
2.80	65.4	862.5	.103	26.7	6.24	13.19	1.222	.222	.818	.182	.000	810.9	.825	.175	.000
3.00	70.8	970.3	.099	27.2	6.34	13.70	1.242	.242	.805	.195	.000	915.8	.812	.188	.000
3.20	76.3	1083.5	.096	27.7	6.44	14.20	1.261	.261	.793	.207	.000	1026.3	.799	.201	.000
3.40	81.9	1202.3	.093	28.2	6.54	14.68	1.281	.281	.781	.219	.000	1142.4	.787	.213	.000
3.60	87.6	1326.5	.090	28.6	6.64	15.15	1.300	.300	.769	.231	.000	1263.8	.775	.225	.000
3.80	93.3	1456.2	.087	29.1	6.73	15.60	1.319	.319	.758	.242	.000	1390.8	.764	.236	.000

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 31 TIMES. AVERAGE NUMBER ITERATIONS = 1.1259
 Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
 PRINT HYD ID=40 CODE=1

PARTIAL HYDROGRAPH 100.01

RUNOFF VOLUME = .52527 INCHES = 10.8806 ACRE-FEET
 PEAK DISCHARGE RATE = 210.93 CFS AT 2.067 HOURS BASIN AREA = .3884 SQ. MI.

*
 *S COMPUTE BASIN 9-D.1 *****
 *S UPDATED TO SHOW 30% OPEN SPACE AND REMOVED 0.0125 SQ MI FROM BASIN
 *S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
 *
 *S LAND TREATMENT CHANGES DUE TO MORE COA OPEN SPACE DUE TO MW UNITS 3-6
 *
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=3 ISLOPE=-1
 LENGTH=400 FT SLOPE=0.0084 K=0.7
 LENGTH=0 FT SLOPE=0.0 K=2.0
 LENGTH=1600 FT SLOPE=0.0250 K=3.0

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	400.0	.008400	.7000
SHALLOW FLOW PORTION	.0	.010000	2.0000
CHANNEL FLOW PORTION	1600.0	.025000	3.0000
TOTAL BASIN	2000.0	.021680	1.4138

TIME OF CONCENTRATION (HRS)= .2669 TIME TO PEAK (HRS)= .1779 LAG TIME (HRS)= .2002

COMPUTE NM HYD ID=9 HYD=9_D.1 AREA=0.0603 SQ MI
 PER A=40.0 PER B=21.0 PER C=19.0 PER D=20.0
 TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1779
 K = .096969HR TP = .177925HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 35.672 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 1.7200
 AREA = .012060 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .191609HR TP = .177925HR K/TP RATIO = 1.076912 SHAPE CONSTANT, N = 3.280142
 UNIT PEAK = 82.400 CFS UNIT VOLUME = .9999 B = 303.92 P60 = 1.7200
 AREA = .048240 SQ MI IA = .53938 INCHES INF = 1.36025 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=9 CODE=1

HYDROGRAPH FROM AREA 9_D.1

RUNOFF VOLUME = .83686 INCHES = 2.6913 ACRE-FEET
 PEAK DISCHARGE RATE = 68.56 CFS AT 1.567 HOURS BASIN AREA = .0603 SQ. MI.

*
 *S ADD 15-D/OS-D TO SUB-BASIN 9-D.1 *****
 ADD HYD ID=44 HYD NO=104.0 ID I=40 ID II=9
 PRINT HYD ID=44 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = .56714 INCHES = 13.5719 ACRE-FEET
PEAK DISCHARGE RATE = 223.13 CFS AT 2.067 HOURS BASIN AREA = .4487 SQ. MI.

*
*S ROUTE 9-D.1/15-D/9-D.1 THRU 6-D.1 IN CHANNEL NO.6 *****
*

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=0 MAX ELEV=3.80
CH SLOPE=0.038 FP SLOPE=0.038
N=0.038 DIST=32.0
DIST ELEV DIST ELEV
0.0 5.0 6.0 0.0
26.0 0.0 32.0 5.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	20.00
.20	4.05	10.42	20.48
.40	8.19	33.08	20.96
.60	12.43	65.02	21.44
.80	16.77	105.07	21.92
1.00	21.20	152.51	22.40
1.20	25.73	206.87	22.88
1.40	30.35	267.81	23.36
1.60	35.07	335.06	23.84
1.80	39.89	408.42	24.32
2.00	44.80	487.74	24.80
2.20	49.81	572.90	25.28
2.40	54.91	663.81	25.76
2.60	60.11	760.37	26.24
2.80	65.41	862.54	26.72
3.00	70.80	970.27	27.20
3.20	76.29	1083.52	27.68
3.40	81.87	1202.26	28.16
3.60	87.55	1326.48	28.64
3.80	93.33	1456.17	29.12

ROUTE MCUNGE ID=30 HYD=104.1 INFLOW ID=44 DT=0HR L=4900
NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0

INFLOW END= 228 TABLE PTS= 20
DT= .033333 QMED= 111.56 CKMED= 10.7047
WIDTH MED= 21.99 NREACH= 8 DX= 612.50

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	5.10	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	5.08	2.57	.996	.004	.996	.000	.004	3.3	.999	.000	.001
.40	8.2	33.1	.337	21.0	6.59	4.04	1.290	.010	.991	.131	-.122	20.5	.993	.040	-.032
.60	12.4	65.0	.260	21.4	8.44	5.23	1.653	.015	.988	.251	-.239	48.0	.990	.197	-.187
.80	16.8	105.1	.217	21.9	10.01	6.27	1.961	.021	.986	.329	-.315	84.1	.987	.293	-.280
1.00	21.2	152.5	.189	22.4	11.39	7.19	2.231	.026	.984	.386	-.370	127.9	.985	.359	-.344
1.20	25.7	206.9	.169	22.9	12.62	8.04	2.472	.031	.982	.429	-.411	178.9	.983	.408	-.392
1.40	30.4	267.8	.154	23.4	13.73	8.82	2.691	.036	.981	.463	-.444	236.6	.982	.447	-.428
1.60	35.1	335.1	.142	23.8	14.76	9.55	2.892	.041	.979	.491	-.471	300.7	.980	.478	-.458
1.80	39.9	408.4	.133	24.3	15.71	10.24	3.077	.046	.978	.515	-.493	371.1	.978	.503	-.482
2.00	44.8	487.7	.125	24.8	16.59	10.89	3.251	.051	.976	.535	-.511	447.4	.977	.525	-.502
2.20	49.8	572.9	.118	25.3	17.42	11.50	3.413	.056	.975	.552	-.527	529.7	.976	.544	-.519
2.40	54.9	663.8	.113	25.8	18.20	12.09	3.566	.061	.974	.568	-.541	617.8	.974	.560	-.535
2.60	60.1	760.4	.108	26.2	18.94	12.65	3.711	.066	.972	.581	-.554	711.5	.973	.575	-.548
2.80	65.4	862.5	.103	26.7	19.65	13.19	3.849	.071	.971	.593	-.565	810.9	.972	.587	-.559
3.00	70.8	970.3	.099	27.2	20.32	13.70	3.981	.075	.970	.604	-.575	915.8	.971	.599	-.570
3.20	76.3	1083.5	.096	27.7	20.96	14.20	4.106	.080	.969	.614	-.583	1026.3	.970	.609	-.579
3.40	81.9	1202.3	.093	28.2	21.58	14.68	4.227	.085	.968	.624	-.592	1142.4	.968	.619	-.587
3.60	87.6	1326.5	.090	28.6	22.17	15.15	4.343	.090	.967	.632	-.599	1263.8	.967	.628	-.595
3.80	93.3	1456.2	.087	29.1	22.62	15.60	4.431	.095	.966	.638	-.604	1390.8	.966	.636	-.602

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 4 OCCURRED 7 TIMES. AVERAGE NUMBER ITERATIONS = 1.1844

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.720	20.0	5.10	1.21	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	10.4	.529	20.5	5.08	2.57	.996	.004	.996	.000	.004	3.3	.999	.000	.001
.40	8.2	33.1	.337	21.0	5.17	4.04	1.013	.013	.987	.013	.000	20.5	.992	.008	.000
.60	12.4	65.0	.260	21.4	5.23	5.23	1.025	.025	.976	.024	.000	48.0	.982	.018	.000
.80	16.8	105.1	.217	21.9	5.30	6.27	1.039	.039	.963	.037	.000	84.1	.969	.031	.000
1.00	21.2	152.5	.189	22.4	5.38	7.19	1.054	.054	.948	.052	.000	127.9	.956	.044	.000
1.20	25.7	206.9	.169	22.9	5.47	8.04	1.071	.071	.934	.066	.000	178.9	.941	.059	.000
1.40	30.4	267.8	.154	23.4	5.56	8.82	1.089	.089	.919	.081	.000	236.6	.926	.074	.000
1.60	35.1	335.1	.142	23.8	5.65	9.55	1.107	.107	.903	.097	.000	300.7	.911	.089	.000
1.80	39.9	408.4	.133	24.3	5.75	10.24	1.126	.126	.888	.112	.000	371.1	.896	.104	.000
2.00	44.8	487.7	.125	24.8	5.84	10.89	1.145	.145	.874	.126	.000	447.4	.881	.119	.000

2.20	49.8	572.9	.118	25.3	5.94	11.50	1.164	.164	.859	.141	.000	529.7	.866	.134	.000
2.40	54.9	663.8	.113	25.8	6.04	12.09	1.183	.183	.845	.155	.000	617.8	.852	.148	.000
2.60	60.1	760.4	.108	26.2	6.14	12.65	1.203	.203	.831	.169	.000	711.5	.838	.162	.000
2.80	65.4	862.5	.103	26.7	6.24	13.19	1.222	.222	.818	.182	.000	810.9	.825	.175	.000
3.00	70.8	970.3	.099	27.2	6.34	13.70	1.242	.242	.805	.195	.000	915.8	.812	.188	.000
3.20	76.3	1083.5	.096	27.7	6.44	14.20	1.261	.261	.793	.207	.000	1026.3	.799	.201	.000
3.40	81.9	1202.3	.093	28.2	6.54	14.68	1.281	.281	.781	.219	.000	1142.4	.787	.213	.000
3.60	87.6	1326.5	.090	28.6	6.64	15.15	1.300	.300	.769	.231	.000	1263.8	.775	.225	.000
3.80	93.3	1456.2	.087	29.1	6.73	15.60	1.319	.319	.758	.242	.000	1390.8	.764	.236	.000

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 16 TIMES. AVERAGE NUMBER ITERATIONS = 1.1354
 Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
 PRINT HYD ID=30 CODE=1

PARTIAL HYDROGRAPH 104.10

RUNOFF VOLUME = .56577 INCHES = 13.5391 ACRE-FEET
 PEAK DISCHARGE RATE = 218.30 CFS AT 2.300 HOURS BASIN AREA = .4487 SQ. MI.

*
 *S COMPUTE BASIN 6-D.1 *****
 *S UPDATED TO SHOW 30% OPEN SPACE (NON COA OPEN SPACE) AND REMOVED
 *S 0.065625 SQ MI FROM BASIN
 *
 *S LAND TREATMENT CHANGES DUE TO MORE COA OPEN SPACE DUE TO MW UNITS 3-6
 *

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=3 ISLOPE=-1
 LENGTH=400 FT SLOPE=0.05 K=0.7
 LENGTH=0 FT SLOPE=0.0084 K=2.0
 LENGTH=2800 FT SLOPE=0.03286 K=3.0

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	400.0	.050000	.7000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	2800.0	.032860	3.0000
TOTAL BASIN	3200.0	.035003	2.2201

TIME OF CONCENTRATION (HRS)= .2140 TIME TO PEAK (HRS)= .1427 LAG TIME (HRS)= .1605

COMPUTE NM HYD ID=6 HYD=6_D.1 AREA=0.0459 SQ MI
 PER A=85.0 PER B=8.0 PER C=3.0 PER D=4.0
 TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1427

K = .077756HR TP = .142672HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 6.7725 CFS UNIT VOLUME = .9986 B = 526.28 P60 = 1.7200
 AREA = .001836 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .174104HR TP = .142672HR K/TP RATIO = 1.220315 SHAPE CONSTANT, N = 2.916181
 UNIT PEAK = 84.907 CFS UNIT VOLUME = .9996 B = 274.92 P60 = 1.7200
 AREA = .044064 SQ MI IA = .62812 INCHES INF = 1.60875 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=6 CODE=1

HYDROGRAPH FROM AREA 6_D.1

RUNOFF VOLUME = .49739 INCHES = 1.2176 ACRE-FEET
 PEAK DISCHARGE RATE = 39.17 CFS AT 1.533 HOURS BASIN AREA = .0459 SQ. MI.

*S
 *S ADD SUB-BASIN (OS-D,15-D,9-D.1) TO SUB-BASIN 6-D.1 TO GET AP_OFF *****
 *S

ADD HYD ID=55 HYD NO=AP_OFF ID I=30 ID II=6
 PRINT HYD ID=55 CODE=1

HYDROGRAPH FROM AREA AP_OFF

RUNOFF VOLUME = .55942 INCHES = 14.7567 ACRE-FEET
 PEAK DISCHARGE RATE = 220.51 CFS AT 2.300 HOURS BASIN AREA = .4946 SQ. MI.

```

*
*S COMPUTE BASIN 9-D.2 *****
*S ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF
*
*S DECREASE AREA BY 0.00283 SQ MI, AREA INCORPORATED INTO MW UNITS 3-6
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
                        NK=1  ISLOPE=0
                        LENGTH=1800 FT  SLOPE=0.0372 K=3.0
                        Kn=.021  CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
                        LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
SHEET FLOW PORTION      .0              .000000              .0000
SHALLOW FLOW PORTION    .0              .000000              .0000
CHANNEL FLOW PORTION    1800.0          .037200              3.0000
TOTAL BASIN              1800.0          .037200              3.0000

TIME OF CONCENTRATION (HRS)= .0864      TIME TO PEAK (HRS)= .0576      LAG TIME (HRS)= .0648

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000      TIME TO PEAK (HRS)= .1333      LAG TIME (HRS)= .1500

COMPUTE NM HYD          ID=5  HYD=9_D.2  AREA=0.00967 SQ MI
                        PER A=30.0  PER B=18.0  PER C=18.0  PER D=34.0
                        TP=0.0 HR  MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR  TP = .133333HR  K/TP RATIO = .545000  SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 12.977 CFS  UNIT VOLUME = .9985  B = 526.28  P60 = 1.7200
AREA = .003288 SQ MI  IA = .10000 INCHES  INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .141012HR  TP = .133333HR  K/TP RATIO = 1.057590  SHAPE CONSTANT, N = 3.338717
UNIT PEAK = 14.760 CFS  UNIT VOLUME = .9991  B = 308.36  P60 = 1.7200
AREA = .006382 SQ MI  IA = .52727 INCHES  INF = 1.32636 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD              ID=5      CODE=20

                        HYDROGRAPH FROM AREA 9_D.2

TIME    FLOW      TIME    FLOW      TIME    FLOW      TIME    FLOW      TIME    FLOW
HRS      CFS      HRS      CFS      HRS      CFS      HRS      CFS      HRS      CFS
.000      .0      2.000      2.7      4.000      .1      6.000      .1
.667      .0      2.667      .4      4.667      .1      6.667      .0
1.333      2.9      3.333      .1      5.333      .1

RUNOFF VOLUME = 1.04568 INCHES = .5393 ACRE-FEET
PEAK DISCHARGE RATE = 15.64 CFS AT 1.500 HOURS  BASIN AREA = .0097 SQ. MI.

*
*S ROUTE 9D.2 FLOW THRU 1200' OF CHANNEL *****
*
COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=0  MAX ELEV=3.80
                        CH SLOPE=0.0433  FP SLOPE=0.0433
                        N=0.038  DIST=32.0
                        DIST  ELEV      DIST  ELEV
                        0.0      5.0      6.0      0.0
                        26.0      0.0      32.0      5.0

RATING CURVE VALLEY SECTION 1.0
WATER    FLOW    FLOW    TOP
SURFACE  AREA    RATE    WIDTH
ELEV     SQ FT   CFS     FT
.00      .00     .00     20.00
.20      4.05    11.12    20.48
.40      8.19    35.31    20.96
.60      12.43   69.41    21.44
.80      16.77   112.16   21.92
1.00     21.20   162.80   22.40
1.20     25.73   220.83   22.88
1.40     30.35   285.88   23.36
1.60     35.07   357.66   23.84
1.80     39.89   435.97   24.32
2.00     44.80   520.65   24.80

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2.20 49.81 611.55 25.28
 2.40 54.91 708.59 25.76
 2.60 60.11 811.67 26.24
 2.80 65.41 920.73 26.72
 3.00 70.80 1035.72 27.20
 3.20 76.29 1156.61 27.68
 3.40 81.87 1283.37 28.16
 3.60 87.55 1415.97 28.64
 3.80 93.33 1554.41 29.12
 ROUTE MCUNGE ID=7 HYD=100.01 INFLOW ID=5 DT=0HR L=1200
 NS=0 SLOPE=.038 MATCODE=0 REGCODE=0 CCODE=0

INFLOW END= 206 TABLE PTS= 20
 DT= .033333 QMED= 7.82 CKMED= 2.7482
 WIDTH MED= 20.34 NREACH= 8 DX= 150.00

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.165	20.0	1.25	1.29	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.20	4.0	11.1	.121	20.5	4.53	2.75	3.622	.021	.991	.569	-.560	3.5	.994	.397	-.391
.40	8.2	35.3	.077	21.0	7.03	4.31	5.624	.042	.987	.700	-.687	21.9	.989	.650	-.639
.60	12.4	69.4	.060	21.4	9.01	5.58	7.206	.063	.985	.758	-.743	51.2	.986	.733	-.719
.80	16.8	112.2	.050	21.9	10.68	6.69	8.548	.084	.983	.792	-.775	89.8	.984	.777	-.760
1.00	21.2	162.8	.043	22.4	12.15	7.68	9.723	.105	.981	.815	-.796	136.6	.982	.805	-.786
1.20	25.7	220.8	.039	22.9	13.47	8.58	10.775	.126	.979	.832	-.811	191.0	.980	.824	-.804
1.40	30.4	285.9	.035	23.4	14.66	9.42	11.729	.146	.977	.845	-.822	252.6	.978	.839	-.817
1.60	35.1	357.7	.033	23.8	15.76	10.20	12.604	.167	.976	.855	-.831	321.0	.976	.850	-.826
1.80	39.9	436.0	.030	24.3	16.77	10.93	13.414	.188	.974	.863	-.837	396.1	.975	.859	-.834
2.00	44.8	520.6	.029	24.8	17.71	11.62	14.169	.208	.973	.870	-.843	477.6	.974	.867	-.840
2.20	49.8	611.6	.027	25.3	18.60	12.28	14.877	.228	.972	.876	-.847	565.4	.972	.873	-.845
2.40	54.9	708.6	.026	25.8	19.43	12.90	15.544	.248	.970	.881	-.851	659.4	.971	.878	-.849
2.60	60.1	811.7	.025	26.2	20.22	13.50	16.176	.268	.969	.885	-.855	759.5	.970	.883	-.853
2.80	65.4	920.7	.024	26.7	20.97	14.08	16.777	.288	.968	.889	-.857	865.6	.969	.887	-.856
3.00	70.8	1035.7	.023	27.2	21.69	14.63	17.350	.308	.967	.893	-.860	977.6	.968	.891	-.859
3.20	76.3	1156.6	.022	27.7	22.37	15.16	17.899	.328	.966	.896	-.862	1095.6	.966	.894	-.861
3.40	81.9	1283.4	.021	28.2	23.03	15.68	18.425	.347	.965	.899	-.864	1219.4	.965	.897	-.863
3.60	87.6	1416.0	.021	28.6	23.67	16.17	18.932	.367	.964	.901	-.865	1349.1	.964	.900	-.865
3.80	93.3	1554.4	.020	29.1	24.14	16.66	19.313	.388	.963	.903	-.866	1484.6	.963	.903	-.866

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 4 OCCURRED 4 TIMES. AVERAGE NUMBER ITERATIONS = 1.0689
 DEPTH AREA Q TRAVEL WIDTH ck VEL C D C1 C2 C3 Q-M C1-M C2-M C3-M
 (FT) (SQ FT) (CFS) TIME(HR) (FT) (FPS) (FPS)
 .00 .0 .0 .165 20.0 1.25 1.29 1.000 .000 1.000 .000 .000 .0 1.000 .000 .000
 .20 4.0 11.1 .121 20.5 1.34 2.75 1.071 .071 .934 .066 .000 3.5 .977 .023 .000
 .40 8.2 35.3 .077 21.0 1.50 4.31 1.197 .197 .835 .165 .000 21.9 .884 .116 .000
 .60 12.4 69.4 .060 21.4 1.67 5.58 1.339 .339 .747 .253 .000 51.2 .789 .211 .000
 .80 16.8 112.2 .050 21.9 1.85 6.69 1.484 .484 .674 .326 .000 89.8 .708 .292 .000
 1.00 21.2 162.8 .043 22.4 2.03 7.68 1.627 .627 .615 .385 .000 136.6 .643 .357 .000
 1.20 25.7 220.8 .039 22.9 2.21 8.58 1.767 .767 .566 .434 .000 191.0 .589 .411 .000
 1.40 30.4 285.9 .035 23.4 2.38 9.42 1.903 .903 .526 .474 .000 252.6 .545 .455 .000
 1.60 35.1 357.7 .033 23.8 2.54 10.20 2.035 1.035 .491 .509 .000 321.0 .508 .492 .000
 1.80 39.9 436.0 .030 24.3 2.70 10.93 2.163 1.163 .462 .538 .000 396.1 .476 .524 .000
 2.00 44.8 520.6 .029 24.8 2.86 11.62 2.288 1.288 .437 .563 .000 477.6 .449 .551 .000
 2.20 49.8 611.6 .027 25.3 3.01 12.28 2.409 1.409 .415 .585 .000 565.4 .426 .574 .000
 2.40 54.9 708.6 .026 25.8 3.16 12.90 2.527 1.527 .396 .604 .000 659.4 .405 .595 .000
 2.60 60.1 811.7 .025 26.2 3.30 13.50 2.643 1.643 .378 .622 .000 759.5 .387 .613 .000
 2.80 65.4 920.7 .024 26.7 3.44 14.08 2.755 1.755 .363 .637 .000 865.6 .370 .630 .000
 3.00 70.8 1035.7 .023 27.2 3.58 14.63 2.865 1.865 .349 .651 .000 977.6 .356 .644 .000
 3.20 76.3 1156.6 .022 27.7 3.72 15.16 2.973 1.973 .336 .664 .000 1095.6 .343 .657 .000
 3.40 81.9 1283.4 .021 28.2 3.85 15.68 3.078 2.078 .325 .675 .000 1219.4 .330 .670 .000
 3.60 87.6 1416.0 .021 28.6 3.98 16.17 3.181 2.181 .314 .686 .000 1349.1 .319 .681 .000
 3.80 93.3 1554.4 .020 29.1 4.10 16.66 3.282 2.282 .305 .695 .000 1484.6 .309 .691 .000
 MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 2 OCCURRED 254 TIMES. AVERAGE NUMBER ITERATIONS = 1.0548
 Equations solved with two passes: first using the Ponce correction to C1, second using the Fread correction to C1, C2 and C3
 PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 100.01

RUNOFF VOLUME = 1.04013 INCHES = .5364 ACRE-Feet
 PEAK DISCHARGE RATE = 15.09 CFS AT 1.767 HOURS BASIN AREA = .0097 SQ. MI.

*
 *S COMPUTE BASIN 6-D.2*****
 *S UPDATED TO SHOW 30% OPEN SPACE (NON COA OPEN SPACE)
 *
 *S BREAK BASIN 6-D.2 INTO SUBBASINS FOR MW UNITS 3-6
 *
 *COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 * NK=1 ISLOPE=0
 * LENGTH=1200 FT SLOPE=0.0433 K=3.0
 * Kn=.021 CR=.5
 *
 *COMPUTE NM HYD ID=7 HYD=6_D.2 AREA=0.047369 SQ MI
 * PER A=42 PER B=15 PER C=15 PER D=28
 * TP=0.0 HR MASS RAIN=-1
 *PRINT HYD ID=7 CODE=20

10

```

PER C=34.5 PER D=31 TP=0.13333 RAINFALL=-1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 13.105 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.7200
AREA = .003320 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118930HR TP = .133330HR K/TP RATIO = .891996 SHAPE CONSTANT, N = 3.975497
UNIT PEAK = 19.595 CFS UNIT VOLUME = .9998 B = 353.53 P60 = 1.7200
AREA = .007390 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=34 CODE=1

HYDROGRAPH FROM AREA 6_D.2D

RUNOFF VOLUME = 1.12813 INCHES = .6444 ACRE-FEET
PEAK DISCHARGE RATE = 19.43 CFS AT 1.500 HOURS BASIN AREA = .0107 SQ. MI.

*
*S COMPUTE BASIN 6-D.2E *****
COMPUTE NM HYD ID=35 HYD=6_D.2E AREA=0.002415 PER A=0 PER B=30.5
PER C=30.5 PER D=39 TP=0.13333 RAINFALL=-1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.7176 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 1.7200
AREA = .000942 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118930HR TP = .133330HR K/TP RATIO = .891996 SHAPE CONSTANT, N = 3.975497
UNIT PEAK = 3.9061 CFS UNIT VOLUME = .9972 B = 353.53 P60 = 1.7200
AREA = .001473 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=35 CODE=1

HYDROGRAPH FROM AREA 6_D.2E

RUNOFF VOLUME = 1.22438 INCHES = .1577 ACRE-FEET
PEAK DISCHARGE RATE = 4.61 CFS AT 1.500 HOURS BASIN AREA = .0024 SQ. MI.

*
*S COMPUTE BASIN 6-D.2F *****
COMPUTE NM HYD ID=36 HYD=6_D.2F AREA=0.004180 PER A=0 PER B=30.5
PER C=30.5 PER D=39 TP=0.13333 RAINFALL=-1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.4347 CFS UNIT VOLUME = .9976 B = 526.28 P60 = 1.7200
AREA = .001630 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118930HR TP = .133330HR K/TP RATIO = .891996 SHAPE CONSTANT, N = 3.975497
UNIT PEAK = 6.7609 CFS UNIT VOLUME = .9984 B = 353.53 P60 = 1.7200
AREA = .002550 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=36 CODE=1

HYDROGRAPH FROM AREA 6_D.2F

RUNOFF VOLUME = 1.22438 INCHES = .2730 ACRE-FEET
PEAK DISCHARGE RATE = 7.96 CFS AT 1.500 HOURS BASIN AREA = .0042 SQ. MI.

*
*S ADD 9-D.2 TO 6-D.2A *****
ADD HYD ID=39 HYD NO=6_9D.2A ID I=7 ID II=31
PRINT HYD ID=39 CODE=1

HYDROGRAPH FROM AREA 6_9D.2A

RUNOFF VOLUME = 1.17314 INCHES = 1.6743 ACRE-FEET
PEAK DISCHARGE RATE = 33.64 CFS AT 1.500 HOURS BASIN AREA = .0268 SQ. MI.

*

```


*S ADD 6-D.2B TO 6_9D.2A *****
 ADD HYD ID=41 HYD NO=6_9D.2AB ID I=32 ID II=39
 PRINT HYD ID=41 CODE=1

HYDROGRAPH FROM AREA 6_9D.2AB

RUNOFF VOLUME = 1.20611 INCHES = 2.7654 ACRE-FEET
 PEAK DISCHARGE RATE = 65.06 CFS AT 1.500 HOURS BASIN AREA = .0430 SQ. MI.

*
 *S ADD 6-D.2C TO 6_9D.2AB *****
 ADD HYD ID=42 HYD NO=6_9D.2ABC ID I=33 ID II=41
 PRINT HYD ID=42 CODE=1

HYDROGRAPH FROM AREA 6_9D.2ABC

RUNOFF VOLUME = 1.19814 INCHES = 3.1243 ACRE-FEET
 PEAK DISCHARGE RATE = 75.84 CFS AT 1.500 HOURS BASIN AREA = .0489 SQ. MI.

*
 *S ADD 6_D.2D TO 6_9D.2ABC *****
 ADD HYD ID=43 HYD NO=6_9D.2ABCD ID I=34 ID II=42
 PRINT HYD ID=43 CODE=1

HYDROGRAPH FROM AREA 6_9D.2ABCD

RUNOFF VOLUME = 1.18556 INCHES = 3.7687 ACRE-FEET
 PEAK DISCHARGE RATE = 95.27 CFS AT 1.500 HOURS BASIN AREA = .0596 SQ. MI.

*
 *S ADD 6_D.2E TO 6_9D.2ABCD *****
 ADD HYD ID=46 HYD NO=6_D.2ABCDE ID I=35 ID II=43
 PRINT HYD ID=46 CODE=1

HYDROGRAPH FROM AREA 6_D.2ABCDE

RUNOFF VOLUME = 1.18706 INCHES = 3.9263 ACRE-FEET
 PEAK DISCHARGE RATE = 99.88 CFS AT 1.500 HOURS BASIN AREA = .0620 SQ. MI.

*
 *S ADD 6_D.2F TO 6_9D.2ABCDE TO GET PROJECT SITE DISCHARGE, AP=6_9D.2*****
 ADD HYD ID=47 HYD NO=6_9D.2ABCDEF ID I=36 ID II=46
 PRINT HYD ID=47 CODE=1

HYDROGRAPH FROM AREA 6_9D.2ABCDEF

RUNOFF VOLUME = 1.18942 INCHES = 4.1993 ACRE-FEET
 PEAK DISCHARGE RATE = 107.84 CFS AT 1.500 HOURS BASIN AREA = .0662 SQ. MI.

*
 *
 *S COMPUTE BASIN 6-D.3*****
 *S UPDATED TO SHOW 30% OPEN SPACE
 *
 *S NO CHANGE FROM MONTECITO WEST DMP
 *

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=1 ISLOPE=0
 LENGTH=600 FT SLOPE=0.0433 K=3.0
 Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	ADJUSTED SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	.0	.000000	.0000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	600.0	.043003	3.0000
TOTAL BASIN	600.0	.043003	3.0000

TIME OF CONCENTRATION (HRS)= .0268 TIME TO PEAK (HRS)= .0179 LAG TIME (HRS)= .0201

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
 REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000 TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

COMPUTE NM HYD ID=9 HYD=6 D.3 AREA=0.018277 SQ MI
 PER A=30.0 PER B=18 PER C=18 PER D=34
 TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 24.528 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.7200
 AREA = .006214 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .141012HR TP = .133333HR K/TP RATIO = 1.057590 SHAPE CONSTANT, N = 3.338717
 UNIT PEAK = 27.898 CFS UNIT VOLUME = .9995 B = 308.36 P60 = 1.7200
 AREA = .012063 SQ MI IA = .52727 INCHES INF = 1.32636 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=9 CODE=20

HYDROGRAPH FROM AREA 6_D.3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	5.1	4.000	.2	6.000	.2		
.667	.0	2.667	.7	4.667	.2	6.667	.0		
1.333	5.6	3.333	.3	5.333	.2				

RUNOFF VOLUME = 1.04568 INCHES = 1.0193 ACRE-FEET
 PEAK DISCHARGE RATE = 29.55 CFS AT 1.500 HOURS BASIN AREA = .0183 SQ. MI.

*
 *S***** ROUTE OFFSITE FLOW THRU 850' OF 36" RCP PIPE
 COMPUTE RATING CURVE CID=10 VS NO=1 CODE=-1
 SLP=0.0273
 DIA=36 INCHES N=0.013
 *****WARNING***** CID=1 USED

RATING CURVE PIPE SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	MAX WIDTH FT
.00	.00	.00	.00
.16	.14	.58	1.33
.31	.39	2.51	1.83
.47	.71	5.83	2.18
.63	1.07	10.49	2.44
.78	1.46	16.38	2.63
.94	1.89	23.37	2.78
1.09	2.33	31.32	2.89
1.25	2.79	40.04	2.96
1.41	3.26	49.36	2.99
1.56	3.72	59.07	3.00
1.72	4.19	68.96	3.00
1.88	4.65	78.80	3.00
2.03	5.10	88.32	3.00
2.19	5.53	97.23	3.00
2.35	5.93	105.21	3.00
2.50	6.30	111.85	3.00
2.66	6.62	116.60	3.00
2.81	6.89	118.55	3.00
3.00	7.07	118.55	3.00

ROUTE MCUNGE ID=10 HYD= RT.2AB2 INFLOW ID=9 DT=0HR L=850
 NS=0 SLOPE=.0273 MATCODE=0 REGCODE=0 CCODE=0

INFLOW END= 210		TABLE PTS= 19		CKMED= 14.8344											
DT= .033333	WIDTH MED= 2.58	QMED= 14.77	NREACH= 1	DX= 850.00											
DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME(HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.078	.0	7.08	1.94	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.16	.1	.6	.057	1.3	7.06	4.11	.997	.003	.997	.000	.003	.1	1.000	.000	.000
.31	.4	2.5	.037	1.8	9.34	6.42	1.319	.006	.995	.140	-.134	1.4	.995	.047	-.042
.47	.7	5.8	.029	2.2	11.83	8.26	1.670	.010	.993	.254	-.246	4.0	.993	.201	-.194
.63	1.1	10.5	.024	2.4	13.92	9.83	1.966	.013	.991	.329	-.320	8.0	.992	.294	-.286
.78	1.5	16.4	.021	2.6	15.71	11.18	2.218	.017	.989	.382	-.371	13.3	.990	.357	-.348
.94	1.9	23.4	.019	2.8	17.23	12.38	2.432	.021	.988	.421	-.409	19.8	.989	.403	-.392
1.09	2.3	31.3	.018	2.9	18.50	13.43	2.612	.025	.986	.450	-.436	27.3	.987	.437	-.424
1.25	2.8	40.0	.016	3.0	19.55	14.35	2.760	.030	.984	.472	-.456	35.6	.985	.463	-.448
1.41	3.3	49.4	.016	3.0	20.37	15.16	2.875	.035	.982	.489	-.471	44.6	.983	.482	-.465
1.56	3.7	59.1	.015	3.0	20.94	15.86	2.956	.041	.980	.500	-.479	54.2	.981	.496	-.477
1.72	4.2	69.0	.014	3.0	21.07	16.46	2.975	.047	.977	.503	-.479	64.0	.978	.503	-.481

```

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 4 TIMES. AVERAGE NUMBER ITERATIONS = 1.0777
Equations solved using the Ponce correction to C2
PRINT HYD ID=10 CODE=1

```

RUNOFF VOLUME = 1.04577 INCHES = 1.0194 ACRE-FeET
PEAK DISCHARGE RATE = 29.41 CFS AT 1.533 HOURS BASIN AREA = .0183 SQ. MI.

```

COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME TRANSITION METHOD
NK=3  ISLOPE=-1
LENGTH=400 FT  SLOPE=0.0340 K=0.7
LENGTH=1600 FT  SLOPE=0.0361 K=2.0
LENGTH=2800 FT  SLOPE=0.0346 K=3.0

```

USE Kn= .0160 AND Lca/L= .50000

SCS UPLAND METHOD FACTORS

SHEET FLOW PORTION	400.0	.034000	.7000
SHALLOW FLOW PORTION	1600.0	.036100	2.0000
CHANNEL FLOW PORTION	2800.0	.034600	3.0000
TOTAL BASIN	4800.0	.035050	2.0799

LAG EQUATION FACTORS:	Kn=	.0160	TOTAL BASIN LENGTH (FT)=	4800.0
TOTAL BASIN SLOPE (FT/FT)=		.035050	CENTROUD LENGTH (FT)=	2400.0

TIME OF CONCENTRATION (HRS)= .2889 TIME TO PEAK (HRS)= .1926 LAG TIME (HRS)= .2167

COMPUTE NM HYD ID=60 HYD=A_1.1 AREA=0.08421 SQ MI
PER A=90.0 PER B=5.0 PER C=5.0 PER D=0.0
TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1926

K = .231672HR TP = .192581HR K/TP RATIO = 1.202988 SHAPE CONSTANT, N = 2.954469
UNIT PEAK = 121.60 CFS UNIT VOLUME = .9998 B = 278.09 P60 = 1.7200
AREA = .084210 SQ MI IA = .62750 INCHES INF = 1.60700 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=60 CODE=20

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
2.000	.0	2.000	10.7	4.000	.4	6.000	.0		
.667	.0	2.667	2.5	4.667	.1	6.667	.0		
1.333	.1	3.333	1.0	5.333	.1				

RUNOFF VOLUME = .43725 INCHES = 1.9637 ACRE-FEET
PEAK DISCHARGE RATE = 51.19 CFS AT 1.567 HOURS BASIN AREA = .0842 SQ. MI.

```

*****
*S COMPUTE BASIN A-1.2
*S UPDATED TO SHOW 30% OPEN SPACE
*
*S DECREASE AREA BY 0.0101 SQ MI, AREA INCORPORATED INTO MW UNITS 3-6
*****

```

```

*
COMPUTE LT TP          LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
                        NK=1 ISLOPE=0
                        LENGTH=3200 FT SLOPE=0.0325 K=3.0
                        Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS
LENGTH (FT)          SLOPE (FT/FT)          COMPOSITE K
SHEET FLOW PORTION    .0                    .000000          .0000
SHALLOW FLOW PORTION .0                    .000000          .0000
CHANNEL FLOW PORTION  3200.0                .032500          3.0000
TOTAL BASIN           3200.0                .032500          3.0000

TIME OF CONCENTRATION (HRS)= .1644    TIME TO PEAK (HRS)= .1096    LAG TIME (HRS)= .1233

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000    TIME TO PEAK (HRS)= .1333    LAG TIME (HRS)= .1500

COMPUTE NM HYD          ID=65 HYD=A_1.2 AREA=0.012613 SQ MI
                        PER A=30.0 PER B=18.0 PER C=18.0 PER D=34.0
                        TP=0.0 HR MASS RAIN=-1
TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 16.927 CFS UNIT VOLUME = .9987 B = 526.28 P60 = 1.7200
AREA = .004288 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .141012HR TP = .133333HR K/TP RATIO = 1.057590 SHAPE CONSTANT, N = 3.338717
UNIT PEAK = 19.253 CFS UNIT VOLUME = .9993 B = 308.36 P60 = 1.7200
AREA = .008325 SQ MI IA = .52727 INCHES INF = 1.32636 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD              ID=65 CODE=20

HYDROGRAPH FROM AREA A_1.2

TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 2.000 3.5 4.000 .1 6.000 .1
.667 .0 2.667 .5 4.667 .1 6.667 .0
1.333 3.8 3.333 .2 5.333 .1

RUNOFF VOLUME = 1.04568 INCHES = .7034 ACRE-FEET
PEAK DISCHARGE RATE = 20.39 CFS AT 1.500 HOURS BASIN AREA = .0126 SQ. MI.

*
*S ADD A-1.1 TO A-2.2 TO GET FLOW IN VISTA VIEJA AVENUE *****
ADD HYD ID=66 HYD NO=A_1.1_1.2 ID I=60 ID II=65
PRINT HYD ID=66 CODE=1

HYDROGRAPH FROM AREA A_1.1_1.2

RUNOFF VOLUME = .51650 INCHES = 2.6671 ACRE-FEET
PEAK DISCHARGE RATE = 68.67 CFS AT 1.567 HOURS BASIN AREA = .0968 SQ. MI.

*
*S
*S *****
*S * COMPUTE OFFSITE "E" BASINS *
*S *****
*S
*S
*S
*S COMPUTE BASIN E-1.1 *****
*
COMPUTE NM HYD ID=21 HYD=1_E.1 AREA=0.006128 PER A=30.0 PER B=18.0
PER C=18.0 PER D=34 TP=0.13333 RAINFALL=-1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.2240 CFS UNIT VOLUME = .9980 B = 526.28 P60 = 1.7200
AREA = .002084 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .141009HR TP = .133330HR K/TP RATIO = 1.057590 SHAPE CONSTANT, N = 3.338717
UNIT PEAK = 9.3540 CFS UNIT VOLUME = .9986 B = 308.36 P60 = 1.7200

```

AREA = .004044 SQ MI IA = .52727 INCHES INF = 1.32636 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=21 CODE=1

HYDROGRAPH FROM AREA 1_E.1

RUNOFF VOLUME = 1.04568 INCHES = .3418 ACRE-FEET
 PEAK DISCHARGE RATE = 9.92 CFS AT 1.500 HOURS BASIN AREA = .0061 SQ. MI.

*
 *S COMPUTE BASIN E-1.3 *****
 *S UPDATED TO SHOW 30% OPEN SPACE
 *
 *S NO CHANGE FROM MONTECITO WEST DMP
 *

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=1 ISLOPE=0
 LENGTH=3800 FT SLOPE=0.0325 K=3.0
 Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	.0	.000000	.0000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	3800.0	.032500	3.0000
TOTAL BASIN	3800.0	.032500	3.0000

TIME OF CONCENTRATION (HRS)= .1952 TIME TO PEAK (HRS)= .1301 LAG TIME (HRS)= .1464

TIME TO PEAK COMPUTED TO BE LESS THAN 0.133333 HOUR MINIMUM VALUE.
 REVISED VALUES: TIME OF CONCENTRATION (HRS)= .2000 TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

COMPUTE NM HYD ID=70 HYD=E_1.3 AREA=0.08120 SQ MI
 PER A=52.0 PER B=16.0 PER C=16.0 PER D=16.0
 TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1333

K = .073112HR TP = .133333HR K/TP RATIO = .548342 SHAPE CONSTANT, N = 7.051009
 UNIT PEAK = 51.026 CFS UNIT VOLUME = .9991 B = 523.67 P60 = 1.7200
 AREA = .012992 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .147593HR TP = .133333HR K/TP RATIO = 1.106950 SHAPE CONSTANT, N = 3.194118
 UNIT PEAK = 152.08 CFS UNIT VOLUME = 1.000 B = 297.28 P60 = 1.7200
 AREA = .068208 SQ MI IA = .56429 INCHES INF = 1.43000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=70 CODE=20

HYDROGRAPH FROM AREA E_1.3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	14.3	4.000	.4	6.000	.4		
.667	.0	2.667	2.2	4.667	.4	6.667	.0		
1.333	12.4	3.333	.7	5.333	.4				

RUNOFF VOLUME = .75028 INCHES = 3.2492 ACRE-FEET
 PEAK DISCHARGE RATE = 102.27 CFS AT 1.500 HOURS BASIN AREA = .0812 SQ. MI.

*
 *S COMPUTE BASIN E-1.4 *****
 *S UPDATED TO SHOW 30% OPEN SPACE
 *
 *S NO CHANGE FROM MONTECITO WEST DMP
 *

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME TRANSITION METHOD
 NK=1 ISLOPE=0
 LENGTH=5200 FT SLOPE=0.0325 K=3.0
 Kn=.021 CR=.5

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

```

SCS UPLAND METHOD FACTORS
          LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
SHEET FLOW PORTION          .0          .000000          .0000
SHALLOW FLOW PORTION      .0          .000000          .0000
CHANNEL FLOW PORTION      5200.0          .032500          3.0000
TOTAL BASIN                5200.0          .032500          3.0000

LAG EQUATION FACTORS:      Kn= .0210      TOTAL BASIN LENGTH (FT)= 5200.0
TOTAL BASIN SLOPE (FT/FT)= .032500      CENTROID LENGTH (FT)= 2600.0

TIME OF CONCENTRATION (HRS)= .2385      TIME TO PEAK (HRS)= .1590      LAG TIME (HRS)= .1789

COMPUTE NM HYD      ID=75 HYD=E_1.4 AREA=0.13593 SQ MI
                    PER A=60.0 PER B=13.0 PER C=13.0 PER D=14.0
                    TP=0.0 HR MASS RAIN=-1

TIME TO PEAK (hrs)= .1590

K = .088752HR TP = .159019HR K/TP RATIO = .558124 SHAPE CONSTANT, N = 6.893744
UNIT PEAK = 61.775 CFS UNIT VOLUME = .9994 B = 516.20 P60 = 1.7200
AREA = .019030 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .174967HR TP = .159019HR K/TP RATIO = 1.100293 SHAPE CONSTANT, N = 3.212680
UNIT PEAK = 219.60 CFS UNIT VOLUME = 1.000 B = 298.73 P60 = 1.7200
AREA = .116900 SQ MI IA = .58198 INCHES INF = 1.47953 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD      ID=75 CODE=20

HYDROGRAPH FROM AREA E_1.4

TIME FLOW TIME FLOW TIME FLOW TIME FLOW TIME FLOW
HRS CFS HRS CFS HRS CFS HRS CFS HRS CFS
.000 .0 2.000 23.9 4.000 .8 6.000 .6
.667 .0 2.667 4.5 4.667 .6 6.667 .0
1.333 13.2 3.333 1.5 5.333 .5 7.333 .0

RUNOFF VOLUME = .70019 INCHES = 5.0761 ACRE-FEET
PEAK DISCHARGE RATE = 144.66 CFS AT 1.533 HOURS BASIN AREA = .1359 SQ. MI.

*
*S
*S *****
*S *COMPUTE MONTECITO WEST UNITS 1-2 ONSITE BASINS*
*S *****
*S
*S NO CHANGE FROM MONTECITO WEST DMP
*S
*S COMPUTE BASIN 6-D.4 *****
*
COMPUTE NM HYD      ID=2 HYD=6_D.4 AREA=0.015778 PER A=0 PER B=29
                    PER C=29 PER D=42 TP=0.13333 RAINFALL=-1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 26.157 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.7200
AREA = .006627 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118930HR TP = .133330HR K/TP RATIO = .891996 SHAPE CONSTANT, N = 3.975497
UNIT PEAK = 24.265 CFS UNIT VOLUME = .9999 B = 353.53 P60 = 1.7200
AREA = .009151 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD      ID=2 CODE=1

HYDROGRAPH FROM AREA 6_D.4

RUNOFF VOLUME = 1.26047 INCHES = 1.0607 ACRE-FEET
PEAK DISCHARGE RATE = 30.55 CFS AT 1.500 HOURS BASIN AREA = .0158 SQ. MI.

*
*S COMPUTE BASIN 6-D.5 *****
COMPUTE NM HYD      ID=3 HYD=6_D.5 AREA=0.007522 PER A=0 PER B=34
                    PER C=34 PER D=32 TP=0.13333 RAINFALL=-1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.5010 CFS UNIT VOLUME = .9982 B = 526.28 P60 = 1.7200
AREA = .002407 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

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K = .118930HR    TP = .133330HR    K/TP RATIO = .891996    SHAPE CONSTANT, N = 3.975497
UNIT PEAK = 13.563 CFS    UNIT VOLUME = .9995    B = 353.53    P60 = 1.7200
AREA = .005115 SQ MI    IA = .42500 INCHES    INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD                ID=3    CODE=1

                                HYDROGRAPH FROM AREA 6_D.5

RUNOFF VOLUME = 1.14016 INCHES    = .4574 ACRE-FEET
PEAK DISCHARGE RATE = 13.73 CFS    AT 1.500 HOURS    BASIN AREA = .0075 SQ. MI.

*
*S COMPUTE BASIN 6-D.6 *****
COMPUTE NM HYD    ID=4 HYD=6_D.6 AREA=0.006441 PER A=100 PER B=0
                                PER C=0 PER D=0 TP=0.13333 RAINFALL=-1

K = .167503HR    TP = .133330HR    K/TP RATIO = 1.256304    SHAPE CONSTANT, N = 2.840823
UNIT PEAK = 12.975 CFS    UNIT VOLUME = .9983    B = 268.58    P60 = 1.7200
AREA = .006441 SQ MI    IA = .65000 INCHES    INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD                ID=4    CODE=1

                                HYDROGRAPH FROM AREA 6_D.6

RUNOFF VOLUME = .41046 INCHES    = .1410 ACRE-FEET
PEAK DISCHARGE RATE = 4.95 CFS    AT 1.533 HOURS    BASIN AREA = .0064 SQ. MI.

*
*S COMPUTE BASIN 6-D.7 *****
COMPUTE NM HYD    ID=1 HYD=6_D.7 AREA=0.005236 PER A=0 PER B=31
                                PER C=30 PER D=39 TP=0.13333 RAINFALL=-1

K = .072665HR    TP = .133330HR    K/TP RATIO = .545000    SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.0603 CFS    UNIT VOLUME = .9980    B = 526.28    P60 = 1.7200
AREA = .002042 SQ MI    IA = .10000 INCHES    INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .119171HR    TP = .133330HR    K/TP RATIO = .893807    SHAPE CONSTANT, N = 3.966901
UNIT PEAK = 8.4552 CFS    UNIT VOLUME = .9989    B = 352.96    P60 = 1.7200
AREA = .003194 SQ MI    IA = .42623 INCHES    INF = 1.04344 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD                ID=1    CODE=1

                                HYDROGRAPH FROM AREA 6_D.7

RUNOFF VOLUME = 1.22285 INCHES    = .3415 ACRE-FEET
PEAK DISCHARGE RATE = 9.96 CFS    AT 1.500 HOURS    BASIN AREA = .0052 SQ. MI.

*
*S COMPUTE BASIN 6-D.8 *****
COMPUTE NM HYD    ID=20 HYD=6_D.8 AREA=0.010762 PER A=0 PER B=30
                                PER C=29 PER D=41 TP=0.13333 RAINFALL=-1

K = .072665HR    TP = .133330HR    K/TP RATIO = .545000    SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 17.417 CFS    UNIT VOLUME = .9988    B = 526.28    P60 = 1.7200
AREA = .004412 SQ MI    IA = .10000 INCHES    INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .119179HR    TP = .133330HR    K/TP RATIO = .893868    SHAPE CONSTANT, N = 3.966604
UNIT PEAK = 16.808 CFS    UNIT VOLUME = .9996    B = 352.94    P60 = 1.7200
AREA = .006350 SQ MI    IA = .42627 INCHES    INF = 1.04356 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD                ID=20    CODE=1

                                HYDROGRAPH FROM AREA 6_D.8

RUNOFF VOLUME = 1.24691 INCHES    = .7157 ACRE-FEET
PEAK DISCHARGE RATE = 20.69 CFS    AT 1.500 HOURS    BASIN AREA = .0108 SQ. MI.

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*S COMPUTE BASIN E-1.2 *****
COMPUTE NM HYD      ID=22 HYD=1_E.2 AREA=0.001177 PER A=0 PER B=29
                    PER C=29 PER D=42 TP=0.13333 RAINFALL=-1

K = .072665HR      TP = .133330HR      K/TP RATIO = .545000      SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.9512 CFS      UNIT VOLUME = .9932      B = 526.28      P60 = 1.7200
AREA = .000494 SQ MI      IA = .10000 INCHES      INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118930HR      TP = .133330HR      K/TP RATIO = .891996      SHAPE CONSTANT, N = 3.975497
UNIT PEAK = 1.8101 CFS      UNIT VOLUME = .9929      B = 353.53      P60 = 1.7200
AREA = .000683 SQ MI      IA = .42500 INCHES      INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD          ID=22      CODE=1

                        HYDROGRAPH FROM AREA 1_E.2

RUNOFF VOLUME = 1.26047 INCHES      = .0791 ACRE-FEET
PEAK DISCHARGE RATE = 2.29 CFS      AT 1.500 HOURS      BASIN AREA = .0012 SQ. MI.

*
*S ADD E_1.1 TO E_1.2 *****
ADD HYD      ID=71      HYD NO=E.1_2 ID I=21 ID II=22
PRINT HYD      ID=71      CODE=1

                        HYDROGRAPH FROM AREA E.1_2

RUNOFF VOLUME = 1.08022 INCHES      = .4208 ACRE-FEET
PEAK DISCHARGE RATE = 12.21 CFS      AT 1.500 HOURS      BASIN AREA = .0073 SQ. MI.

*

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*S ADD 6_D.8 TO E_1.1_1.2 TO GET PROJECT SITE DISCHARGE TO AP_2 *****
ADD HYD          ID=72    HYD NO=AP2_ON ID I=71 ID II=20
PRINT HYD        ID=72    CODE=1

                                HYDROGRAPH FROM AREA AP2_ON

RUNOFF VOLUME =      1.17950 INCHES      =      1.1365 ACRE-FEET
PEAK DISCHARGE RATE =      32.90 CFS    AT    1.500 HOURS    BASIN AREA =    .0181 SQ. MI.

*
*S ADD 6_D.4 TO 6_D.7 TO GET PROJECT SITE DISCHARGE TO AP_1 *****
ADD HYD          ID=11    HYD NO=6D.4_7 ID I=2 ID II=1
PRINT HYD        ID=11    CODE=1

                                HYDROGRAPH FROM AREA 6D.4_7

RUNOFF VOLUME =      1.25107 INCHES      =      1.4021 ACRE-FEET
PEAK DISCHARGE RATE =      40.50 CFS    AT    1.500 HOURS    BASIN AREA =    .0210 SQ. MI.

*
*S ADD 6_D.5 TO 6_D.6 (RETAINED ONSITE FOR 30.0% RETAINAGE) *****
ADD HYD          ID=12    HYD NO=6D.5_6 ID I=3 ID II=4
PRINT HYD        ID=12    CODE=1

                                HYDROGRAPH FROM AREA 6D.5_6

RUNOFF VOLUME =      .80354 INCHES      =      .5984 ACRE-FEET
PEAK DISCHARGE RATE =      18.68 CFS    AT    1.500 HOURS    BASIN AREA =    .0140 SQ. MI.

*
*S
*S          *****
*S          * COMPUTE ANALYSIS POINTS *
*S          *****
*S
*S
*S
*S
*S ANALYSIS POINT 2, MIDDLE BRANCH BOCA NEGRA (NORTHERN STORM DRAIN)
*
*S ADD AP_OFF TO 6_9D.2 (DIVERT FLOWS) TO GET NEW AP_OFF *****
*
ADD HYD          ID=25    HYD NO=AP_OFF.NEW ID I=55 ID II=47
PRINT HYD        ID=25    CODE=1

                                HYDROGRAPH FROM AREA AP_OFF.NEW

RUNOFF VOLUME =      .63379 INCHES      =      18.9559 ACRE-FEET
PEAK DISCHARGE RATE =      232.17 CFS    AT    2.000 HOURS    BASIN AREA =    .5608 SQ. MI.

*S
*S ADD AP2_ON TO NEW AP_OFF TO GET AP#2 AT MIDDLE BRANCH BOCA NEGRA ARROYO ***
*
ADD HYD          ID=24    HYD NO=AP_2 ID I=25 ID II=72
PRINT HYD        ID=24    CODE=1

                                HYDROGRAPH FROM AREA AP_2

RUNOFF VOLUME =      .65082 INCHES      =      20.0925 ACRE-FEET
PEAK DISCHARGE RATE =      237.91 CFS    AT    2.000 HOURS    BASIN AREA =    .5789 SQ. MI.

*
*S ANALYSIS POINT 1, SOUTHERN STORM DRAIN TO VISTA VIEJA SUBDIVISION *****
*
*S DIVIDE 6D.3 FOR 30.0% RETAINAGE
DIVIDE HYD        ID=10    PER=-70.0          ID I=12 HYD NO=6D.3_OUT
                                         ID II=13 HYD NO=6D.3_RETAIN
*
*S ADD 6D.3_OUT TO 6D.4_7 TO GET AP_1 *****
*
ADD HYD          ID=14    HYD NO=AP_1 ID I=12 ID II=11
PRINT HYD        ID=14    CODE=1

```

HYDROGRAPH FROM AREA AP_1

RUNOFF VOLUME = 1.17337 INCHES = 2.1157 ACRE-FEET
PEAK DISCHARGE RATE = 60.74 CFS AT 1.500 HOURS BASIN AREA = .0338 SQ. MI.

*S

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 09:24:52

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -
05/12/2016
INPUT FILE = DEV_Cond.HYM

- VERSION: 1997.02c RUN DATE (MON/DAY/YR) =
USER NO.= AHYMO-S-9702c1BohanHu-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
*S	THE VISTA VIEJA SUBDIVISION DRAINAGE BASIN (D) PROPOSED										
*S	100 YEAR - 6 HOUR STORM										
*S											
*S	REVISED 2005 AHYMO TO REFLECT UPDATED LAND TREATMENTS										
*S	MONTECITO WEST DMP UPDATE WITH MONTEICITO VISTA DEVELOPMENT 5/12/16										
START											TIME= .00
LOCATION											
RAINFALL TYPE= 1											RAIN6= 2.210
*S											
*S											
*S	* COMPUTE OFFSITE "D" BASINS *										
*S											
*S											
*S											
*S	COMPUTE BASIN OS-D *****										
*S	NO CHANGE FROM MONTECITO WEST DMP										
COMPUTE NM HYD	OS_D - 17			.23780	174.20	5.322	.41961	1.533	1.145	PER IMP=	.00
*S	ROUTE OS-D THRU 15-D IN CHANNEL NO.15*****										
ROUTE MCUNGE	100.01 17 50			.23780	170.91	5.282	.41646	1.833	1.123	CCODE =	.1
*S	COMPUTE BASIN 15-D *****										
*S	ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF										
*S	NO CHANGE FROM MONTECITO WEST DMP										
COMPUTE NM HYD	15_D - 15			.15060	177.15	5.638	.70193	1.500	1.838	PER IMP=	16.00
*S	ADD SUB-BASIN OS-D TO SUB-BASIN 15-D*****										
ADD HYD	101.00 15&50 33			.38840	213.08	10.920	.52715	1.800	.857		
*S	ROUTE 15-D/OS-D THRU 9-D.1 IN CHANNEL NO.9*****										
ROUTE MCUNGE	100.01 33 40			.38840	210.93	10.881	.52527	2.067	.849	CCODE =	.1
*S	COMPUTE BASIN 9-D.1 *****										
*S	UPDATED TO SHOW 30% OPEN SPACE AND REMOVED 0.0125 SQ MI FROM BASIN										
*S	ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF										
*S	LAND TREATMENT CHANGES DUE TO MORE COA OPEN SPACE DUE TO MW UNITS 3-6										
COMPUTE NM HYD	9_D.1 - 9			.06030	68.56	2.691	.83686	1.567	1.777	PER IMP=	20.00
*S	ADD 15-D/OS-D TO SUB-BASIN 9-D.1 *****										
ADD HYD	104.00 40& 9 44			.44870	223.13	13.572	.56714	2.067	.777		
*S	ROUTE 9-D.1/15-D/9-D.1 THRU 6-D.1 IN CHANNEL NO.6 *****										
ROUTE MCUNGE	104.10 44 30			.44870	218.30	13.539	.56577	2.300	.760	CCODE =	.1
*S	COMPUTE BASIN 6-D.1 *****										
*S	UPDATED TO SHOW 30% OPEN SPACE (NON COA OPEN SPACE) AND REMOVED										
*S	0.065625 SQ MI FROM BASIN										
*S	LAND TREATMENT CHANGES DUE TO MORE COA OPEN SPACE DUE TO MW UNITS 3-6										
COMPUTE NM HYD	6_D.1 - 6			.04590	39.17	1.218	.49739	1.533	1.333	PER IMP=	4.00
*S											
*S	ADD SUB-BASIN (OS-D,15-D,9-D.1) TO SUB-BASIN 6-D.1 TO GET AP_OFF *****										
ADD HYD	AP_OFF 30& 6 55			.49460	220.51	14.757	.55942	2.300	.697		
*S	COMPUTE BASIN 9-D.2 *****										
*S	ABOVE 4W WATER ZONE DEVELOPED RUNOFF RESTRICTED TO UNDEVELOPED RUNOFF										
*S	DECREASE AREA BY 0.00283 SQ MI, AREA INCORPORATED INTO MW UNITS 3-6										

2

PAGE = 3

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	A_1.1	-	60	.08421	51.19	1.964	.43725	1.567	.950	PER IMP= .00

*S COMPUTE BASIN A-1.2	*****									
*S DECREASE AREA BY 0.0101 SQ MI, AREA INCORPORATED INTO MW UNITS 3-6										
COMPUTE NM HYD	A_1.2	-	65	.01261	20.39	.703	1.04568	1.500	2.527	PER IMP= 34.00

*S ADD A-1.1 TO A-2.2 TO GET FLOW IN VISTA VIEJA AVENUE	*****									
ADD HYD	A_1.1_1.2	60&65	66	.09682	68.67	2.667	.51650	1.567	1.108	
*S										
*S	*****									
*S	* COMPUTE OFFSITE "E" BASINS *									
*S	*****									
*S										
*S COMPUTE BASIN E-1.1	*****									
COMPUTE NM HYD	1_E.1	-	21	.00613	9.92	.342	1.04568	1.500	2.528	PER IMP= 34.00

*S COMPUTE BASIN E-1.3	*****									
*S UPDATED TO SHOW 30% OPEN SPACE										
*S NO CHANGE FROM MONTECITO WEST DMP										
COMPUTE NM HYD	E_1.3	-	70	.08120	102.27	3.249	.75028	1.500	1.968	PER IMP= 16.00

*S COMPUTE BASIN E-1.4	*****									
*S UPDATED TO SHOW 30% OPEN SPACE										
*S NO CHANGE FROM MONTECITO WEST DMP										
COMPUTE NM HYD	E_1.4	-	75	.13593	144.66	5.076	.70019	1.533	1.663	PER IMP= 14.00
*S	*****									
*S	*COMPUTE MONTECITO WEST UNITS 1-2 ONSITE BASINS*									
*S	*****									
*S										
*S NO CHANGE FROM MONTECITO WEST DMP										
*S	*****									
*S COMPUTE BASIN 6-D.4	*****									
COMPUTE NM HYD	6_D.4	-	2	.01578	30.55	1.061	1.26047	1.500	3.025	PER IMP= 42.00

*S COMPUTE BASIN 6-D.5	*****									
COMPUTE NM HYD	6_D.5	-	3	.00752	13.73	.457	1.14016	1.500	2.853	PER IMP= 32.00

*S COMPUTE BASIN 6-D.6	*****									
COMPUTE NM HYD	6_D.6	-	4	.00644	4.95	.141	.41046	1.533	1.202	PER IMP= .00

*S COMPUTE BASIN 6-D.7	*****									
COMPUTE NM HYD	6_D.7	-	1	.00524	9.96	.341	1.22285	1.500	2.971	PER IMP= 39.00

*S COMPUTE BASIN 6-D.8	*****									
COMPUTE NM HYD	6_D.8	-	20	.01076	20.69	.716	1.24691	1.500	3.004	PER IMP= 41.00

*S COMPUTE BASIN E-1.2	*****									
COMPUTE NM HYD	1_E.2	-	22	.00118	2.29	.079	1.26047	1.500	3.044	PER IMP= 42.00

*S ADD E_1.1 TO E_1.2	*****									
ADD HYD	E_1.2	21&22	71	.00731	12.21	.421	1.08022	1.500	2.611	

*S ADD 6_D.8 TO E_1.1	1.2 TO GET PROJECT SITE DISCHARGE TO AP_2 *****									
ADD HYD	AP2_ON	71&20	72	.01807	32.90	1.137	1.17950	1.500	2.845	

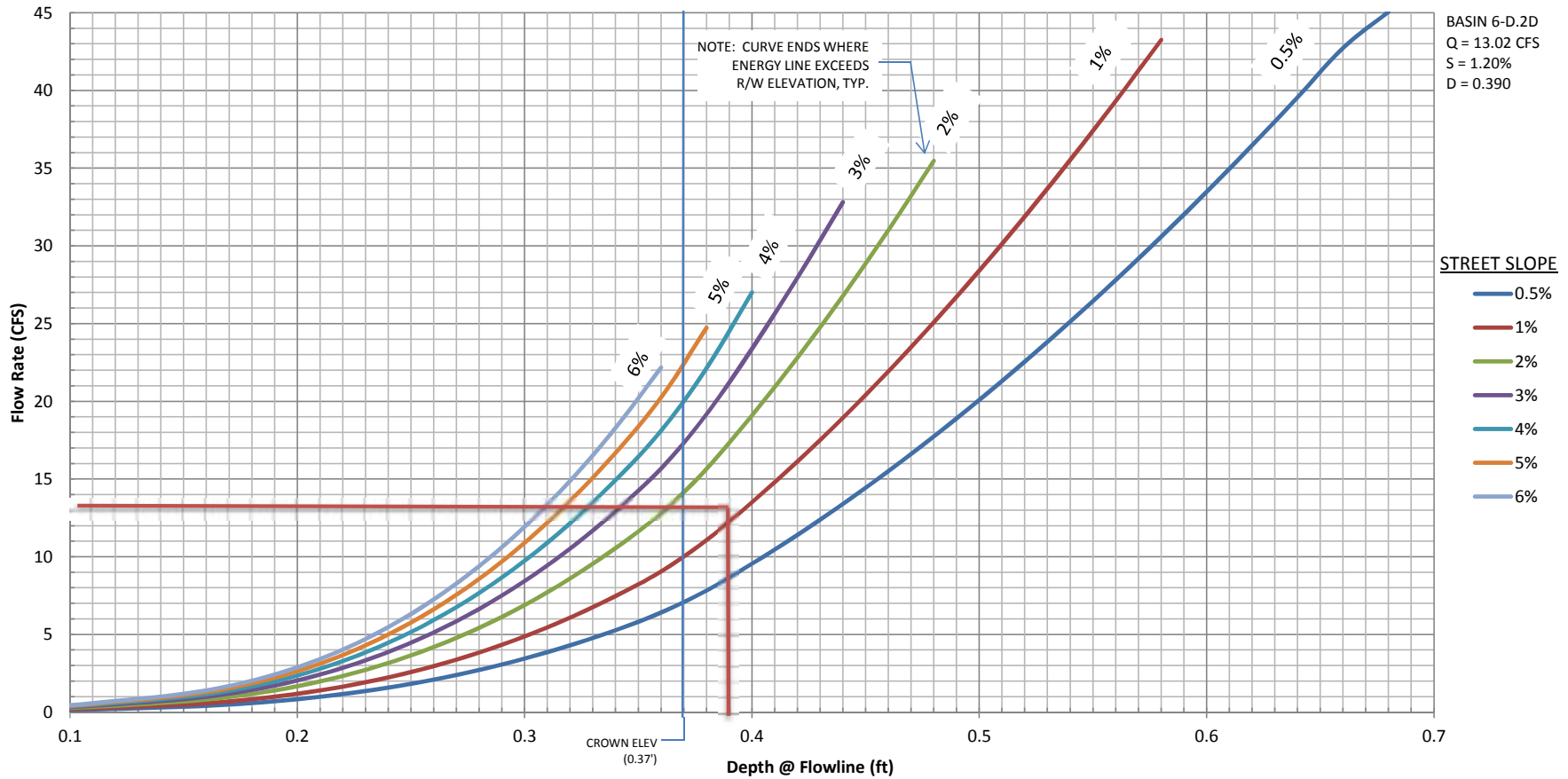
*S ADD 6_D.4 TO 6_D.7	TO GET PROJECT SITE DISCHARGE TO AP_1 *****									
ADD HYD	6D.4_7	2& 1	11	.02101	40.50	1.402	1.25107	1.500	3.012	

*S ADD 6_D.5 TO 6_D.6	(RETAINED ONSITE FOR 30.0% RETAINAGE) *****									
ADD HYD	6D.5_6	3& 4	12	.01396	18.68	.598	.80354	1.500	2.091	
*S										
*S	*****									

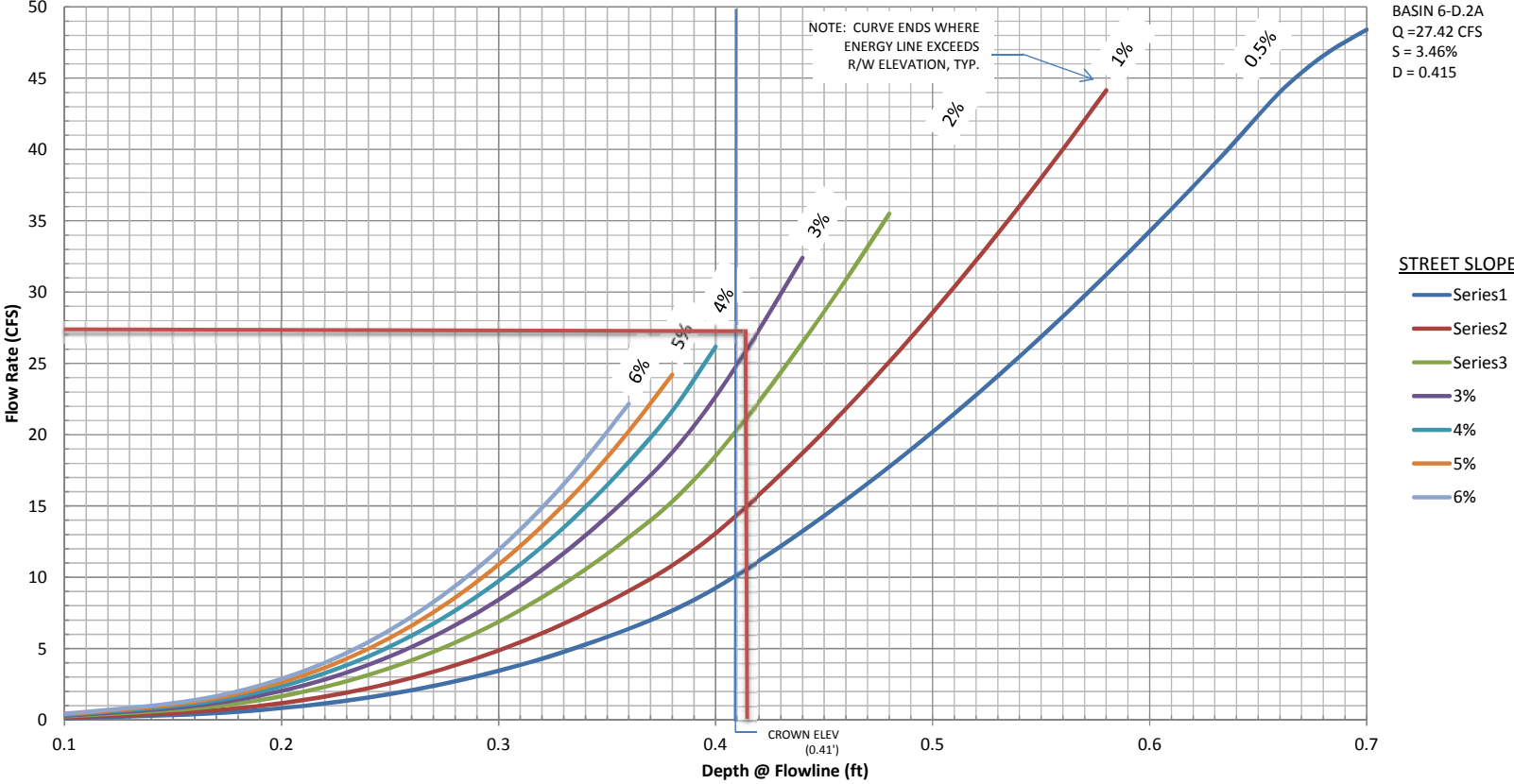
	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 4 NOTATION
*S	* COMPUTE ANALYSIS POINTS *								
*S	*****								
*S									
*S									
*S									
*S									
*S	ANALYSIS POINT 2, MIDDLE BRANCH BOCA NEGRA (NORTHERN STORM DRAIN)								
*S	ADD AP_OFF TO 6_9D.2 (DIVERT FLOWS) TO GET NEW AP_OFF *****								
ADD HYD	AP_OFF.NEW 55&47	25	.56080	232.17	18.956	.63379	2.000	.647	
*S									
*S	ADD AP2_ON TO NEW AP_OFF TO GET AP#2 AT MIDDLE BRANCH BOCA NEGRA ARROYO ***								
ADD HYD	AP_2 25&72	24	.57886	237.91	20.093	.65082	2.000	.642	
*S	ANALYSIS POINT 1, SOUTHERN STORM DRAIN TO VISTA VIEJA SUBDIVISION *****								
*S	DIVIDE 6D.3 FOR 30.0% RETAINAGE								
DIVIDE HYD	6D.3_OUT	10	.01279	20.59	.714	1.04575	1.533	2.514	
	6D.3_RETAIN	and 12	.00548	8.82	.306	1.04575	1.533	2.514	
*S	ADD 6D.3_OUT TO 6D.4_7 TO GET AP_1 *****								
ADD HYD	AP_1 12&11	14	.03381	60.74	2.116	1.17337	1.500	2.807	
*S									
FINISH									

**APPENDIX C -
STREET HYDRAULICS AND STORM DRAIN INLET
ANALYSIS**

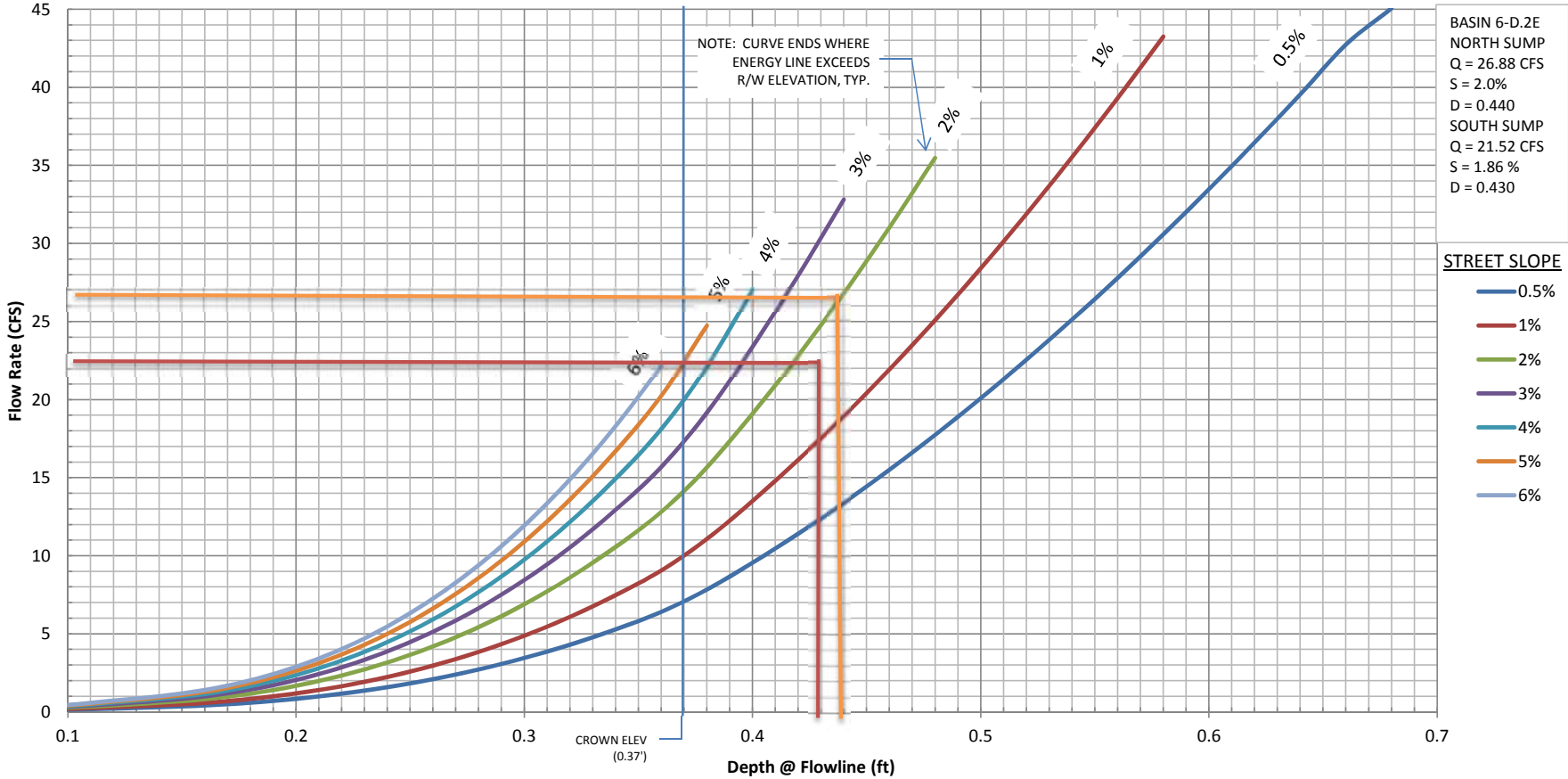
28' F-F Piedra Aspero Street Hydraulics (Full Street Section)



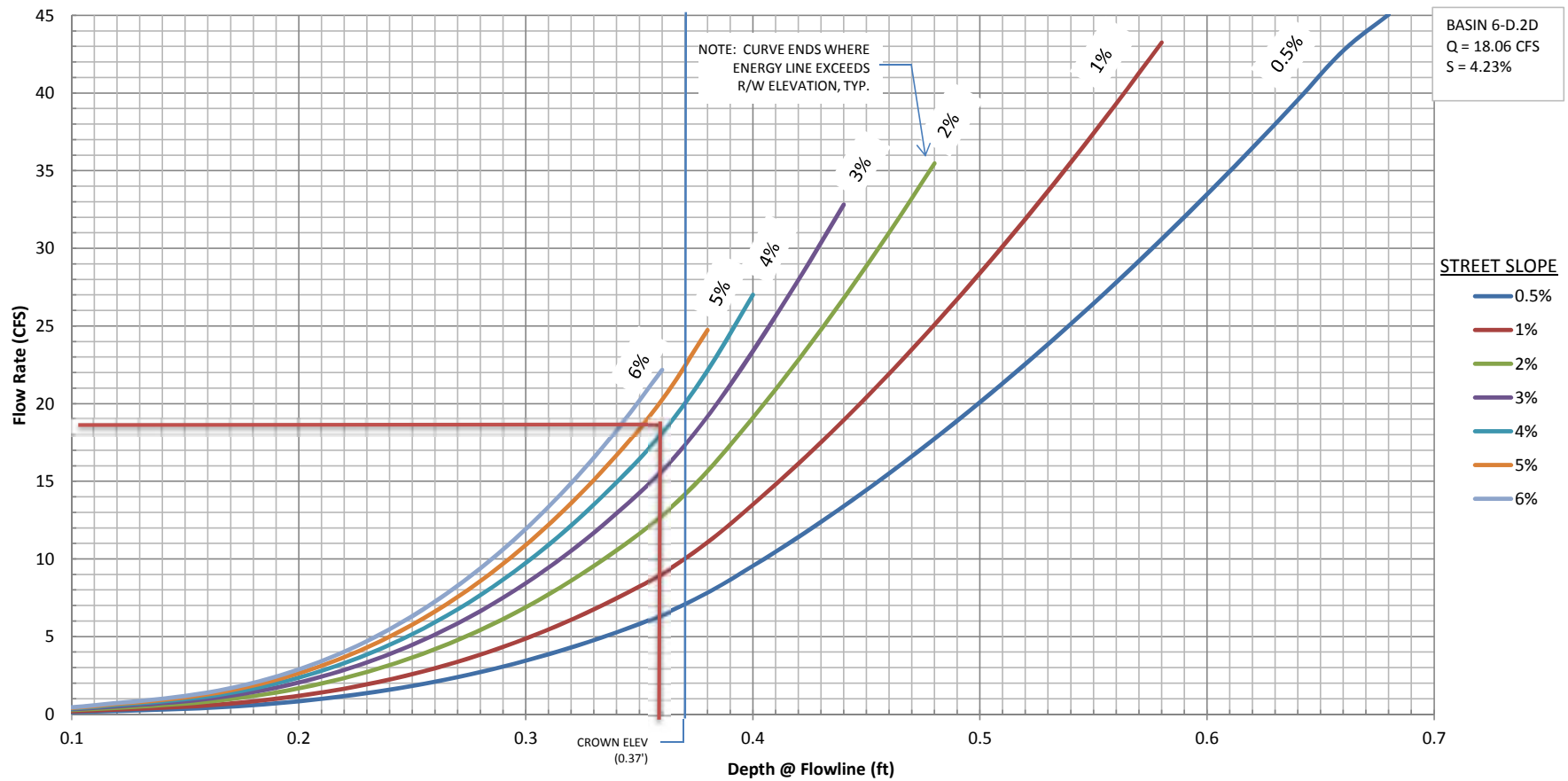
30' F-F Vista Bosquejo Road Hydraulics (Full Street Section)



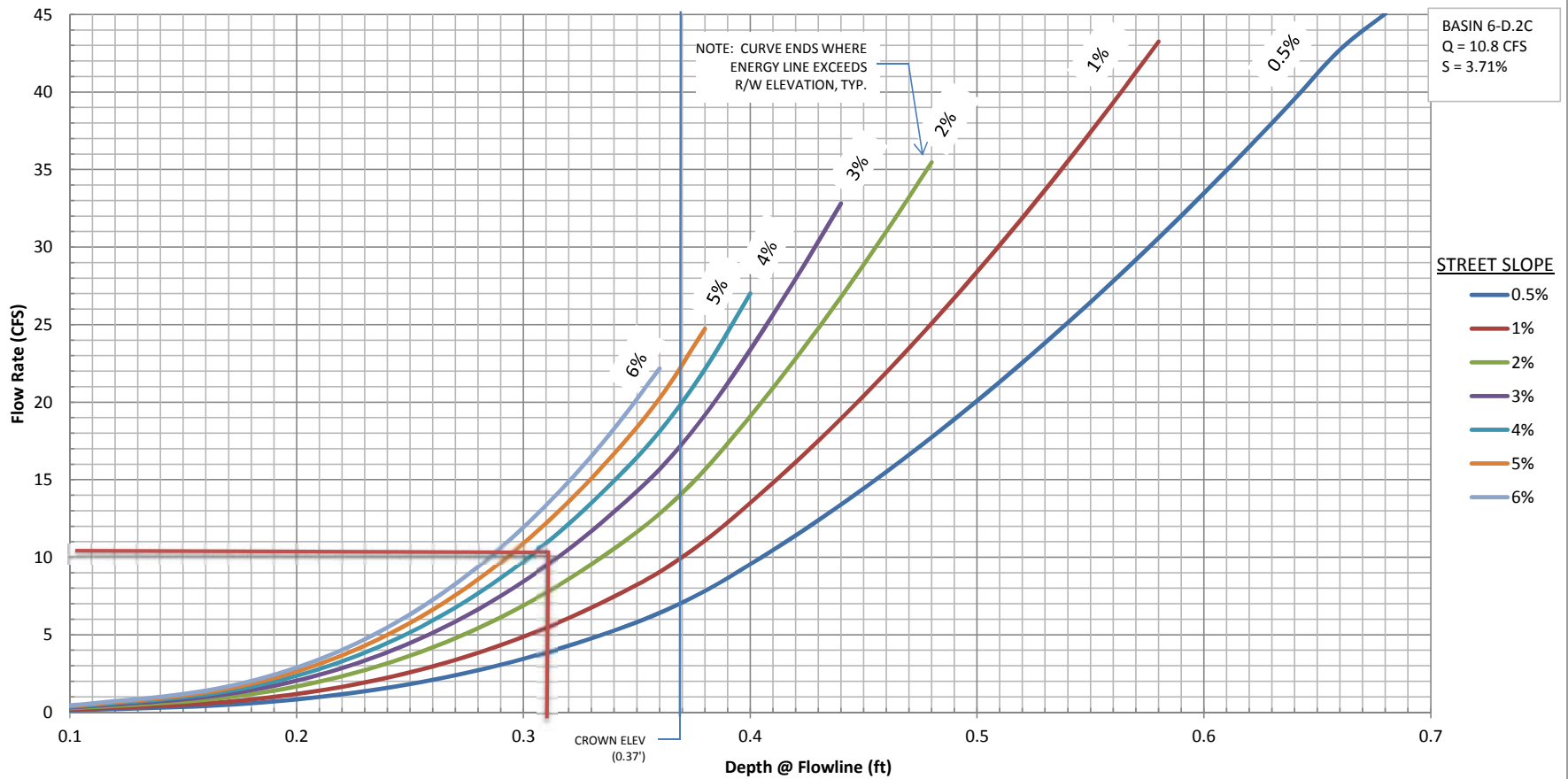
28' F-F Vista Luces Street Hydraulics (Full Street Section)



28' F-F Retablo Road Hydraulics (Full Street Section)



28' F-F Piedra Dibujo Road Hydraulics (Full Street Section)



C7_Street Capacities Stream Input_MW.txt
X,Y INPUT FILES FOR STREAM CALCULATOR - STREET CAPACITIES

NORMAL CROWN 28' F-F

0	0.86
9.33	0.67
9.5	0.0
11.5	0.13
23.5	0.37
35.5	0.13
37.5	0.0
37.67	0.67
47.0	0.86

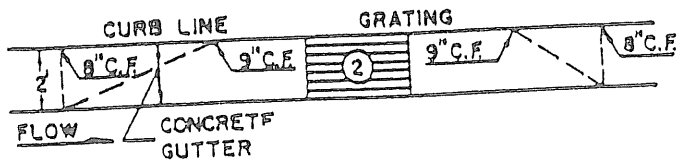
NORMAL CROWN 30' F-F

0	0.88
10.33	0.67
10.5	0.0
12.5	0.13
25.5	0.39
38.5	0.13
40.5	0.0
40.67	0.67
51.0	0.88

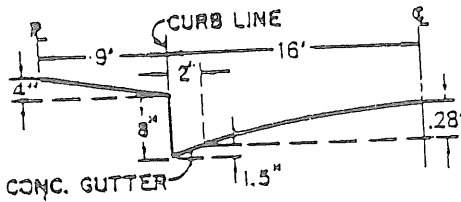
28' Street Depth VS Flowrate, n=0.017
(NORMAL CROWN)

Depth	S=0.5%		S=1.0%		S=2.0%		S=3.0%		S=4.0%		S=5.0%		S=6.0%	
	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E
0.02	0.002	0.021	0.002	0.022	0.003	0.025	0.004	0.027	0.005	0.03	0.005	0.032	0.006	0.034
0.04	0.011	0.043	0.016	0.046	0.022	0.052	0.027	0.058	0.031	0.064	0.035	0.07	0.038	0.076
0.06	0.032	0.065	0.046	0.07	0.065	0.081	0.08	0.091	0.092	0.101	0.103	0.112	0.113	0.122
0.08	0.07	0.088	0.099	0.095	0.14	0.11	0.171	0.126	0.198	0.141	0.221	0.156	0.242	0.171
0.1	0.127	0.11	0.179	0.12	0.254	0.141	0.311	0.161	0.359	0.182	0.401	0.202	0.439	0.223
0.12	0.206	0.133	0.292	0.146	0.413	0.172	0.505	0.198	0.583	0.224	0.652	0.25	0.715	0.277
0.14	0.289	0.153	0.408	0.167	0.578	0.194	0.707	0.221	0.817	0.248	0.913	0.275	1	0.302
0.16	0.403	0.174	0.57	0.187	0.807	0.214	0.988	0.242	1.141	0.269	1.275	0.296	1.397	0.323
0.18	0.582	0.195	0.823	0.21	1.164	0.24	1.426	0.27	1.646	0.3	1.84	0.33	2.016	0.36
0.2	0.832	0.217	1.176	0.234	1.663	0.268	2.037	0.302	2.352	0.336	2.63	0.37	2.881	0.404
0.22	1.161	0.239	1.642	0.259	2.322	0.298	2.843	0.337	3.283	0.376	3.671	0.415	4.021	0.454
0.24	1.578	0.262	2.232	0.284	3.156	0.329	3.866	0.373	4.464	0.418	4.99	0.462	5.467	0.507
0.26	2.092	0.285	2.959	0.31	4.184	0.361	5.125	0.411	5.918	0.462	6.616	0.512	7.248	0.563
0.28	2.711	0.308	3.835	0.337	5.423	0.394	6.642	0.451	7.669	0.508	8.574	0.564	9.393	0.621
0.3	3.444	0.332	4.87	0.364	6.888	0.427	8.436	0.491	9.741	0.555	10.891	0.618	11.93	0.682
0.32	4.298	0.355	6.078	0.391	8.595	0.461	10.527	0.532	12.155	0.603	13.59	0.673	14.887	0.744
0.34	5.28	0.379	7.467	0.418	10.56	0.496	12.933	0.574	14.934	0.652	16.696	0.73	18.29	0.808
0.36	6.398	0.403	9.049	0.446	12.797	0.531	15.673	0.617	18.097	0.702	20.233	0.788	22.164	0.873
0.38	7.822	0.429	11.062	0.478	15.644	0.575	19.159	0.673	22.123	0.77	24.735	0.868	27.096	0.965
0.4	9.547	0.457	13.502	0.514	19.094	0.629	23.386	0.743	27.003	0.857	30.191	0.972	33.072	1.086
0.42	11.406	0.486	16.13	0.552	22.812	0.683	27.939	0.815	32.261	0.947	36.069	1.078	39.511	1.21
0.44	13.393	0.515	18.94	0.59	26.786	0.739	32.806	0.889	37.881	1.038	42.352	1.188	46.395	1.337
0.46	15.504	0.544	21.926	0.628	31.008	0.796	37.977	0.964	43.852	1.132	49.028	1.299	53.707	1.467
0.48	17.735	0.573	25.081	0.667	35.47	0.853	43.442	1.04	50.162	1.227	56.083	1.414	61.436	1.6
0.5	20.082	0.603	28.401	0.706	40.165	0.912	49.192	1.118	56.802	1.324	63.506	1.53	69.568	1.736
0.52	22.543	0.633	31.881	0.746	45.087	0.971	55.22	1.197	63.762	1.423	71.288	1.649	78.093	1.874
0.54	25.115	0.663	35.518	0.786	50.229	1.032	61.518	1.277	71.035	1.523	79.42	1.769	87	2.015
0.56	27.794	0.693	39.307	0.826	55.588	1.093	68.081	1.359	78.613	1.625	87.892	1.891	96.281	2.158
0.58	30.578	0.724	43.244	0.867	61.157	1.154	74.902	1.441	86.489	1.728	96.698	2.016	105.927	2.303
0.6	33.466	0.754	47.328	0.908	66.932	1.217	81.975	1.525	94.656	1.833	105.829	2.141	115.93	2.45
0.62	36.455	0.785	51.555	0.95	72.91	1.279	89.296	1.609	103.11	1.939	115.28	2.269	126.283	2.598
0.64	39.542	0.816	55.921	0.991	79.085	1.343	96.859	1.694	111.843	2.046	125.044	2.397	136.979	2.749
0.66	42.727	0.847	60.425	1.034	85.454	1.407	104.66	1.781	120.851	2.154	135.115	2.528	148.012	2.901
0.68	45.06	0.87	63.724	1.059	90.12	1.439	110.373	1.818	127.448	2.198	142.491	2.577	156.092	2.957
0.7	46.652	0.886	65.976	1.071	93.304	1.442	114.274	1.813	131.952	2.184	147.527	2.555	161.608	2.926
0.72	48.482	0.903	68.564	1.085	96.964	1.45	118.756	1.815	137.127	2.18	153.313	2.545	167.946	2.91
0.74	50.542	0.92	71.477	1.101	101.083	1.462	123.801	1.823	142.953	2.184	159.827	2.545	175.081	2.905
0.76	52.827	0.939	74.709	1.118	105.654	1.477	129.4	1.835	149.418	2.194	167.054	2.552	182.999	2.911
0.78	55.336	0.959	78.257	1.137	110.672	1.495	135.544	1.852	156.513	2.21	174.987	2.567	191.689	2.924
0.8	58.066	0.979	82.118	1.158	116.133	1.515	142.233	1.873	164.237	2.23	183.622	2.588	201.148	2.945
0.82	61.019	0.999	86.294	1.179	122.039	1.537	149.466	1.896	172.589	2.255	192.96	2.613	211.377	2.972
0.84	64.195	1.02	90.786	1.201	128.391	1.562	157.246	1.922	181.572	2.283	203.004	2.644	222.379	3.005

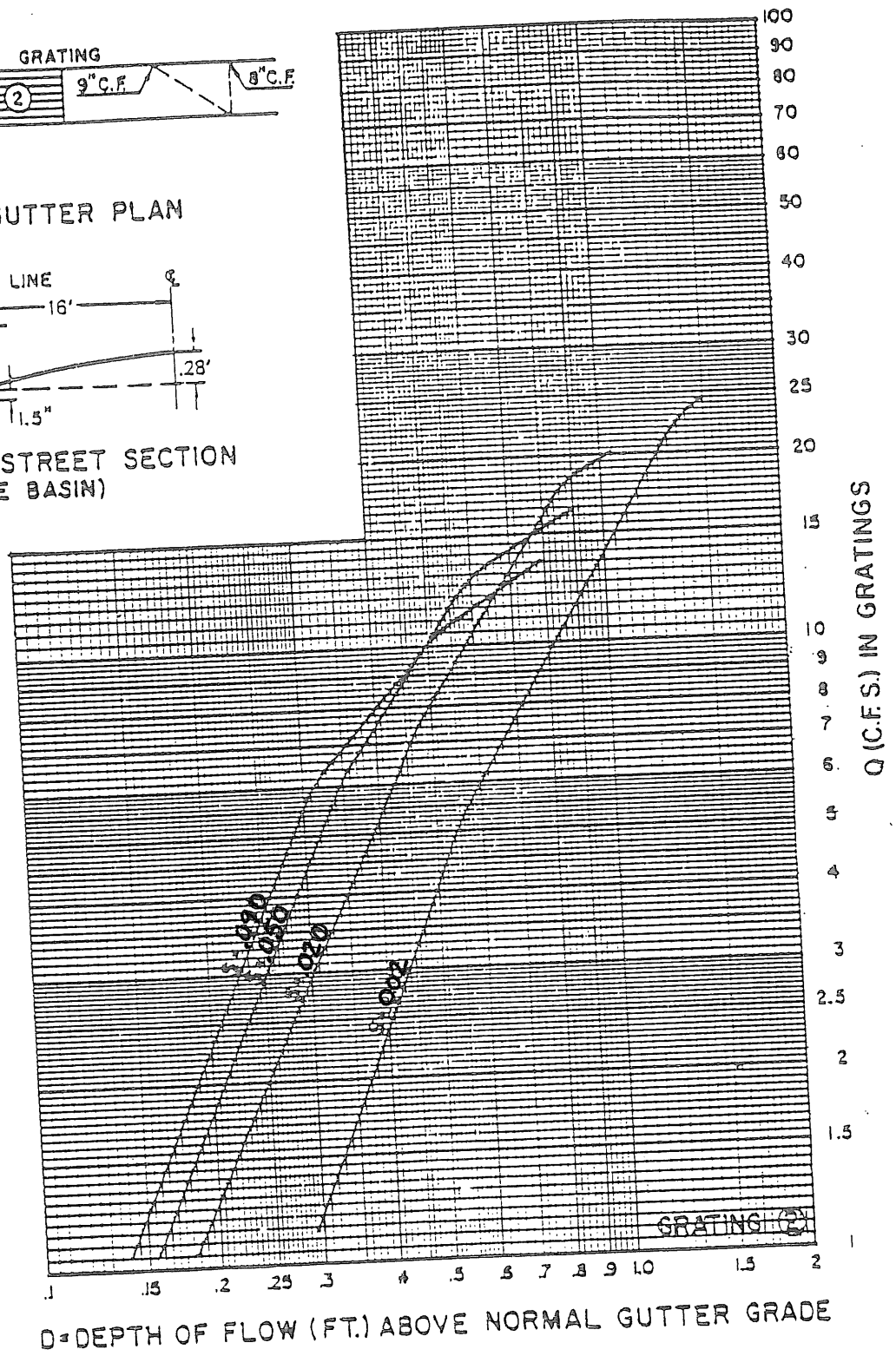
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



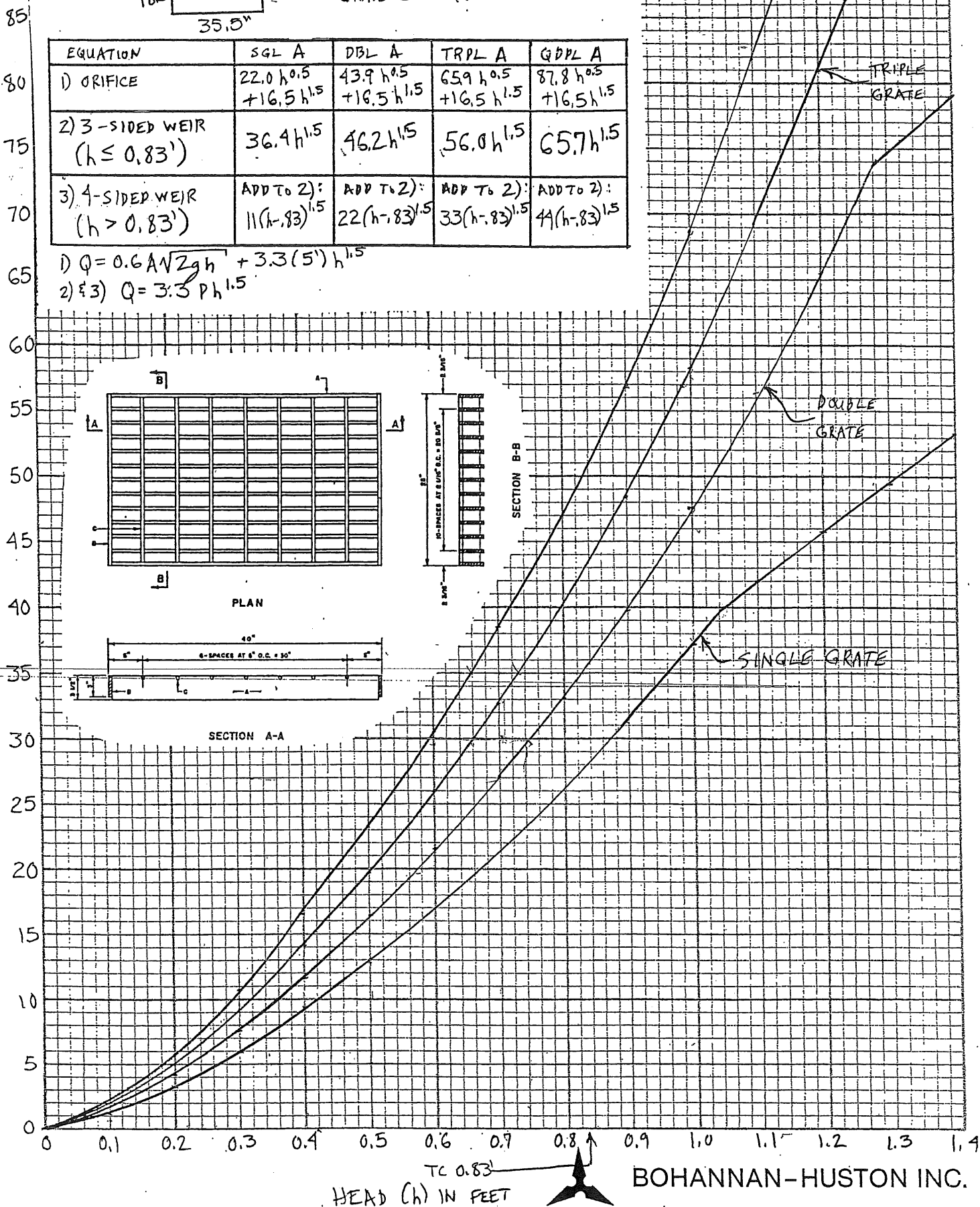
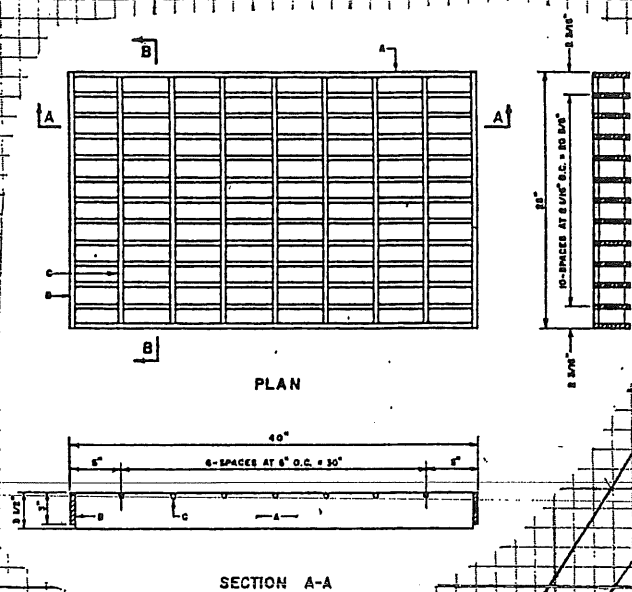
90

60" WING 40" @ TC
 18.5" 35.0"
 GRATE OPEN AREA - 7.06 SF / GRADE
 NET OPEN AREA
 GRATE @ 10" (0.83') BELOW TC

EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0 h^{0.5} + 16.5 h^{1.5}$	$43.9 h^{0.5} + 16.5 h^{1.5}$	$65.9 h^{0.5} + 16.5 h^{1.5}$	$87.8 h^{0.5} + 16.5 h^{1.5}$
2) 3-SIDED WEIR ($h \leq 0.83'$)	$36.4 h^{1.5}$	$46.2 h^{1.5}$	$56.0 h^{1.5}$	$65.7 h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h - 0.83)^{1.5}$	ADD TO 2): $22(h - 0.83)^{1.5}$	ADD TO 2): $33(h - 0.83)^{1.5}$	ADD TO 2): $44(h - 0.83)^{1.5}$

1) $Q = 0.6 A \sqrt{2gh} + 3.3(5') h^{1.5}$
 2) & 3) $Q = 3.3 P h^{1.5}$

GRATE CAPACITY (Q) IN CFS



TC 0.83'
 HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____
 PROJECT NO. _____ BY JPK DATE 4/9/92
 SUBJECT: RATING CURVE FOR TYPE A WEIR _____

Design Log

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InRoads Storm & Sanitary Design Log

Drainage File: P:\20160398\CDP\Control\Data\20160398_SD.sdb

Design File: P:\20160398\CDP\DESIGN\WORKAREA\ACAD-20160398_UTIL.DWG

Display Log: P:\20160398\CDP\DESIGN\WORKAREA\design.log

Date: Wednesday, May 18, 2016 12:14:31 PM
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HGL/EGL Computations:

Table A:

Struct_ID	D (in)	Q (cfs)	L (ft)	V (ft/s)	d (ft)	dc (ft)	V ² /2g (ft)	Sf (ft/ft)	Dn_Soffit (ft)	EGLdn (ft)	HGLdn (ft)	Tot_Loss (ft)	EGLup (ft)	HGLup (ft)	Rim Elev. (ft)
Outfall	-	-	-	-	-	-	-	-	-	-	-	-	-	5427.96	-
SDP1	60	108.00	72.51	6.73	3.81	2.96	0.70	0.0020	5428.96	5428.66	5427.96	0.15	5428.81	5428.11	-
SDMH1	-	-	-	-	-	-	-	-	-	5428.81	5428.11	0.44	5429.25	5428.55	5434.15
SDP2	60	108.00	174.49	5.50	-	-	0.47	0.0017	5429.20	5429.25	5428.55	0.30	5429.55	5429.08	-
SDMH2	-	-	-	-	-	-	-	-	-	5429.55	5429.08	0.27	5429.82	5429.35	5440.01
SDP3	54	96.40	263.48	6.06	-	-	0.57	0.0024	5429.16	5429.82	5429.35	0.63	5430.46	5429.88	-
SDMH3	-	-	-	-	-	-	-	-	-	5430.46	5429.88	0.05	5430.50	5429.93	5434.76
SDP4	48	88.40	157.44	7.03	-	-	0.77	0.0038	5429.29	5430.50	5429.93	0.60	5431.10	5430.33	-
SDMH4	-	-	-	-	-	-	-	-	-	5431.10	5430.33	0.09	5431.19	5430.42	5432.20
SDP5	36	61.60	76.79	8.71	-	-	1.18	0.0085	5428.70	5431.19	5430.42	0.66	5431.84	5430.66	-
SDMH5	-	-	-	-	-	-	-	-	-	5431.84	5430.66	0.24	5432.08	5430.90	5433.31
SDP6	36	35.60	229.28	5.04	-	-	0.39	0.0028	5428.95	5432.08	5430.90	0.65	5432.73	5432.34	-
SDMH6	-	-	-	-	-	-	-	-	-	5432.73	5432.34	0.10	5432.83	5432.44	5433.34
SDP7	24	14.00	156.62	4.46	-	-	0.31	0.0038	5428.51	5432.83	5432.44	0.60	5433.43	5433.13	-
SDMH7	-	-	-	-	-	-	-	-	-	5433.43	5433.13	0.33	5433.76	5433.46	5435.00
SDP8	24	14.00	82.16	4.46	-	-	0.31	0.0038	5431.80	5433.76	5433.46	0.31	5434.08	5433.77	-
SDMH8	-	-	-	-	-	-	-	-	-	5434.08	5433.77	0.09	5434.17	5433.86	5437.13
SDP11	24	14.00	179.75	12.22	-	-	2.32	0.0038	5434.10	5434.17	5433.86	-	5441.53	5439.22	-
SDMH9	-	-	-	-	-	-	-	-	-	5441.53	5439.22	-	5441.53	5439.22	5443.43
SDP26	18	7.00	26.33	11.15	0.58	1.02	1.93	-	5440.03	5441.15	5439.22	-	5442.05	5440.12	-
IN5	-	-	-	-	-	-	-	-	-	5442.05	5440.12	-	5442.05	5440.12	5443.37
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5429.55	5429.08	-
SDMH2	-	-	-	-	-	-	-	-	-	5429.55	5429.08	0.09	5429.64	5429.17	5440.01
SDP16	24	11.60	93.40	18.42	-	-	5.27	0.0026	5428.66	5429.64	5429.17	-	5443.78	5438.51	-
SDMH10	-	-	-	-	-	-	-	-	-	5443.78	5438.51	-	5443.78	5438.51	5443.18
SDP17	18	5.80	36.68	12.73	0.46	0.92	2.52	-	5439.60	5441.08	5438.56	-	5443.68	5441.16	-
IN7	-	-	-	-	-	-	-	-	-	5443.68	5441.16	-	5443.68	5441.16	5444.53
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5430.46	5429.88	-
SDMH3	-	-	-	-	-	-	-	-	-	5430.46	5429.88	0.03	5430.48	5429.91	5434.76
SDP10	24	8.00	151.81	2.55	-	-	0.10	0.0013	5427.28	5430.48	5429.91	0.19	5430.67	5430.57	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5431.10	5430.33	-
SDMH4	-	-	-	-	-	-	-	-	-	5431.10	5430.33	0.07	5431.17	5430.40	5432.20
SDP13	24	13.40	4.55	4.27	-	-	0.28	0.0035	5429.60	5431.17	5430.40	0.02	5431.19	5430.90	-
IN1	-	-	-	-	-	-	-	-	-	5431.19	5430.90	-	5431.19	5430.90	5432.04

20160398_SD_HGL.txt

New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5431.10	5430.33	-
SDMH4	-	-	-	-	-	-	-	-	-	5431.10	5430.33	0.07	5431.17	5430.40	5432.20
SDP12	24	13.40	20.02	4.27	-	-	0.28	0.0035	5429.60	5431.17	5430.40	0.07	5431.24	5430.96	-
IN2	-	-	-	-	-	-	-	-	-	5431.24	5430.96	-	5431.24	5430.96	5432.04
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5431.84	5430.66	-
SDMH5	-	-	-	-	-	-	-	-	-	5431.84	5430.66	0.41	5432.25	5431.07	5433.31
SDP19	24	26.00	36.00	8.28	-	-	1.06	0.0132	5427.95	5432.25	5431.07	0.48	5432.73	5431.66	-
SDMH11	-	-	-	-	-	-	-	-	-	5432.73	5431.66	0.44	5433.16	5432.10	5434.01
SDP20	24	13.00	77.11	4.14	-	-	0.27	0.0033	5429.90	5433.16	5432.10	0.25	5433.42	5433.15	-
SDMH12	-	-	-	-	-	-	-	-	-	5433.42	5433.15	0.05	5433.47	5433.20	5436.88
SDP21	24	13.00	156.97	12.42	-	-	2.40	0.0033	5432.90	5433.47	5433.20	-	5440.13	5437.73	-
SDMH13	-	-	-	-	-	-	-	-	-	5440.13	5437.73	-	5440.13	5437.73	5443.05
SDP22	18	6.50	31.49	12.96	0.49	0.98	2.61	-	5439.17	5440.77	5438.16	-	5442.90	5440.29	-
IN11	-	-	-	-	-	-	-	-	-	5442.90	5440.29	-	5442.90	5440.29	5443.68
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5432.73	5432.34	-
SDMH6	-	-	-	-	-	-	-	-	-	5432.73	5432.34	0.11	5432.84	5432.45	5433.34
SDP14	24	10.80	20.44	3.44	-	-	0.18	0.0023	5429.66	5432.84	5432.45	0.05	5432.89	5432.71	-
IN4	-	-	-	-	-	-	-	-	-	5432.89	5432.71	-	5432.89	5432.71	5433.18
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5432.73	5432.34	-
SDMH6	-	-	-	-	-	-	-	-	-	5432.73	5432.34	0.11	5432.84	5432.45	5433.34
SDP15	24	10.80	6.54	3.44	-	-	0.18	0.0023	5429.66	5432.84	5432.45	0.01	5432.86	5432.67	-
IN3	-	-	-	-	-	-	-	-	-	5432.86	5432.67	-	5432.86	5432.67	5433.18
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5441.53	5439.22	-
SDMH9	-	-	-	-	-	-	-	-	-	5441.53	5439.22	-	5441.53	5439.22	5443.43
SDP27	18	7.00	5.56	22.43	0.35	1.02	7.82	-	5440.03	5447.03	5439.22	-	5447.75	5439.93	-
IN6	-	-	-	-	-	-	-	-	-	5447.75	5439.93	-	5447.75	5439.93	5443.41
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5443.78	5438.51	-
SDMH10	-	-	-	-	-	-	-	-	-	5443.78	5438.51	-	5443.78	5438.51	5443.18
SDP18	18	5.80	5.27	23.39	0.30	0.92	8.50	-	5439.60	5447.01	5438.51	-	5448.10	5439.60	-
IN8	-	-	-	-	-	-	-	-	-	5448.10	5439.60	-	5448.10	5439.60	5443.17
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5432.73	5431.66	-
SDMH11	-	-	-	-	-	-	-	-	-	5432.73	5431.66	0.24	5432.97	5431.90	5434.01
SDP24	18	6.50	20.11	3.68	-	-	0.21	0.0038	5429.40	5432.97	5431.90	0.08	5433.04	5432.83	-
IN9	-	-	-	-	-	-	-	-	-	5433.04	5432.83	-	5433.04	5432.83	5433.59
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5432.73	5431.66	-
SDMH11	-	-	-	-	-	-	-	-	-	5432.73	5431.66	0.24	5432.97	5431.90	5434.01
SDP25	18	6.50	5.84	3.68	-	-	0.21	0.0038	5429.40	5432.97	5431.90	0.02	5432.99	5432.78	-
IN10	-	-	-	-	-	-	-	-	-	5432.99	5432.78	-	5432.99	5432.78	5433.93
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5440.13	5437.73	-
SDMH13	-	-	-	-	-	-	-	-	-	5440.13	5437.73	-	5440.13	5437.73	5443.05
SDP23	18	6.50	5.52	32.26	0.26	0.98	16.18	-	5438.60	5453.91	5437.73	-	5455.43	5439.26	-
IN12	-	-	-	-	-	-	-	-	-	5455.43	5439.26	-	5455.43	5439.26	5442.93

Table B:

LOSSES	Hf	Hb	Hstr	Hc	He	Hj	Total	- LOSS_COEFFICIENTS							
Str_ID								Dstr	Ko	CD	Cd	Cq	Cp	Cb	K
Outfall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP1	0.15	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-

										20160398_SD_HGL.txt						
SDMH1	-	-	0.44	-	-	-	0.44	4.01	1.432	1.000	0.438	1.000	1.000	1.000	1.000	0.627
SDP2	0.30	-	-	-	-	-	0.30	-	-	-	-	-	-	-	-	-
SDMH2	-	-	0.27	-	-	-	0.27	4.52	1.502	1.000	0.471	0.812	1.000	1.000	1.000	0.575
SDP3	0.63	-	-	-	-	-	0.63	-	-	-	-	-	-	-	-	-
SDMH3	-	-	0.05	-	-	-	0.05	4.70	0.133	1.000	0.513	1.155	1.000	1.000	1.000	0.079
SDP4	0.60	-	-	-	-	-	0.60	-	-	-	-	-	-	-	-	-
SDMH4	-	-	0.09	-	-	-	0.09	4.73	0.150	1.000	0.553	1.408	1.000	1.000	1.000	0.117
SDP5	0.66	-	-	-	-	-	0.66	-	-	-	-	-	-	-	-	-
SDMH5	-	-	0.24	-	-	-	0.24	4.81	0.200	1.000	0.664	1.523	1.000	1.000	1.000	0.202
SDP6	0.65	-	-	-	-	-	0.65	-	-	-	-	-	-	-	-	-
SDMH6	-	-	0.10	-	-	-	0.10	5.93	0.200	1.000	0.752	1.687	1.000	1.000	1.000	0.254
SDP7	0.60	-	-	-	-	-	0.60	-	-	-	-	-	-	-	-	-
SDMH7	-	-	0.33	-	-	-	0.33	3.43	1.553	1.000	0.690	1.000	1.000	1.000	1.000	1.073
SDP8	0.31	-	-	-	-	-	0.31	-	-	-	-	-	-	-	-	-
SDMH8	-	-	0.09	-	-	-	0.09	1.77	0.615	1.000	0.465	1.000	1.000	1.000	1.000	0.286
SDP11	0.69	0.01	-	-	-	-	0.70	-	-	-	-	-	-	-	-	-
SDMH9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP26	-	-	-	-	-	-	SuperCrt	-	-	-	-	-	-	-	-	-
IN5	-	-	-	-	-	-	-	0.58	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH2	-	-	0.09	-	-	-	0.09	4.52	0.227	1.000	0.471	1.827	1.000	1.000	1.000	0.195
SDP16	0.25	-	-	-	-	-	0.25	-	-	-	-	-	-	-	-	-
SDMH10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP17	-	-	-	-	-	-	SuperCrt	-	-	-	-	-	-	-	-	-
IN7	-	-	-	-	-	-	-	0.46	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH3	-	-	0.03	-	-	-	0.03	4.70	1.462	1.000	0.513	0.063	1.000	1.000	1.000	0.047
SDP10	0.19	-	-	-	-	-	0.19	-	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH4	-	-	0.07	-	-	-	0.07	4.73	1.487	1.000	0.553	0.116	1.000	1.000	1.000	0.096
SDP13	0.02	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-
IN1	-	-	-	-	-	-	-	2.86	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH4	-	-	0.07	-	-	-	0.07	4.73	1.488	1.000	0.553	0.116	1.000	1.000	1.000	0.095
SDP12	0.07	-	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-
IN2	-	-	-	-	-	-	-	2.92	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH5	-	-	0.41	-	-	-	0.41	4.81	1.553	1.000	0.664	0.337	1.000	1.000	1.000	0.348
SDP19	0.48	-	-	-	-	-	0.48	-	-	-	-	-	-	-	-	-
SDMH11	-	-	0.44	-	-	-	0.44	3.86	0.388	1.000	0.742	1.430	1.000	1.000	1.000	0.411
SDP20	0.25	-	-	-	-	-	0.25	-	-	-	-	-	-	-	-	-
SDMH12	-	-	0.05	-	-	-	0.05	2.35	0.311	1.000	0.551	1.000	1.000	1.000	1.000	0.171
SDP21	0.52	-	-	-	-	-	0.52	-	-	-	-	-	-	-	-	-
SDMH13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP22	-	-	-	-	-	-	SuperCrt	-	-	-	-	-	-	-	-	-
IN11	-	-	-	-	-	-	-	0.49	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH6	-	-	0.11	-	-	-	0.11	5.93	1.553	1.000	0.752	0.237	1.000	1.000	1.000	0.278
SDP14	0.05	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-
IN4	-	-	-	-	-	-	-	3.53	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH6	-	-	0.11	-	-	-	0.11	5.93	1.553	1.000	0.752	0.237	1.000	1.000	1.000	0.278
SDP15	0.01	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-
IN3	-	-	-	-	-	-	-	3.49	-	-	-	-	-	-	-	-

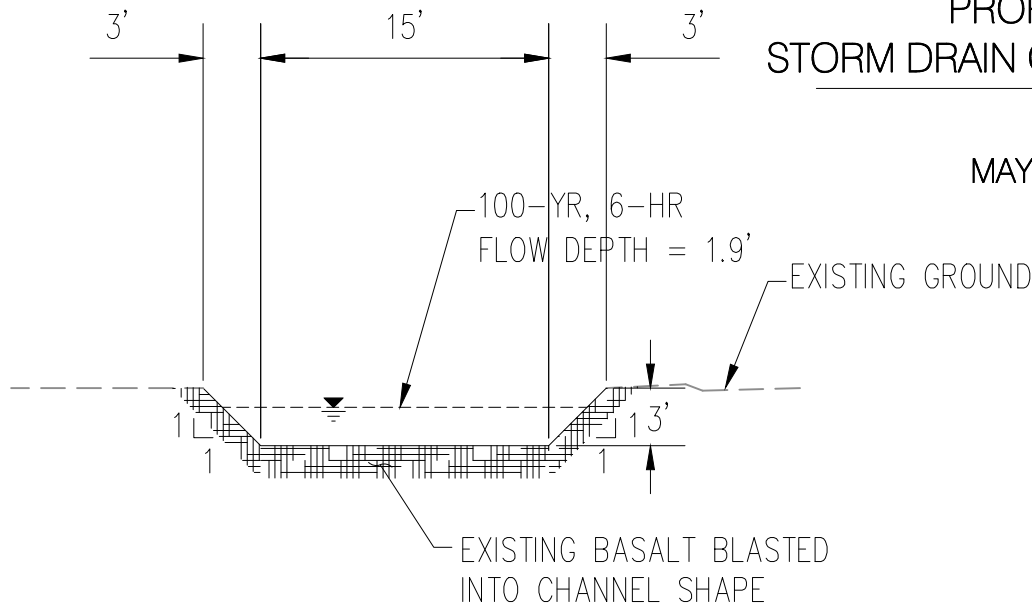
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New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP27	-	-	-	-	-	-	SuperCrt	-	-	-	-	-	-	-	-	-
IN6	-	-	-	-	-	-	-	0.35	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP18	-	-	-	-	-	-	SuperCrt	-	-	-	-	-	-	-	-	-
IN8	-	-	-	-	-	-	-	0.30	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH11	-	-	0.24	-	-	-	0.24	3.86	1.553	1.000	0.742	0.194	1.000	1.000	0.224	-
SDP24	0.08	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-
IN9	-	-	-	-	-	-	-	3.23	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH11	-	-	0.24	-	-	-	0.24	3.86	1.553	1.000	0.742	0.194	1.000	1.000	0.224	-
SDP25	0.02	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-
IN10	-	-	-	-	-	-	-	2.78	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP23	-	-	-	-	-	-	SuperCrt	-	-	-	-	-	-	-	-	-
IN12	-	-	-	-	-	-	-	0.26	-	-	-	-	-	-	-	-

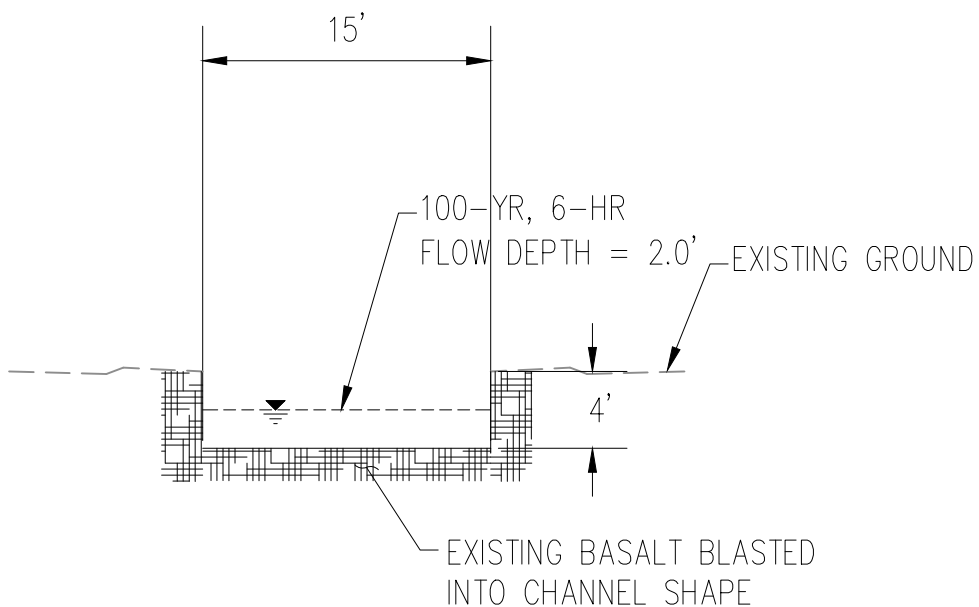
**APPENDIX D -
OPEN CHANNEL OUTFALL ALTERNATIVE
SECTIONS**

PROPOSED
STORM DRAIN OUTFALL DESIGN

MAY 2016



A TRAPEZOIDAL CHANNEL TYPICAL SECTION
SCALE: N.T.S.



B RECTANGULAR CHANNEL TYPICAL SECTION
SCALE: N.T.S.

Montecito Outfall Channel Freeboard Calculations

Reference: "City of Albuquerque, DPM" Ch. 22 Section 3.C.4

Required Freeboard for Rectangular Channels: 2 ft

Freeboard for flow rates less than 100 cfs and average flow velocity of less than 35 fps:

$$Freeboard(ft) = 1.0 + .025Vd^{1/3}$$

Channel Shape	Bottom Width	Side Slopes	Channel Slope	n-value	Q Total	Water Depth (1)	Velocity (1)	Required Freeboard	Total Required Depth (2)
	(ft)	(ft/ft)			(cfs)	(ft)	(ft/s)	(ft)	(ft)
Rectangular	15	0	0.65%	0.045	111	2.04	3.63	2.00	4.04
Trapezoidal	15	1	0.65%	0.045	111	1.86	3.54	1.05	3.00

Notes:

1. Input values above were calculated in hydraflow, see link below to see the output files.

<\\a-abq-fs2\projects\20160398\WR\Calculations\Programs\Hydraflow>

2. Total Required Depth = Water Depth + Required Freeboard

Channel Report

<Name>

Rectangular

Bottom Width (ft) = 15.00
Total Depth (ft) = 4.00

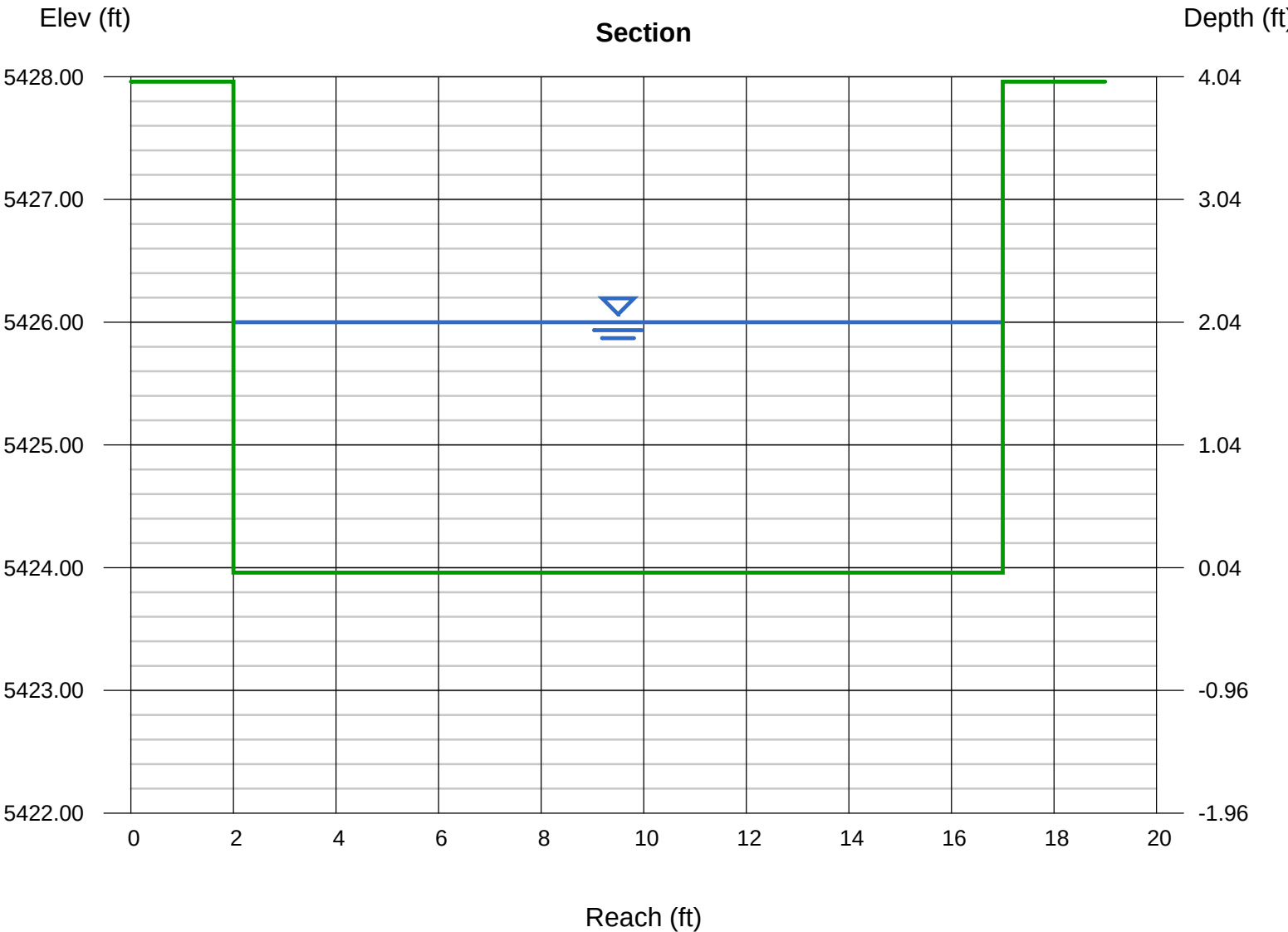
Invert Elev (ft) = 5423.96
Slope (%) = 0.65
N-Value = 0.045

Calculations

Compute by: Known Q
Known Q (cfs) = 111.00

Highlighted

Depth (ft) = 2.04
Q (cfs) = 111.00
Area (sqft) = 30.60
Velocity (ft/s) = 3.63
Wetted Perim (ft) = 19.08
Crit Depth, Yc (ft) = 1.20
Top Width (ft) = 15.00
EGL (ft) = 2.24



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Monday, May 16 2016

<Name>

Trapezoidal

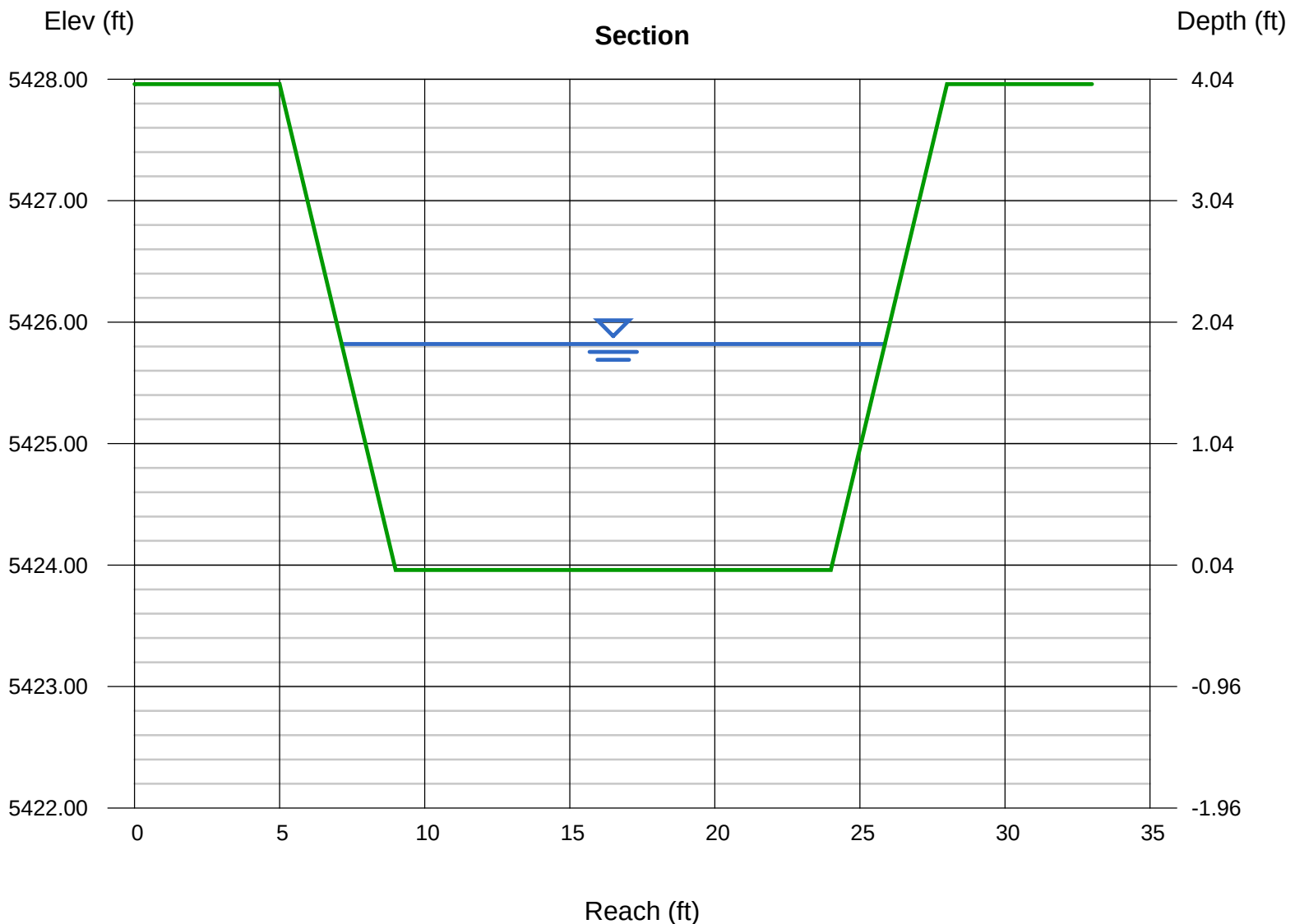
Bottom Width (ft) = 15.00
Side Slopes (z:1) = 1.00, 1.00
Total Depth (ft) = 4.00
Invert Elev (ft) = 5423.96
Slope (%) = 0.65
N-Value = 0.045

Highlighted

Depth (ft) = 1.86
Q (cfs) = 111.00
Area (sqft) = 31.36
Velocity (ft/s) = 3.54
Wetted Perim (ft) = 20.26
Crit Depth, Yc (ft) = 1.17
Top Width (ft) = 18.72
EGL (ft) = 2.05

Calculations

Compute by: Known Q
Known Q (cfs) = 111.00



EXHIBITS

EXHIBIT 1: PRELIMINARY PLAT

EXHIBIT 2: OVERALL BASIN MAP

EXHIBIT 3: ON-SITE BASIN MAP

EXHIBIT 4: GRADING PLAN

**EXHIBIT 5: STORM DRAIN CAPACITY
CALCULATIONS**

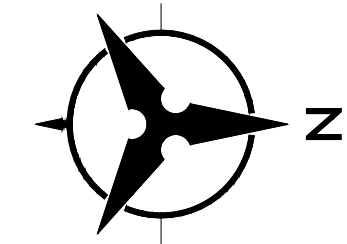
**EXHIBIT 1 -
PRELIMINARY PLAT**



NOT TO SCALE
VICINITY MAP
ZONE ATLAS C-09-7



PRELIMINARY PLAT FOR
MONTECITO VISTAS UNITS 1-4
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
SECTION 20 & 21
T. 11 N., R. 2 E., N.M.P.M.
AUGUST 2016



100 50 0 100
1" = 100'

THE CITY IS EXECUTING THIS PLAT BECAUSE THE CITY IS AN OWNER OF A PORTION OF THE PROPERTY BEING PLATTED (THE "CITY PROPERTY"). THE CITY IS NEGOTIATING AN EXCHANGE PURSUANT TO WHICH THE CITY PROPERTY WILL BE CONVEYED TO VICTORY LAND, LLC (THE "EXCHANGE"). FINAL PLAT APPROVAL SHALL BE CONDITIONED UPON THE CITY PROPERTY BEING DECLARED SURPLUS AND THE EXCHANGE BEING APPROVED BY THE CITY COUNCIL AND THE EXCHANGE BEING CONSUMMATED.



ROBERT J. PERRY
CHIEF ADMINISTRATIVE OFFICER
CITY OF ALBUQUERQUE

DATE

LEGEND	
	SUBDIVISION BOUNDARY LINE
	EXISTING LOT LINE
	NEW LOT LINE
	NEW TRACT BOUNDARY
	ADJOINING PROPERTY LINE
	CENTERLINE MONUMENT TO BE INSTALLED
	CITY OF ALBUQUERQUE SURVEY CONTROL MONUMENT

SURVEY NOTES:

- ALL BOUNDARY CORNERS SHOWN (●) ARE FOUND REBAR W/CAP.
- ALL STREET CENTERLINE MONUMENTATION SHALL BE INSTALLED AT ALL CENTERLINE PC'S, PTS, ANGLE POINTS, AND STREET INTERSECTIONS AND SHOWN THUS (▲) AND WILL BE MARKED BY (4") ALUMINUM CAP STAMPED "CITY OF ALBUQUERQUE CENTERLINE MONUMENTATION MARKED, DO NOT DISTURB PLS 14271".
- THE SUBDIVISION BOUNDARY WILL BE TIED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM AS SHOWN.
- BASIS OF BEARINGS WILL BE NEW MEXICO STATE PLANE BEARINGS.
- DISTANCES SHALL BE GROUND DISTANCES.
- MANHOLES WILL BE OFFSET AT ALL POINTS OF CURVATURE, TANGENCY STREET INTERSECTIONS, AND ALL OTHER ANGLE POINTS TO ALLOW USE OF CENTERLINE MONUMENTATION.

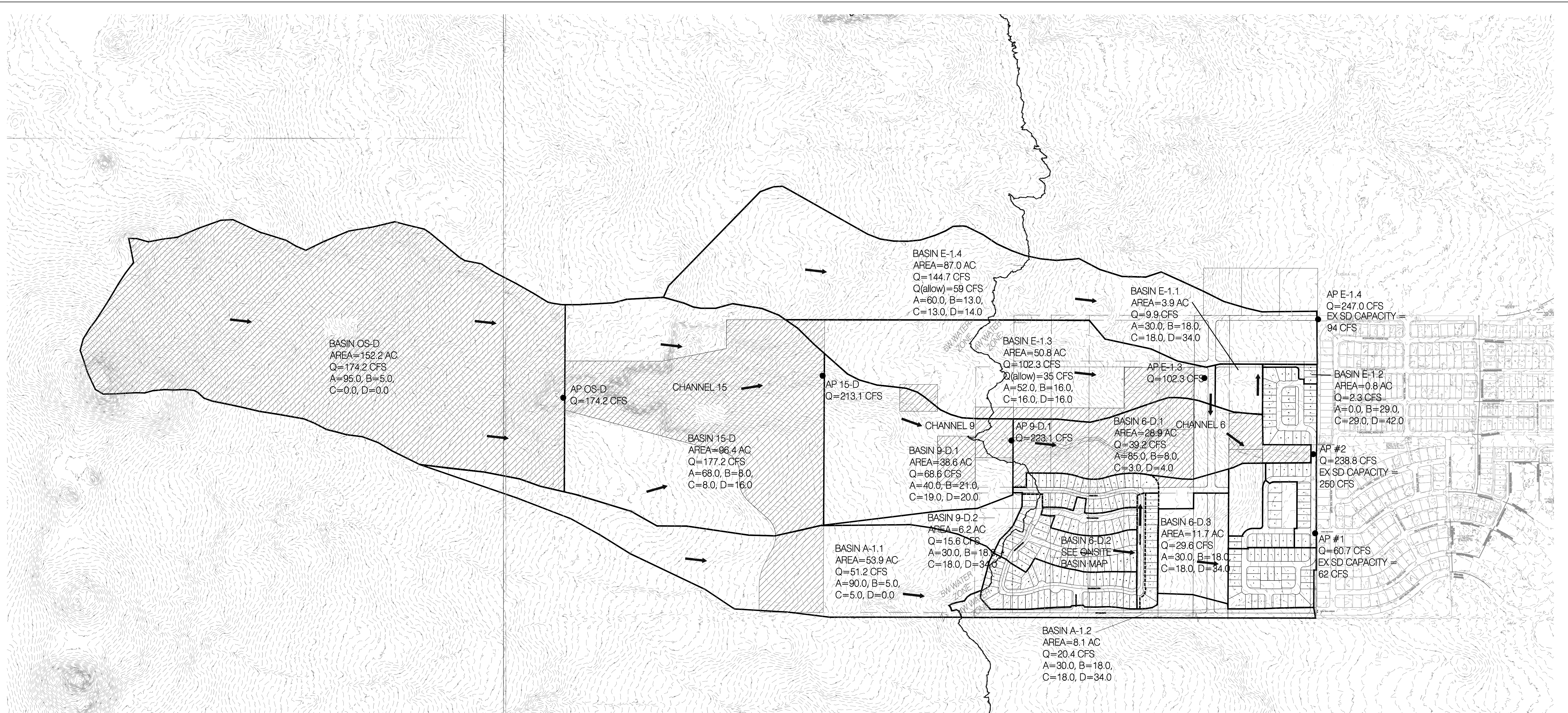
APPROVED

Scott M. Rinkham P.S. 5/19/16
CITY SURVEYOR DATE

For Scott Schiabor
FOR SCOTT SCHIABOR
VICTORY LAND, LLC

DATE

**EXHIBIT 2 -
OVERALL BASIN MAP**



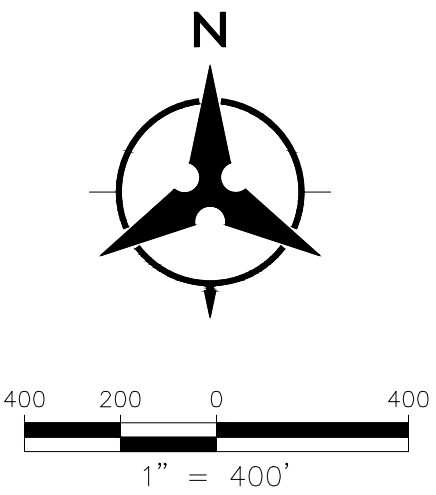
DEVELOPED CONDITIONS
OVERALL BASIN MAP

LEGEND

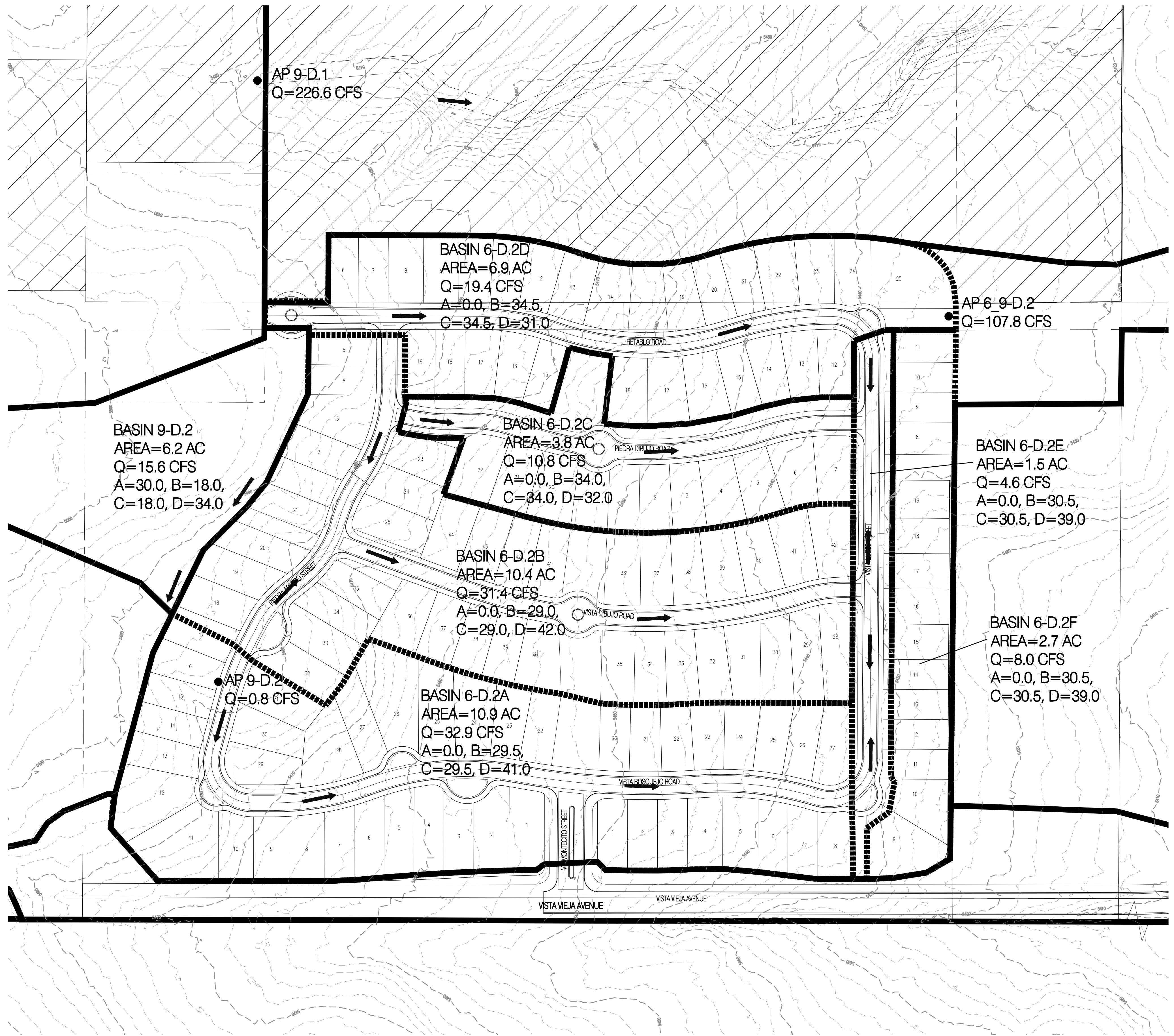
BASIN BOUNDARY

FLOW ARROW

OPEN SPACE



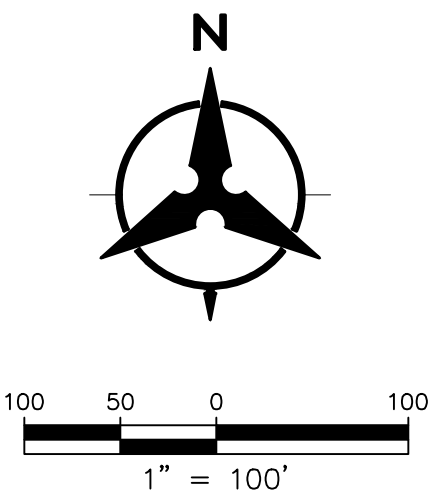
**EXHIBIT 3 -
ON-SITE BASIN MAP**



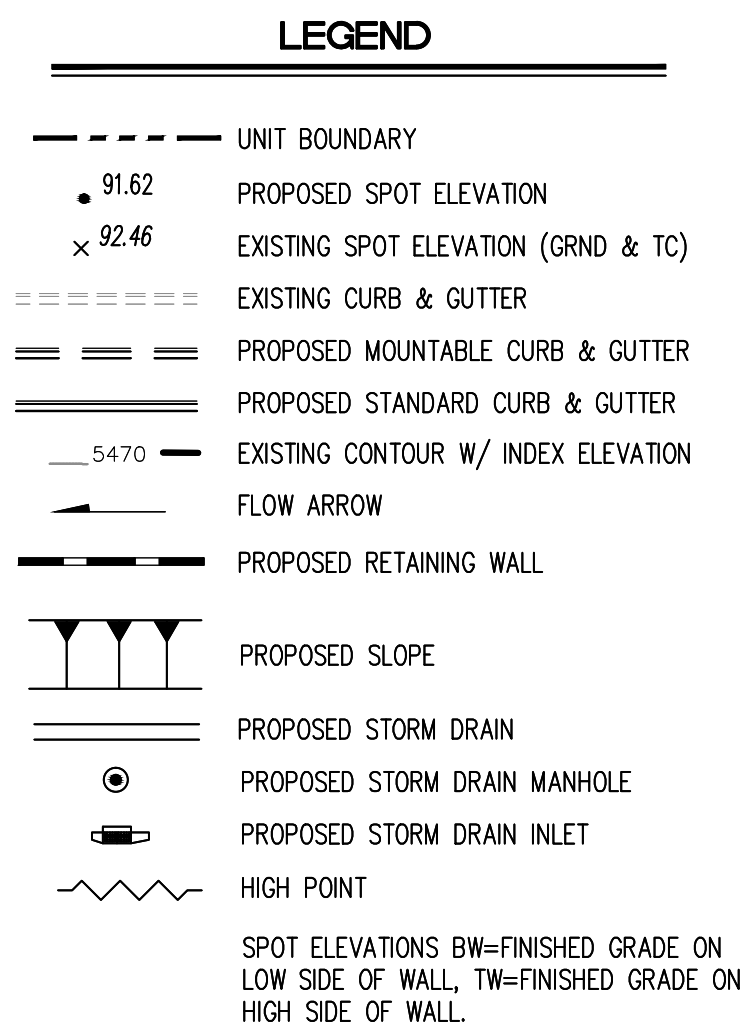
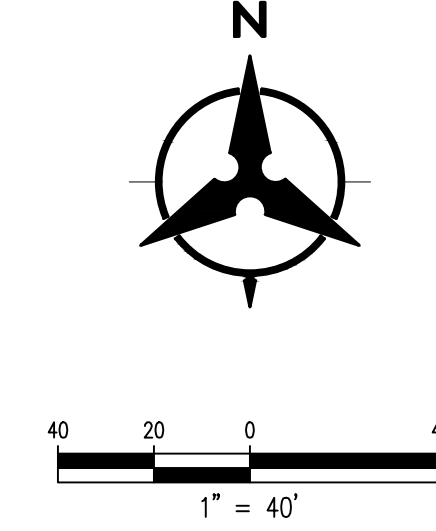
LEGEND

BASIN BOUNDARY	— — — — —
FLOW ARROW	→
PROPOSED STORM DRAIN	— — — — —
EXISTING STORM DRAIN	— — — — —

ONSITE BASIN MAP
MONTECITO VISTAS UNITS 1-4 SUBDIVISION

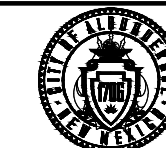


**EXHIBIT 4 -
GRADING PLAN**



1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS TO REFER TO EARTHWORK SPECIFICATION AS NOTED IN THE SOILS REPORT BY X86 VINYARD, DATED 04-18-16
3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DIST CONTROL MEASURES & REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AS PER DETAIL, SHEET JB, AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
5. ALL SPOT ELEVATIONS ARE TO FLOWLINE UNLESS OTHERWISE NOTED.
6. BOULDERS GREATER THAN 3 FEET IN DIAMETER EXCAVATED DURING GRADING ACTIVITIES SHALL BE STOCKPILED AND DISPOSED OF AT THE DISCRETION OF THE OWNER.
7. ALL WALLS SHOWN ARE TO BE PLACED ALONG PROPERTY LINE. WALLS ARE SHOWN OFFSET FOR VISUAL PURPOSE ONLY.

		ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS	AS-BUILT INFORMATION	
				FIELD NOTES				
				NO.	BY	DATE		
No.	Date	REMARKS	By				ACS MONUMENT "2-D9"	CONTRACTOR
DESIGN							GEOGRAPHIC POSITION (NAD 83)	WORK SHOWN BY
REVISIONS							N.M. STATE PLANE COORDINATES (CENTRAL ZONE)	INSPECTOR'S FIELD VERIFICATION BY
							X = 1,493,615.357 Y = 1,515,761.743	CORRECTED BY
							GROUND-TO-GRID FACTOR = 0.999667790	MICROFILM INFORMATION
							$\Delta\alpha = -0^{\circ}01'16''58.43''$	RECORDED BY
							NAVD 1988 ELEVATION = 5441.396	NO.
Designed By: SJS				DATE:	05 / 2016			
Drawn By: BJG				DATE:	05 / 2016			
Checked By: SJS				DATE:	05 / 2016			

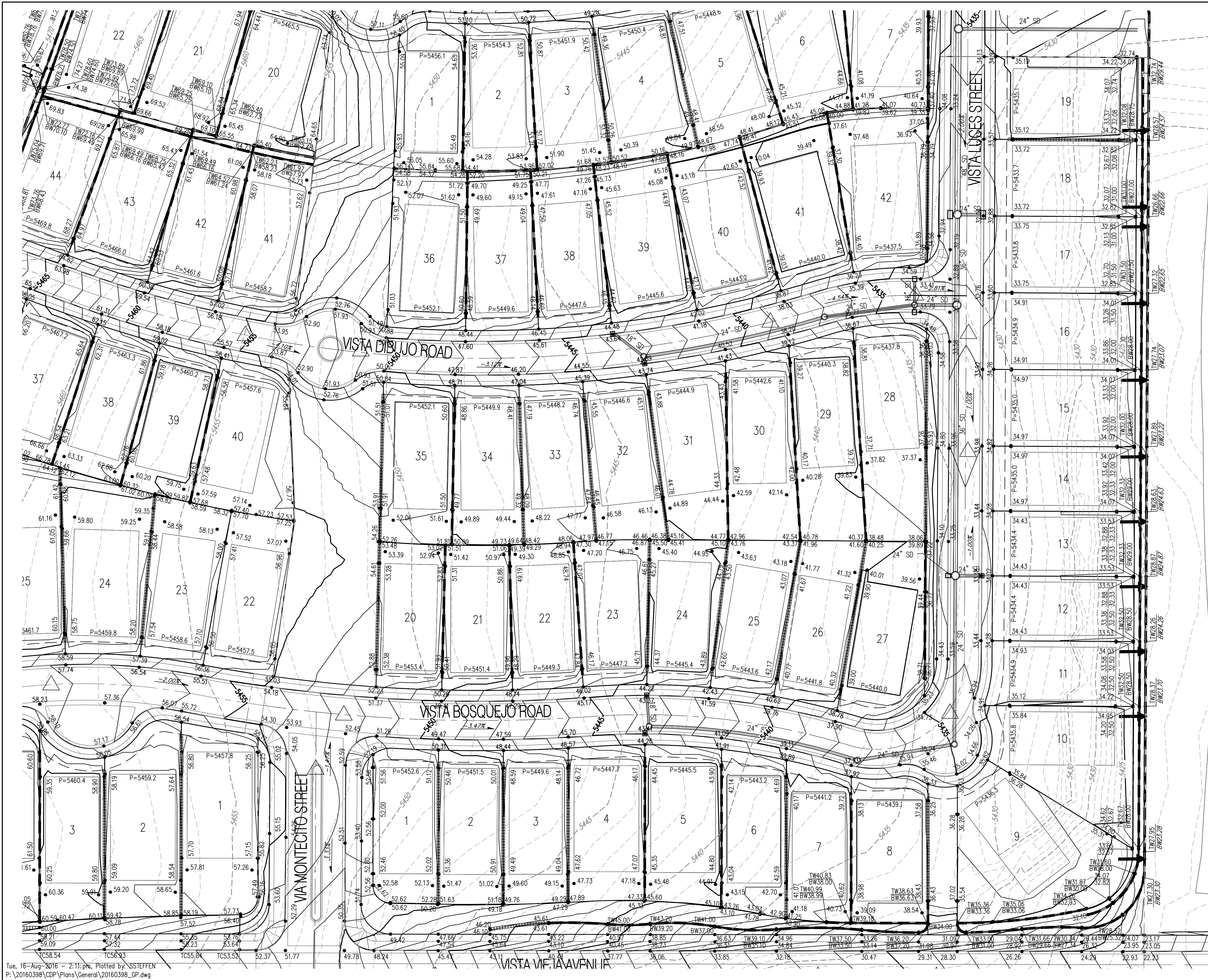


CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MONTECITO VISTAS
GRADING PLAN
VISTA VIEJA AVENUE

Design Review Committee		City Engineer Approval		Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.		Coa #	Zone Map No.	D-09	Sheet	1 Of 6

Tue, 16-Aug-2016 - 2:10:pm, Plotted by: SSTEFFEN
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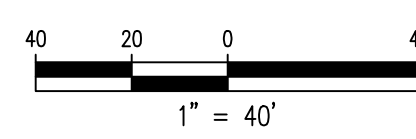
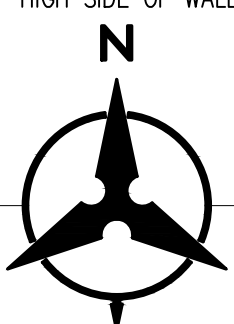


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- EXISTING CURB & GUTTER
- PROPOSED MOUNTABLE CURB & GUTTER
- PROPOSED STANDARD CURB & GUTTER
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- PROPOSED RETAINING WALL
- PROPOSED SLOPE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED STORM DRAIN INLET
- HIGH POINT
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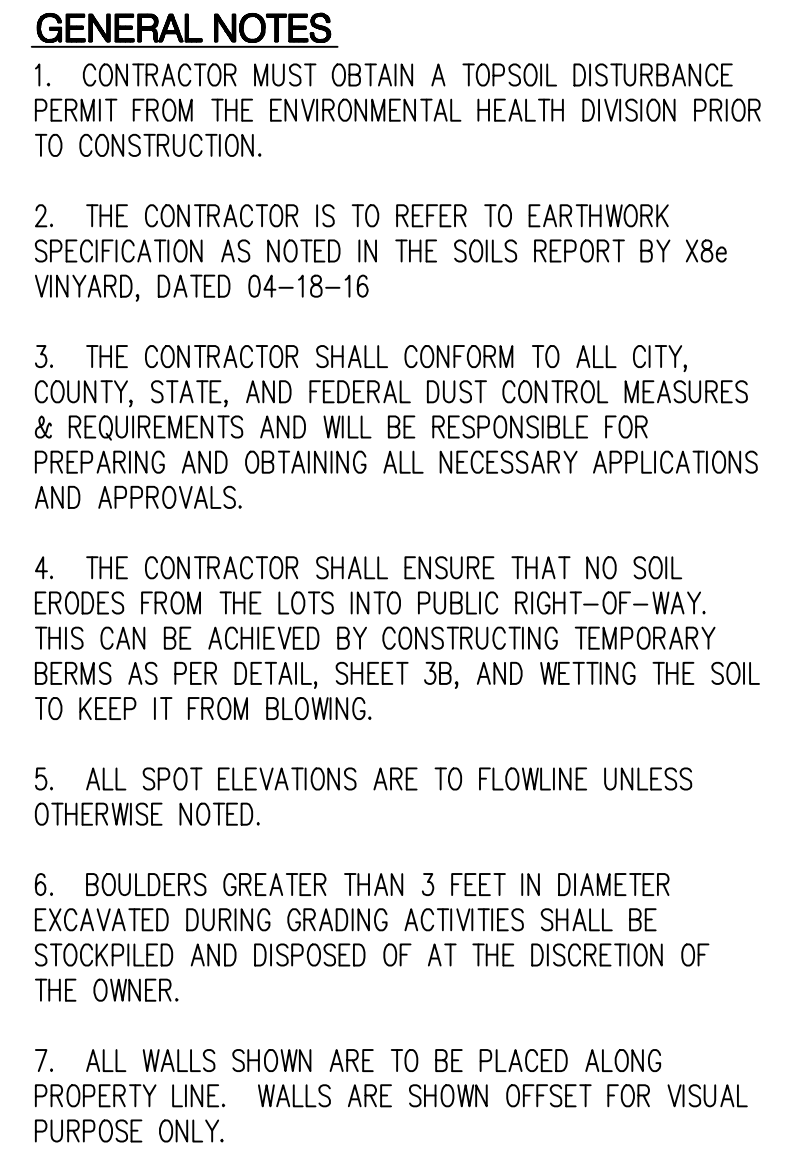
Bohannon & Huston



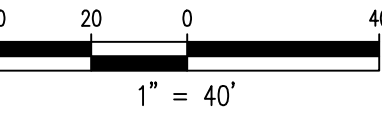
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MONTECITO VISTAS
GRADING PLAN
UNIT 1

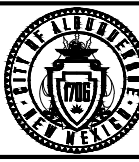
Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
Coa #	D-09	2	6



	UNIT BOUNDARY
	PROPOSED SPOT ELEVATION EXISTING SPOT ELEVATION (GRND & TC)
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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MONTECITO VISTAS
GRADING PLAN
UNIT 2

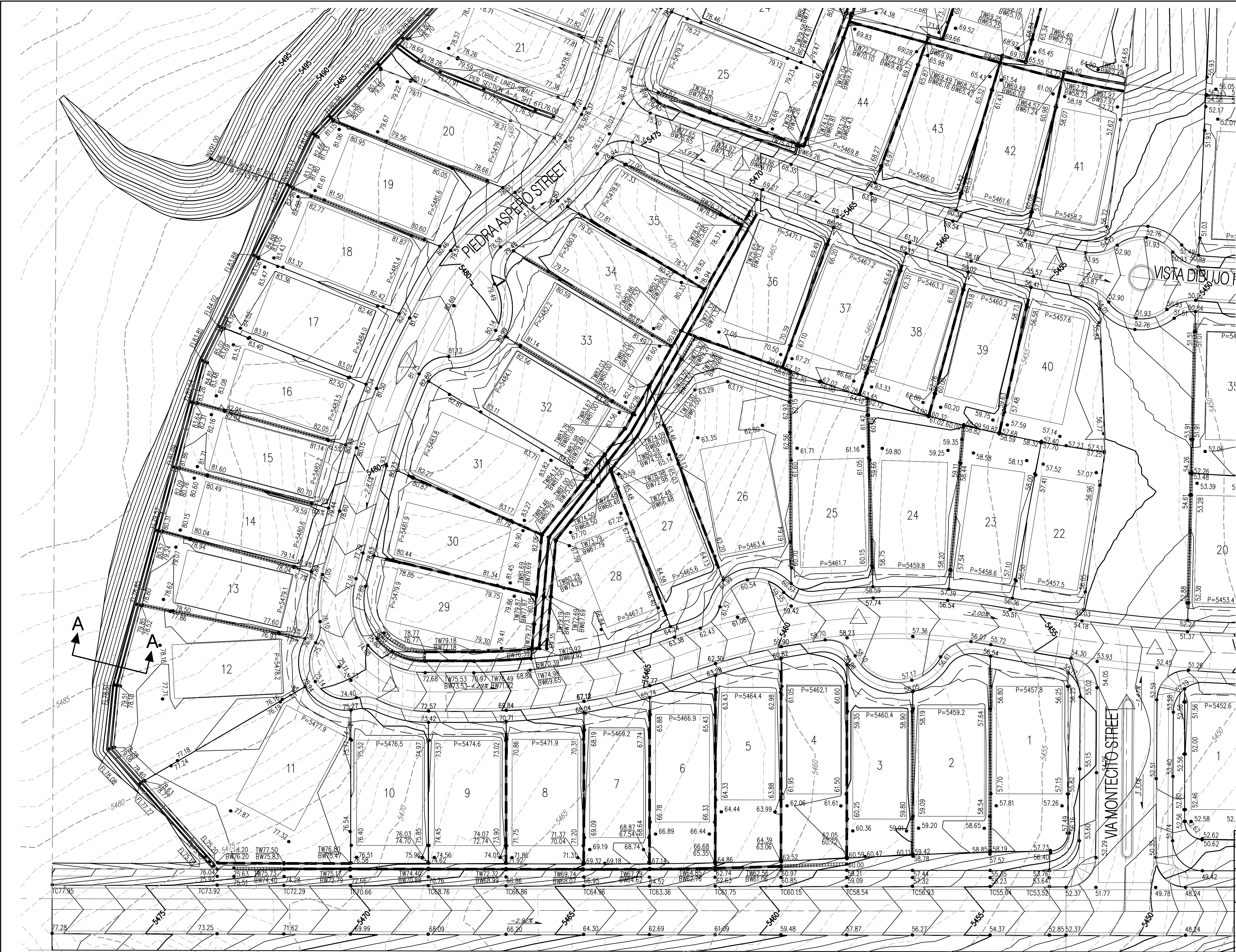
Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No. Coa #		Zone Map No. D-09	Sheet 3 Of 6	

AS-BUILT INFORMATION	
CONTRACTOR	DATE
WORKED BY	DATE
SUPERVISOR'S ACCEPTANCE BY	DATE
FIELD VERIFICATION BY	DATE
CORRECTED BY	DATE
MICROFILM INFORMATION	
RECORDED BY	DATE
NO.	

BENCH MARKS	ACS MONUMENT "2-D9"
	GEOGRAPHIC POSITION (NAD 83)
	N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
	X = 1,493,615,357 Y = 1,515,761,743
	GROUND-TO-GRID FACTOR = 0.999667790
	$\Delta\alpha = -0^{\circ}16'58.43''$
	$\Delta\lambda$ 1988 ELEVATION = 5441.396

[illegible]

No.	Date	REMARKS		By		
REVISONS						
DESIGN						
Designed By: SJS						DATE: 05/2016
Drawn By: BJG						DATE: 05/2016
Checked By: SJS						DATE: 05/2016

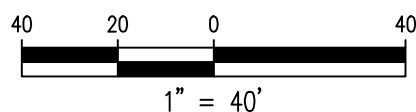
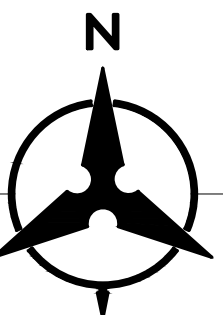


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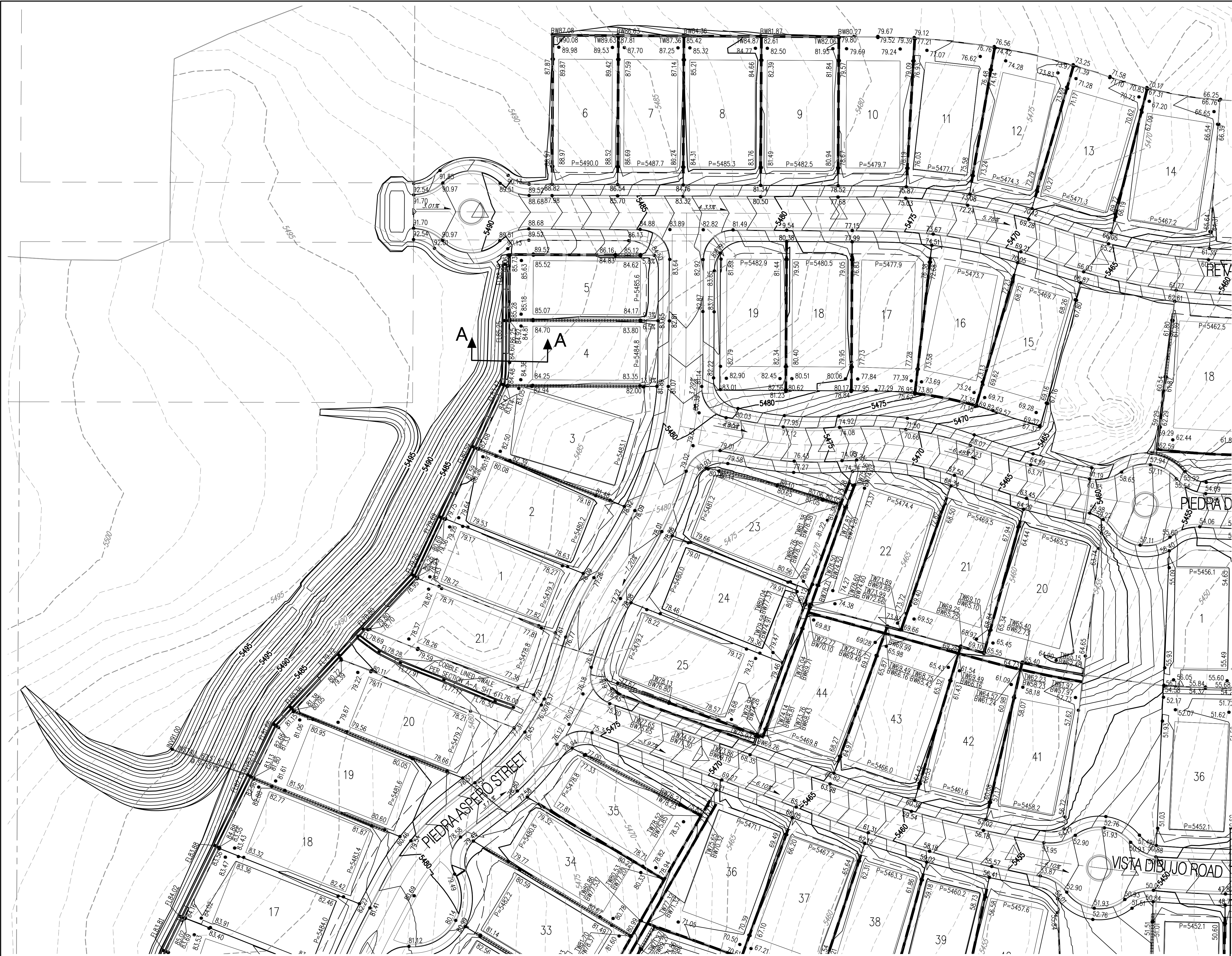
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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

MONTECITO VISTAS
GRADING PLAN
UNIT 3

Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Zone Map No.	Sheet	Of
Coa #	D-09	4	6

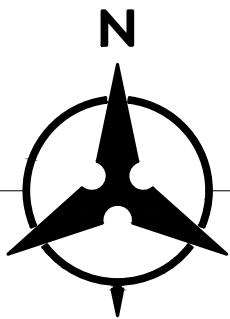


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40 20 0 40
1" = 40'

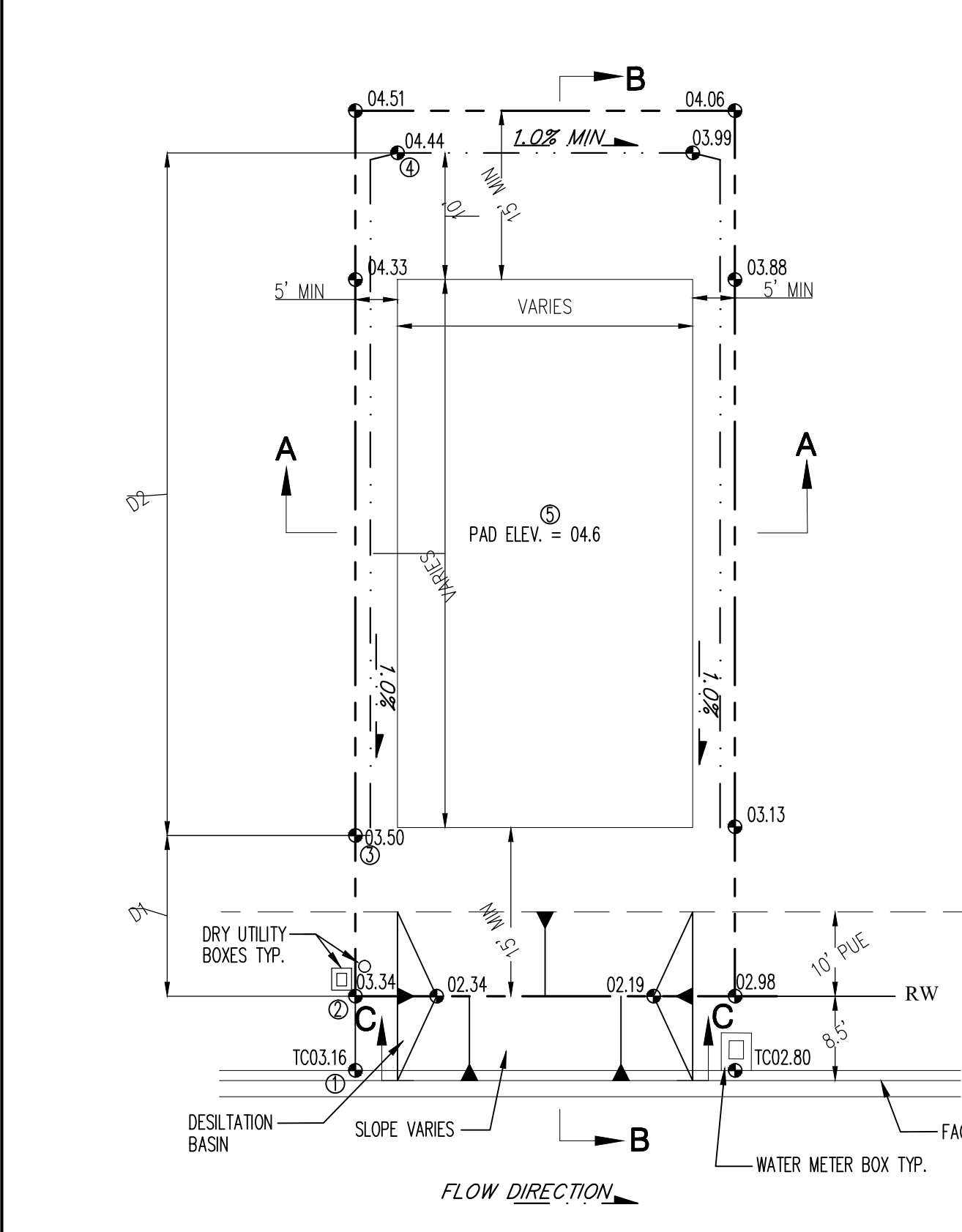
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CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT



**CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT**

**MONTECITO VISTAS
GRADING PLAN
UNIT 4**

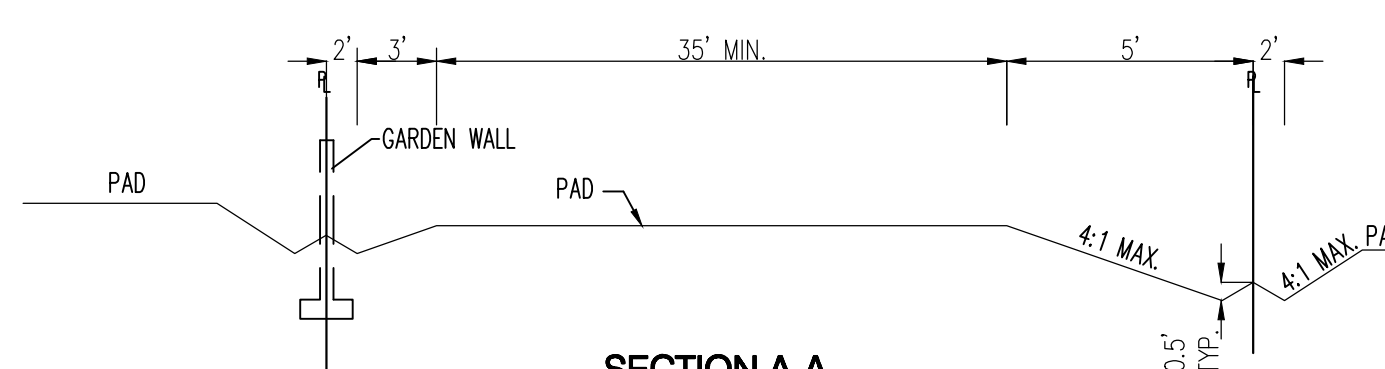
Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.		Zone Map No.	Sheet	Of
Coa #		D-09	5	6



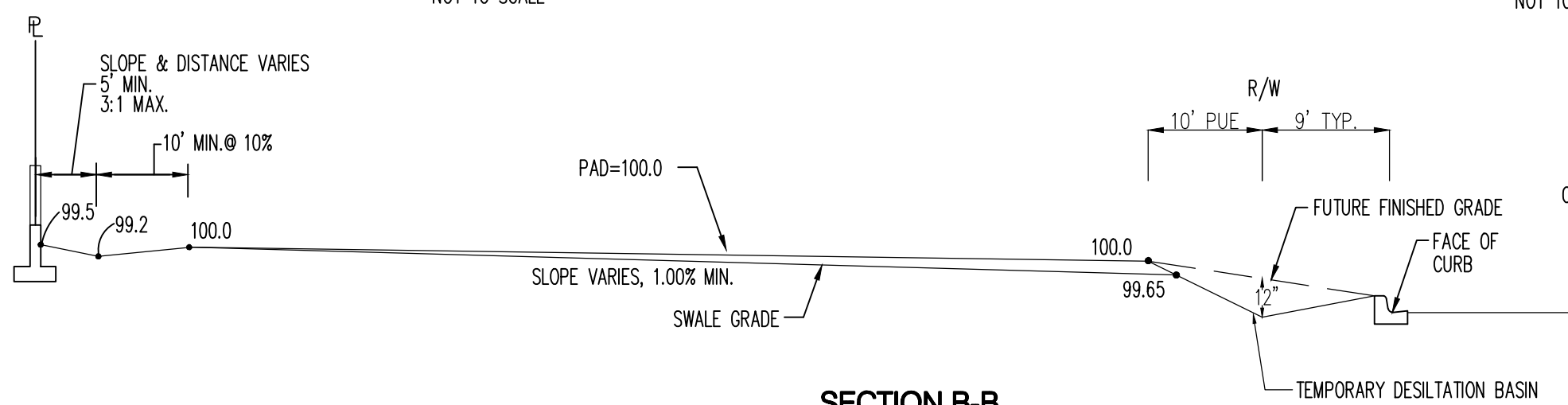
**TYPICAL LOT GRADE DETAIL
WITH DESILENTION BASIN FOR SEDIMENTATION CONTROL**
NOT TO SCALE

TO SET SPOT ② - ADD 0.17' TO SPOT ①
TO SET SPOT ③ - MULTIPLY D1 BY 1.0% AND ADD TO SPOT ②
TO SET SPOT ④ - MULTIPLY D2 BY 1.0% AND ADD TO SPOT ③
TO SET SPOT ⑤ - ADD 0.2' TO SPOT ④

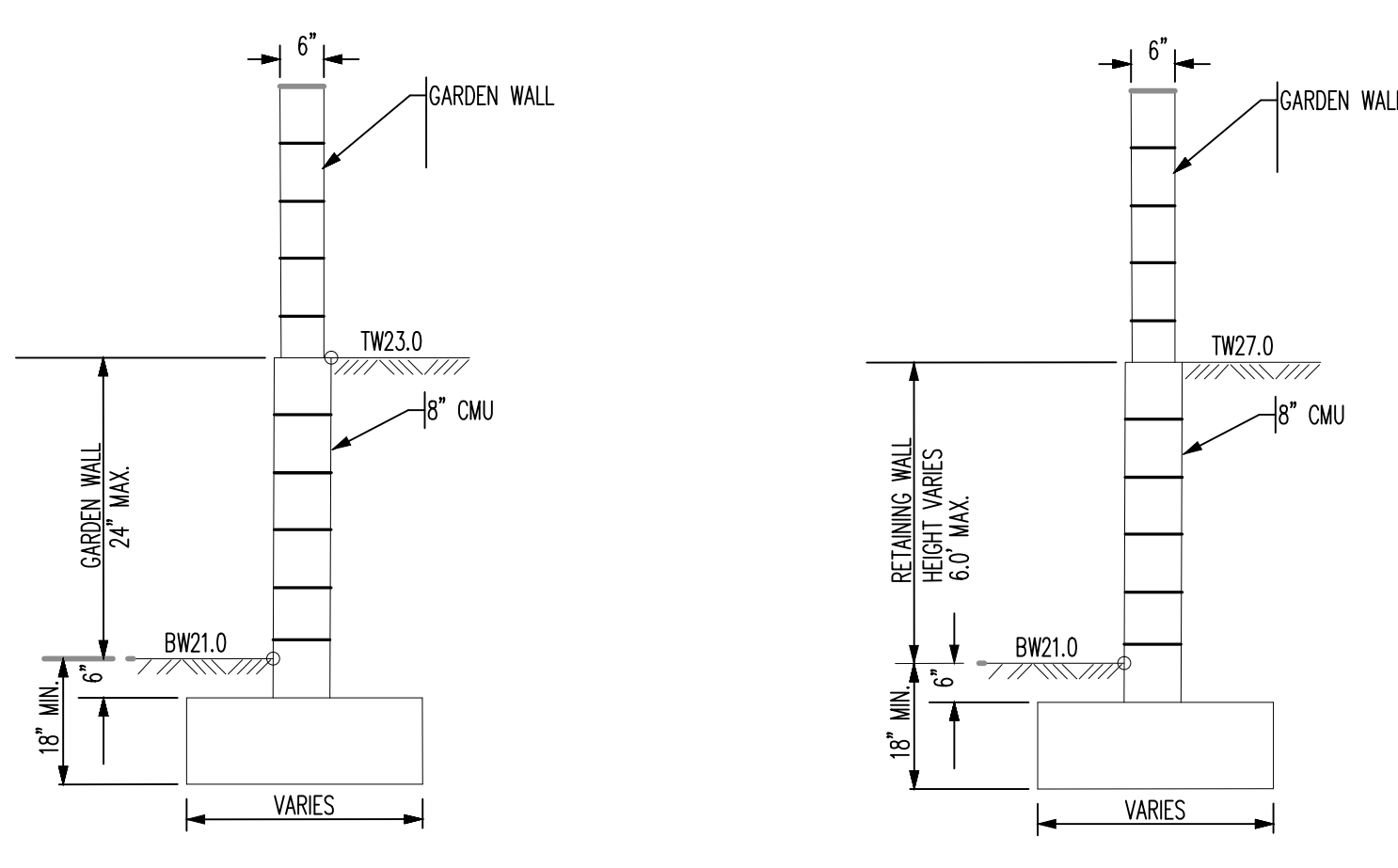
BOTTOM OF BASIN IS 1' BELOW PROPERTY LINE ELEVATION.
SEE GRADING PLANS FOR EXACT ELEVATIONS.
CONTRACTOR SHALL CONSTRUCT TEMPORARY DESILENTION BASIN AT EACH LOT.



**SECTION A-A
TYPICAL SIDE YARD SWALE**
NOT TO SCALE

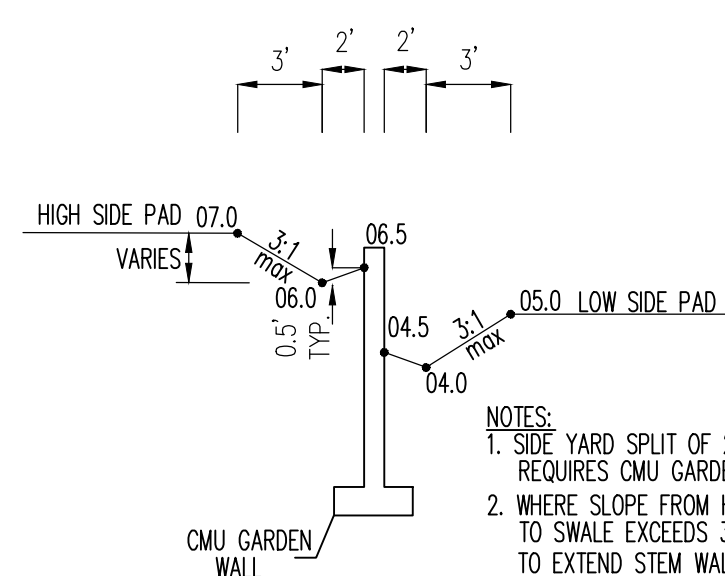


**SECTION B-B
TYPICAL SIDE YARD SWALE**
NOT TO SCALE

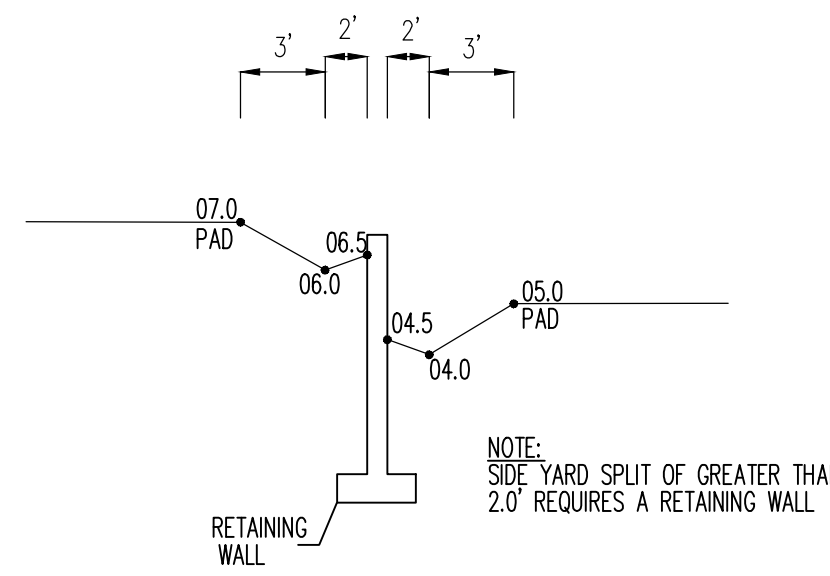


TYPICAL GARDEN WALL NOMENCLATURE
NOT TO SCALE
(RETAINING HEIGHT IS TAKEN TO BE DIFFERENCE IN FINISHED GRADES ON LEFT AND RIGHT SIDE OF WALL.)

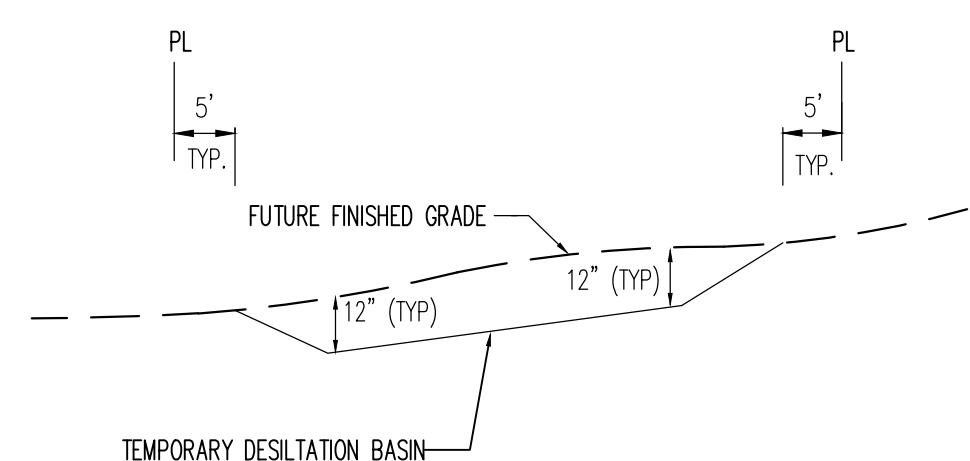
TYPICAL RETAINING WALL NOMENCLATURE
NOT TO SCALE
(RETAINING HEIGHT IS TAKEN TO BE DIFFERENCE IN FINISHED GRADES ON LEFT AND RIGHT SIDE OF WALL.)



SIDE YARD GARDEN WALL DETAIL
NOT TO SCALE

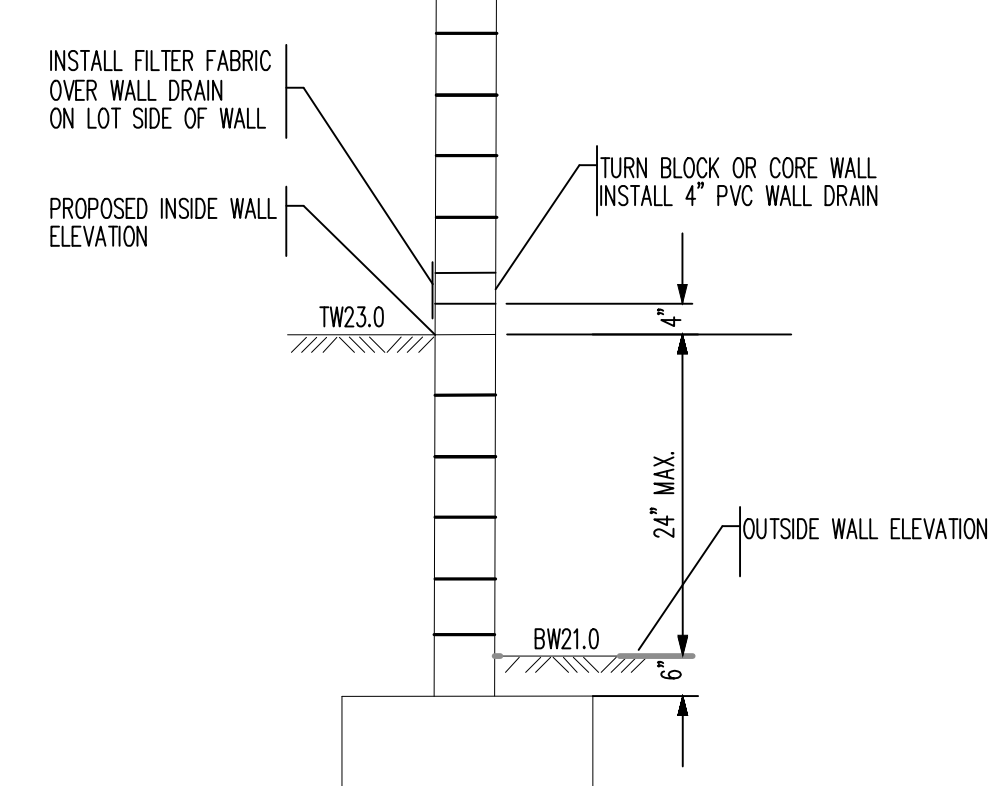


SIDE YARD RETAINING WALL DETAIL
NOT TO SCALE

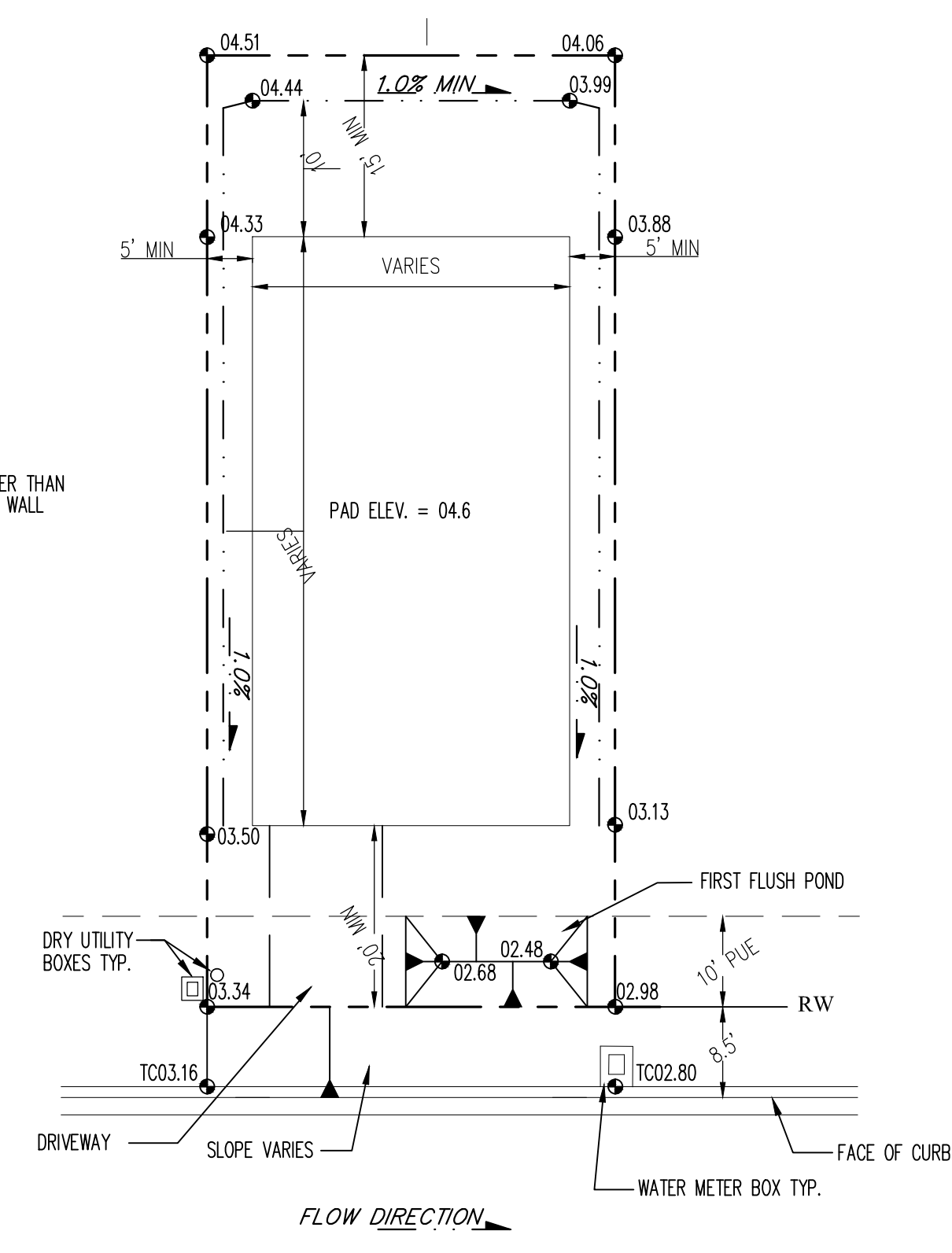


**SECTION C-C
TYPICAL SIDE YARD SWALE**
NOT TO SCALE

- NOTE:
- CONTRACTOR IS TO MASS GRADE ROADS TO 2' BEYOND FUTURE CURB. EXCESS FROM DRY UTILITY TRENCH IS TO BE USED TO BACK FILL BEHIND CURB.
 - FRONT YARDS ARE TO BE GRADED AS SHOWN ON THIS DETAIL FOR FINAL GRADING AND CERTIFICATION THIS DETAIL TO BE COORDINATED WITH.
 - HOME BUILDER TO BRING FRONT YARD TO ULTIMATE FRONT YARD GRADES AFTER HOME CONSTRUCTION IS COMPLETED. SEE ULTIMATE FRONT YARD GRADING DETAIL ON THIS SHEET.

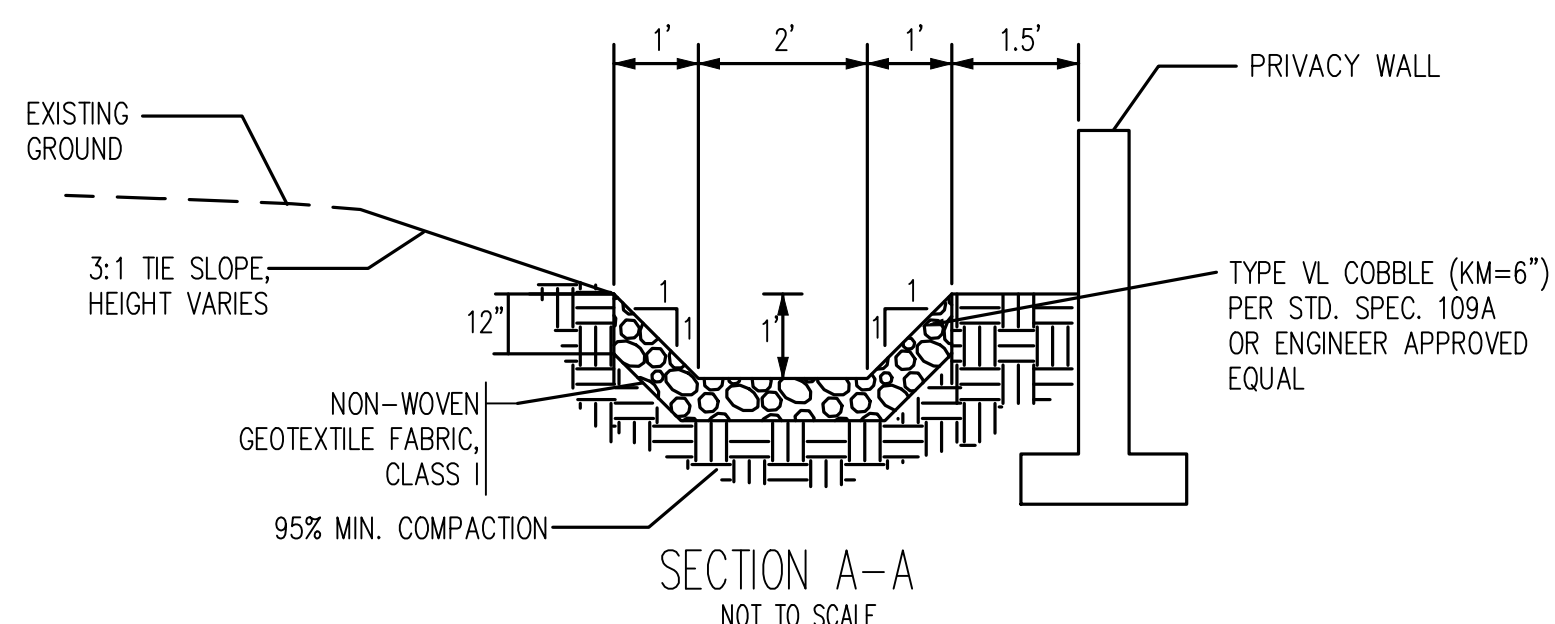


WALL DRAIN DETAIL
NOT TO SCALE



**TYPICAL LOT GRADE DETAIL
WITH FIRST FLUSH POND**
NOT TO SCALE

FIRST FLUSH VOLUME REQUIRED:
45'x75' PAD - 47 CUBIC FEET
50'x75' PAD - 53 CUBIC FEET
HOME BUILDER SHALL CONSTRUCT FIRST FLUSH POND PRIOR TO LANDSCAPING FRONT YARD



**SECTION A-A
TYPICAL SIDE YARD SWALE**
NOT TO SCALE

GENERAL NOTES

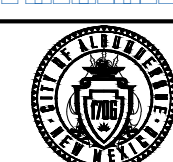
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AS-BUILT INFORMATION		BENCH MARKS		SURVEY INFORMATION		ENGINEER'S SEAL		REVISIONS		DESIGN		DATE		DATE		DATE	
CONTRACTOR	DATE	CONTRACTOR	DATE	NO.	BY	DATE	DATE	By	REMARKS	REVISIONS	DESIGN	DATE	05/2016	DATE	05/2016	DATE	05/2016
WORK	DATE	WORK	DATE														
INSPECTOR'S	DATE	INSPECTOR'S	DATE														
ACCEPTANCE BY	DATE	ACCEPTANCE BY	DATE														
VERIFICATION BY	DATE	VERIFICATION BY	DATE														
DESIGNED BY	DATE	DESIGNED BY	DATE														
DRAWN BY	DATE	DRAWN BY	DATE														
CHECKED BY	DATE	CHECKED BY	DATE														
NO.		NO.															

Bohannan Huston



**CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT**

**MONTECITO VISTAS
GRADING PLAN
DETAILS**

Design Review Committee	City Engineer Approval	Mo./Day/Yr.	Mo./Day/Yr.
City Project No.	Coa #	Zone Map No.	Sheet Of
		D-09	6 6

**EXHIBIT 5 -
STORM DRAIN CAPACITY CALCULATIONS**

MONTECITO VISTAS UNITS 1-4

PROPOSED
STORM DRAIN NETWORK

AUGUST 2016

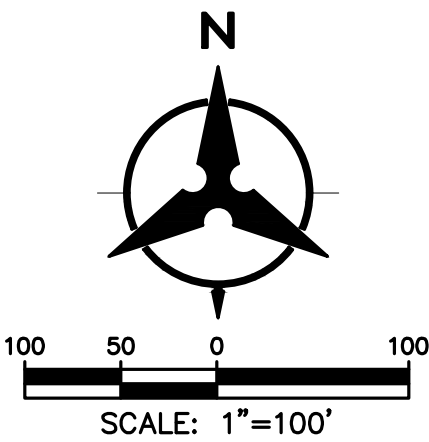
STORM INLET SUMMARY						
INLET	STREET GRADE (%)	UPSTREAM HALF ST FLOW (CFS)	UPSTREAM DEPTH (FT)	FLOW CAPTURED BY INLET (CFS)	BYPASS FLOW (CFS)	INLET TYPE
1	4.2%	9.0	0.36	5.8	3.3	A
2	4.2%	9.0	0.36	5.8	3.3	A
3	N/A SUMP	13.4	0.44	13.4	0.0	A
4	N/A SUMP	13.4	0.44	13.4	0.0	A
5	3.1%	12.6	0.41	6.5	6.1	A
6	3.1%	12.6	0.41	6.5	6.1	A
7	3.8%	9.2	0.37	6.5	2.7	C
8	3.8%	9.2	0.37	6.5	2.7	C
9	N/A SUMP	10.8	0.43	10.8	0.0	A
10	N/A SUMP	10.8	0.43	10.8	0.0	A
11	3.5%	13.7	0.42	7.0	6.7	A
12	3.5%	13.7	0.42	7.0	6.7	A
13	N/A SUMP	8.0	N/A	8.0	0.0	D

STORM DRAIN PIPE SUMMARY				
SDP	SIZE (IN)	SLOPE (%)	FLOW (CFS)	MAX CAPACITY (CFS)
1	24"	13.1%	11.6	81.9
2	60"	0.2%	108.0	120.9
3	60"	0.2%	108.0	116.5
4	54"	0.2%	96.4	89.1
5	24"	1.0%	8.0	22.6
6	48"	0.2%	88.4	65.5
7	36"	0.2%	61.6	31.1
8	24"	6.0%	26.0	55.3
9	24"	4.0%	13.0	45.1
10	24"	4.0%	13.0	45.2
11	36"	2.1%	35.6	30.2
12	24"	2.1%	14.0	32.8
13	24"	2.8%	14.0	38.0
14	24"	3.6%	14.0	43.0

NOTES: 1. ALL INLETS ABOVE ARE SINGLE GRATE.
2. ALL LATERAL PIPES CONNECTING INLETS TO MANHOLES ARE 18" DIA., EXCEPT LATERAL TO MANHOLE FROM IN3, IN4, IN9, IN10, AND IN13 WHICH ARE 24" DIA.

LEGEND

- PROPOSED STORM DRAIN PIPE
PROPOSED STORM DRAIN MANHOLE
PROPOSED STORM DRAIN INLET



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