K09/D006

Biazar, Shahab

From: Biazar, Shahab
Sent: Friday, March 17, 2017 8:20 AM
To: 'Ron Bohannan'
Cc: Jaimie Garcia
Subject: RE: West Ridge MHP 16000140772

Good morning,

Sorry for the late response. I looked over the submittal, and you should be able to move forward with vacating portion of the exiting drainage easement.

Thanks

Shahab Biazar, P.E.

City Engineer
Planning Department
Development Review Services Division
600 2nd St. NW, Suite 201
Albuquerque, NM 87102
t 505-924-3999
f 505-924-3864

From: Ron Bohannan [mailto:rrb@tierrawestllc.com]
Sent: Wednesday, March 08, 2017 8:38 AM
To: Biazar, Shahab
Cc: Jaimie Garcia
Subject: FW: West Ridge MHP 16000140772

Shahab did you get a chance to review this letter and the release?

Thanks

Ronald R. Bohannan, P.E.
President
Tierra West LLC
5571 Midway Park Place NE
Albuquerque, NM 87109
505-858-3100 office
800-245-3102
rrb@tierrawestllc.com

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unauthorized interception of this message is illegal under the law. If you have received this message in error, please immediately notify me by return message or by telephone and delete the original message from your email system. Thank you.

From: Jaimie Garcia
Sent: Wednesday, March 8, 2017 7:54 AM
To: Ron Bohannan; Kevin McCready
Cc: 'Fred Seeley'; ginaseeley@comcast.net
Subject: RE: West Ridge MHP 16000140772

Good Morning Kevin,

Attached is a PDF copy of the submittal package for the Westridge Mobile Home Park, that what was submitted to Shahab Biazar, City of Albuquerque's City Engineer, on March 1, 2017 for his review and the release of easements.

Respectfully,

Jaimie N. Garcia
Project Coordinator
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109
505-858-3100 Office
505-858-1118 Fax
jgarcia@tierrawestllc.com

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From: Ron Bohannan
Sent: Tuesday, March 07, 2017 4:24 PM
To: Kevin McCready
Cc: 'Fred Seeley'; ginaseeley@comcast.net; Jaimie Garcia
Subject: RE: West Ridge MHP 16000140772

Jaimie when you get the letter and the attachments scanned please send to Kevin this afternoon.

Thanks
Ron

From: Kevin McCready [mailto:kmccready@moplaw.com]
Sent: Tuesday, February 21, 2017 10:56 AM
To: Ron Bohannan

Cc: 'Fred Seeley'; ginaseeley@comcast.net; Jaimie Garcia
Subject: RE: West Ridge MHP 16000140772

Thank you Ron,

I appreciate you keeping us informed. The buyer has a contingency if we are unable to give it what it wants in relation to drainage, so we are hoping you will be able to meet with the City and get it to do what is necessary. The buyer is looking for items 1 and 2 in the earliest email in this email stream, below (re: termination of the 1998 Agreement and Covenant, and a written acknowledgment from the City). Nos. 3 and 4 below (re: Exhibit A to the 2008 Drainage Covenant, and a diagram from you) were requested by Fred/current owner, but may affect the buyer also. No. 5 below (re: clubhouse/easement encroachment situation) was requested by Fred. Thank you.

Kevin

Kevin J. McCready
Myers, McCready & Myers, P.C.
1401 Central Avenue NW, Suite B
Albuquerque, NM 87104
Direct Office Phone: (505) 764-1906
Office Phone: (505) 247-9080
Fax: (505) 247-9109
Email: kmccready@moplaw.com

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From: Ron Bohannan [mailto:rrb@tierrawestllc.com]
Sent: Friday, February 17, 2017 7:03 AM
To: Kevin McCready <kmccready@moplaw.com>; Fred Seeley <fnseeley@comcast.net>
Cc: ginaseeley@comcast.net; Jaimie Garcia <jgarcia@tierrawestllc.com>
Subject: RE: West Ridge MHP 16000140772

Kevin and Fred, the City is very short handed and we continue to push to meet with the City Attorney and City Engineer.

Sorry that it is dragging on.

Ron Bohannan

From: Kevin McCready [mailto:kmccready@moplaw.com]
Sent: Tuesday, January 24, 2017 10:35 AM
To: Fred Seeley; Ron Bohannan
Cc: ginaseeley@comcast.net
Subject: FW: West Ridge MHP 16000140772

Fred and Ron,

Fred asked me to make a list of what Ron and Tierra West LLC need to do in relation to the purchase agreement and mobile home park. See the list below. I am sending this list to both of you at the same time—Fred has not reviewed it yet, and so he may have some additional thoughts.

Also, the buyer signed the first amendment to purchase agreement and emailed it yesterday afternoon—attached is the fully signed doc. It addresses some of the matters below. Fred and Gina were cc'ed on the email yesterday afternoon, so they may have already printed it.

Here is the list for Tierra West:

1-Per the amendment, par. 2, Tierra West needs to contact and work with the City of Albuquerque to attempt to terminate Exception 18 of the title commitment, the 1998 Agreement and Covenant (which shows both a large drainage pond at the intersection of 90th and Volcano, and a small drainage pond closer to the club house). We believe that Exception 16, the 2008 Drainage Covenant, takes the place of Exception 18. There is language in the Agreement and Covenant regarding its termination, in paragraph 7, although it seems to me that the parties could enter into a cancelation and release that is effective immediately, waiving the 30 day notice from the City to West Ridge Limited Partnership.

2-Per the amendment, par. 3, Tierra West needs to request from the City of Albuquerque a certification, notification or other written form acknowledging Seller's and the Property's compliance with existing drainage covenants and agreements with the City of Albuquerque.

We have not guaranteed that the City will do the above. If we don't get these, in part, then the buyer would have the option to terminate the purchase agreement, or a warranty and indemnity from West Ridge could be triggered, including a warranty from West Ridge that for 90 days after closing, the Drainage Facility shown on Exhibit A to the 2008 Drainage Covenant is functionally operational and in compliance with the Drainage Covenant (except that seller is not required to construct or fill in the existing pond at the intersection to conform to the Drainage Covenant). For now, the contingency period has been extended to Feb. 24 for a few items, including the above.

3-When Tierra West is working with the City, it seems that those parties will need to take a look at Exhibit A to the 2008 Drainage Covenant. I am not sure that the exhibit clearly shows the dimensions of the (revised) required pond at the intersection of 90th and Volcano.

4-You asked me to request from Ron a diagram showing: a) the dimensions of the drainage pond located at the intersection of 90th and Volcano as addressed in the 1998 Agreement and Covenant (see Ex. A and diagram to Ex. A attached to the Agreement and Covenant—this is the large drainage pond formerly required at the intersection), and b) on the same diagram, the dimensions of the drainage pond as addressed in the 2008 Drainage Covenant (this is the reduced-size drainage pond located at the intersection).

5-Per your request, I also asked Ron for his thoughts on the encroachment of the club house on the 10' utility easement, as shown on Exhibit A to the Easement Encroachment Agreement with PNM, which is Exception 14. At this time, the buyer (and not the seller) is seeking similar encroachment agreements (or I believe termination of easement over encroachment, in the case of CenturyLink) with CenturyLink and, I understand, the Gas Co.

Fred, for West Ridge's part, in relation to the above, West Ridge needs to "retain" Tierra West as to par. 1 above, the attempted termination of the 1998 Agreement and Covenant, and to make a "request" to Tierra West as to par. 2 above, the written acknowledgment from the City. Ron, I understand that Fred is asking Tierra West for a proposal as to Tierra West's work relating to the MHP-can you prepare one please?

Please let me know if you have any questions or need any documents that I might have. Thank you.

Kevin

Kevin J. McCready
Myers, McCready & Myers, P.C.
1401 Central Avenue NW, Suite B
Albuquerque, NM 87104
Direct Office Phone: (505) 764-1906
Office Phone: (505) 247-9080
Fax: (505) 247-9109
Email: kmccready@moplaw.com

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TIERRA WEST, LLC

5571 Midway Park Place NE Albuquerque, NM 87109
(505) 858-3100 Fax (505) 858-1118 1-800-245-3102
tierrawestllc.com

March 1, 2017

Mr. Shahab Biazar, City Engineer
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87103

RE: **WESTRIDGE MOBILE HOME PARK**
RELEASE OF DRAINAGE EASEMENT

Dear Mr. Seeley,

Below is a summary of the work done by Tierra West, LLC in reference to the West Ridge Mobile Home Park:

- Approved Administrative Amendment- Administrative Site Development plan for subdivision for Tract A, is to subdivide the site and to establish a new use for Tract A-2. Approved September 17, 2012.

- Grading and Drainage- Modified design of the permanent detention pond to accommodate the construction of storage units and RV parking. To provide room for these changes, the pond size was modified to allow the property owner to reclaim as much usable land as possible. Grading and Drainage approval June 4, 2013.

- CLOMR-Application submitted to Federal Emergency Management Agency April 24, 2014. CLOMR approved September 9, 2013.

- Vacation of Public Drainage Easement- proposed to eliminate the two temporary drainage easements for the development of a community basketball court, resident storage area and additional mobile home spaces. Private on-site detention ponding will replace the two temporary easements.

- Release of Public Drainage Easement- Will submit application for release of drainage easement, will meet with City of Albuquerque engineer, Shahab Biazar for release drainage easements.

If you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, P.E.
JN: 27031.00
RRB/jg

RECEIVED
3-2-17

TW

Tierra West, LLC.

(505) 858-3100
5571 Midway Park Place NE, Albuquerque, NM 87109

TO Shahab Biazar
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

LETTER OF TRANSMITTAL

DATE: 3/1/2017	JOB NO: 27031
ATTENTION: Shahab Biazar	
RE: Westridge Mobile Home Park	
Release of Easements	
PHONE 505-924-3999	

WE ARE SENDING YOU [X] Attached [ ] Under Separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [ ] Plans [ ] Samples [ ] Specifications

[ ] Copy of letter [ ] Change order [ ] Check _____

COPIES	DATED	NO.	DESCRIPTION
			CLOMR-
			Grading and Drainage Cert, G&D plan
			Administrative Amendment
			Official Notice of Decision-
			Alta Survey
			PNM Easement
			Centurylink Easement

THESE ARE TRANSMITTED as checked below:

[X] For approval [ ] Approved as submitted [ ] **FOR SIGNATURE(S) AND NOTARY**

[ ] For your use [ ] Approved as noted [ ] _____

[ ] As requested [ ] Returned for your records

[ ] For review and comments [ ] _____

[ ] FOR BIDS DUE _____ 20 _____ [ ] PRINTS RETURNED AFTER LOAN TO US

REMARKS If you have any questions, please call our office at (505) 858-3100. Thank you!

COPY TO _____

RECEIVED BY _____ Date: _____ SIGNED Jaimie Garcia for Ronald Bohannan P.E.

CITY OF ALBUQUERQUE

September 9, 2013

Ronald R. Bohannan, P.E.
Tierra West, LLC.
5571 Midway Park Pl NE
Albuquerque, NM 87109

Re: West Ridge MH Park
Conditional Letter Of Map Revision (CLOMR)
Engineer's Stamp date 8/14/2013 (K-09/D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 8-27-13, the Grading and Drainage Plan is approved for grading permit. Erosion Sediment Control plan and Flood Permit application must be submitted prior to any grading.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for disturbing one acre or more and a Topsoil Disturbance Permit for disturbing ¾ of an acre or more. If you have any questions, you can contact me at 924-3695.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development Review Services

C: e-mail

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Federal Emergency Management Agency

Washington, D.C. 20472

April 24, 2014

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 13-06-4665R
Community Name: City of Albuquerque, NM
Community No.: 350002

The Honorable Richard J. Berry
Mayor, City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

104

Dear Mayor Berry:

We are providing our comments with the enclosed Conditional Letter of Map Revision (CLOMR) on a proposed project within your community that, if constructed as proposed, could revise the effective Flood Insurance Study report and Flood Insurance Rate Map for your community.

If you have any questions regarding the floodplain management regulations for your community, the National Flood Insurance Program (NFIP) in general, or technical questions regarding this CLOMR, please contact the Director, Mitigation Division of the Federal Emergency Management Agency (FEMA) Regional Office in Denton, Texas, at (940) 898-5127, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip

Sincerely,

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

List of Enclosures:
Conditional Letter of Map Revision Comment Document

cc: Mr. Curtis A. Cherne, P.E., CFM
Floodplain Administrator
City of Albuquerque

Mr. Fred N. Seely
Western Security Real Estate, Inc.

Mr. Ronald R. Bohannan, P.E.
Tierra West, LLC

RECEIVED
3-2-17

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT

COMMUNITY INFORMATION		PROPOSED PROJECT DESCRIPTION	BASIS OF CONDITIONAL REQUEST
COMMUNITY	City of Albuquerque Bernalillo County New Mexico	DETENTION BASIN FILL	HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 350002		
IDENTIFIER	West Ridge Mobile Home Park	APPROXIMATE LATITUDE AND LONGITUDE: 35.077,-106.737 SOURCE: USGS QUADRANGLE DATUM: NAD 83	

AFFECTED MAP PANELS

TYPE: FIRM* NO.: 35001C0328H DATE: August 16, 2012

* FIRM - Flood Insurance Rate Map

FLOODING SOURCES AND REACH DESCRIPTION

Unnamed Pond – near the intersection of Volcano Road Northwest and 90th Street

PROPOSED PROJECT DESCRIPTION

Flooding Source	Proposed Project	Location of Proposed Project
Unnamed Pond	Fill Placement	near the intersection of Volcano Road Northwest and 90th Street
Unnamed Pond	Detention Pond	near the intersection of Volcano Road Northwest and 90th Street

SUMMARY OF IMPACTS TO FLOOD HAZARD DATA

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
Unnamed Pond	Zone A	Zone AE	None	Yes
	No BFEs*	BFEs	Yes	None

* BFEs - Base (1-percent-annual-chance) Flood Elevations

COMMENT

This document provides the Federal Emergency Management Agency's (FEMA's) comment regarding a request for a CLOMR for the project described above. This document is not a final determination; it only provides our comment on the proposed project in relation to the flood hazard information shown on the effective National Flood Insurance Program (NFIP) map. We reviewed the submitted data and the data used to prepare the effective flood hazard information for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on their knowledge of local conditions and in the interest of safety, may set higher standards for construction in the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood). If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on the FEMA Web site at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

RECEIVED 3-2-17

Federal Emergency Management Agency
Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

To determine the changes in flood hazards that will be caused by the proposed project, we compared the hydraulic modeling reflecting the proposed project (referred to as the proposed conditions model) to the hydraulic modeling reflecting the existing conditions.

The table below shows the changes in the base flood water-surface elevations (WSELs).

Base Flood WSEL Comparison Table

Flooding Source: Unnamed Pond		Base Flood WSEL Change (feet)	Location of maximum change
Proposed vs. Existing	Maximum increase	1.0	entire pond
	Maximum decrease	None	

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA Web site at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

DATA REQUIRED FOR FOLLOW-UP LOMR

Upon completion of the project, your community must submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report. If the project is built as proposed and the data below are received, a revision to the FIRM and FIS report would be warranted.

• Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview and Concurrence Form," must be included. A copy of this form may be accessed at http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm.

• The detailed application and certification forms listed below may be required if as-built conditions differ from the proposed plans. If required, please submit new forms, which may be accessed at http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm, or annotated copies of the previously submitted forms showing the revised information.

Form 2, entitled "Riverine Hydrology and Hydraulics Form." Hydraulic analyses for as-built conditions of the base flood must be submitted with Form 2.

Form 3, entitled "Riverine Structures Form."

• A certified topographic work map showing the revised and effective base floodplain boundaries. Please ensure that the revised information ties in with the current effective information at the downstream and upstream ends of the revised reach and any tributaries.

• An annotated copy of the FIRM, at the scale of the effective FIRM, that shows the revised base floodplain boundary delineations shown on the submitted work map and how they tie-in to the base floodplain boundary delineations shown on the current effective FIRM at the downstream and upstream ends of the revised reach and any tributaries.

• As-built plans, certified by a registered Professional Engineer, of all proposed project elements.

• Documentation of the individual legal notices sent to property owners who will be affected by any widening or shifting of the base floodplain and/or any BFE establishment.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on the FEMA Web site at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

DATA REQUIRED FOR FOLLOW-UP LOMR (continued)

• An officially adopted maintenance and operation plan for the Unnamed Pond. This plan, which may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation, must describe the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished.

• FEMA's fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps may be accessed at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm. The fee at the time of the map revision submittal must be received before we can begin processing the request. Payment of this fee can be made through a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). Please forward the payment, along with the revision application, to the following address:

LOMC Clearinghouse
847 South Pickett Street
Alexandria, Virginia 22304-4605

or submit the LOMR using the Online LOMC portal at: https://hazards.fema.gov/femaportal/onlinelomc/signin

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the flood hazard information (i.e., base flood elevations, base flood depths, SFHAs, zone designations, and/or regulatory floodways) will change as a result of the project, a 90-day appeal period will be initiated for the revision, during which community officials and interested persons may appeal the revised flood hazard information based on scientific or technical data.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA Web site at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

COMMUNITY REMINDERS

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Frank Pagano
Director, Mitigation Division
Federal Emergency Management Agency, Region VI
Federal Regional Center, Room 206
800 North Loop 288
Denton, TX 76209
(940) 898-5127

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA Web site at http://www.fema.gov/business/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

CITY OF ALBUQUERQUE

June 4, 2013

Ronald R. Bohannan, P.E.
Tierra West, LLC.
5571 Midway Park Pl NE
Albuquerque, NM 87109

Re: West Ridge MH Park
Grading and Drainage Plan
Engineer's Stamp date 05-16-2013 (K-09/D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 05-13-13, the above referenced plan is accepted for Grading Permit. Upon completion of the project, provide an Engineer Certification for our files.

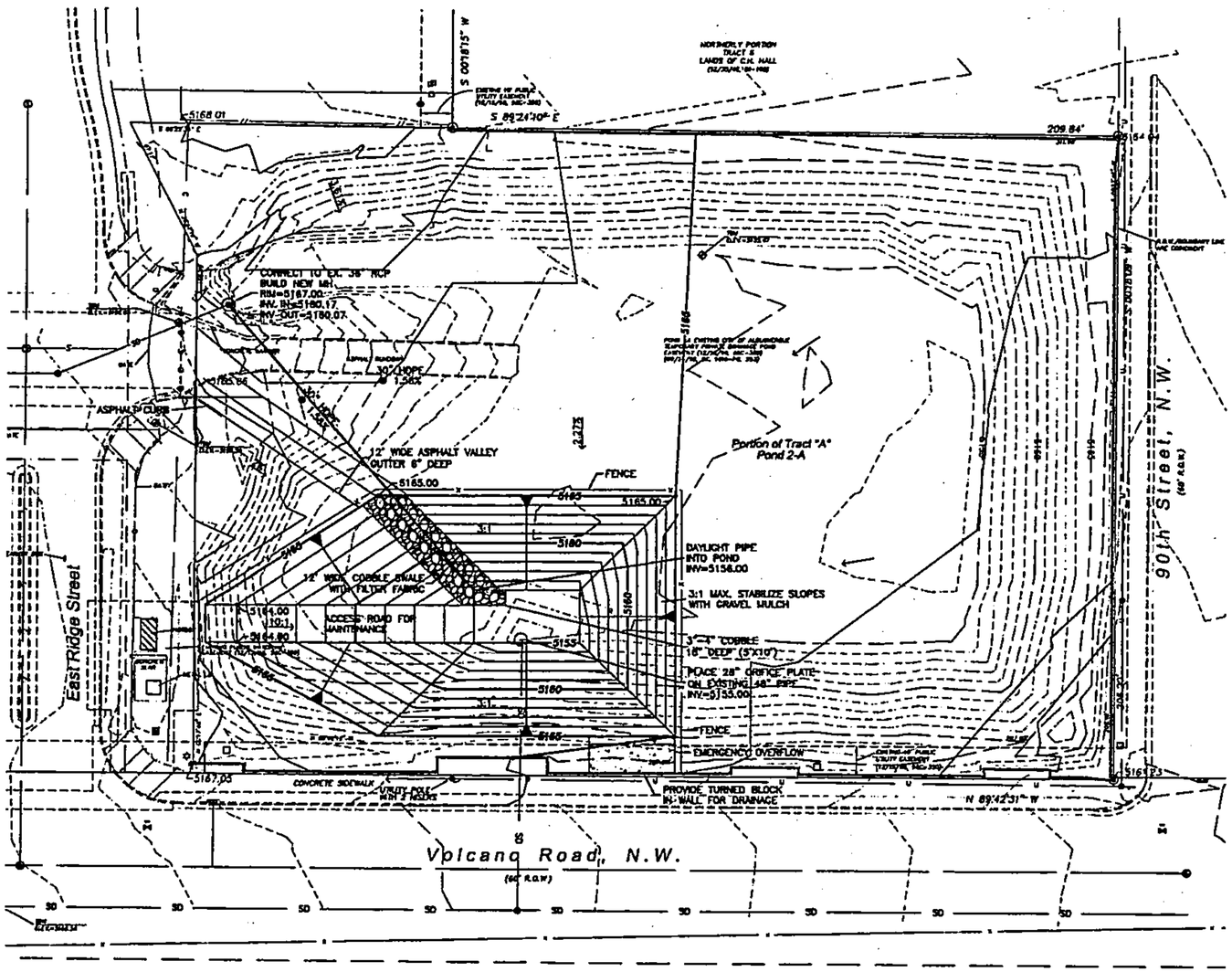
If you have any questions, you can contact me at 924-3695 or Rudy Rael at 924-3977.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

RR/SB
C: Email

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov



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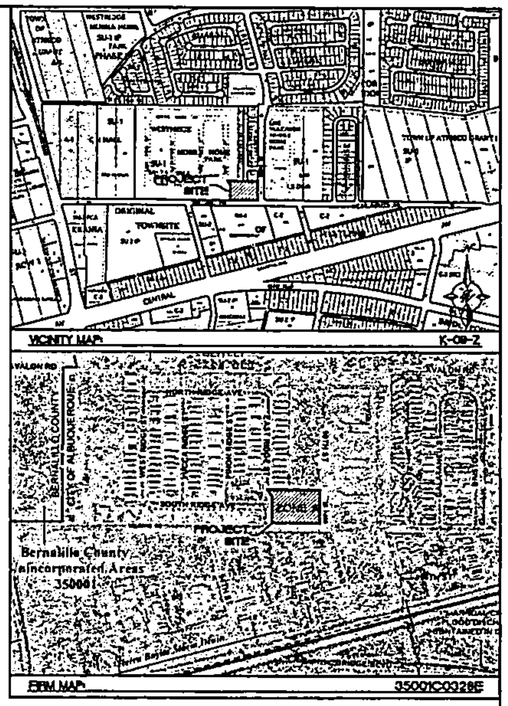
LEGEND

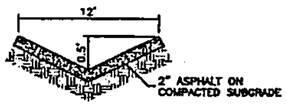
- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- 5010 — CONTOUR MAJOR
- 5011 — CONTOUR MINOR
- x 5048.25 — SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 — EXISTING CONTOUR MAJOR
- 5011 — EXISTING CONTOUR MINOR
- x 5048.25 — EXISTING SPOT ELEVATION



GRAPHIC SCALE

20 10 0 10 20

SCALE: 1"=20'



VALLEY GUTTER
SC: NTS

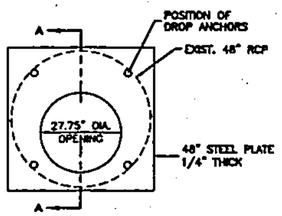
NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 785-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

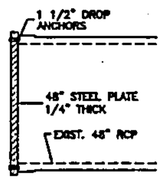
APPROVAL	NAME	DATE
INSPECTOR		

EROSION CONTROL PLAN, NPDES PERMIT AND POLLUTION PREVENTION NOTES

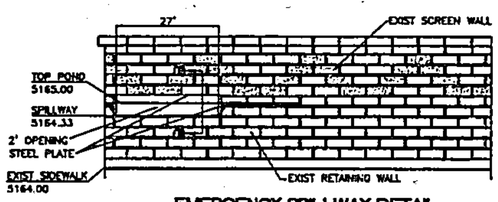
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT OUT OF EXISTING RIGHT-OF-WAY.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL STORM RUN OFF ON SITE.
4. REPAIR OF DAMAGED FACILITIES AND CLEAN-UP OF SEDIMENT ACCUMULATION ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.
6. ALL SITES OVER 1 ACRE DISTURBANCE REQUIRE FEDERAL NPDES PERMIT.



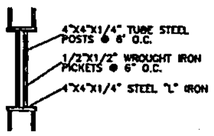
ORIFICE PLATE DETAIL
SC: NTS



SECTION A-A
SC: NTS



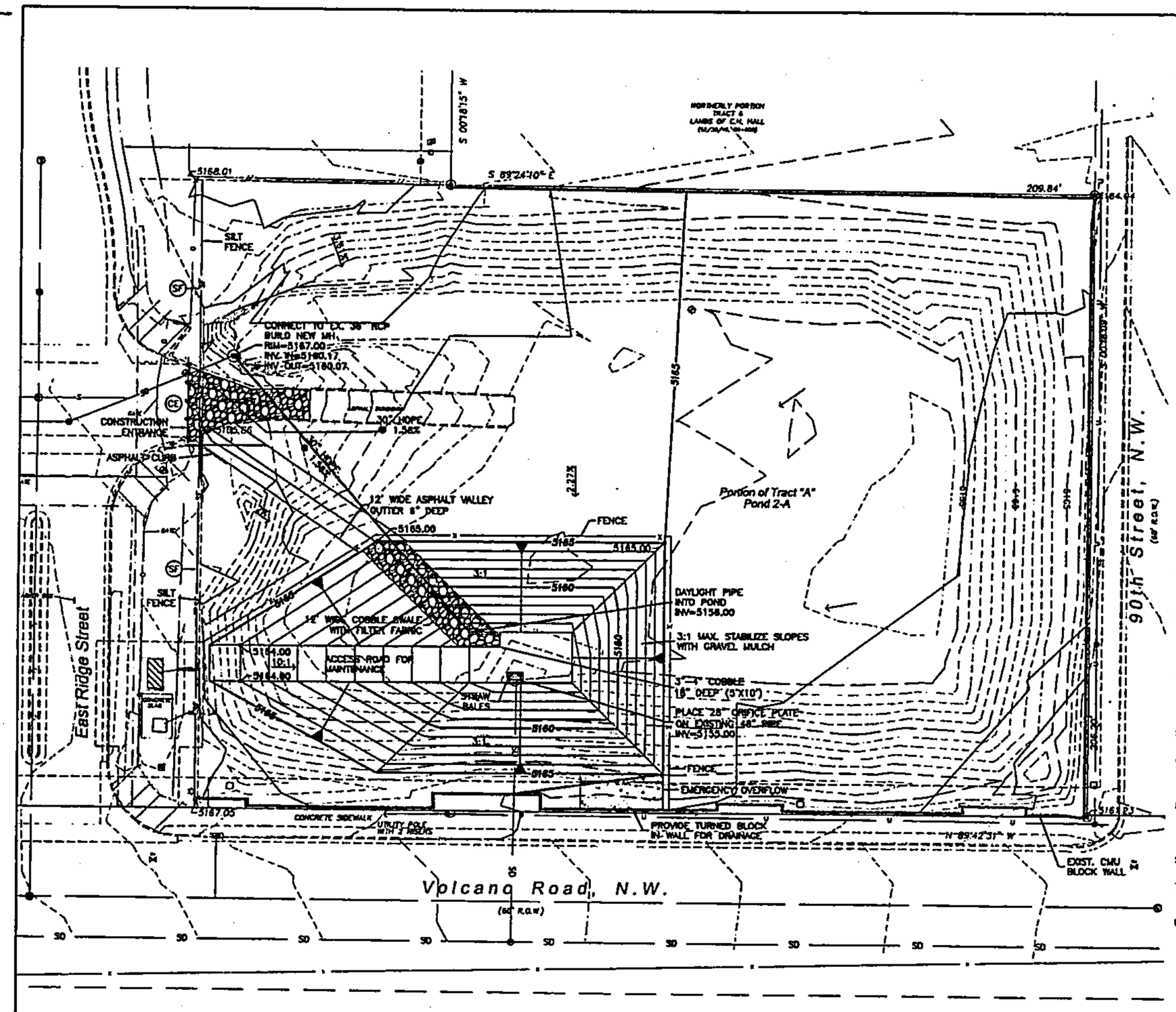
EMERGENCY SPILLWAY DETAIL
NTS

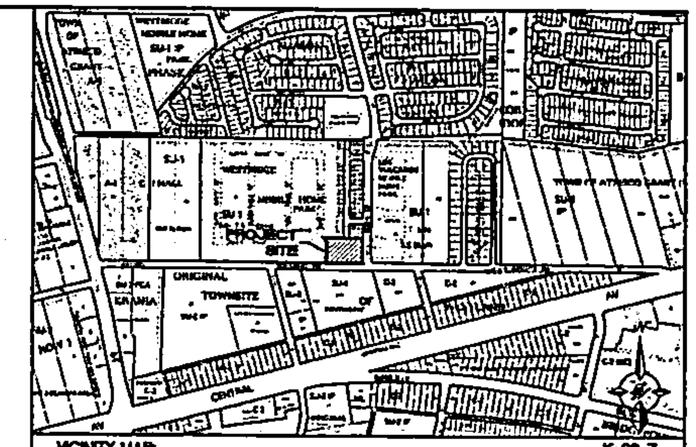


SECTION B-B

ROUGH GRADING APPROVAL — DATE

ENGINEER'S SEAL	WEST RIDGE MOBILE HOME PARK	DRAWN BY DY
	GRADING AND DRAINAGE PLAN	DATE 5/13/13
		27031-GR
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # C2
RONALD R. BOHANNAN P.E. #7868		JOB # 27031





LEGEND

- BOUNDARY LINE
- RIGHT OF WAY LINE
- LIMITS OF DISTURBANCE
- STORM DRAIN
- SILT FENCE EXCEPTION
- FLOOD PLAIN

EROSION DETAILS

- CE — TEMPORARY STONE CONSTRUCTION EXIT
- SF — TEMPORARY SILT FENCE
- IP — FABRIC INLET SEDIMENT FILTER
- SB — SEDIMENT BASIN

EROSION NOTES

- SS — SWPPP INFORMATION SIGN
- EO — EMERGENCY OVERFLOW

GENERAL EROSION NOTES

A. THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS COMPRISED OF THIS DRAWING ("SITE MAP"), THE STANDARD DETAILS, THE PLAN NARRATIVE, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.

B. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE OF NEW MEXICO NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS.

C. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE SWPPP. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST TO OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.

D. BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.

E. SITE MAP MUST CLEARLY DELINEATE ALL STATE WATERS. PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATERS OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.

F. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.

G. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES.

H. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.

I. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.

J. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.

K. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORMWATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.

L. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.

M. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS STOPPED FOR AT LEAST 21 DAYS, SHALL BE TEMPORARILY SEEDED. THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY OCCURING THESE AREAS. PROVIDE ADEQUATE TEMPORARY IRRIGATION FOR GERMINATION.

N. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY SEEDED. THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN.

O. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE.

P. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.

Q. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN THE DETENTION POND AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.

R. ON-SITE & OFFSITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES, AS REQUIRED PER THE CONSTRUCTION GENERAL PERMIT. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.

S. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.

T. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) TO PREVENT EROSION.

U. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.

MAINTENANCE

ALL MEASURES STATED ON THIS EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A 0.5" RAINFALL EVENT, AND CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

1. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING, OR DETERIORATION.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
3. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
4. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.
5. ANY TEMPORARY PARKING AND STORAGE AREAS SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AS CONDITIONS DEMAND. ONCE IDENTIFIED, NOTE ON THE SWPPP PLAN.
6. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50%.

SEQUENCE OF CONSTRUCTION

1. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
2. CONSTRUCT THE SILT FENCES AND INLET PROTECTION ON THE SITE.
3. PREPARE TEMPORARY PARKING AND STORAGE AREA AND LABEL LOCATION ON EC-1.
4. CONSTRUCT THE SEDIMENTATION BASINS AND EMERGENCY OVERFLOW.
5. CLEAR AND GRUB THE SITE.
6. UNDERCUT GRADE AS REQUIRED.
7. START CONSTRUCTION OF BUILDING PAD AND STRUCTURES.
8. FINISH GRADING THE SITE. RAISE GRADES TO INDUCE DRAINAGE TOWARD SEDIMENT BASINS.
9. PROTECT INLET DRAINS FROM SEDIMENT AFTER INSTALLATION.
10. STABILIZE GRADED AREAS UPON COMPLETION.

N

GRAPHIC SCALE

20 10 0 10 20

SCALE: 1"=20'

CAUTION

ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

SITE AREA	11.85 ACRES
DISTURBED AREA	12.00 ACRES

ENGINEER'S SEAL

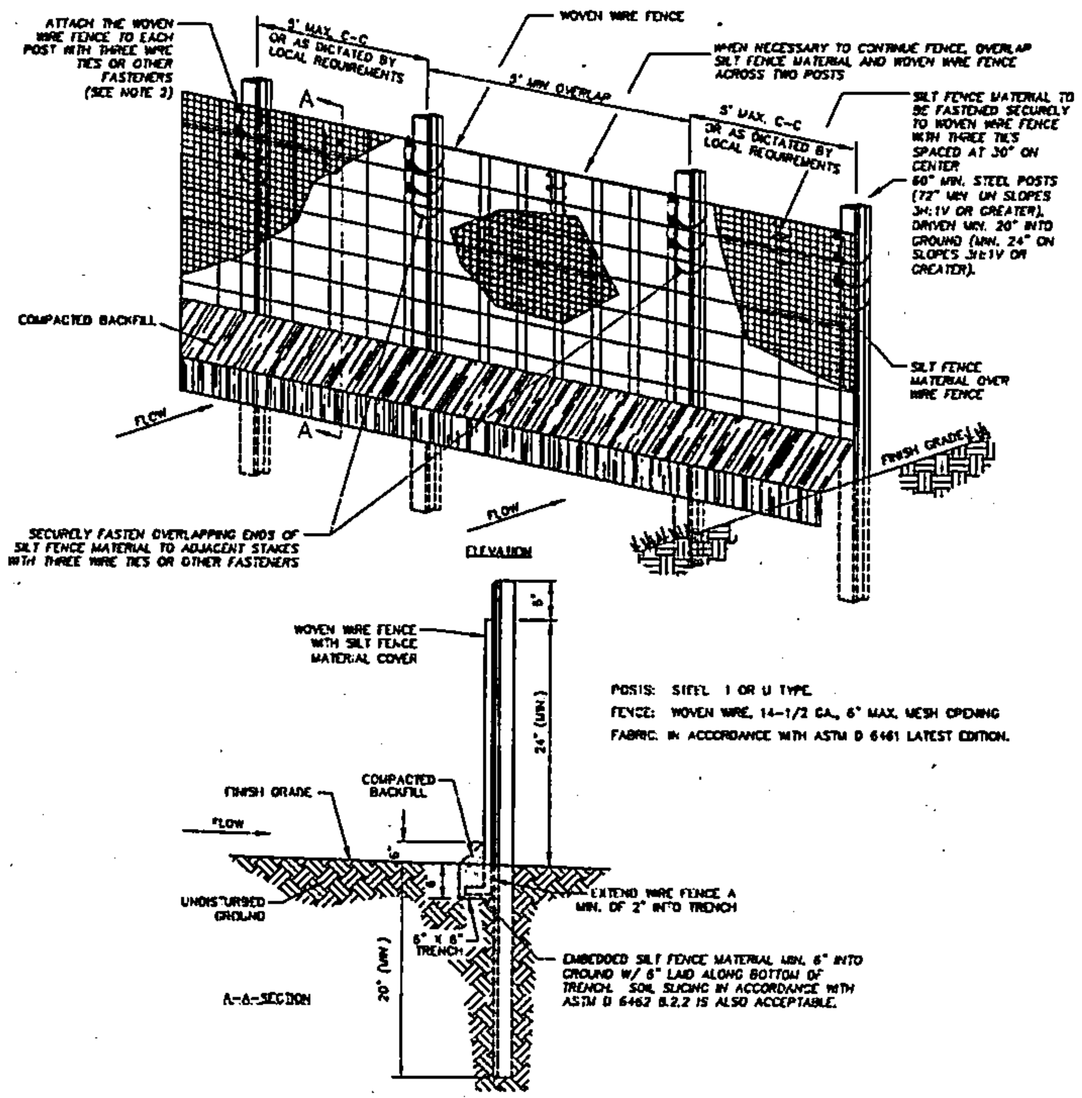
RONALD R. BOHANNAN P.E. #7868

WEST RIDGE MOBILE HOME PARK

SEDIMENTATION AND EROSION CONTROL PLAN

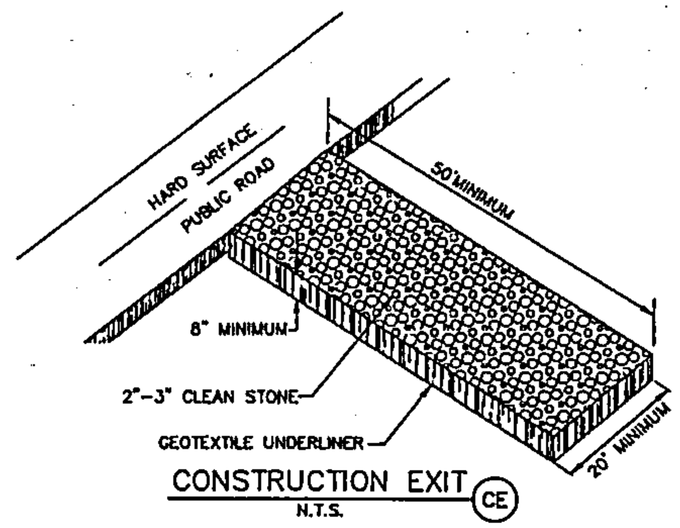
TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY	DY
DATE	4/15/13
	27031-SWPPP
SHEET #	EC-1
JOB #	27031



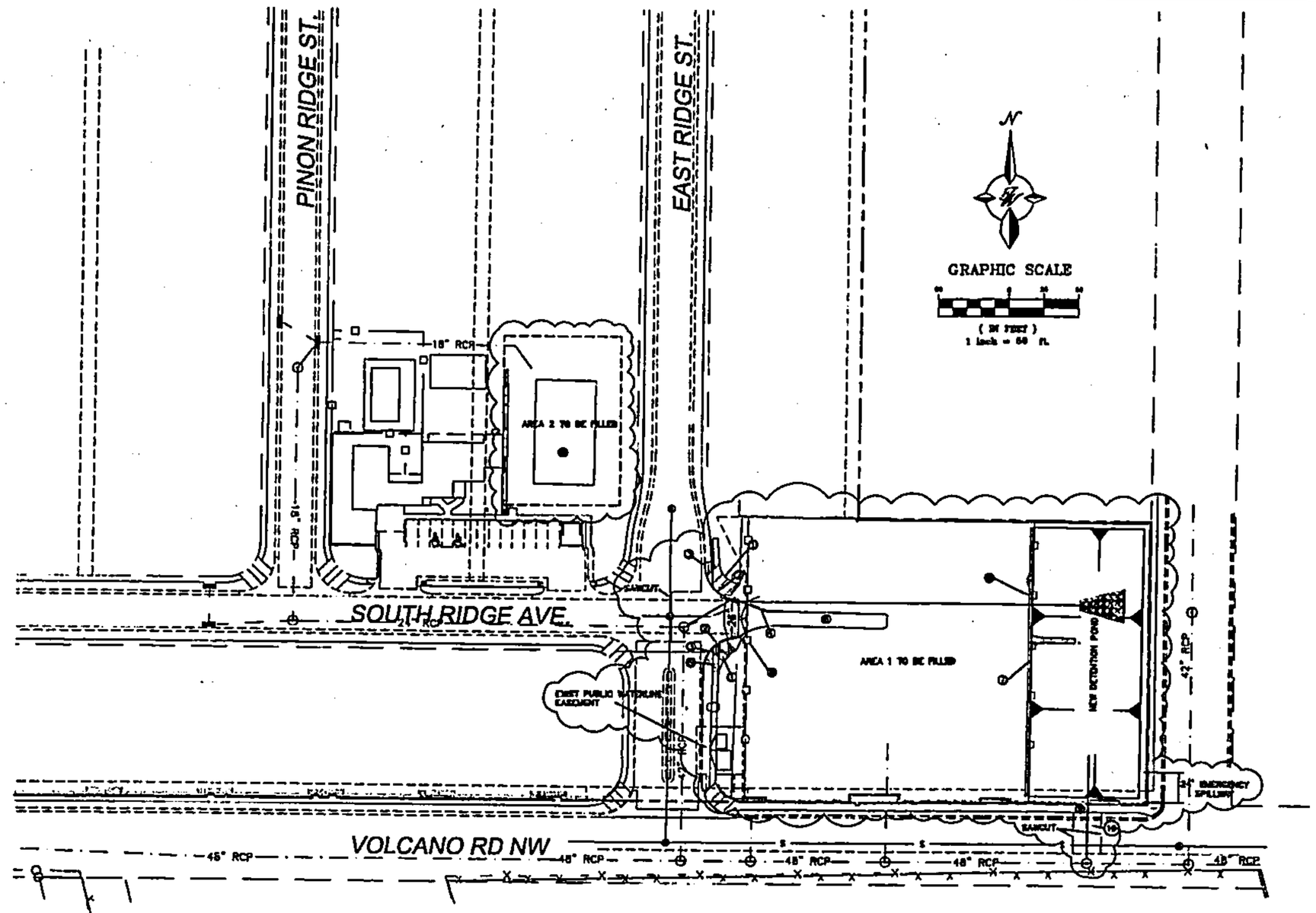
1. INSTALLATION SHALL COMPLY WITH ASTM D 6462 LATEST EDITION.
2. ATTACH THE WOVEN WIRE FENCE TO EACH POST AND THE GEOTEXTILE TO THE WOVEN WIRE FENCE (SPACED EVERY 30") WITH THREE WIRE TIES OR OTHER FASTENERS, ALL SPACED WITHIN THE TOP 8" OF THE FABRIC. ATTACH EACH TIE DIAGONALLY 45 DEGREES THROUGH THE FABRIC, WITH EACH PUNCTURE AT LEAST 1" VERTICALLY APART ALSO. EACH TIE PLACED ON A POST SHOULD BE POSITIONED TO HANG ON A POST NIPPLE WHEN TIGHTENED TO PREVENT SAGGING.
3. WHEN TWO SECTIONS OF SILT FENCE MATERIAL ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED A MINIMUM OF 60" ACROSS TWO POSTS, AS SHOWN.
4. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE SWPPP. DEPTH OF ACCUMULATED SEDIMENTS MAY NOT EXCEED ONE-HALF THE HEIGHT OF THE FENCE. MAINTENANCE CLEANOUT MUST BE CONDUCTED REGULARLY TO PREVENT ACCUMULATED SEDIMENTS FROM REACHING ONE-HALF THE HEIGHT OF THE SILT FENCE MATERIAL ABOVE GRADE.
5. ALL SILT FENCE SHALL INCLUDE WIRE SUPPORT UNLESS THE STATIC SLICING EQUIPMENT IS UTILIZED TO INSTALL THE FENCE PER DETAIL- "SILT FENCE INSTALLATION (SLICING METHOD)"
6. WRAP APPROXIMATELY 6" OF FABRIC AROUND THE END POSTS AND SECURE WITH 3 TIES.
7. COMPACT THE SOIL IMMEDIATELY NEXT TO THE SILT FENCE FABRIC WITH THE FRONT WHEEL OF THE TRACTOR, SKID STEER, OR ROLLER EXERTING AT LEAST 60 POUNDS PER SQ. INCH. COMPACT THE UPSTREAM SIDE FIRST. COMPACT EACH SIDE THICE FOR A TOTAL OF FOUR TRIPS.
8. ADD POST CAPS AS NEEDED BASED ON SITE CONDITIONS AND APPLICABLE AGENCY REQUIREMENTS.

SEDIMENTATION/SILT FENCE WITH WIRE SUPPORT (SF)
N.T.S.



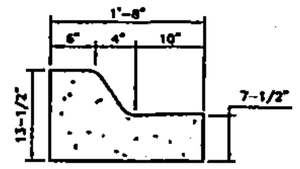
CONSTRUCTION EXIT (CE)
N.T.S.

ENGINEER'S SEAL RONALD R. BOHANNAN P.E. #7868	WEST RIDGE MOBILE HOME PARK SEDIMENTATION AND EROSION CONTROL DETAILS	DRAWN BY DY DATE 5/13/13 27031-SWPPP
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # EC-2 JOB # 27031



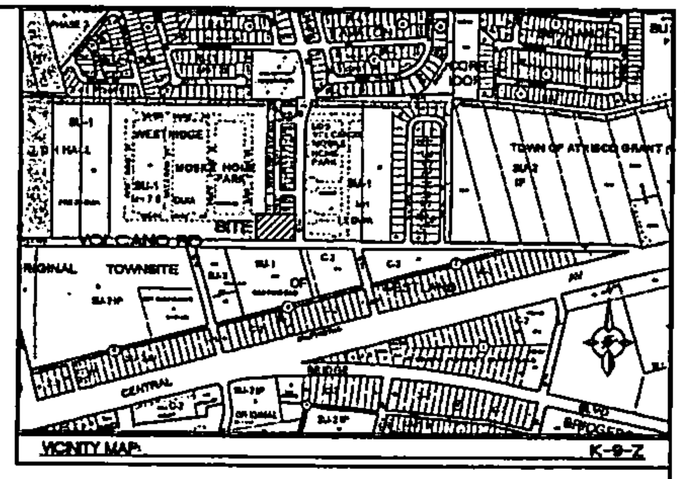
KEYED NOTES:

1. REMOVE AND DISPOSE EXISTING HANDICAP RAMP
2. REMOVE AND DISPOSE EXISTING CURB AND GUTTER. REPLACE WITH NEW CURB AND GUTTER PER COA STD DWG 2415A
3. NEW UNIDIRECTIONAL HANDICAP RAMP PER DETAIL THIS SHEET
4. REMOVE AND DISPOSE EXISTING CONCRETE BARRIER
5. NEW SIDEWALK PER COA STD DWG 2430
6. REMOVE AND DISPOSE EXITING ASPHALT
7. INSTALL 6" MEDIAN CURB PER COA STD DWG 2415B
8. INSTALL NEW CHAINLINK FENCE W/12' GATE SEE DETAIL THIS SHEET
9. REMOVE AND DISPOSE EXISTING SIDEWALK AND CURB AND GUTTER. REPLACE SIDEWALK PER COA STD DWG 2430, REPLACE CURB AND GUTTER PER COA DWG 2415A
10. REMOVE AND DISPOSE EXISTING ASPHALT. REPLACE ASPHALT PER COA STD DWG 2485



CURB GENERAL NOTES:
1. ALL CURBS TO BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE, PER WAL-MART SPECIFICATIONS.
2. PROVIDE CONTRACTION JTS. 12' MAX. SPACING, 1/2" EXP. JTS. AT CURB RETURNS AND AT A MAX. SPACING OF 120' BETWEEN CURB RETURNS AND EACH SIDE OF SEPARATELY CONSTRUCTED DRIVEWAYS. CONTRACTION JTS. SHALL BE EITHER SAWED OR TOOLED A MINIMUM OF 1" DEEP AT FINISHED FACES.
3. ALL EDGES SHALL BE EDGED WITH A 3/8" RADIUS EDGING TOOL.
4. 1/4" ISOLATION JOINT SHALL BE PLACED BETWEEN SIDEWALK AND CURB WHEN CAST ADJACENT TO EACH OTHER.

STANDARD MEDIAN CURB / GUTTER
NTS



VICINITY MAP K-9-Z

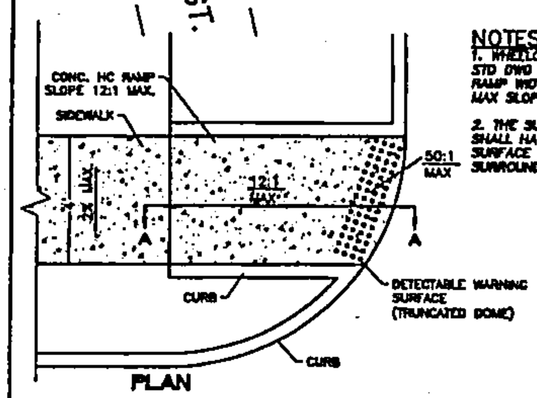
LEGAL DESCRIPTION:

PORTION OF TRACT "A", WEST RIDGE MOBILE HOME PARK

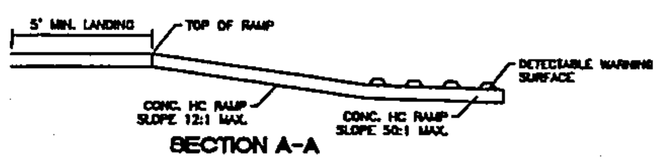
LEGEND

- EXISTING CURB & GUTTER
- BOUNDARY LINE
- PROPOSED STORM DRAIN
- EXISTING SORM DRAIN
- EASEMENT
- EXIST RETAINING WALL
- EXIST CMU PERIMETER WALL
- IMPROVEMENT AREA

DRB ADMINISTRATIVE SITE PLAN AMENDMENT
PROJECT NO. 1003192
APPLICATION NO. 08-AA-10087
PLANNING DIRECTOR — DATE 1/23/08



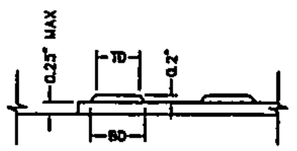
PLAN



SECTION A-A

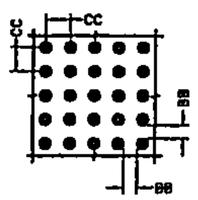
UNIDIRECTIONAL HC RAMP
NOT TO SCALE

NOTES:
1. WHEELCHAIR RAMPS ARE AS C.O.A. STD DWG 2441 CASE II, EXCEPT THE RAMP WIDTH WILL VARY TO MEET A 12:1 MAX SLOPE
2. THE SURFACE OF RAMP AND SIDES SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE ROUGHER THAN THE SURROUNDING SIDEWALK.

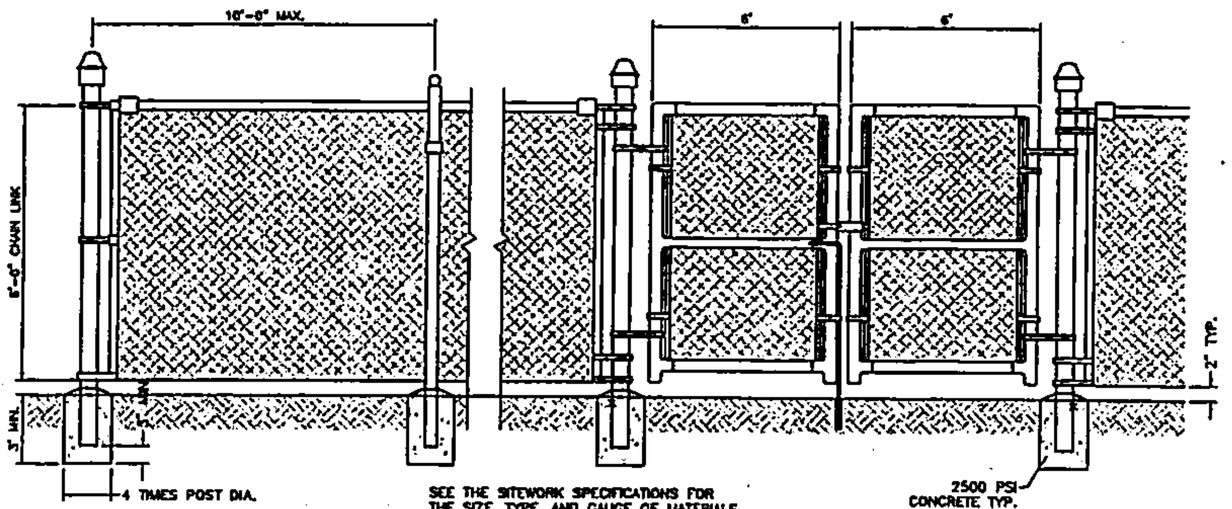


1. TRUNCATED DOME DESIGN PER A.D.A. SPECIFICATIONS
2. FOR TRUNCATED DOME SUBMIT SPECIFICATIONS TO CITY CONSTRUCTION ENGINEER FOR EVALUATION PRIOR TO CONSTRUCTION

DOME SECTION
BD – BASE DIAMETER 0.9" MIN
TD – TOP DIAMETER 50% OF BD MIN TO 65% OF BD MAX



DOME SPACING
CC – CENTER TO CENTER SPACING 2.35"
BB – BASE TO BASE SPACING 1.45" MIN



SEE THE SITEWORK SPECIFICATIONS FOR THE SIZE, TYPE, AND GAUGE OF MATERIALS THAT WILL BE USED FOR CONSTRUCTION OF A CHAIN LINK FENCE.

CHAIN LINK FENCE W/6' DOUBLE GATE
NTS (NOT FACING PUBLIC RIGHTOF WAY)

PROJECT NUMBER: _____
APPLICATION NUMBER: _____

This plan is consistent with the specific Site Development Plan approved by the Environmental Planning Commission (EPC), dated _____ and the Findings and Conditions in the Official Notification of Decision are satisfied.

Is an Infrastructure List required? ( ) Yes ( ) No If Yes, then a set of approved DRC plans with a work order is required for any construction within Public Right-of-Way or for construction of public improvements.

DRB SITE DEVELOPMENT PLAN SIGNOFF APPROVAL:

Traffic Engineer, Transportation Division	Date
Water Utility Development	Date
Parks & Recreation Department	Date
City Engineer	Date
* Environmental Health Department (conditional)	Date
Solid Waste Management	Date
DRB Chairperson, Planning Department	Date

* Environmental Health, if necessary

ENGINEER'S SEAL — RONALD R. BOHANNAN P.E. #7868	WEST RIDGE MOBILE HOME PARK	DRAWN BY pm
	ADMINISTRATIVE AMENDMENT SITE PLAN	DATE 1-10-08
		2731-SPE
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NEW MEXICO 87109 (505)858-3100	SHEET # C1
		JOB # 27031

AA.

OFFICIAL NOTICE OF DECISION

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT REVIEW BOARD

June 23, 2010

Project# 1000248
10DRB-70147 VACATION OF PUBLIC DRAINAGE EASEMENT

TIERRA WEST LLC agent(s) for WESTERN SECURITY REAL ESTATE request(s) the referenced/ above action(s) for two temporary drainage easements on a portion of Tract(s) A, **WEST RIDGE MOBILE HOME PARK** zoned SU-1 FOR MHP (Mobil Home Park), located on the north side of VOLCANO RD NW bewteen 98TH ST NW and 90TH ST NW containing approximately 27.4898 acre(s). (K-9)

At the June 23, 2010 Development Review Board meeting, the vacation was approved as shown on Exhibit B in the Planning file per section 14-14-7-2(A)(1) and (B) (1)(3) of the Subdivision Ordinance.

(A)(1) The public easement vacation request was filed by the owners of a majority of the footage of land abutting the proposed vacation.

(B)(1) The public welfare is in no way served by retaining the public easements.

(B)(3) There is no convincing evidence that any substantial property right is being abridged against the will of the owner of the right.

CONDITIONS:

1. The vacated property shall be shown on a replat approved by the Development Review Board and the approved replat shall be filed for record with the Bernalillo County Clerk's Office within one year.
2. Alternative drainage easements(s) shall be shown on the replat, to the satisfaction of the City Engineer.

If you wish to appeal this decision, you must do so by July 9, 2010 in the manner described below.

Appeal is to the Land Use Hearing Officer. Any person aggrieved with any determination of the Development Review Board may file an appeal on the Planning Department form, to the Planning Department, within 15 days of the Development Review Board's decision.

The date the determination in question is issued is not included in the 15-day period for filing an appeal.

If the fifteenth day falls on a Saturday, Sunday or holiday as listed in the Merit System Ordinance, the next working day is considered as the deadline for filing the appeal. Such appeal shall be heard within 60 days of its filing.

You will receive notice if any other person files an appeal. Successful applicants are reminded that other requirements of the City must be complied with, even after approval of the referenced application(s).

Please note that the vacation of all plats, rights-of-way, and easements are void after one year from the final appeal date referenced above if all conditions are not met (The effective date of Development Review Board approval is the hearing date plus the 15-day appeal period.) (REF: Chapter 14 Article 14 Part 7-2 (E)(3)(6) Revised Ordinance.)

Jack Cloud, AICP, DRB Chair

Cc: Tierra West LLC – 5571 Midway Park Place NE – Albuquerque, NM 87109
Western Security Real Estate – P.O. Box 65598 – Albuquerque, NM 87109
Marilyn Maldonado
Scott Howell
File

Pursuant to the New Mexico Title Insurance Law §59A-30-4 NMSA 1978, Control and supervision by superintendent and Title Insurance Regulation §13.14.18.10, NMAC, no part of any title insurance commitment, policy or endorsement form may be added to, altered, inserted in or typed upon, deleted or otherwise changed from the title insurance form promulgated by the New Mexico Superintendent of Insurance, nor issued by a person or company not licensed with regard to the business of title insurance by the New Mexico Superintendent of Insurance, nor issued by a person or company who does not own, operate or control an approved title abstract plant as defined by New Mexico law and regulations for the county wherein the property is located.

COMMITMENT FOR TITLE INSURANCE
SCHEDULE A

File No.: 01147-34117

1. **Effective Date:** December 30, 2016 at 8:00 A.M.

2. **Policy or Policies to be issued:** **Amount of Insurance**

   (a) A.L.T.A. Owner's Policy 2006 (Standard) $7,725,000.00

   Proposed Insured:

   NMAL West Ridge MHP, LLC, a Colorado limited liability company

   (b) A.L.T.A. Loan Policy 2006 (Standard)

   Proposed Insured:

   Bellwether Enterprise Mortgage Investments, LLC and/or Fannie Maetheir successors and/or assigns, as their interests may appear

3. **The estate or interest in the land described or referred to in this Commitment and covered herein is:**

   Fee Simple

4. **Title to the said estate or interest in said land is at the effective date hereof vested in:**

   West Ridge Limited Partnership, a New Mexico limited partnership

5. **The land referred to in this Commitment is described as follows:**

   Tract lettered "A" of West Ridge Mobile Home Park, as the same is shown and designated on the plat entitled "Corrected Plat of Tract 'A,' West Ridge Mobile Home Park, Albuquerque, Bernalillo County, New Mexico," filed in the office of the County Clerk of Bernalillo County, New Mexico, on December 15, 1998, in Plat Book 98C, Page 350.

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COMMITMENT FOR TITLE INSURANCE
SCHEDULE B
PART I

File No.: 01147-34117

The following are the requirements to be complied with:

1. Payment of the full consideration to, or for the account of, the grantors or mortgagors.

2. Payment of all taxes, charges, assessments, levied and assessed against subject premises, which are due and payable.

3. Satisfactory evidence should be had that improvements and/or repairs or alterations thereto are completed; that contractor, subcontractors, labor and materialmen are all paid.

4. Instruments necessary to create the estate or interest to be insured must be properly executed, delivered and duly filed for record, to wit:

    a. Execution and recordation of Warranty Deed from West Ridge Limited Partnership, a New Mexico limited partnership to NMAL West Ridge MHP, LLC, a Colorado limited liability company.

    b. Execution and recordation of Mortgage from NMAL West Ridge MHP, LLC, a Colorado limited liability company to Lender, securing its loan.

5. Provide this Company with official identification of all parties involved in this transaction before or at closing.

6. Payment of Taxes for the second half of 2016.

7. Release of Multifamily Mortgage, Assignment of Rents and Security Agreement executed by West Ridge Limited Partnership, a limited partnership organized and existing under the laws of New Mexico, payable to Walker & Dunlop, LLC, dated December 16, 2009, recorded December 16, 2009, as Doc. No. 2009136438, records of Bernalillo County, New Mexico, securing the original principal amount of $4,802,000.00, and assigned to Fannie Mae.

8. Termination of Financing Statement by and between West Ridge Limited Partnership, a New Mexico limited partnership, as Debtor, and Fannie Mae, as Secured Party, recorded December 16, 2009, as Doc. No. 2009136440, and amended by UCC Financing Statement Amendment (Continuation) recorded August 2, 2014, as Doc. No. 2014060685, records of Bernalillo County, New Mexico.

9. Provide this Company with the Partnership Agreement and any amendments made thereto of West Ridge Limited Partnership, a New Mexico limited partnership. NOTE: Stewart Title of Albuquerque, LLC reserves the right to make further requirements upon review of the above.

10. Provide this Company with a copy of the Operating Agreement(s) for NMAL West Ridge MHP, LLC, a Colorado limited liability company. NOTE: Stewart Title of Albuquerque, LLC reserves the right to make further requirements upon review of the above.

11. Provide this Company with a Limited Liability Company Resolution of NMAL West Ridge MHP, LLC, a Colorado limited liability company, naming the person(s) authorized to execute the Mortgage required as Item 4a above on behalf of said limited liability company. NOTE: Stewart Title of Albuquerque, LLC reserves the right to make further requirements upon review of the above.

12. NOTE: Underwriter approval is required on this transaction. Additional requirements and/or exceptions may be made at the direction of Stewart Title Guaranty Company.

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COMMITMENT FOR TITLE INSURANCE
SCHEDULE B
PART II

File No.: 01147-34117

Standard exceptions 1, 2, 3, and or 4, may be deleted from any policy upon compliance with all provisions of the applicable rules, upon payment of all additional premiums required by the applicable rules, upon receipt of the required documents and upon compliance with the company's underwriting standards for each such deletion. Standard exception 5 may be deleted from the policy if the name insured in the case of an owner's policy, or the vestee, in the case of a leasehold or loan policy, is a corporation, a partnership, or other artificial entity, or a person holding title as trustee. Except for the issuance of a U.S. policy form (NM7 or NM34), any policy to be issued pursuant to this commitment will be endorsed or modified in schedule B by the company to waive its right to demand arbitration pursuant to the conditions and stipulations of the policy at no cost or charge to the insured. The endorsement or the language added to schedule B of the policy shall read: "In compliance with Subsection D of 13.14.18.10 NMAC, the company hereby waives its right to demand arbitration pursuant to the title insurance arbitration rules of the American land title association. Nothing herein prohibits the arbitration of all arbitrable matters when agreed to by both the company and the insured."

Schedule B of the policy or policies to be issued will contain exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

1. Right or claims of parties in possession not shown by the public records.
2. Easements or claims of easements, not shown by the public records.
3. Encroachments, overlaps, conflicts in boundary lines, shortages in area, or other matters which would be disclosed by an accurate survey and inspection of the premises.
4. Any lien, claim or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Community property, survivorship, or homestead rights, if any, of any spouse of the insured (or vestee in a leasehold or loan policy)
6. Water rights, claims or title to water.
7. Taxes for the year 2017, and thereafter.
8. Defects, liens, encumbrances, adverse claims or other matters, if any, created first appearing in the public records or attaching subsequent to the Effective Date hereof but prior to the date the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by the Commitment.
9. All matters that may be shown on an Improvement Location Report or survey of the property, if one is provided to the title company.
10. Minerals of whatsoever kind, subsurface and surface substances, including but not limited to coal, lignite, oil, gas, uranium, clay, rock, sand and gravel in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto, whether or not appearing in the Public Records or listed in Schedule B. The Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interests that are not listed.
11. Reservations and exceptions in the Patent by the United States of America recorded on August 21, 1905, in Book 35, Page 91, records of Bernalillo County, New Mexico.
12. Easements and notes, and incidental purpose thereto, affecting the insured premises, as shown and set forth on the recorded plats, recorded in Plat Book 98C, Page 293; and recorded in Plat Book 98C, Page 350, records of

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Bernalillo County, New Mexico, and as shown on ALTA/NSPS Land Title Survey, prepared by Thomas D. Johnston, License No. 14269, dated December 14, 2016.

13. PNM Gas Services Right of Way Easement, and incidental purposes thereto, recorded February 5, 1999, in Book 9902, Page 6327, as Doc. No. 1999016380 records of Bernalillo County, New Mexico, and as shown on ALTA/ NSPS Land Title Survey, prepared by Thomas D. Johnston, License No. 14269, dated December 14, 2016.

14. Easement Encroachment Agreement by and between Fred N. Seeley, West Ridge Mobile Home Park and Public Service Company of New Mexico, a New Mexico Corporation for its Electric Services Division, recorded May 26, 1999, in Book 9907, Page 9095, as Doc. No. 1999069255, records of Bernalillo County, New Mexico, and as shown on ALTA/NSPS Land Title Survey, prepared by Thomas D. Johnston, License No. 14269, dated December 14, 2016.

15. Grant of Easement, and incidental purposes thereto, recorded August 19, 2003, in Book A62, Page 6107, as Doc. No. 2003146422, records of Bernalillo County, New Mexico.

16. Drainage Covenant recorded January 7, 2008, as Doc. No. 2008001771, records of Bernalillo County, New Mexico.

17. Agreement and Covenant recorded September 24, 1998, in Book 9816, Page 253, as Doc. No. 1998122071, records of Bernalillo County, New Mexico.

18. Agreement and Covenant recorded September 24, 1998, in Book 9816, Page 254, as Doc. No. 1998122072, records of Bernalillo County, New Mexico, and as shown on ALTA/NSPS Land Title Survey, prepared by Thomas D. Johnston, License No. 14269, dated December 14, 2016.

19. Agreement and Covenant recorded December 17, 1999, in Book 9916, Page 3749, as Doc. No. 1999154230, records of Bernalillo County, New Mexico.

20. Title to the manufactured and/or mobile homes presently located on the above described land is not insured herein and any loss or damage suffered as a result of the transfer of title to the manufactured and/or mobile homes or the removal of the manufactured and/or mobile homes from the above described land is not insured herein.

21. Any possible assessments for paving, sewer and water extension which are or might be a lien by law, but have not yet been filed for record in the office of the County Clerk of Bernalillo County, New Mexico.

22. Rights of tenants, as tenants only, with no preemptive rights to purchase all or any portions of said land, under unrecorded leases affecting portions of said land for the term and upon the terms, covenants, conditions and provisions therein.

End of Schedule B

In compliance with Subsection D of 13.14.18.10 NMAC, the Company hereby waives its right to demand arbitration pursuant to the Title Insurance Arbitration rules of the American Land Title Association. Nothing herein prohibits the arbitration of all arbitrable matters when agreed to by both the Company and the Insured.

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ALTA/NSPS LAND TITLE SURVEY

SURVEY LEGAL DESCRIPTION:

Tract lettered "A" of West Ridge Mobile Home Park, as the same is shown and designated on the plat entitled "Corrected Plat of Tract 'A,' West Ridge Mobile Home Park, Albuquerque, Bernalillo County, New Mexico," filed in the office of the County Clerk of Bernalillo County, New Mexico, on December 15, 1998, in Plat Book 98C, Page 350.

SURVEYOR'S CERTIFICATION:

TO:
(BUYER), MHP Funds, LLC
(LENDER), TBD
(TITLE COMPANY), Stewart Title Company
(UNDERWRITER), stewart Title Guaranty Company

This is to certify that this map or plat and the survey on which it is based were made in accordance with "Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys", jointly established and adopted by ALTA and NSPS in 2016, and includes Items 1, 2, 3, 4, 6, 7(a), 7(b), 7(c), 8, 9, 10 & 11(a) (location of utilities per visible, above-ground, on-site observation) of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA, NSPS and ACSM and in effect on the date of this certification, undersigned further certifies that the Positional Uncertainties resulting from the survey measurements made on the survey do not exceed the allowable Positional Tolerance.

Thomas D. Johnston, NMPS 14269
DECEMBER 14, 2016

WAYJOHN SURVEYING, INC.

THOMAS D. JOHNSTON
NEW MEXICO
14269
REGISTERED LAND SURVEYOR

NOTES CORRESPONDING TO SCHEDULE B:

FIDELITY NATIONAL TITLE INSURANCE COMPANY COMMITMENT NO. FT0001197840-DAMSR EFFECTIVE DATE MARCH 18, 2016 AT 8:00 A.M.

(11) Reservations and exceptions in the Patent by the United States of America recorded on August 21, 1905, in Book. 35, Page 91, records of Bernalillo County, New Mexico. Item affects subject property. Item is not plotted hereon. Item is blanket in nature.

(12) Easements and notes, and incidental purpose thereto, affecting the insured premises, as shown and set forth on the recorded plats, recorded in Plat Book 95C, Page 293; and recorded in Plat Book 98C, Page 350, records of Bernalillo County, New Mexico Item affects subject property. Item is plotted hereon. More particularly described as follows:
- a: 10' Public Utility Easement
- b: 20' Public Water & Emergency Access Easement
- c: Pond 2A – Temporary Drainage Easement
- d: Pond 2B – Temporary Private Drainage Pond

(13) PNM Gas Services Right of Way Easement, and incidental purposes thereto, recorded February 5, 1999, in Book 9902, Page 8327, as Doc. No. 1999016350 records of Bernalillo County, New Mexico. Item affects subject property. Item is plotted hereon. Item is a 10' wide easement centered on gas line.

(14) Easement Encroachment Agreement by and between Fred N. Seeley, West Ridge Mobile Home Park and Public Service Company of New Mexico, a New Mexico Corporation for its Electric Services Division, recorded May 26, 1999, in Book 9907, Page 9085, as Doc. No. 1999069255, records of Bernalillo County, New Mexico. Item affects subject property. Item is plotted hereon. Item is for the encroachment of the clubhouse within a 10' utility easement.

(15) Grant of Easement, and incidental purposes thereto, recorded August 19, 2003, in Book A62, Page 6107, as Doc. No. 2003146422, records of Bernalillo County, New Mexico. Item affects subject property. Item is not plotted hereon. Item is blanket in nature.

(16) Drainage Covenant recorded January 7, 2008, as Doc. No. 2008001771, records of Bernalillo County, New Mexico. Item affects subject property. Item is not plotted hereon. Item is blanket in nature.

(17) Agreement and Covenant recorded September 24, 1998, in Book 9818, Page 253, as Doc. No. 1998122071, records of Bernalillo County, New Mexico. Item does not affect subject property. Item is not plotted hereon.

(18) Agreement and Covenant recorded September 24, 1998, in Book 9818, Page 254, as Doc. No. 1998122072, records of Bernalillo County, New Mexico. Item affects subject property. Item is plotted hereon.

(19) Agreement and Covenant recorded December 17, 1999, in Book 9916, Page 3749, as Doc. No. 1999154230, records of Bernalillo County, New Mexico. Item does not affect subject property. Item is not plotted hereon.

SURVEYOR'S NOTES:

1. INGRESS AND EGRESS TO THE SUBJECT PROPERTY IS PROVIDED BY VOLCANO ROAD, NW, DEDICATED AND ACCEPTED RIGHTS-OF-WAY MAINTAINED BY THE CITY OF ALBUQUERQUE.

2. THE TITLE LINES AND ACTUAL POSSESSION LINES ARE THE SAME.

3. THE SUBJECT PROPERTY IS NOT SERVED AND IS NOT SERVICED BY ANY ADJOINING PROPERTY FOR DRAINAGE, INGRESS AND EGRESS EXCEPT AS SHOWN.

4. MONUMENTATION RECOVERED, ACCEPTED OR SET IS AS NOTED HEREON.

BASIS OF BEARINGS:

BEARINGS SHOWN HEREON ARE NEW MEXICO STATE PLANE GRID, BASED ON ALBUQUERQUE CONTROL SYSTEM MONUMENTATION. ALL BEARINGS AND DISTANCES ARE FIELD MEASURED. RECORD BEARINGS AND/OR DISTANCES ARE SHOWN IN PARENTHESES.

FLOOD INFORMATION:

THIS PROPERTY DOES LIE IN AN AREA COVERED BY A FORMAL F.E.M.A. FLOOD STUDY. PROPERTY LIES WITHIN ZONE "X" (NO Flood Hazard) AND ZONE "A" (UNDETERMINED BASE FLOOD ELEVATION) AND IS PARTIALLY SUBJECT TO 100-YEAR FLOOD HAZARDS. REFERENCE: FLOOD INSURANCE RATE MAP, ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO PANEL 350002 0328 J; EFFECTIVE DATE: NOVEMBER 4, 2016.

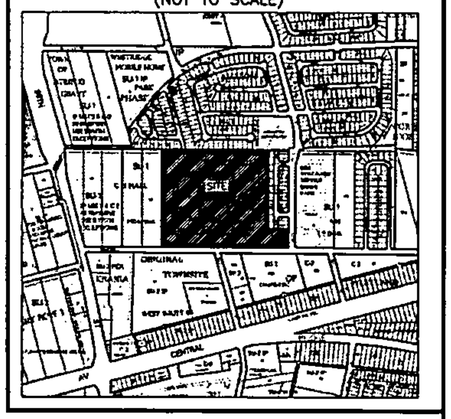
STATEMENT OF ENCROACHMENTS:

(A) CLUBHOUSE ENCROACHES INTO 10' UTILITY EASEMENT AS SHOWN. SEE ITEM 14 FOR ENCROACHMENT AGREEMENT.

(B) CLUBHOUSE ENCROACHES INTO PRIVATE DRAINAGE POND AS SHOWN.

(C) SHED AND/OR MOBILE HOME ENCROACHES INTO 10' PUBLIC UTILITY EASEMENT AS SHOWN.

VICINITY MAP
(NOT TO SCALE)



SITE RESTRICTIONS:

ZONING SU-1

SITE RESTRICTIONS ARE AVAILABLE FROM CITY OF ALBUQUERQUE ZONING CODE, CITY OF ALBUQUERQUE ZONING SUPPLEMENTARY CODES 2001-2003.
NO ZONING REPORT HAS BEEN RECEIVED AS OF THE TIME OF THIS SURVEY.

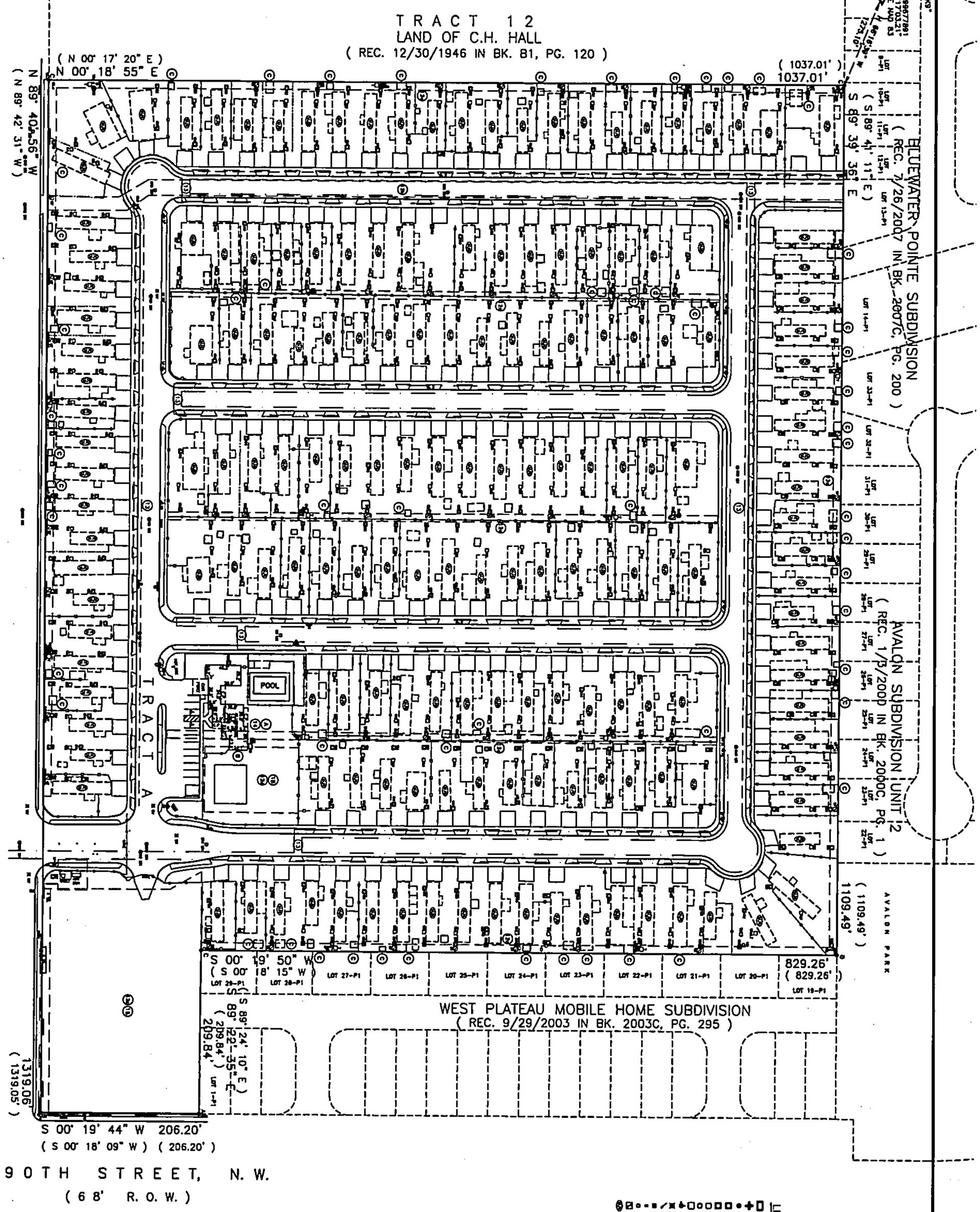
AREA:

PARKING:

WAYJOHN SURVEYING INC
330 Louisiana Blvd, N.E. Albuquerque, NM 87108
Phone: (505) 255-2052 Fax: (505) 256-2867

Date of Survey: 12/5-9/2016	Draftsman: J T K/L J P
Date of Last Revision: N/A	Job No.: ALTA-11-03-2016
SHEET 1 OF 2	

ALTA/NSPS LAND TITLE SURVEY



Thomas D. Johnston, NMPS 14269
DECEMBER 14, 2018
WAYJOHN SURVEYING, INC.

PNM JOB NO. 99107

PNM Electric Services

Alvarado Square, Albuquerque, New Mexico 87158

EASEMENT ENCROACHMENT AGREEMENT

THIS INFORMATION TO BE PROVIDED BY TITLE COMPANY

This Easement Encroachment Agreement made this 21ST day of MAY, 19 99

by and between (BUYER/BORROWER, OWNER) FREID N. SEELEY, WEST RIDGE MOBILE HOME PARK

whose address is 9301 VOLCANO NW, ALBUQUERQUE, NM

(hereinafter called "First Party"), (his) (her) (their) (its) heirs, successors and assigns, and PUBLIC SERVICE COMPANY OF NEW MEXICO, A New Mexico Corporation for it's Electric Services Division, (hereinafter called ("PNM") ("Parties").

WITNESSETH:

WHEREAS, PNM is the Grantee of a certain easement within the hereinafter described property.

WHEREAS, First Party desires to encroach upon the Easement as more particularly specified hereinafter, and WHEREAS, PNM has agreed to said encroachment: NOW, THEREFORE, for and in consideration of the sum of One and No/100 ($1.00) DOLLAR, in hand paid, and other valuable consideration, the receipt of which is hereby acknowledged, PNM does hereby grant First Party the right to encroach upon the Easement only to the extent of, and for the purposes set forth below:

PNM USE ONLY FOR LEGAL DESCRIPTION

Encroachment of a club house within a ten (10) foot utility easement in Tract A of WEST RIDGE MOBILE HOME PARK, filed for record in the office of the County Clerk in Bernalillo County in Plat Book 98C, Page 350 on December 15,1998.

Encroachment shown on Exhibit A "attached and made a part of this document.

1999069255
5220328
Page: 1 of 3
05/28/1999 08:59A
Bk-9887 Pg-9895
Judy D. Woodward Bern. Co. EASE R 11.00

By granting the aforesaid right to encroach PNM does not waive or relinquish any rights that it may have under or by reason of the Easement, including, but not limited to the right to build, rebuild, construct, reconstruct, locate, change, modify, renew, operate and maintain its electric lines (including underground lines), pole, guywires and other electric equipment, fixtures and structures that are now located, or may in the future be located, through, on, within, or under the Easement. First Party, at its sole cost and expense, agrees to remove or relocate its encroachment upon the written request of PNM within 90 days of such written request. First Party appoints PNM its agent to accomplish said removal or relocation at First Party's expense if First Party fails to remove or relocate such encroachment within such time period.

PNM 467 3/94

Land Records Corp. SW ALB10423 BE 1999069255.001

In consideration of PNM granting First Party the right to encroach upon the Easement, First Party hereby agrees to indemnify and hold harmless PNM, its agents and employees, from any and all claims whatsoever for personal injuries or damages to property when such injuries or damages directly or indirectly arise out of the existence, construction, maintenance, repair, condition, use or presence of the encroachment upon the Easement, regardless of the cause of said injuries or damages; provided, however, that notwithstanding anything to the contrary in this paragraph, First Party shall not be required to indemnify PNM for liability, claims, damages, losses or expenses, arising out of (a) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by PNM, or the agents or employees of PNM; or (b) the giving of or the failure to give directions or instructions by PNM, or the agents or employees of PNM, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

In consideration of PNM permitting First Party to encroach upon the Easement, First Party agrees that PNM shall not be responsible for any damage caused to facilities, equipment, structures or other property of First Party if damaged by reason of PNM's use of Easement.

First Party shall comply with all applicable laws, ordinances, rules and regulations enacted or promulgated by any federal, state or local governmental body having jurisdiction over First Party's encroachment.

The provisions hereof shall inure to the benefit of and bind the heirs, executors, administrators, personal representatives, successors and assigns of the Parties hereto; provided, however, that no such heir, executor, administrator, personal representative, successor or assign of First Party shall have the right to use, alter or modify the encroachment in a manner which will increase the burden of the encroachment on the Easement.

IN WITNESS WHEREOF, the Parties have executed this Agreement on the day and year first above written.

BUYER/BORROWER, OWNER (First Party):

X Fred N. Seeley

PUBLIC SERVICE COMPANY OF NEW MEXICO

BY: _____

PNM USE ONLY

STATE OF NEW MEXICO

COUNTY OF Bernalillo } SS

This instrument was acknowledged before me on MAY 26 19 99,

by Rubin Phillips

of the Public Service Company of New Mexico, a New Mexico corporation, for it's Electric Services Division on behalf of said corporation.

NOTARY PUBLIC

My Commission Expires: 5-17-00

STATE OF NEW MEXICO

X COUNTY OF VALENCIA } SS

This instrument was acknowledged before me on 21st MAY 19 99,

by FRED N. SEELEY, (WEST RIDGE MOBILE HOME PARK) WESTERN SECURITY REAL ESTATE, INC.

OFFICIAL SEAL
Karen Stewart
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 1-5-2003

NOTARY PUBLIC

My Commission Expires: 1-5-2003

FOR RECORDER'S USE ONLY

PNM REFERENCE NUMBER

1999069255
5228526
Page: 2 of 3
05/26/1999 09:59A
Bk-9997 Pg-9095
Judy D. Woodward Bern. Co. EASE R 11.00

PNM 467 3/98

Exhibit "A"

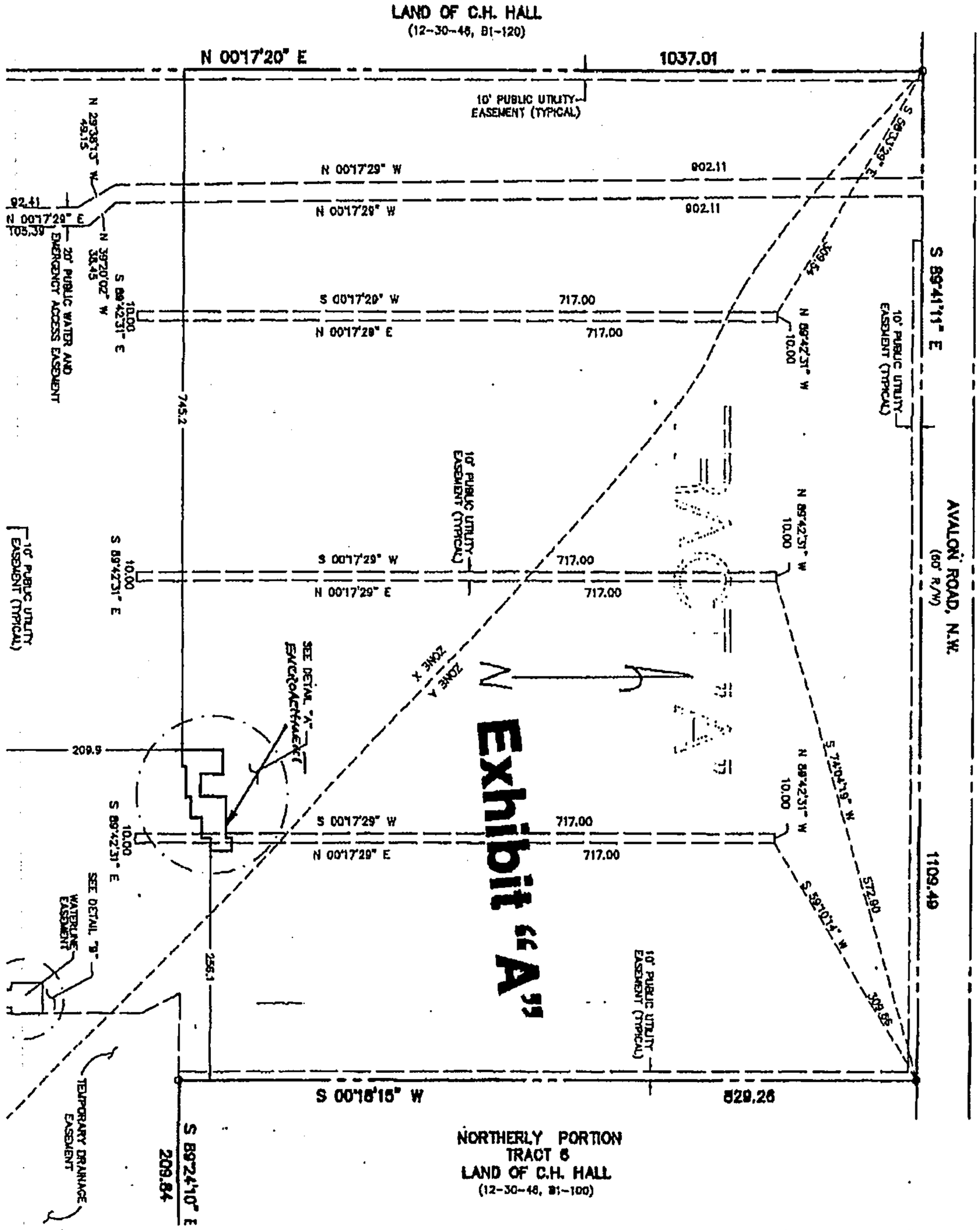
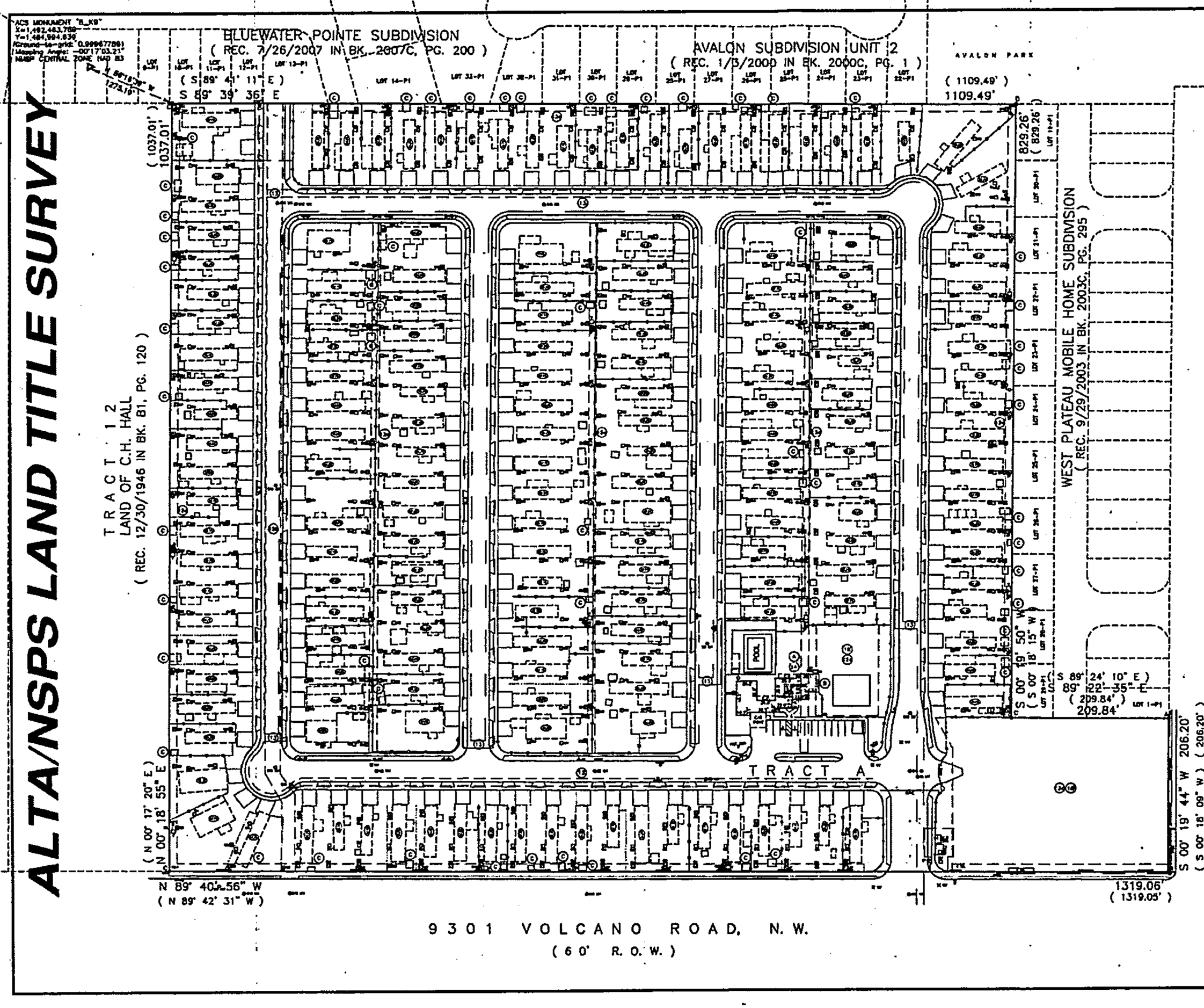


Exhibit "A"

ALTA/NSPS LAND TITLE SURVEY



Thomas D. Johnston, NMPS 14299
DECEMBER 14, 2016

WAYJOHN SURVEYING, INC.

THOMAS D. JOHNSTON
NEW MEXICO
14299
REGISTERED LAND SURVEYOR

LEGEND:

- DROP INLET
- LIGHT POLE
- POWER POLE
- ELECTRIC METER
- GAS METER
- WATER METER
- MANHOLE (TYPE)
- ELECTRIC TRANSFORMER
- FIRE HYDRANT
- WATER VALVE
- GUY ANCHOR
- IRRIGATION CONTROL VALVE/BOX
- TELEPHONE PEDESTAL
- CABLE TV PEDESTAL
- UTILITY CLUSTER WITH ELECTRIC, CABLE & TELEPHONE PEDESTALS
- MOBILE HOME, NOT ON FOUNDATION.
- CONCRETE
- OVERHEAD ELECTRIC LINES
- CHAIN LINK FENCE
- WOOD FENCE
- WROUGHT IRON FENCE
- WOVEN WIRE FENCE
- BLOCK WALL

SCALE: 1 INCH = 60 FEET

FOUND/SET MONUMENT LEGEND:
A: FOUND PK NAIL ON WALL - NO DISC
B: SET "+" IN CONCRETE
C: SET PK NAIL AND DISK "WAYJOHN PS 14299"
D: SET #4 REBAR WITH CAP "WAYJOHN PS 14299"

WAYJOHN SURVEYING INC
330 Louisiana Blvd. N.E. Albuquerque, NM 87108
Phone: (505) 256-2062 Fax: (505) 256-2897

Date of Survey: 12/5-9/2016 Draftsman: J T K/L J P
Date of Last Revision: N/A Job No.: ALTA-11-03-2016
SHEET 2 OF 2

Centurylink

CITY OF ALBUQUERQUE

December 17, 2010

Ronald R. Bohannan, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

Re: West Ridge MH Park Detention Pond
Grading and Drainage Plan
Engineer's Stamp dated 12-10-10 (K9-D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 12-13-2010, the above referenced plan is approved for Grading Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology along with a private facilities maintenance agreement.

A separate Work Order permit is required for construction within the city right of way.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge.

This project also requires a Topsoil Disturbance Permit since it is disturbing ¾ of an acre or more.

Upon completion of the project, provide an Engineer Certification for our files.

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

Sincerely,

Bradley L. Bingham, P.E., C.F.M.
City Hydrologist, Planning Department
Development and Building Services

C: File

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

CITY OF
Albuquerque

January 20, 1998

Martin J. Chávez, Mayor

Sara McCollam
Tierra West, LLC
4421 McLeod Road NE, Suite D
Albuquerque, New Mexico 87109

RE: Drainage Report and Grading and Drainage Plan for West Ridge Mobile Home Park (K9/D6) Submitted for Preliminary Plat, Site Development Plan, Building Permit and Grading Permit Approval, Engineer's Stamp Dated 1/9/98.

Dear Ms. McCollam:

Based on the information provided in the submittal of January 9, 1998, the above referenced plan and report are approved for Preliminary Plat, Site Development Plan and Building Permit Approval.

As you are aware, Agreement and Covenants are required for each of the proposed ponds prior to Work Order approval. The Grading and Drainage Certification is required prior to release of Financial Guarantees.

If you have any questions, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Ronald R. Bohannan, P.E.
Fred Seeley, Great Western Realty
File

FILE COPY

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz
Mayor

UTILITY DEVELOPMENT DIVISION
HYDROLOGY SECTION
(505) 768-2650

December 2, 1987

Leonard Utter
Tom Mann & Associates, Inc.
811 Dallas, NE
Albuquerque, New Mexico 87110

RE: GRADING & DRAINAGE PLAN SUBMITTAL OF VISTA DEL VALLE MOBILE HOME PARK RECEIVED NOVEMBER 20, 1987 FOR BUILDING PERMIT & WORK ORDER APPROVALS (K-9/D6) (W.O. #3313)

Dear Mr. Utter:

The above referenced submittal dated October 27, 1987, is approved although prior to sign-off on the final plat by the City Engineer or any Building Permits sign-offs by Hydrology, a Drainage Covenant requiring owner's maintenance of the temporary retention pond must be executed and filed with the County Clerk.

If you have any questions, please call me at 768-2650.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Hydrology Section

xc: Andre Houle, DRC
Gary Filhtner, Owner

RAG/bsj

City of Albuquerque

November 5, 1999

Ronald R. Bohannan, P.E.
Tierra West, LLC
4421 McLeod Road NE, Suite D
Albuquerque, New Mexico 87109

RE: ***Grading and Drainage Certification for West Ridge Mobile Home Park (K9/D6) Submitted for Release of Financial Guarantees and for Release of the Certificate of Occupancy for the Community Building, Engineer's Certification Stamp Dated 10/21/99.***

Dear Mr. Bohannan:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated January 27, 1998, and revised on July 7, 1998. However, prior to release of Financial Guarantees for this subdivision, the Letter of Map Revision (LOMR) must be received from the Federal Emergency Management Agency (FEMA).

The LOMR request was submitted to FEMA on October 14, 1999. If FEMA has no problem with the submittal, it is anticipated that the LOMR may be issued within the next month or two.

The above referenced plan is also adequate for release of the Certificate of Occupancy for the Community Center.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Terri Martin, DRB 97-451, City Project No. 593081
Whitney Reierson, City Hydrology
Fred Seeley, Great Western Realty
File

K9/D6

DRAINAGE REPORT

for

West Ridge Mobile Home Park

Prepared by

Tierra West, LLC
4421 McLeod Road NE, Suite D
Albuquerque, New Mexico 87109

Prepared for

Fred Seeley
Great Western Realty
3511 Carlisle Blvd, NE
Albuquerque, New Mexico 87107

RECEIVED
JAN 09 1998
HYDROLOGY SECTION

October 1997

Ronald R. Bohannan P.E. No. 7868

REGISTERED RONALD RAY BOHANNAN NEW MEXICO PROFESSIONAL ENGINEER

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-8088 FAX (505) 888-6188

May 19, 1999

Ronald Bohannan, PE
Tierra West LLC
4421 McLeod Road NE
Albuquerque, New Mexico 87109

SUBJECT: AVALON SUBDIVISION, UNIT 2

Dear Ron:

Pursuant to our telephone conversation on May 14, 1999 this letter shall formally confirm our understanding of the drainage conditions proposed by Avalon Subdivision Unit 2 with regard to Phase 2 of the West Ridge Mobile Home Park (WRMHP). Per the Drainage Report for WRMHP, Phase 2 of the park was programmed to drain into a 36 inch storm drain to be constructed in 94th Street. Avalon subsequently updated the WRMHP Plan by moving the storm drain to Bluewater and 90th Street. To give Phase 2 a drainage outfall, Avalon originally proposed to construct a storm drain from the southwest corner of Avalon, through the subdivision, to a community detention pond at 90th Street.

We would like to reduce our infrastructure demand by taking advantage of your offer to rout developed flows from Phase 2 through the mobile home park to the existing ponding areas. We would provide an interim pond at the southeast corner of the tract to retain undeveloped flows.

Your acknowledgment of our agreement by signing below will allow us to proceed with Preliminary Plat approval, which is up for renewal on May 26, 1999.

If you have any questions please call.

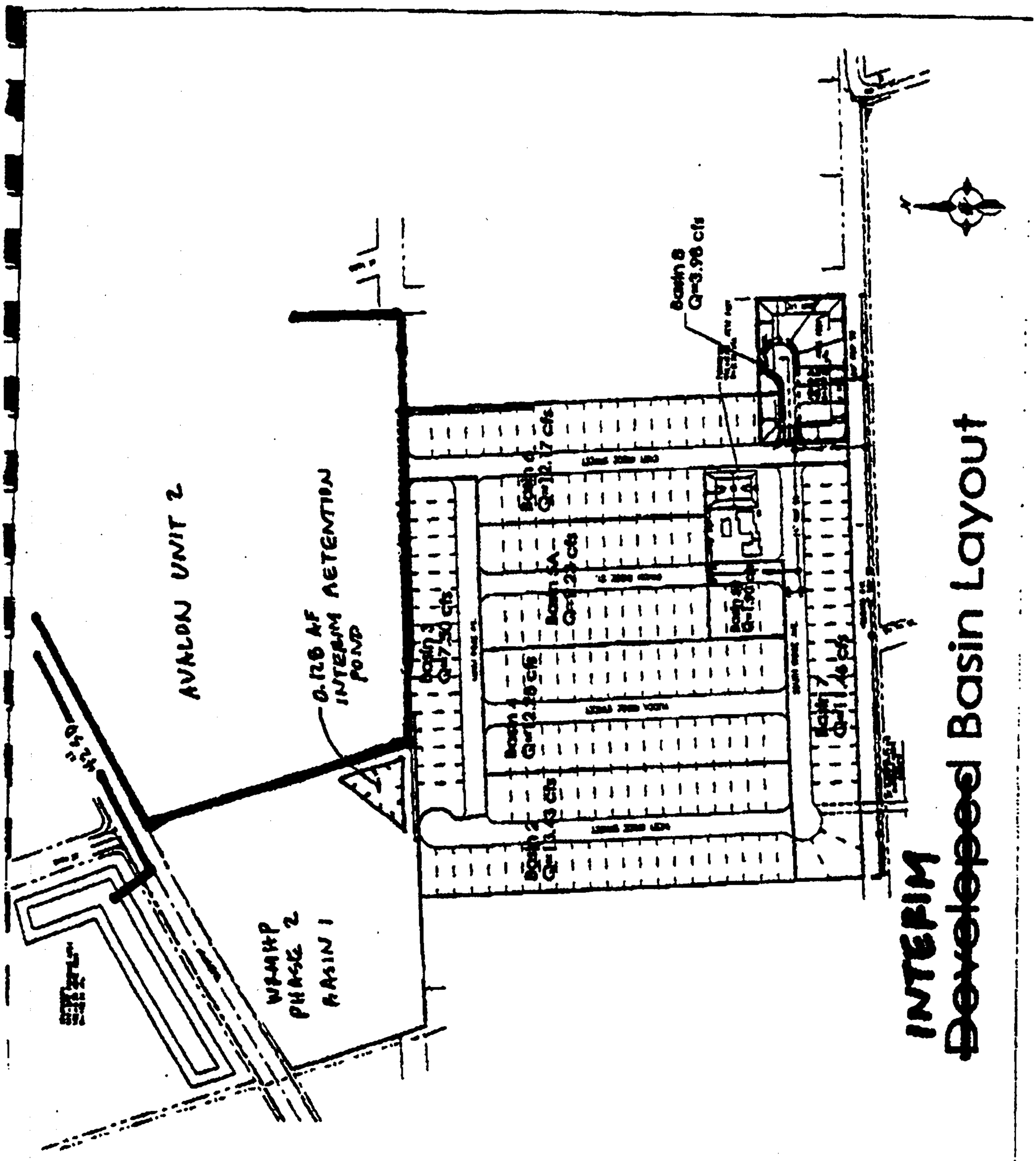
Sincerely,

BRASHER & LORENZ, INC.

Dennis A. Lorenz, PE
Principal

Ronald Bohannan, PE Date
Agent for West Ridge Mobile Home Park

/dl/99504
Encl
CC: Bo Johnson, 5905 Azueko Ct. NW, Albq, NM 87120


AVALON UNIT 2
0.126 AF INTERIM AETENTION POND
WHMHP PHASE 2 BASIN 1
Basin 8 Q=3.98 cfs
INTERIM Developed Basin Layout

ON-SITE DRAINAGE BASINS

Existing

BASIN	AREA (SF)	AREA (AC)	AREA (MI²)
1	298683.06	6.8568	0.010714
2	223543.54	5.1319	0.008019
3	124717.65	2.8631	0.004474
4	204349.12	4.6912	0.007330
5A	153472.50	3.5232	0.005505
5B	31237.50	0.7171	0.001120
6	202495.68	4.6487	0.007264
7	190736.43	4.3787	0.006842
8	65979.78	1.5147	0.002367
	1495215.26	34.3254	0.053633

RUNOFF CALCULATION RESULTS

Existing

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	8.84	3.02	0.382	0.128
2	6.62	2.26	0.286	0.096
3	3.69	1.26	0.159	0.053
4	6.05	2.07	0.261	0.088
5A	4.54	1.55	0.196	0.066
5B	0.93	0.32	0.040	0.013
6	5.99	2.05	0.259	0.087
7	5.65	1.93	0.244	0.082
8	1.96	0.67	0.084	0.028
	44.27	15.13	1.911	0.641

Proposed

SUB-BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	21.26	13.69	1.049	0.649
2	13.43	8.07	0.644	0.372
3	7.50	4.51	0.359	0.208
4	12.28	7.37	0.589	0.340
5A	9.23	5.54	0.442	0.255
5B	1.90	1.14	0.090	0.052
6	12.17	7.31	0.583	0.337
7	11.46	6.88	0.549	0.317
8	3.98	2.39	0.190	0.110
	93.21	56.9	4.495	2.640

DRAINAGE REPORT

for

West Ridge Mobile Home Park

Prepared by

Tierra West, LLC
4421 McLeod Road NE, Suite D
Albuquerque, New Mexico 87109

Prepared for

Fred Seeley
Great Western Realty
3511 Carlisle Blvd, NE
Albuquerque, New Mexico 87107

RECEIVED
JAN 0 9 1998
HYDROLOGY SECTION

October 1997

RONALD RAY BOHANNAN
NEW MEXICO
REGISTERED
PROFESSIONAL ENGINEER
7868

Ronald R. Bohannan P.E. No. 7868

TABLE OF CONTENTS

Zone Atlas Map K-9 1

Location 2

FEMA Map and Soil Conditions 2

Off-site Drainage Management Plan 2

FIRM Map 350001C0328 D 3

Interim Solution 4

Off-site Undeveloped Basin Layout 5

Future Solution 6

City of Albuquerque Developed Basin Map 7

On-Site Drainage Management Plan 8

Developed Basin Layout 9

Summary 12

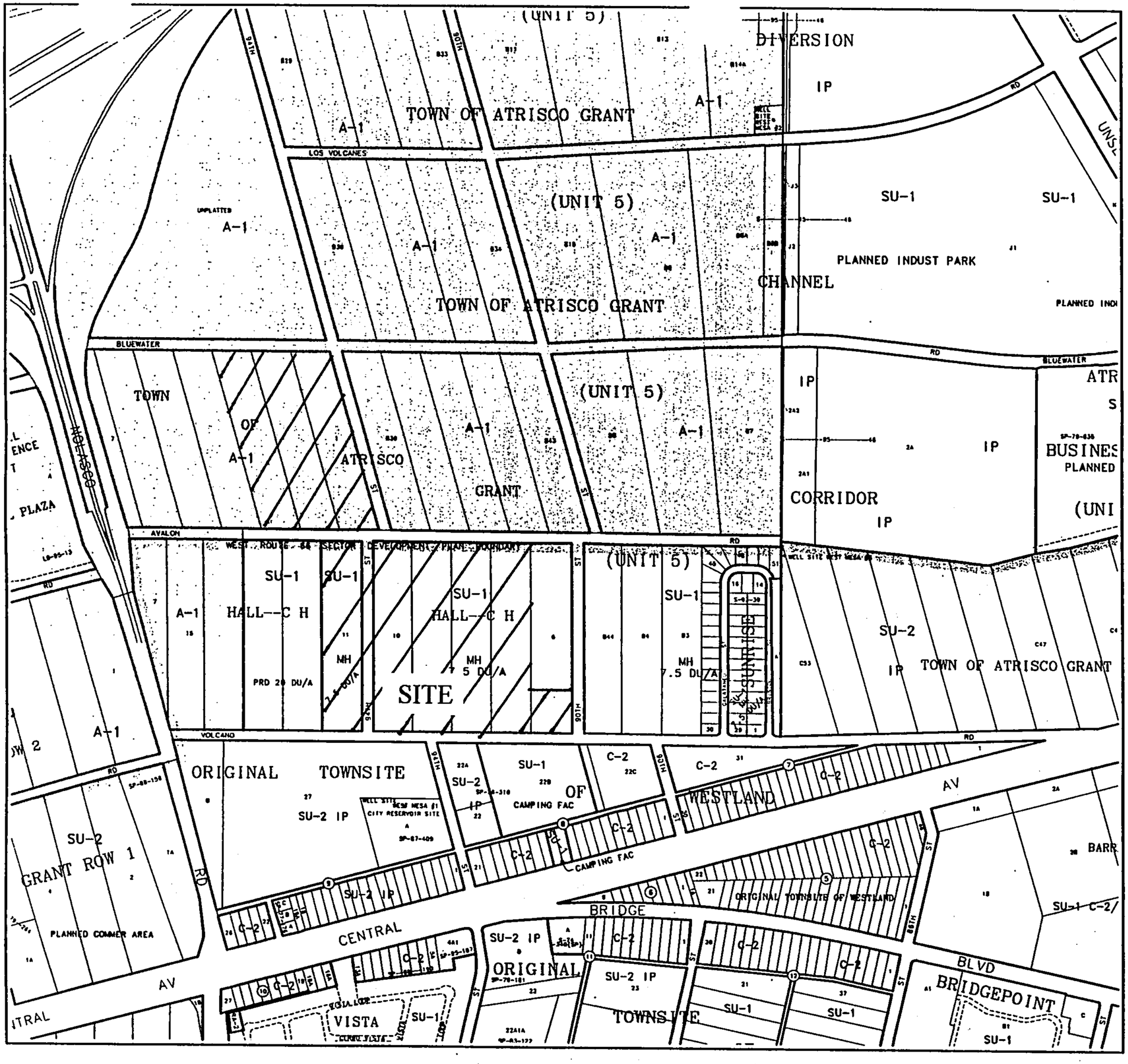
Runoff Calculations 14

Street Capacity 19

Storm Sewer 29

Pond Calculations 38

AHYMO Runoff Input and Summary Output for Proposed and Existing Drainage Basins 53



GRAPHIC SCALE IN FEET

250 0 500 1000

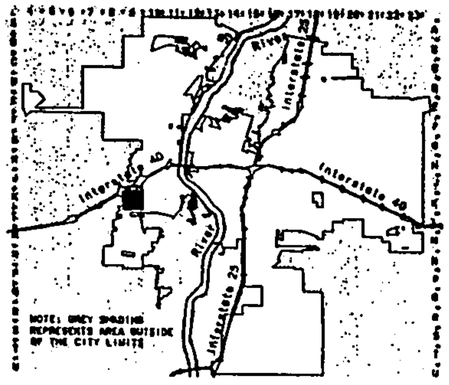
CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

©Copyright 1997

Map Amended through February 17, 1997



LEGAL DESCRIPTION

T10N

R2E

SEC 21

UNIFORM PROPERTY CODE

1-009-067

K-9-Z

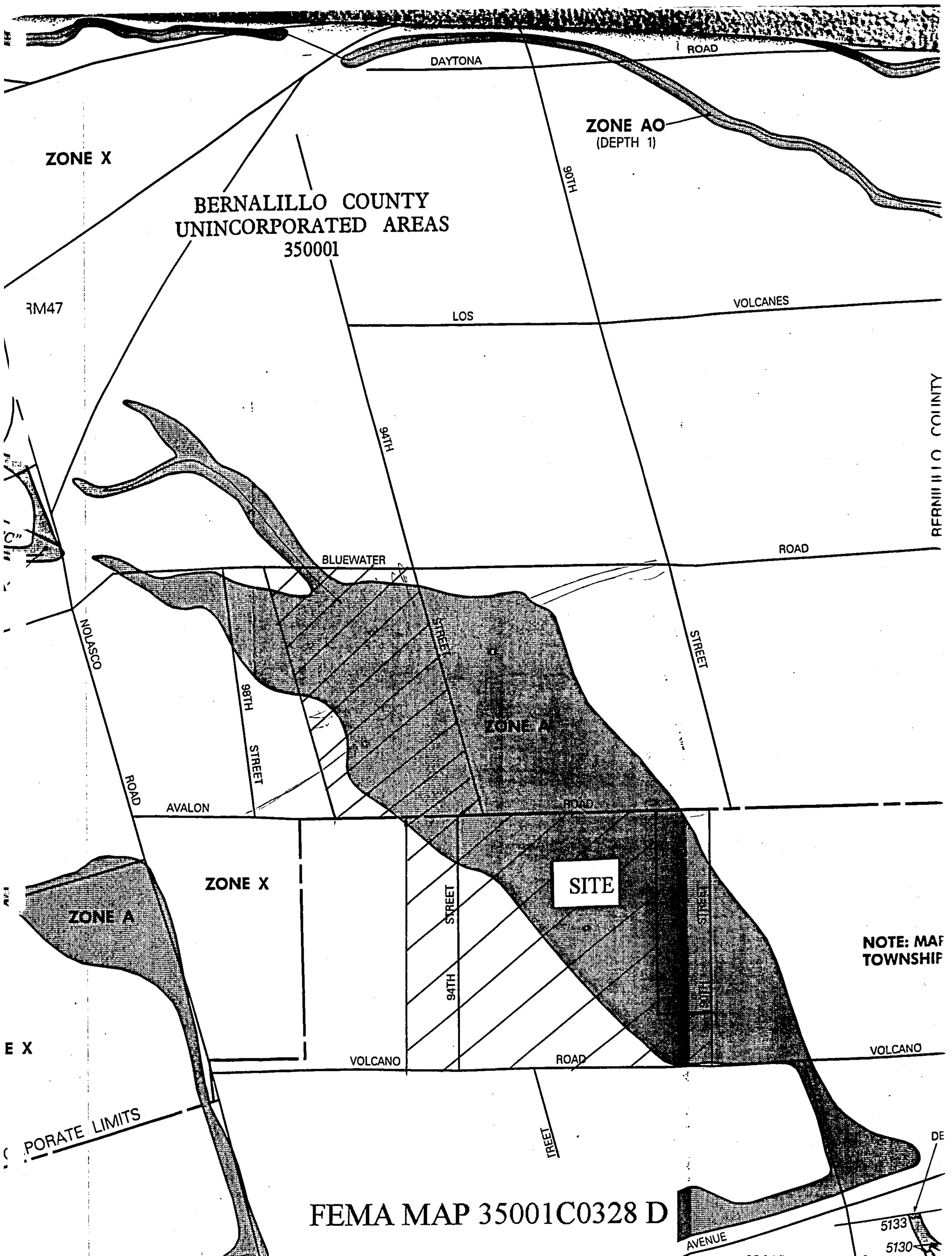
Location

West Ridge Mobile Home Park is located south of Avalon Road between 90th and 94th Streets. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 27.4 acres. The site is identified as Tracts 6, 7, 8, 9, 10, and 11 of C.H. Hall. The purpose of this report is to provide the drainage analysis and management plan for the mobile home park. An RV park is Phase II of the project and is included to the north of the mobile home park. The drainage solution for the RV park is provided here although it is conceptual and a detailed report will be provided when the park is developed.

FEMA Map and Soil Conditions

The site is located on FIRM Map 35001C0328 D as shown on the attached excerpt. The map shows that the site lies within a 100 year flood plain. A Letter of Map Revision (LOMR) will be submitted for the site that will remove the 100 year flood plain. The LOMR will only affect the flood plain downstream of the site and will not remove the flood plain north of the site. Future upstream development will have to submit additional LOMRs after upstream improvements are constructed. The residents of the site will be required to acquire flood insurance until improvements are constructed that remove the flood plain and the LOMR is approved.

The site contains two different soils from the Soil Conservation Service Soil Survey of Bernalillo County. The first is a Pajarito loamy fine sand which has moderately rapid permeability. The second soil is a Bluepoint loamy fine sand and has rapid permeability. Runoff is slow and the hazard of soil blowing is severe for both soils.


DAYTONA
ROAD
ZONE AO
(DEPTH 1)
ZONE X
90TH
BERNALILLO COUNTY
UNINCORPORATED AREAS
350001
VOLCANES
LOS
94TH
BLUEWATER
ROAD
NOLASCO
ROAD
98TH
STREET
STREET
STREET
ZONE A
AVALON
ROAD
ZONE X
SITE
ZONE A
STREET
94TH
VOLCANO
ROAD
VOLCANO
STREET
FEMA MAP 35001C0328 D
AVENUE
5133
5130

Off-site Drainage Management Plan

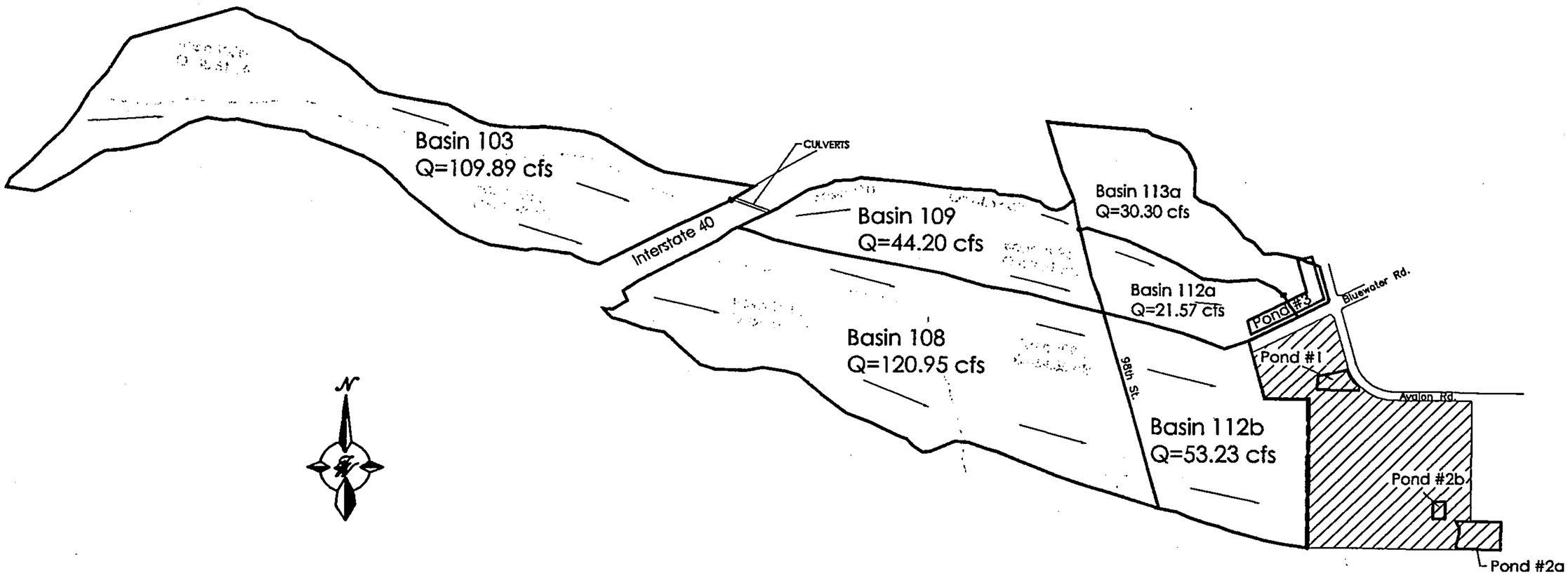
The site is currently undeveloped and drains to the southeast with 44.27 cfs of undeveloped runoff. The offsite undeveloped flows impacting the site have been divided into six basins, Basins 103, 108, 109, 112a, 112b, and 113a. These six basins consist of several smaller basins that were used for ease in computation but are not needed for narrative purposes. Basin 103 consists of basins 103a and 103b. Basin 108 consists of basins 108.1 and 109a. Basin 109 consists of basins 109b and 110. (see attached exhibit). These basins directly impact the site from the northwest.

Undeveloped flows that consist of Basins 103, 109, 112a, 113a will be cut off from the site by Bluewater Road. This undeveloped offsite flow will be ponded in an temporary off-site pond north of Bluewater Road and west of 94th Street (Pond 3). Pond 3 will be designed for the undeveloped upstream runoff. The pond will not have capacity for developed flows and is not intended as an outfall for upstream basins. Offsite Basins 108, and 112b will be captured in a proposed 48" RCP storm sewer in Volcano Road and routed to a proposed retention pond on the mobile home park site (Pond 2a).

In the future, the developed flows from the west will be cut off by Interstate 40 and 98th Street. The temporary retention ponds will be removed and the proposed storm sewer will be designed for the developed flows east of 98th Street.

Interim Solution

Basin 103 consists of the area west of Interstate 40. Basin 103 has an undeveloped runoff of 109.89 cfs . This basin flows southeast and passes under the Interstate through a series of existing culverts. The runoff will be detained in a temporary off-site retention pond located north of Bluewater Road (Pond 3). In the future, the developed runoff from Basin 103 will not affect the site as it will be contained at the Interstate with the I-40 Interceptor Project.



Off-Site Undeveloped Basin Layout

Basins 109 is located between Interstate 40 and 98th Street. Basin 109 has an undeveloped runoff flow of 44.20 cfs. This basin drains southeast towards the site and will be contained in the same temporary off-site retention pond (Pond 3) located north of Bluewater Road (Pond 3). In the future, Basin 109 will be intercepted by 98th Street and will not affect the site.

Basin 112a will have an undeveloped runoff of 21.57 cfs and is located between 98th Street and the site. This runoff will be captured in the temporary retention pond (Pond 3) located north of Bluewater Road.

Basin 113a will have an undeveloped runoff of 30.30 cfs and is located north of basin 112a and east of 98th Street. The basin consists of the northern portion of the floodplain impacting the site. This runoff and the floodplain will be captured in the temporary retention pond (Pond 3) located north of Bluewater Road.

The proposed off-site retention pond (Pond 3) is located north of Bluewater Road. It will collect a total flow of 205.96 cfs. The pond has a capacity of 6.46 ac-ft which is greater than the required capacity of 5.86 ac-ft. In the event of an emergency, the runoff will overflow from a 70.0 foot wide spillway. The pond will be removed after 98th Street is improved and the offsite basins intercepted.

Basin 108 drains east towards the site and is too far south to be captured in the temporary retention pond near Bluewater Road. Basin 108 has an undeveloped runoff of 120.95 cfs. This basin will sheet flow east until it reaches the western edge of the mobile home park and is directed south to Volcano Road via a waterproofed wall. The flows will then be conveyed to Volcano Road and captured in a cattleguard inlet. The proposed 48" RCP storm drain in Volcano Road has been designed to have capacity for the undeveloped flows from west of the site. The 48" RCP storm drain will transport the off-site flows to a proposed on-site temporary retention pond (Pond 2a). In the future, Basin 108 will be intercepted by

improvements in 98th Street and will no longer affect the site.

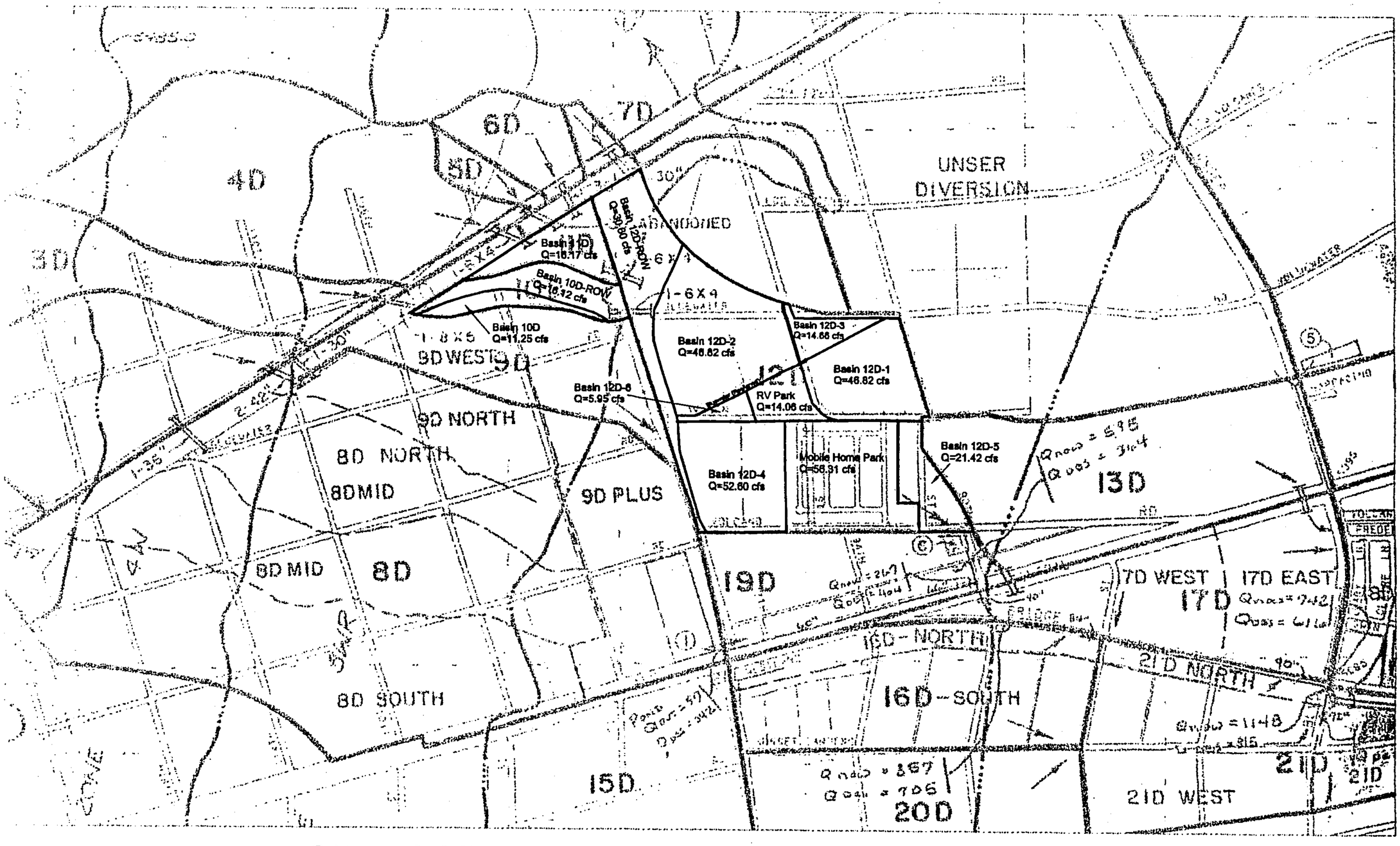
Basin 112b will flow east with an undeveloped runoff of 53.23 cfs. This basin is located between 98th Street and the site, and south of Basin 112a. Basin 112b will be captured by the storm drain in Volcano Road and conveyed to the proposed on-site retention pond (Pond 2a).

Offsite basins 108, and 112b will drain to a proposed on-site retention pond (Pond 2a) located in the southeast corner of the mobile home park. A total of 10.43 ac-ft of volume from the undeveloped off-site flows and the developed on-site flows must be ponded on the site. There will be a large pond (Pond 2a) in the southeast corner of the mobile home park and a second smaller pond (Pond 2b) located near the basketball court in the center of the site. Pond 2a will have a capacity of 9.9813 ac-ft and Pond 2b will have a capacity of 0.49 ac-ft. These two ponds total 10.47 ac-ft which is greater than the 10.43 required. In the event of an emergency, the runoff from Pond 2a will overflow from a 90.0 foot wide spillway.

The proposed 48" RCP storm drain in Volcano Road has been designed to carry the undeveloped flow of 174.18 cfs from the offsite basins to the retention pond (Pond 2a). A cattle guard inlet will capture the offsite flows as they enter Volcano Road at the west end of the mobile home park. In the future, when downstream improvements are constructed, the on-site retention ponds will be removed and a permanent detention pond constructed. The upstream basins will be cut off at 98th Street when upstream improvements are constructed. The storm drain in Volcano Road will be required to convey the offsite developed basin 12D-4 with a developed runoff flow of 52.60 cfs and the controlled discharge from the site of 56.31 cfs, which is a total of 108.91 cfs.

Future Solution

The developed future basins are based on the City of Albuquerque's long range storm sewer plan for the 98th Street and I-40 area. According to this plan, the site is located within



City of Albuquerque Developed Basin Map
Sub-basins for Storm Sewer Analysis

Basin 12D (see attached developed offsite basin map). Basins 10D and 11D are routed through Basin 12D. Basin 10D and 11D are located northwest of the site between 98th Street and I-40. Basin 12D includes the area north of the site all the way to I-40. These three basins flow to a proposed 66" storm drain in 90th Street.

The original hydrology for the proposed storm drain in 90th Street estimated the flow from Basins 10D, 11D, and 12D to be 364 cfs. New hydrology for the area estimates the developed runoff for the area as 595 cfs. The proposed 66" RCP in 90th Steet was designed using the old hydrology and will not have capacity for the new runoff flow of 595 cfs. The City of Albuquerque has made no provisions for the discrepancy. For the purposes of this report, we have assumed each tract will be required to detain the difference in flows onsite. A portion of each basin is right-of-way belonging to the State Highway Department. This ROW is undeveloped with no improvements planned. This land cannot be expected to detain the difference in flows. The undeveloped right-of-way will discharge a total of 63.09 cfs. This leaves 300.70 cfs for the developable portion of the basins to discharge. There is a total of 146.94 developable acres in the three basins. This will be an allowable discharge of 2.05 cfs/acre, not including the ROW which will discharge the existing undeveloped flow rate. The allowable discharge rate includes street flow from streets within and adjacent to each parcel.

This offsite flow must be routed around the site in a storm sewer system located within the public streets. A 48" RCP storm sewer in Bluewater west of 94th Street will collect the offsite flows from the north, which includes Basins 10D, 11D, and 12D-2 and the ROW areas. This is a total developed flow of 152.49 cfs. The storm drain in Bluewater will connect to a proposed 48" RCP storm sewer in 94th Street. The storm drain in 94th Street will connect to a 54" storm drain Avalon. This system will convey the developed flows from the RV Park, Basin 12D-6 and Basin 12D-1, located south of Bluewater Road and north of Avalon Road, and also the incoming flows from the Bluewater storm drain. The Avalon storm sewer will convey a total

of 219.32 cfs from the developed upland basins and the RV park. The 54" storm drain in Avalon will flow east to 90th Street. A second storm drain located west of 94th Street in Bluewater will convey the 14.66 cfs from Basin 12D-3 via a 24" pipe to 90th Street. At 90th Street the 60" RCP storm drain will flow south until it connects with the proposed 66" storm sewer located at the intersection of 90th Street and Volcano Road.

The storm sewer in Volcano Road will collect the flow from the west of the site. The developed offsite basin 12D-3 has a developed runoff of 52.60 cfs. A 48" RCP storm drain in Volcano Road will collect the developed flows from Basin 12D-3. This storm drain has been sized for the offsite undeveloped flow rate of 174.18 and will have capacity for the 52.60 of developed future offsite flows.

When the temporary on-site retention pond is removed, the developed flows from the mobile home park will drain to the storm drain in Volcano Road. The 48" RCP storm drain will contain 108.91 cfs at this point. The 60" RCP in north 90th Street will connect to the storm drain in Volcano and a total of 364.31 cfs will continue to drain east in a 66" RCP in Volcano Road to south 90th Street. This storm sewer will connect to the proposed 66" storm sewer in 90th Street and the flows conveyed south to the eventual outfall.

On-Site Drainage Management Plan

The proposed drainage solution is to route the onsite runoff to three temporary retention ponds located onsite. One retention pond (Pond 1) will be located on the future RV park site. The other two ponds (Ponds 2a and 2b) will be located on the proposed mobile home park site. The undeveloped offsite runoff from basins 108 and 112b will be ponded in the mobile home park site in the onsite retention pond (Ponds 2a).

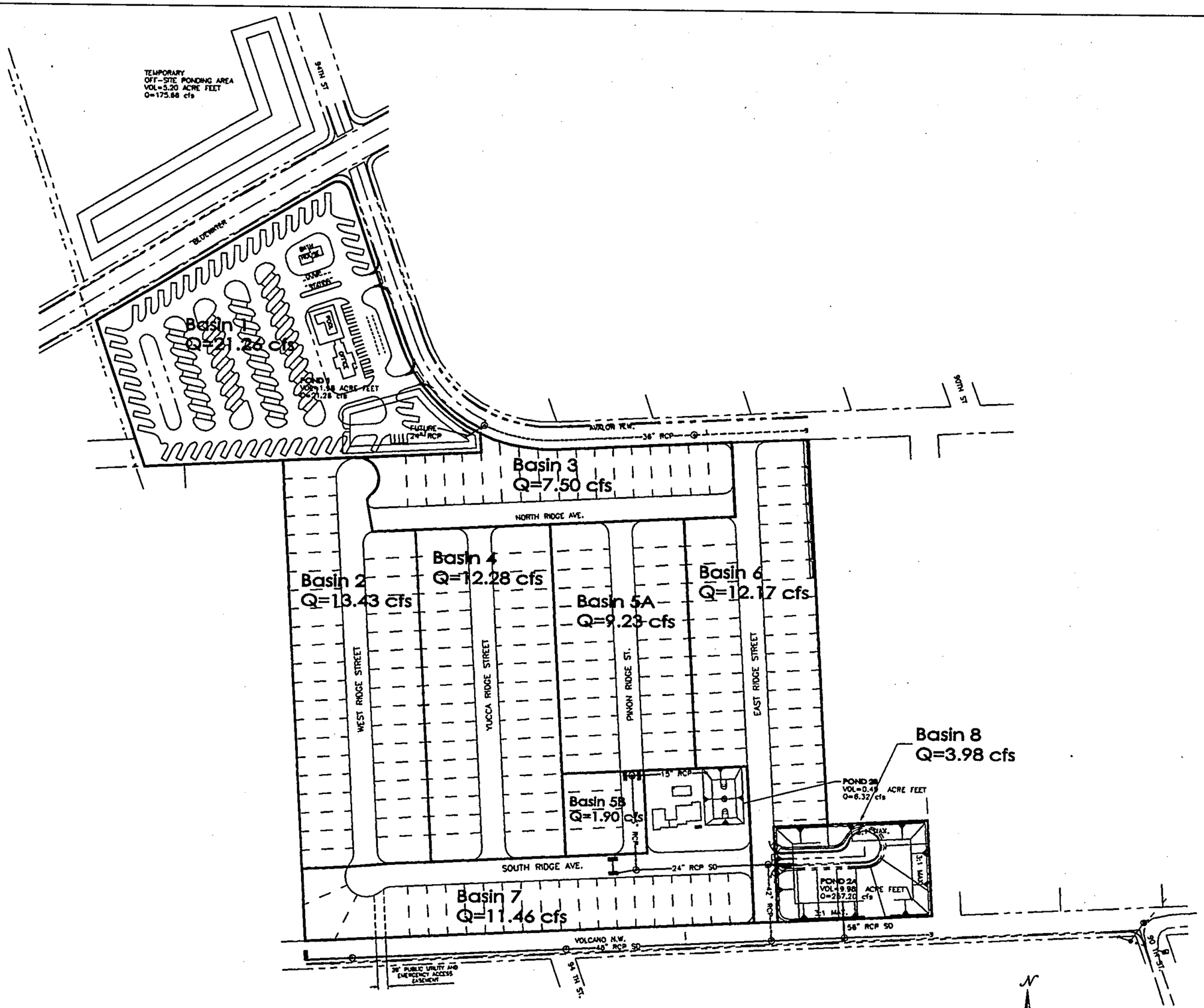
In the future, the developed flows from offsite basins Basin 103, 108, and 109 will be intercepted by Interstate 40 and 98th Street. The offsite developed runoff from basins 112a

and 113a will be included in the developed basin 12D-2 captured in a proposed storm drain in Bluewater Road. The offsite developed runoff from basin 112b will be part of the developed basin 12D-4 and will be conveyed by the proposed 48" storm drain in Volcano Road to a proposed 66" storm drain in 90th Street. At this time the temporary onsite retention ponds (Ponds 2a and 2b) will be removed and a permanent detention pond constructed. The mobile home park will drain to the proposed storm sewer in Volcano Road. The onsite retention pond (Pond 1) in the RV park will also be removed and a permanent detention pond constructed in its place. The RV park will drain to a proposed 60" storm drain in Avalon Road.

The site contains eight on-site proposed basins. The basins, the runoff values and the ponding location are shown in the following table.

Basin	Runoff (cfs)	Location
1	21.26	Pond 1
2	13.43	Pond 2a
3	7.50	Pond 2a
4	12.28	Pond 2a
5a	9.23	Pond 2b
5b	1.90	Pond 2a
6	12.17	Pond 2a
7	11.46	Pond 2a
8	3.98	Pond 2a

Basin 1 consists of the future proposed RV park and will drain to a proposed temporary retention pond (Pond 1) located in the southeast corner of the basin. Basin 1 has 21.26 cfs of developed runoff flow. Pond 1 will have a capacity of 1.9842 ac-ft which is greater than the required capacity of 1.8073 ac-ft. In the event of an emergency, the runoff will overflow from a 20.50 foot wide spillway. When the area is fully developed the retention pond will be removed and a permanent detention pond constructed. The detention pond will drain to a proposed 60" RCP storm drain in Avalon Road. The storm drain in Avalon Road has been designed to carry



Developed Basin Layout

the developed controlled flows from the RV park, the developed flows from the upstream basin 12D-1 and 12D-6 and the incoming flows from the Bluewater storm sewer.

The on-site basins 2 thru 8 consist of the mobile home park and will drain to the two proposed retention ponds (Pond 2a and Pond 2b) located in the southeast corner of the mobile home park. A proposed 24" RCP storm drain system in South Ridge Avenue will collect the flows from the site and convey them to retention Pond 2a. An eight foot channel will transport the flows that are not intercepted by the proposed 24" RCP storm drain system into Pond 2a. A total of 65.6 cfs will be retained from the mobile home park in Pond 2a. An 18" RCP pipe with a 13" orifice plate in Pinon Ridge Street will convey 6.32 cfs from Basin 5A into Pond 2b. The remaining flow from Basin 5A will drain to Pond 2a. When the retention ponds are removed the 18" storm drain will connect to the 24" RCP storm drain in South Ridge Street and eventually drain to the proposed 48" RCP in Volcano Road.

Summary

Basin 1 consists of the RV park and a total of 21.26 cfs will be ponded in a proposed on-site retention pond. Basin 2 thru 8 consist of the mobile home park and will be ponded in two proposed on-site retention ponds. When downstream improvements are constructed the retention ponds will be removed and permanent detention ponds constructed.

The offsite flows from the northwest (Basins 103, 109, 112a, and 113a), will be ponded in a temporary retention pond located north of Bluewater Road (Pond 3). When upstream improvements are constructed the offsite flows will be cut off at 98th Street and the retention pond removed. The storm drain in Bluewater will be designed the convey the offsite developed basin east and north of 98th Street.

The offsite flows from the west (Basins 108, and 112b), will be retained in the two proposed retention on-site ponds in the mobile home park (Pond 2a and 2b). When

downstream improvements are constructed the ponds will be removed and a permanent detention pond constructed. The site will discharge to Volcano Road at a controlled rate. The developed flows from the west will be cut off at 98th Street and the developed flows from east of the site will be conveyed via the 48" RCP pipe in Volcano Road. Storm drains in Bluewater and Avalon will convey the flow from the developed basin (Basin 12D) to the proposed 66" storm drain located at 90th Street and Volcano.

3-2-11

RUNOFF CALCULATIONS

The site is @ Zone 1

LAND TREATMENT

Proposed
B = 20%
C = 20%
D = 60 %

Existing
B = 100%

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 1.87 inches

P_{360} = 2.20 inches

P_{1440} = 2.66 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 1.87 x 0.667
= 1.25 inches

P_{360} = 1.47

P_{1440} = 1.77

ON-SITE DRAINAGE BASINS

Existing

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
1	298683.06	6.8568	0.010714
2	223543.54	5.1319	0.008019
3	124717.65	2.8631	0.004474
4	204349.12	4.6912	0.007330
5A	153472.50	3.5232	0.005505
5B	31237.50	0.7171	0.001120
6	202495.68	4.6487	0.007264
7	190736.43	4.3787	0.006842
8	65979.78	1.5147	0.002367
	1495215.26	34.3254	0.053633

RUNOFF CALCULATION RESULTS

Existing

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	8.84	3.02	0.382	0.128
2	6.62	2.26	0.286	0.096
3	3.69	1.26	0.159	0.053
4	6.05	2.07	0.261	0.088
5A	4.54	1.55	0.196	0.066
5B	0.93	0.32	0.040	0.013
6	5.99	2.05	0.259	0.087
7	5.65	1.93	0.244	0.082
8	1.96	0.67	0.084	0.028
	44.27	15.13	1.911	0.641

Proposed

SUB-BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	21.26	13.69	1.049	0.649
2	13.43	8.07	0.644	0.372
3	7.50	4.51	0.359	0.208
4	12.28	7.37	0.589	0.340
5A	9.23	5.54	0.442	0.255
5B	1.90	1.14	0.090	0.052
6	12.17	7.31	0.583	0.337
7	11.46	6.88	0.549	0.317
8	3.98	2.39	0.190	0.110
	93.21	56.9	4.495	2.640

OFF-SITE UNDEVELOPED DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
103a	2070346.36	47.5286	0.074263
103b	1640953.82	37.6711	0.058861
108.1	1912002.97	43.8935	0.068584
109a	2168598.50	49.7842	0.077788
109b	998219.01	22.9160	0.035806
110	496735.88	11.4035	0.017818
112a	729591.89	16.7491	0.026171
112b	1799941.46	41.3210	0.064564
113a	1024806.96	23.5263	0.036760
Total	12841196.85	294.7933	0.460615

RUNOFF CALCULATION RESULTS

Undeveloped

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
103a	61.38	20.90	2.646	0.888
103b	48.51	16.58	2.097	0.704
108.1	56.60	19.31	2.443	0.820
109a	64.35	21.88	2.771	0.930
109b	29.51	10.09	1.276	0.428
110	14.69	5.02	0.635	0.213
112a	21.57	7.37	0.932	0.313
112b	53.23	18.18	2.300	0.772
113a	30.30	10.36	1.310	0.440
Total	380.14	129.69	16.410	5.508

Estimated Allowable Discharge for Future Developed Basins

Basin	Area w/o ROW (acres)	Flow (cfs)
10D	5.49	11.25
12D-1	22.84	46.82
12D-2	38.12	78.15
12D-3	7.15	14.66
12D-4	25.66	52.60
12D-5	10.45	21.42
12D-6	2.90	5.95
Site		
RV Park	6.86	14.06
MHP	27.47	56.31
Total	146.94	301.23

Estimated Discharge from State Highway Right-of-Way

Basin	ROW Area (acres)	Flow (cfs)
10D-ROW	12.51	16.12
11D	12.56	16.17
12D- ROW	23.92	30.80
Total	48.99	63.09

Allowable Discharge = 364 cfs-63.30 = 300.70 cfs/146.94 = 2.05 cfs/acre

Street Capacity Calculations

BLUEWATER ROAD
48' F-F Street Section with 8" curb
Slope= 0.0146

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0002	0.0005	0.2962	0.0030	0.5221	0.0039
0.020	0.0032	0.3406	0.0094	0.0015	0.0030	0.4703	0.0094	0.5860	0.0094
0.040	0.0128	0.6812	0.0188	0.0096	0.0191	0.7465	0.0299	0.6577	0.0222
0.060	0.0288	1.0219	0.0282	0.0282	0.0563	0.9782	0.0587	0.7037	0.0368
0.080	0.0512	1.3625	0.0376	0.0607	0.1213	1.1850	0.0948	0.7383	0.0526
0.100	0.0800	1.7031	0.0470	0.1100	0.2200	1.3750	0.1375	0.7663	0.0693
0.120	0.1152	2.0437	0.0564	0.1789	0.3577	1.5527	0.1863	0.7899	0.0869
0.125	0.1250	2.1289	0.0587	0.1994	0.3989	1.5956	0.1994	0.7953	0.0914

For water depths greater than 0.125 ft but less than 0.565 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2119	0.4238	1.5623	0.2031	0.7636	0.0897
0.185	0.3350	5.1895	0.0646	0.5694	1.1388	1.6996	0.3144	0.6964	0.1118
0.240	0.6856	7.9951	0.0858	1.4082	2.8165	2.0540	0.4929	0.7389	0.1580
0.295	1.1875	10.8006	0.1099	2.8785	5.7571	2.4240	0.7151	0.7865	0.2122
0.350	1.8406	13.6062	0.1353	5.1231	10.2462	2.7833	0.9742	0.8291	0.2711
0.405	2.6450	16.4117	0.1612	8.2735	16.5469	3.1280	1.2668	0.8662	0.3333
0.460	3.6006	19.2173	0.1874	12.4523	24.9045	3.4584	1.5908	0.8986	0.3982
0.515	4.7075	22.0228	0.2138	17.7752	35.5505	3.7759	1.9446	0.9272	0.4653
0.565	5.8450	24.5733	0.2379	23.6998	47.3996	4.0547	2.2909	0.9506	0.5279

For water depths greater than 0.565 ft but less than 0.667 ft

Y2= Y - 0.565
A3= A2 + Y2*24
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.570	5.9650	24.5783	0.2427	24.5130	49.0259	4.1095	2.3424	0.9592	0.5391
0.580	6.2050	24.5883	0.2524	26.1716	52.3432	4.2178	2.4463	0.9760	0.5615
0.595	6.5650	24.6033	0.2668	28.7392	57.4785	4.3776	2.6047	1.0001	0.5951
0.605	6.8050	24.6133	0.2765	30.5033	61.0066	4.4825	2.7119	1.0156	0.6176
0.620	7.1650	24.6283	0.2909	33.2264	66.4529	4.6373	2.8751	1.0379	0.6514
0.635	7.5250	24.6433	0.3054	36.0405	72.0811	4.7894	3.0413	1.0592	0.6853
0.645	7.7650	24.6533	0.3150	37.9663	75.9327	4.8894	3.1537	1.0729	0.7079
0.667	8.2930	24.6753	0.3361	42.3406	84.6813	5.1056	3.4054	1.1017	0.7579

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 24 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	9.1122	26.3256	0.3461	47.4462	94.8923	5.2069	3.6448	1.0967	0.7907
0.730	9.9042	27.8259	0.3559	52.5389	105.0777	5.3047	3.8724	1.0941	0.8221
0.753	**10.5419**	**28.9762**	**0.3638**	**56.7436**	**113.4873**	**5.3827**	**4.0532**	**1.0931**	**0.8470**
0.770	11.0302	29.8263	0.3698	60.0234	120.0467	5.4417	4.1901	1.0929	0.8658
0.800	11.9272	31.3266	0.3807	66.1764	132.3527	5.5483	4.4387	1.0932	0.8999
0.820	12.5502	32.3268	0.3882	70.5435	141.0869	5.6209	4.6091	1.0939	0.9231
0.850	13.5222	33.8271	0.3997	77.5026	155.0053	5.7315	4.8718	1.0955	0.9588

Street Capacity Calculations

94TH STREET

40' F-F Street Section with 8" curb

Slope= 0.0151

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0002	0.0005	0.3013	0.0030	0.5309	0.0040
0.020	0.0032	0.3406	0.0094	0.0015	0.0031	0.4782	0.0096	0.5959	0.0096
0.040	0.0128	0.6812	0.0188	0.0097	0.0194	0.7592	0.0304	0.6689	0.0228
0.060	0.0288	1.0219	0.0282	0.0286	0.0573	0.9948	0.0597	0.7157	0.0377
0.080	0.0512	1.3625	0.0376	0.0617	0.1234	1.2051	0.0964	0.7508	0.0539
0.100	0.0800	1.7031	0.0470	0.1119	0.2237	1.3984	0.1398	0.7793	0.0710
0.120	0.1152	2.0437	0.0564	0.1819	0.3638	1.5791	0.1895	0.8033	0.0889
0.125	0.1250	2.1289	0.0587	0.2028	0.4057	1.6227	0.2028	0.8088	0.0935

For water depths greater than 0.125 ft but less than 0.485 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2155	0.4310	1.5889	0.2066	0.7766	0.0919
0.175	0.2875	4.6794	0.0614	0.4808	0.9617	1.6725	0.2927	0.7045	0.1076
0.220	0.5406	6.9749	0.0775	1.0557	2.1113	1.9527	0.4296	0.7337	0.1434
0.265	0.8950	9.2703	0.0965	2.0232	4.0464	2.2605	0.5990	0.7739	0.1863
0.310	1.3506	11.5658	0.1168	3.4660	6.9321	2.5662	0.7955	0.8123	0.2334
0.355	1.9075	13.8612	0.1376	5.4613	10.9227	2.8631	1.0164	0.8468	0.2832
0.400	2.5656	16.1567	0.1588	8.0813	16.1625	3.1498	1.2599	0.8777	0.3353
0.445	3.3250	18.4521	0.1802	11.3941	22.7882	3.4268	1.5249	0.9053	0.3891
0.485	4.0850	20.4925	0.1993	14.9732	29.9464	3.6654	1.7777	0.9275	0.4383

For water depths greater than 0.485 ft but less than 0.667 ft

Y2= Y - 0.485
A3= A2 + Y2*20
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.490	4.1850	20.4975	0.2042	15.5866	31.1731	3.7244	1.8249	0.9376	0.4494
0.515	4.6850	20.5225	0.2283	18.7970	37.5939	4.0122	2.0663	0.9852	0.5049
0.540	5.1850	20.5475	0.2523	22.2399	44.4799	4.2893	2.3162	1.0286	0.5606
0.565	5.6850	20.5725	0.2763	25.9070	51.8141	4.5571	2.5748	1.0684	0.6167
0.590	6.1850	20.5975	0.3003	29.7908	59.5815	4.8166	2.8418	1.1051	0.6731
0.615	6.6850	20.6225	0.3242	33.8844	67.7688	5.0687	3.1173	1.1390	0.7298
0.666	**7.7070**	**20.6736**	**0.3728**	**42.8802**	**85.7603**	**5.5638**	**3.7060**	**1.2014**	**0.8466**
0.667	7.7250	20.6745	0.3736	43.0460	86.0919	5.5723	3.7167	1.2024	0.8487

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 16 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	8.2802	22.3248	0.3709	45.9131	91.8262	5.5449	3.8814	1.1679	0.8580
0.730	8.8322	23.8251	0.3707	48.9574	97.9148	5.5430	4.0464	1.1433	0.8705
0.750	9.2252	24.8253	0.3716	51.2181	102.4362	5.5520	4.1640	1.1298	0.8806
0.770	9.6382	25.8255	0.3732	53.6645	107.3290	5.5679	4.2873	1.1182	0.8921
0.800	10.2952	27.3258	0.3768	57.6858	115.3717	5.6032	4.4825	1.1040	0.9115
0.820	10.7582	28.3260	0.3798	60.6041	121.2083	5.6333	4.6193	1.0963	0.9258
0.850	11.4902	29.8263	0.3852	65.3440	130.6881	5.6869	4.8339	1.0870	0.9491

Street Capacity Calculations

AVALON ROAD

40' F-F Street Section with 8" curb

Slope= 0.023

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0003	0.0006	0.3718	0.0037	0.6552	0.0055
0.020	0.0032	0.3406	0.0094	0.0019	0.0038	0.5902	0.0118	0.7355	0.0131
0.040	0.0128	0.6812	0.0188	0.0120	0.0240	0.9369	0.0375	0.8256	0.0308
0.060	0.0288	1.0219	0.0282	0.0354	0.0707	1.2277	0.0737	0.8833	0.0507
0.080	0.0512	1.3625	0.0376	0.0761	0.1523	1.4873	0.1190	0.9267	0.0722
0.100	0.0800	1.7031	0.0470	0.1381	0.2761	1.7258	0.1726	0.9618	0.0949
0.120	0.1152	2.0437	0.0564	0.2245	0.4490	1.9489	0.2339	0.9914	0.1186
0.125	0.1250	2.1289	0.0587	0.2503	0.5007	2.0026	0.2503	0.9982	0.1247

For water depths greater than 0.125 ft but less than 0.485 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2660	0.5319	1.9609	0.2549	0.9584	0.1228
0.175	0.2875	4.6794	0.0614	0.5934	1.1869	2.0641	0.3612	0.8695	0.1448
0.220	0.5406	6.9749	0.0775	1.3029	2.6058	2.4099	0.5302	0.9055	0.1924
0.265	0.8950	9.2703	0.0965	2.4969	4.9939	2.7899	0.7393	0.9551	0.2492
0.310	1.3506	11.5658	0.1168	4.2777	8.5554	3.1672	0.9818	1.0025	0.3110
0.355	1.9075	13.8612	0.1376	6.7402	13.4804	3.5335	1.2544	1.0451	0.3764
0.400	2.5656	16.1567	0.1588	9.9737	19.9473	3.8874	1.5550	1.0832	0.4446
0.445	3.3250	18.4521	0.1802	14.0623	28.1246	4.2293	1.8820	1.1173	0.5150
0.485	4.0850	20.4925	0.1993	18.4795	36.9590	4.5237	2.1940	1.1447	0.5793

For water depths greater than 0.485 ft but less than 0.667 ft

Y2= Y - 0.485
A3= A2 + Y2*20
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.490	4.1850	20.4975	0.2042	19.2365	38.4730	4.5965	2.2523	1.1572	0.5935
0.515	4.6850	20.5225	0.2283	23.1987	46.3973	4.9517	2.5501	1.2160	0.6648
0.540	5.1850	20.5475	0.2523	27.4479	54.8958	5.2937	2.8586	1.2695	0.7364
0.565	5.6850	20.5725	0.2763	31.9737	63.9474	5.6242	3.1777	1.3186	0.8083
0.578	**5.9530**	**20.5859**	**0.2892**	**34.5102**	**69.0203**	**5.7971**	**3.3530**	**1.3433**	**0.8470**
0.615	6.6850	20.6225	0.3242	41.8192	83.6383	6.2557	3.8472	1.4058	0.9532
0.640	7.1850	20.6475	0.3480	47.1231	94.2461	6.5585	4.1975	1.4447	1.0262
0.667	7.7250	20.6745	0.3736	53.1261	106.2522	6.8772	4.5871	1.4839	1.1055

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 16 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	8.2802	22.3248	0.3709	56.6646	113.3292	6.8434	4.7904	1.4414	1.1192
0.730	8.8322	23.8251	0.3707	60.4218	120.8436	6.8411	4.9940	1.4110	1.1367
0.750	9.2252	24.8253	0.3716	63.2119	126.4238	6.8521	5.1391	1.3943	1.1507
0.770	9.6382	25.8255	0.3732	66.2312	132.4624	6.8717	5.2912	1.3800	1.1663
0.800	10.2952	27.3258	0.3768	71.1942	142.3884	6.9153	5.5322	1.3625	1.1925
0.820	10.7582	28.3260	0.3798	74.7959	149.5918	6.9524	5.7010	1.3530	1.2117
0.850	11.4902	29.8263	0.3852	80.6457	161.2915	7.0186	5.9658	1.3416	1.2427

Street Capacity Calculations

VOLCANO ROAD

40' F-F Street Section with 8" curb

Slope= 0.0275

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0003	0.0007	0.4066	0.0041	0.7165	0.0063
0.020	0.0032	0.3406	0.0094	0.0021	0.0041	0.6454	0.0129	0.8042	0.0148
0.040	0.0128	0.6812	0.0188	0.0131	0.0262	1.0245	0.0410	0.9027	0.0348
0.060	0.0288	1.0219	0.0282	0.0387	0.0773	1.3425	0.0805	0.9658	0.0573
0.080	0.0512	1.3625	0.0376	0.0833	0.1665	1.6263	0.1301	1.0133	0.0814
0.100	0.0800	1.7031	0.0470	0.1510	0.3019	1.8871	0.1887	1.0516	0.1069
0.120	0.1152	2.0437	0.0564	0.2455	0.4910	2.1310	0.2557	1.0841	0.1335
0.125	0.1250	2.1289	0.0587	0.2737	0.5475	2.1898	0.2737	1.0915	0.1403

For water depths greater than 0.125 ft but less than 0.485 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2908	0.5816	2.1442	0.2787	1.0480	0.1383
0.175	0.2875	4.6794	0.0614	0.6489	1.2978	2.2570	0.3950	0.9508	0.1636
0.220	0.5406	6.9749	0.0775	1.4246	2.8493	2.6352	0.5797	0.9901	0.2171
0.265	0.8950	9.2703	0.0965	2.7303	5.4606	3.0506	0.8084	1.0443	0.2807
0.310	1.3506	11.5658	0.1168	4.6775	9.3550	3.4632	1.0736	1.0961	0.3499
0.355	1.9075	13.8612	0.1376	7.3702	14.7403	3.8638	1.3716	1.1428	0.4231
0.400	2.5656	16.1567	0.1588	10.9058	21.8116	4.2507	1.7003	1.1844	0.4992
0.445	3.3250	18.4521	0.1802	15.3765	30.7531	4.6245	2.0579	1.2217	0.5779
0.485	4.0850	20.4925	0.1993	20.2066	40.4132	4.9465	2.3991	1.2517	0.6496

For water depths greater than 0.485 ft but less than 0.667 ft

Y2= Y - 0.485

A3= A2 + Y2*20

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.490	4.1850	20.4975	0.2042	21.0343	42.0686	5.0261	2.4628	1.2653	0.6654
0.515	4.6850	20.5225	0.2283	25.3668	50.7336	5.4145	2.7885	1.3296	0.7445
0.547	**5.3310**	**20.5548**	**0.2594**	**31.4274**	**62.8548**	**5.8952**	**3.2265**	**1.4043**	**0.8472**
0.565	5.6850	20.5725	0.2763	34.9619	69.9239	6.1499	3.4747	1.4418	0.9037
0.590	6.1850	20.5975	0.3003	40.2031	80.4062	6.5001	3.8351	1.4913	0.9838
0.615	6.6850	20.6225	0.3242	45.7275	91.4550	6.8403	4.2068	1.5371	1.0643
0.640	7.1850	20.6475	0.3480	51.5271	103.0542	7.1715	4.5898	1.5798	1.1452
0.667	7.7250	20.6745	0.3736	58.0912	116.1824	7.5199	5.0158	1.6226	1.2330

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 16 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	8.2802	22.3248	0.3709	61.9604	123.9208	7.4829	5.2381	1.5761	1.2491
0.730	8.8322	23.8251	0.3707	66.0688	132.1375	7.4804	5.4607	1.5429	1.2691
0.750	9.2252	24.8253	0.3716	69.1196	138.2392	7.4925	5.6193	1.5246	1.2850
0.770	9.6382	25.8255	0.3732	72.4211	144.8422	7.5139	5.7857	1.5090	1.3027
0.800	10.2952	27.3258	0.3768	77.8479	155.6959	7.5616	6.0492	1.4898	1.3324
0.820	10.7582	28.3260	0.3798	81.7862	163.5724	7.6022	6.2338	1.4795	1.3540
0.850	11.4902	29.8263	0.3852	88.1828	176.3656	7.6746	6.5234	1.4670	1.3889

Street Capacity Calculations

WEST RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0081

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.00036	0.000721	0.225292	0.002253	0.397025	0.002518
0.02	0.0064	0.660312	0.009692	0.002289	0.004578	0.357629	0.007153	0.445646	0.00609
0.025	0.01	0.825391	0.012115	0.00415	0.0083	0.414992	0.010375	0.462532	0.008083
0.035	0.0196	1.155547	0.016962	0.010179	0.020358	0.519348	0.018177	0.489211	0.012376
0.045	0.0324	1.485703	0.021808	0.019896	0.039792	0.614075	0.027633	0.510137	0.017
0.055	0.0484	1.815859	0.026654	0.033976	0.067951	0.701974	0.038609	0.527487	0.021892
0.06	0.0576	1.980937	0.029077	0.042849	0.085697	0.743898	0.044634	0.535192	0.024427
0.0625	0.0625	2.063476	0.030289	0.047776	0.095553	0.764421	0.047776	0.538846	0.025715

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.048665	0.09733	0.766303	0.048277	0.538025	0.025859
0.1	0.172656	3.976351	0.043421	0.1678	0.335601	0.971876	0.097188	0.541605	0.04147
0.13	0.311406	5.506651	0.056551	0.360938	0.721876	1.159059	0.150678	0.566508	0.05777
0.16	0.495156	7.036951	0.070365	0.663936	1.327873	1.340862	0.214538	0.59074	0.07578
0.2	0.810156	9.077351	0.08925	1.27288	2.545761	1.571154	0.314231	0.619122	0.101655
0.24	1.205156	11.11775	0.108399	2.15546	4.310921	1.788532	0.429248	0.643373	0.129168
0.28	1.680156	13.15815	0.127689	3.351701	6.703402	1.994875	0.558565	0.664368	0.158009
0.3025	1.9825	14.30588	0.138579	4.176618	8.353236	2.106743	0.63729	0.675027	0.174738

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	4.201128	8.402255	2.11165	0.63983	0.67604	0.175412
0.308	2.0595	14.31138	0.143906	4.449328	8.898657	2.160393	0.665401	0.686008	0.18216
0.3102	2.0903	14.31358	0.146036	4.560313	9.120626	2.181655	0.676749	0.690299	0.185135
0.316	2.1715	14.31938	0.151648	4.858058	9.716117	2.23719	0.706952	0.701345	0.192997
0.32	2.2275	14.32338	0.155515	5.067709	10.13542	2.275066	0.728021	0.708747	0.198435
0.324	2.2835	14.32738	0.15938	5.28084	10.56168	2.312608	0.749285	0.715981	0.203884
0.331	2.3815	14.33438	0.166139	5.6621	11.3242	2.377535	0.786964	0.728258	0.213451
0.333	2.4095	14.33638	0.168069	5.772949	11.5459	2.395911	0.797839	0.731679	0.216191

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	5.858376	11.71675	2.403338	0.805118	0.731753	0.217521
0.354	**2.714525**	**15.38659**	**0.176422**	**6.717494**	**13.43499**	**2.474648**	**0.876025**	**0.732966**	**0.230404**
0.38	3.122725	16.68685	0.187137	8.037466	16.07493	2.573863	0.978068	0.73581	0.248704
0.41	3.635725	18.18715	0.199906	9.778849	19.5577	2.689656	1.102759	0.740247	0.270659
0.45	4.389725	20.18755	0.217447	12.48779	24.97558	2.844777	1.28015	0.747333	0.301137
0.48	5.007725	21.68785	0.2309	14.82753	29.65507	2.960932	1.421247	0.753147	0.324783
0.513	5.7395	23.33818	0.245928	17.72384	35.44769	3.088047	1.584168	0.759796	0.351482

Street Capacity Calculations

NORTH RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0192

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000555	0.00111	0.34686	0.003469	0.61126	0.004986
0.02	0.0064	0.660312	0.009692	0.003524	0.007048	0.550606	0.011012	0.686117	0.011831
0.025	0.01	0.825391	0.012115	0.006389	0.012778	0.638922	0.015973	0.712114	0.015609
0.035	0.0196	1.155547	0.016962	0.015672	0.031344	0.799588	0.027986	0.753189	0.023684
0.045	0.0324	1.485703	0.021808	0.030632	0.061264	0.94543	0.042544	0.785407	0.032314
0.055	0.0484	1.815859	0.026654	0.052309	0.104618	1.08076	0.059442	0.81212	0.041395
0.06	0.0576	1.980937	0.029077	0.06597	0.131939	1.145306	0.068718	0.823983	0.046082
0.0625	0.0625	2.063476	0.030289	0.073556	0.147113	1.176903	0.073556	0.829608	0.048459

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.074925	0.149849	1.1798	0.074327	0.828343	0.048743
0.1	0.172656	3.976351	0.043421	0.258346	0.516691	1.496301	0.14963	0.833856	0.078087
0.13	0.311406	5.506651	0.056551	0.555701	1.111402	1.784488	0.231983	0.872196	0.108025
0.16	0.495156	7.036951	0.070365	1.022197	2.044394	2.064393	0.330303	0.909504	0.1408
0.2	0.810156	9.077351	0.08925	1.959728	3.919455	2.41895	0.48379	0.9532	0.187554
0.24	1.205156	11.11775	0.108399	3.318548	6.637096	2.753625	0.66087	0.990538	0.236974
0.2505	**1.3221**	**11.65336**	**0.113452**	**3.752842**	**7.505685**	**2.838547**	**0.711056**	**0.999457**	**0.250319**
0.3025	1.9825	14.30588	0.138579	6.430324	12.86065	3.243543	0.981172	1.039272	0.318373

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	4.201128	8.402255	2.11165	0.63983	0.67604	0.175412
0.308	2.0595	14.31138	0.143906	4.449328	8.898657	2.160393	0.665401	0.686008	0.18216
0.3102	2.0903	14.31358	0.146036	4.560313	9.120626	2.181655	0.676749	0.690299	0.185135
0.316	2.1715	14.31938	0.151648	4.858058	9.716117	2.23719	0.706952	0.701345	0.192997
0.32	2.2275	14.32338	0.155515	5.067709	10.13542	2.275066	0.728021	0.708747	0.198435
0.324	2.2835	14.32738	0.15938	5.28084	10.56168	2.312608	0.749285	0.715981	0.203884
0.331	2.3815	14.33438	0.166139	5.6621	11.3242	2.377535	0.786964	0.728258	0.213451
0.333	2.4095	14.33638	0.168069	5.772949	11.5459	2.395911	0.797839	0.731679	0.216191

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	5.858376	11.71675	2.403338	0.805118	0.731753	0.217521
0.36	2.805725	15.68665	0.178861	7.007033	14.01407	2.497406	0.899066	0.733516	0.234562
0.3654	2.889344	15.9567	0.181074	7.27527	14.55054	2.517966	0.920065	0.73407	0.238338
0.397	3.4079	17.53702	0.194326	8.9947	17.9894	2.639367	1.047829	0.738204	0.261042
0.45	4.389725	20.18755	0.217447	12.48779	24.97558	2.844777	1.28015	0.747333	0.301137
0.48	5.007725	21.68785	0.2309	14.82753	29.65507	2.960932	1.421247	0.753147	0.324783
0.513	5.7395	23.33818	0.245928	17.72384	35.44769	3.088047	1.584168	0.759796	0.351482

Street Capacity Calculations

YUCCA RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0121

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000441	0.000881	0.275357	0.002754	0.485253	0.003491
0.02	0.0064	0.660312	0.009692	0.002797	0.005595	0.437102	0.008742	0.544678	0.008367
0.025	0.01	0.825391	0.012115	0.005072	0.010144	0.507212	0.01268	0.565316	0.011074
0.035	0.0196	1.155547	0.016962	0.012441	0.024883	0.634758	0.022217	0.597924	0.016883
0.045	0.0324	1.485703	0.021808	0.024317	0.048635	0.750536	0.033774	0.623501	0.023115
0.055	0.0484	1.815859	0.026654	0.041526	0.083051	0.857969	0.047188	0.644707	0.029692
0.06	0.0576	1.980937	0.029077	0.05237	0.104741	0.909209	0.054553	0.654124	0.033093
0.0625	0.0625	2.063476	0.030289	0.058393	0.116787	0.934293	0.058393	0.65859	0.034819

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.059479	0.118959	0.936592	0.059005	0.657586	0.035019
0.1	0.172656	3.976351	0.043421	0.205089	0.410179	1.187848	0.118785	0.661962	0.056131
0.13	0.311406	5.506651	0.056551	0.441147	0.882293	1.416628	0.184162	0.692399	0.077931
0.16	0.495156	7.036951	0.070365	0.811478	1.622956	1.638832	0.262213	0.722015	0.101909
0.2	0.810156	9.077351	0.08925	1.555743	3.111486	1.9203	0.38406	0.756704	0.136237
0.24	1.205156	11.11775	0.108399	2.634451	5.268903	2.185983	0.524636	0.786345	0.172631
0.28	1.680156	13.15815	0.127689	4.096523	8.193047	2.43818	0.68269	0.812005	0.210694
0.3025	1.9825	14.30588	0.138579	5.104755	10.20951	2.574908	0.77891	0.825033	0.232741

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	5.134712	10.26942	2.580906	0.782014	0.826272	0.233614
0.308	2.0595	14.31138	0.143906	5.438068	10.87614	2.64048	0.813268	0.838455	0.242353
0.312	2.1155	14.31538	0.147778	5.68568	11.37136	2.68763	0.83854	0.847938	0.24936
0.316	2.1715	14.31938	0.151648	5.937627	11.87525	2.734343	0.864053	0.857199	0.256379
0.3192	**2.2163**	**14.32258**	**0.154742**	**6.142277**	**12.28455**	**2.77141**	**0.884634**	**0.864453**	**0.262005**
0.324	2.2835	14.32738	0.15938	6.45436	12.90872	2.826521	0.915793	0.875088	0.270459
0.331	2.3815	14.33438	0.166139	6.920344	13.84069	2.905876	0.961845	0.890093	0.282822
0.333	2.4095	14.33638	0.168069	7.055826	14.11165	2.928336	0.975136	0.894275	0.286362

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	7.160238	14.32048	2.937413	0.984033	0.894365	0.288122
0.35	2.654725	15.18655	0.174808	7.98036	15.96072	3.006097	1.052134	0.895449	0.301522
0.39	3.288725	17.18695	0.19135	10.50049	21.00097	3.192874	1.245221	0.900993	0.338827
0.42	3.816725	18.68725	0.204242	12.72772	25.45543	3.334722	1.400583	0.906791	0.368097
0.45	4.389725	20.18755	0.217447	15.26285	30.52571	3.47695	1.564627	0.913407	0.398315
0.48	5.007725	21.68785	0.2309	18.12254	36.24508	3.618917	1.73708	0.920513	0.42937
0.513	5.7395	23.33818	0.245928	21.66247	43.32495	3.774279	1.936205	0.92864	0.464396

Street Capacity Calculations

PINON RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0163

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000511	0.001023	0.319593	0.003196	0.563209	0.004404
0.02	0.0064	0.660312	0.009692	0.003247	0.006494	0.507322	0.010146	0.63218	0.010487
0.025	0.01	0.825391	0.012115	0.005887	0.011774	0.588695	0.014717	0.656134	0.013851
0.035	0.0196	1.155547	0.016962	0.01444	0.02888	0.736732	0.025786	0.693981	0.021051
0.045	0.0324	1.485703	0.021808	0.028224	0.056448	0.871109	0.0392	0.723666	0.028756
0.055	0.0484	1.815859	0.026654	0.048197	0.096394	0.995801	0.054769	0.748278	0.036872
0.06	0.0576	1.980937	0.029077	0.060784	0.121567	1.055273	0.063316	0.759209	0.041064
0.0625	0.0625	2.063476	0.030289	0.067774	0.135548	1.084386	0.067774	0.764392	0.04319

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.069035	0.13807	1.087055	0.068484	0.763226	0.043442
0.1	0.172656	3.976351	0.043421	0.238037	0.476074	1.378676	0.137868	0.768306	0.069607
0.13	0.311406	5.506651	0.056551	0.512017	1.024034	1.644208	0.213747	0.803632	0.096412
0.16	0.495156	7.036951	0.070365	0.941841	1.883683	1.902109	0.304338	0.838007	0.125804
0.2	0.810156	9.077351	0.08925	1.805672	3.611344	2.228795	0.445759	0.878268	0.167784
0.24	1.205156	11.11775	0.108399	3.057675	6.11535	2.537161	0.608919	0.912671	0.212202
0.2959	**1.891189**	**13.96921**	**0.135383**	**5.564686**	**11.12937**	**2.942427**	**0.870664**	**0.953247**	**0.277504**
0.3025	1.9825	14.30588	0.138579	5.924832	11.84966	2.988566	0.904041	0.957574	0.28543

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	5.959601	11.9192	2.995527	0.907645	0.959012	0.28648
0.308	2.0595	14.31138	0.143906	6.311691	12.62338	3.064672	0.943919	0.973152	0.296991
0.312	2.1155	14.31538	0.147778	6.599083	13.19817	3.119396	0.973252	0.984159	0.305416
0.316	2.1715	14.31938	0.151648	6.891504	13.78301	3.173615	1.002862	0.994908	0.313855
0.32	2.2275	14.32338	0.155515	7.188908	14.37782	3.227344	1.03275	1.005408	0.322308
0.325	2.2975	14.32838	0.160346	7.567601	15.1352	3.293842	1.070499	1.0182	0.332895
0.331	2.3815	14.33438	0.166139	8.032094	16.06419	3.372704	1.116365	1.033086	0.345628
0.333	2.4095	14.33638	0.168069	8.189342	16.37868	3.398772	1.131791	1.037939	0.349879

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	8.310527	16.62105	3.409307	1.142118	1.038044	0.352028
0.36	2.805725	15.68665	0.178861	9.939979	19.87996	3.542749	1.27539	1.040546	0.379504
0.39	3.288725	17.18695	0.19135	12.18738	24.37477	3.705808	1.445265	1.045737	0.413842
0.42	3.816725	18.68725	0.204242	14.77242	29.54484	3.870444	1.625586	1.052466	0.449463
0.45	4.389725	20.18755	0.217447	17.71482	35.42965	4.03552	1.815984	1.060145	0.486202
0.48	5.007725	21.68785	0.2309	21.03392	42.06784	4.200294	2.016141	1.068393	0.523929
0.513	5.7395	23.33818	0.245928	25.14254	50.28508	4.380615	2.247256	1.077826	0.566448

Street Capacity Calculations

EAST RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0201

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000568	0.001136	0.354896	0.003549	0.625423	0.00516
0.02	0.0064	0.660312	0.009692	0.003606	0.007211	0.563363	0.011267	0.702013	0.012232
0.025	0.01	0.825391	0.012115	0.006537	0.013074	0.653725	0.016343	0.728613	0.016133
0.035	0.0196	1.155547	0.016962	0.016035	0.03207	0.818114	0.028634	0.77064	0.024468
0.045	0.0324	1.485703	0.021808	0.031342	0.062683	0.967334	0.04353	0.803605	0.033372
0.055	0.0484	1.815859	0.026654	0.053521	0.107041	1.1058	0.060819	0.830936	0.042739
0.06	0.0576	1.980937	0.029077	0.067498	0.134996	1.171842	0.070311	0.843074	0.047573
0.0625	0.0625	2.063476	0.030289	0.075261	0.150521	1.204171	0.075261	0.848829	0.050025

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.076661	0.153321	1.207135	0.07605	0.847535	0.050318
0.1	0.172656	3.976351	0.043421	0.264331	0.528663	1.530969	0.153097	0.853175	0.080607
0.13	0.311406	5.506651	0.056551	0.568576	1.137152	1.825833	0.237358	0.892404	0.111473
0.16	0.495156	7.036951	0.070365	1.04588	2.091761	2.112223	0.337956	0.930576	0.14525
0.2	0.810156	9.077351	0.08925	2.005133	4.010266	2.474995	0.494999	0.975285	0.193419
0.24	1.205156	11.11775	0.108399	3.395436	6.790872	2.817424	0.676182	1.013488	0.244319
0.28	1.680156	13.15815	0.127689	5.27984	10.55968	3.14247	0.879892	1.04656	0.297426
0.3025	1.9825	14.30588	0.138579	6.579309	13.15862	3.318693	1.003905	1.063351	0.328137

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	6.617918	13.23584	3.326423	1.007906	1.064948	0.329328
0.308	2.0595	14.31138	0.143906	7.008902	14.0178	3.403206	1.048187	1.08065	0.341259
0.3102	2.0903	14.31358	0.146036	7.183733	14.36747	3.4367	1.066064	1.087409	0.346515
0.316	2.1715	14.31938	0.151648	7.652763	15.30553	3.524183	1.113642	1.104808	0.360394
0.32	2.2275	14.32338	0.155515	7.983019	15.96604	3.583847	1.146831	1.116469	0.369985
0.324	2.2835	14.32738	0.15938	8.318758	16.63752	3.642986	1.180327	1.127865	0.37959
0.3241	2.2849	14.32748	0.159477	8.327222	16.65444	3.644458	1.181169	1.128146	0.37983
0.333	2.4095	14.33638	0.168069	9.093964	18.18793	3.774212	1.256813	1.152594	0.401257

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3438	**2.563616**	**14.87648**	**0.172327**	**9.838359**	**19.67672**	**3.837688**	**1.319397**	**1.153424**	**0.414657**
0.36	2.805725	15.68665	0.178861	11.03798	22.07596	3.934093	1.416273	1.155488	0.4352
0.39	3.288725	17.18695	0.19135	13.53364	27.06729	4.115164	1.604914	1.161253	0.474508
0.42	3.816725	18.68725	0.204242	16.40423	32.80846	4.297986	1.805154	1.168725	0.515256
0.45	4.389725	20.18755	0.217447	19.67166	39.34333	4.481297	2.016584	1.177252	0.557256
0.48	5.007725	21.68785	0.2309	23.3574	46.71479	4.664273	2.238851	1.186412	0.600363
0.513	5.7395	23.33818	0.245928	27.91987	55.83974	4.864513	2.495495	1.196886	0.648923

Street Capacity Calculations

SOUTH RIDGE ST. - BETWEEN WEST RIDGE AND YUCCA RIDGE

28' F-F Street Section with 4" curb

Slope= 0.0295

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000688	0.001376	0.429947	0.004299	0.757681	0.006824
0.02	0.0064	0.660312	0.009692	0.004368	0.008736	0.682498	0.01365	0.850469	0.016051
0.025	0.01	0.825391	0.012115	0.00792	0.015839	0.791969	0.019799	0.882694	0.021118
0.035	0.0196	1.155547	0.016962	0.019426	0.038852	0.991121	0.034689	0.933608	0.031914
0.045	0.0324	1.485703	0.021808	0.037969	0.075939	1.171897	0.052735	0.973544	0.043415
0.055	0.0484	1.815859	0.026654	0.064839	0.129678	1.339645	0.07368	1.006654	0.055488
0.06	0.0576	1.980937	0.029077	0.081772	0.163544	1.419653	0.085179	1.021359	0.061711
0.0625	0.0625	2.063476	0.030289	0.091176	0.182352	1.458818	0.091176	1.028332	0.064865

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.092872	0.185744	1.462409	0.092132	1.026764	0.065251
0.1	0.172656	3.976351	0.043421	0.32023	0.640459	1.854724	0.185472	1.033597	0.104488
0.13	0.311406	5.506651	0.056551	0.688813	1.377626	2.211944	0.287553	1.081121	0.14412
0.16	0.495156	7.036951	0.070365	1.267054	2.534107	2.558896	0.409423	1.127366	0.187344
0.2	0.810156	9.077351	0.08925	2.42916	4.85832	2.998385	0.599677	1.181529	0.248828
0.24	1.205156	11.11775	0.108399	4.113472	8.226944	3.413227	0.819174	1.227811	0.313666
0.28	1.680156	13.15815	0.127689	6.396373	12.79275	3.807011	1.065963	1.267877	0.381208
0.3025	1.9825	14.30588	0.138579	7.970641	15.94128	4.0205	1.216201	1.288218	0.420228

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	8.017415	16.03483	4.029864	1.221049	1.290153	0.421722
0.308	2.0595	14.31138	0.143906	8.491081	16.98216	4.122884	1.269848	1.309176	0.436676
0.3094	**2.0791**	**14.31278**	**0.145262**	**8.625626**	**17.25125**	**4.148731**	**1.283617**	**1.314399**	**0.440868**
0.316	2.1715	14.31938	0.151648	9.271099	18.5422	4.269445	1.349145	1.338443	0.460655
0.32	2.2275	14.32338	0.155515	9.671195	19.34239	4.341726	1.389352	1.352569	0.472669
0.324	2.2835	14.32738	0.15938	10.07793	20.15587	4.413371	1.429932	1.366375	0.4847
0.331	2.3815	14.33438	0.166139	10.80553	21.61106	4.537278	1.501839	1.389804	0.505795
0.333	2.4095	14.33638	0.168069	11.01707	22.03414	4.572348	1.522592	1.396334	0.511831

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	11.1801	22.3602	4.58652	1.536484	1.396474	0.51497
0.36	2.805725	15.68665	0.178861	13.37219	26.74439	4.766039	1.715774	1.39984	0.555062
0.3654	2.889344	15.9567	0.181074	13.8841	27.76819	4.805276	1.755848	1.400897	0.563917
0.397	3.4079	17.53702	0.194326	17.16545	34.3309	5.036958	1.999672	1.408786	0.616981
0.45	4.389725	20.18755	0.217447	23.83165	47.6633	5.428961	2.443033	1.426207	0.710105
0.48	5.007725	21.68785	0.2309	28.29681	56.59361	5.650631	2.712303	1.437303	0.764758
0.513	5.7395	23.33818	0.245928	33.82411	67.64822	5.893216	3.02322	1.449992	0.826277

Street Capacity Calculations

SOUTH RIDGE ST. - BETWEEN PINON RIDGE AND EAST RIDGE

28' F-F Street Section with 8" curb

Slope= 0.0295

For water depths less than 0.125 feet

Y=	Water depth
Area =	8*Y^2
P=	SQRT(257*Y^2) + Y
n=	0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000337	0.000674	0.421092	0.004211	0.742077	0.006625
0.02	0.0032	0.340624	0.009395	0.002139	0.004278	0.668442	0.013369	0.832954	0.015594
0.04	0.0128	0.681249	0.018789	0.013582	0.027164	1.061086	0.042443	0.934959	0.036544
0.06	0.0288	1.021873	0.028184	0.040044	0.080088	1.390415	0.083425	1.000325	0.060026
0.08	0.0512	1.362498	0.037578	0.08624	0.172479	1.684368	0.134749	1.049456	0.085289
0.1	0.08	1.703122	0.046973	0.156363	0.312726	1.954536	0.195454	1.08922	0.111951
0.12	0.1152	2.043746	0.056367	0.254263	0.508527	2.207147	0.264858	1.122827	0.139773
0.125	0.125	2.128902	0.058716	0.283505	0.56701	2.268038	0.283505	1.130492	0.14689

For water depths greater than 0.125 ft but less than 0.365 ft

Y1=	Y-0.125
A2=	A1 + 2*Y1 + 25*Y1^2
P2=	P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.301196	0.602391	2.220798	0.288704	1.085449	0.144876
0.16	0.225625	3.914252	0.057642	0.505468	1.010936	2.240302	0.358448	0.987003	0.157229
0.2	0.415625	5.954652	0.069798	1.057822	2.115645	2.545136	0.509027	1.002924	0.20078
0.24	0.685625	7.995052	0.085756	2.001756	4.003512	2.919607	0.700706	1.050246	0.256122
0.28	1.035625	10.03545	0.103197	3.420796	6.841591	3.303122	0.924874	1.100063	0.317548
0.32	1.465625	12.07585	0.121368	5.393953	10.78791	3.680309	1.177699	1.146519	0.382965
0.34	1.710625	13.09605	0.130621	6.611682	13.22336	3.865068	1.314123	1.168126	0.416836
0.365	2.045	14.3713	0.142297	8.368334	16.73667	4.092095	1.493615	1.193634	0.4601

For water depths greater than 0.365 ft but less than 0.667 ft

Y2=	Y - 0.365
A3=	A2 + Y2*14
P3=	P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3657	**2.0548**	**14.372**	**0.142972**	**8.435004**	**16.87001**	**4.105024**	**1.501207**	**1.196259**	**0.462284**
0.41	2.675	14.4163	0.185554	13.06526	26.13051	4.884208	2.002525	1.344232	0.600931
0.45	3.235	14.4563	0.223778	17.90193	35.80386	5.533827	2.490222	1.453756	0.727131
0.5	3.935	14.5063	0.271261	24.75622	49.51244	6.291288	3.145644	1.56793	0.886531
0.54	4.495	14.5463	0.309013	30.84575	61.6915	6.862236	3.705607	1.645663	1.015428
0.59	5.195	14.5963	0.355912	39.17072	78.34145	7.540081	4.448648	1.729904	1.178245
0.63	5.755	14.6363	0.3932	46.37339	92.74678	8.057931	5.076496	1.789062	1.3098
0.667	6.273	14.6733	0.427511	53.44673	106.8935	8.520123	5.682922	1.838463	1.432463

For water depths greater than 0.667 ft but less than 0.847 ft

Y3=	Y - 0.667
A4=	A3 + 14 * Y3 + 25 * Y3^2
P4=	P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

Street Capacity Calculations

EAST RIDGE ST - AT SOUTH RIDGE ST

28' F-F Street Section with 8" curb

Slope= 0.0201

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000278	0.000556	0.347587	0.003476	0.612542	0.005002
0.02	0.0032	0.340624	0.009395	0.001766	0.003531	0.551761	0.011035	0.687556	0.011867
0.04	0.0128	0.681249	0.018789	0.011211	0.022422	0.875865	0.035035	0.771755	0.02802
0.06	0.0288	1.021873	0.028184	0.033054	0.066108	1.147708	0.068863	0.825711	0.046216
0.08	0.0512	1.362498	0.037578	0.071186	0.142372	1.39035	0.111228	0.866266	0.065855
0.1	0.08	1.703122	0.046973	0.129069	0.258137	1.613358	0.161336	0.899089	0.086628
0.12	0.1152	2.043746	0.056367	0.20988	0.41976	1.821874	0.218625	0.926829	0.108344
0.125	0.125	2.128902	0.058716	0.234017	0.468034	1.872136	0.234017	0.933156	0.113903

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.24862	0.49724	1.833142	0.238308	0.895976	0.112084
0.16	0.225625	3.914252	0.057642	0.417235	0.83447	1.849241	0.295879	0.814715	0.120959
0.2	0.415625	5.954652	0.069798	0.873172	1.746344	2.100865	0.420173	0.827857	0.154613
0.24	0.685625	7.995052	0.085756	1.652335	3.30467	2.409969	0.578393	0.866918	0.197771
0.28	1.035625	10.03545	0.103197	2.823671	5.647343	2.726538	0.763431	0.908039	0.245859
0.2968	1.206481	10.89242	0.110763	3.448412	6.896824	2.85824	0.848326	0.924568	0.267083
0.34	1.710625	13.09605	0.130621	5.457566	10.91513	3.190393	1.084734	0.964221	0.323814
0.365	2.045	14.3713	0.142297	6.907582	13.81516	3.377791	1.232894	0.985277	0.357841

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.115	14.3763	0.147117	7.304442	14.60888	3.453637	1.277846	1.000571	0.370282
0.41	2.675	14.4163	0.185554	10.78462	21.56925	4.031635	1.65297	1.109587	0.47024
0.4816	**3.6774**	**14.4879**	**0.253826**	**18.26974**	**36.53948**	**4.968113**	**2.392643**	**1.261596**	**0.651558**
0.5	3.935	14.5063	0.271261	20.43484	40.86969	5.193099	2.596549	1.294237	0.698696
0.54	4.495	14.5463	0.309013	25.4614	50.92281	5.664383	3.058767	1.3584	0.801938
0.59	5.195	14.5963	0.355912	32.33319	64.66639	6.223906	3.672105	1.427937	0.932428
0.63	5.755	14.6363	0.3932	38.27859	76.55717	6.651362	4.190358	1.476768	1.037915
0.667	6.273	14.6733	0.427511	44.11722	88.23444	7.032874	4.690927	1.517547	1.136308

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

Street Capacity Calculations

AVALON ROAD

32' F-F Street Section with 8" curb

Slope= 0.0234

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.0003	0.0006	0.375037	0.00375	0.660916	0.0056
0.02	0.0032	0.340624	0.009395	0.001905	0.00381	0.595334	0.011907	0.741853	0.013244
0.04	0.0128	0.681249	0.018789	0.012096	0.024193	0.945034	0.037801	0.832702	0.031175
0.06	0.0288	1.021873	0.028184	0.035664	0.071329	1.238344	0.074301	0.890918	0.051332
0.08	0.0512	1.362498	0.037578	0.076808	0.153615	1.500148	0.120012	0.934676	0.073059
0.1	0.08	1.703122	0.046973	0.139261	0.278523	1.740767	0.174077	0.970092	0.096019
0.12	0.1152	2.043746	0.056367	0.226454	0.452909	1.965749	0.23589	1.000022	0.120004
0.125	0.125	2.128902	0.058716	0.252498	0.504995	2.019981	0.252498	1.006849	0.126142

For water depths greater than 0.125 ft but less than 0.405 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.268254	0.536507	1.977907	0.257128	0.966732	0.124245
0.16	0.225625	3.914252	0.057642	0.450185	0.900369	1.995278	0.319244	0.879054	0.134392
0.196	0.393025	5.750612	0.068345	0.878487	1.756974	2.235194	0.438098	0.889732	0.167379
0.246	0.733025	8.301112	0.088304	1.943651	3.887302	2.651548	0.652281	0.942115	0.227078
0.28	1.035625	10.03545	0.103197	3.04666	6.093321	2.941857	0.82372	0.979748	0.272448
0.32	1.465625	12.07585	0.121368	4.804012	9.608024	3.277791	1.048893	1.021124	0.329023
0.36	1.975625	14.11625	0.139954	7.120969	14.24194	3.604413	1.297589	1.058657	0.388243
0.395	2.4875	15.9016	0.156431	9.656559	19.31312	3.882034	1.533403	1.088511	0.441828
0.405	2.645	16.4117	0.161165	10.47414	20.94827	3.959976	1.60379	1.096572	0.457406

For water depths greater than 0.405 ft but less than 0.667 ft

Y2= Y - 0.405

A3= A2 + Y2*16

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.41	2.725	16.4167	0.165989	11.0052	22.01041	4.038607	1.655829	1.111506	0.4713
0.43	3.045	16.4367	0.185256	13.23164	26.46327	4.345365	1.868507	1.167788	0.526978
0.48	3.845	16.4867	0.233218	19.47971	38.95942	5.066245	2.431798	1.288658	0.667096
0.52	4.485	16.5267	0.271379	25.13764	50.27527	5.604824	2.914508	1.369722	0.780296
0.5434	**4.8594**	**16.5501**	**0.293618**	**28.7044**	**57.4088**	**5.906984**	**3.209855**	**1.412141**	**0.847003**
0.59	5.605	16.5967	0.337718	36.34595	72.69189	6.484558	3.825889	1.487738	0.980919
0.6658	6.8178	16.6725	0.408925	50.22474	100.4495	7.366708	4.904754	1.591013	1.201714
0.667	6.837	16.6737	0.410047	50.45828	100.9166	7.380178	4.922579	1.592487	1.205238

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 16 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	7.392225	18.32403	0.403417	53.96627	107.9325	7.30041	5.110287	1.537695	1.211959
0.73	7.944225	19.82433	0.400731	57.73839	115.4768	7.26797	5.305618	1.499076	1.22507
0.75	8.337225	20.82453	0.400356	60.55688	121.1138	7.263434	5.447576	1.478031	1.236915
0.77	8.750225	21.82473	0.400932	63.61759	127.2352	7.270395	5.598204	1.460107	1.250924
0.8	9.407225	23.32503	0.40331	68.66449	137.329	7.299123	5.839298	1.438129	1.275504
0.82	9.870225	24.32523	0.405761	72.33551	144.671	7.328659	6.009501	1.42623	1.293996
0.85	10.60223	25.82553	0.410533	78.3081	156.6162	7.386006	6.278105	1.411797	1.324502

Pipe Capacity

Manning's Equation:
Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
CB1 to CB2	18	3	1.77	0.375	18.24	15.72	8.90
CB2 to MH1	18	6.68	1.77	0.375	27.22	15.72	8.90
MH1 to MH2	30	2	4.91	0.625	58.16	37.76	7.69
CB6 to MH2	30	1	4.91	0.625	41.13	34.13	6.95
CB4 to MH1	18	2.41	1.77	0.375	16.35	6.32	3.58
MH2 to MH6	30	2.26	4.91	0.625	61.83	50.00	10.19
CB5 TO MH4	48	2.41	12.57	1	223.59	174.12	13.86
MH4 TO MH5	48	2.73	12.57	1	237.98	174.18	13.86
MH5 TO MH6	48	2.73	12.57	1	237.98	174.18	13.86
MH6 TO MH7	48	2.02	12.57	1	204.71	174.18	13.86
MH7 to POND 2A	56	1	17.10	1.166667	217.26	174.18	10.18
CB3 to CB4	18	2	1.77	0.375	14.90	4.30	2.43
CB4 to POND 2B	13	2.08	0.92	0.270833	6.38	6.32	6.86

Offsite Developed Pipe Capacity

Manning's Equation:
Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Pipe	D (in)	Slope (%)	Area (ft^2)	R	Q Provided (cfs)	Q Required (cfs)	Velocity (ft/s)
Bluewater							
West of 94th Stree	48	1.46	12.57	1	174.03	152.49	12.13
East of 94th Street	24	1	3.14	0.5	22.68	14.66	4.67
94th Street	48	1.51	12.57	1	176.99	152.49	12.13
Avalon	54	2.3	15.90	1.125	299.04	219.32	13.79
90th Street	60	1	19.63	1.25	261.14	255.40	13.01
Volcano							
West End of Site	48	2	12.57	1	203.69	174.18	13.86
Site Entrance	48	2	12.57	1	203.69	108.91	8.67
North 90th Street	66	1.5	23.76	1.375	412.39	364.31	15.33

DROP INLET CALCULATIONS

<u>ORIFICE EQUATION</u>

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

	PIPE SIZE (IN)	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
CB-1	18	1.77	15.72	3.41	4.00
CB-2	18	1.77	15.72	3.41	4.93
CB-3	12	0.79	4.30	1.29	4.00
CB-4	15	1.23	6.32	1.14	4.62
CB-5	48	12.57	174.18	8.29	9.00
MH-1	24	3.14	37.76	6.23	6.60
MH-2	30	4.91	50.00	4.48	4.50
MH-4	48	12.57	174.18	8.29	9.00
MH-5	48	12.57	174.18	8.29	9.00
MH-6	48	12.57	174.18	8.29	9.00
MH-7	48	12.57	174.18	8.29	9.00

STORM DROP INLET-EFFECTIVE AREA
Double 'A'

<u>Area at the grate:</u>

L $= 88\ ¾" - 2(6"_{ends}) - 6"_{center\ piece} - 14(½_{\ middle\ bars})$
$= 63\ ¾"$
$= 5.3125'$

W $= 25\ ½" - 13(½"_{\ middle\ bars})$
$= 19"$
$= 1.5833'$

Area $= 5.3125' \times 1.5833'$
$= 8.41\ ft^2$

Effective Area $= 8.41 - 8.41\ (0.5_{\ clogging\ factor})$
$= 4.21\ ft^2$ at the grate

<u>Area at the throat:</u>

L $= 13.50"$

H $= 10\ ¾" - 4\ ½"$
$= 6\ ¼"$
$= 0.5208'$

Area $= 13.50' \times 0.5208'$
$= 7.03\ ft^2$ at the throat

<u>Total Area:</u>

Area $= 4.21_{grate} + 7.03_{throat}$
$= 11.24\ ft^2$

Street Capacity Calculations

SOUTH RIDGE ST. - BETWEEN YUCCA RIDGE AND PINON RIDGE

28' F-F Street Section with 8" curb

Slope= 0.036

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000372	0.000744	0.465176	0.004652	0.819765	0.007625
0.02	0.0032	0.340624	0.009395	0.002363	0.004726	0.738421	0.014768	0.920155	0.017881
0.04	0.0128	0.681249	0.018789	0.015004	0.030008	1.17217	0.046887	1.032839	0.041755
0.06	0.0288	1.021873	0.028184	0.044236	0.088472	1.535977	0.092159	1.105048	0.068449
0.08	0.0512	1.362498	0.037578	0.095268	0.190536	1.860704	0.148856	1.159323	0.097126
0.1	0.08	1.703122	0.046973	0.172732	0.345465	2.159156	0.215916	1.20325	0.127359
0.12	0.1152	2.043746	0.056367	0.280882	0.561764	2.438212	0.292585	1.240375	0.158883
0.125	0.125	2.128902	0.058716	0.313185	0.62637	2.505478	0.313185	1.248843	0.166943

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.332728	0.665455	2.453292	0.318928	1.199084	0.164832
0.16	0.225625	3.914252	0.057642	0.558385	1.116771	2.474838	0.395974	1.090332	0.17936
0.2	0.415625	5.954652	0.069798	1.168565	2.337131	2.811586	0.562317	1.10792	0.228936
0.24	0.685625	7.995052	0.085756	2.211319	4.422637	3.22526	0.774062	1.160195	0.291662
0.28	1.035625	10.03545	0.103197	3.778917	7.557834	3.648924	1.021699	1.215228	0.361158
0.32	1.465625	12.07585	0.121368	5.958643	11.91729	4.065599	1.300992	1.266548	0.435087
0.3388	**1.695361**	**13.03484**	**0.130064**	**7.218068**	**14.43614**	**4.257541**	**1.442455**	**1.289019**	**0.471025**
0.365	2.045	14.3713	0.142297	9.244411	18.48882	4.520494	1.64998	1.318595	0.522185

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.115	14.3763	0.147117	9.77553	19.55106	4.622	1.71014	1.339063	0.539688
0.41	2.675	14.4163	0.185554	14.43305	28.86611	5.395534	2.212169	1.484959	0.680088
0.4796	**2.821**	**14.4859**	**0.194741**	**15.71916**	**31.43831**	**5.572193**	**2.672424**	**1.417943**	**0.751375**
0.49	3.795	14.4963	0.261791	25.75744	51.51487	6.787203	3.325729	1.708696	0.964147
0.54	4.495	14.5463	0.309013	34.07498	68.14995	7.58064	4.093546	1.817946	1.144332
0.59	5.195	14.5963	0.355912	43.27149	86.54298	8.329449	4.914375	1.911007	1.326577
0.63	5.755	14.6363	0.3932	51.2282	102.4564	8.901512	5.607953	1.976358	1.473798
0.667	6.273	14.6733	0.427511	59.04204	118.0841	9.41209	6.277864	2.030931	1.61105

For water depths greater than 0.667 ft but less than 0.847 ft

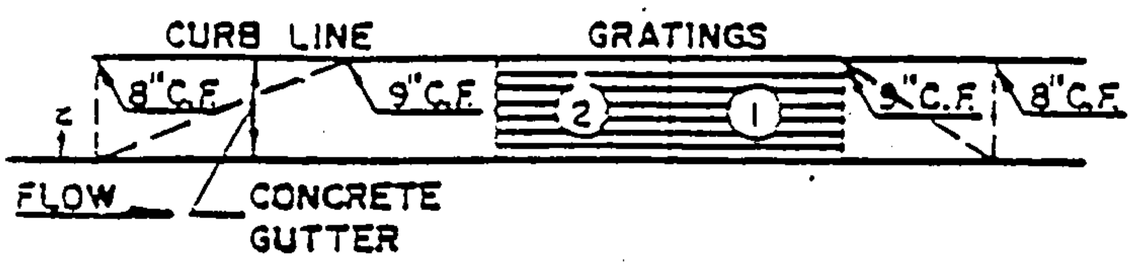
Y3= Y - 0.667
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

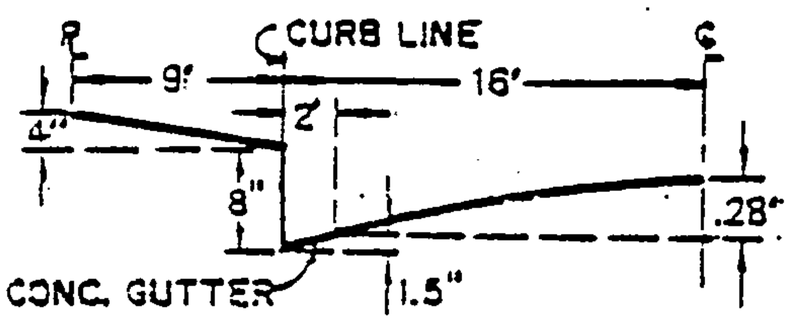
South Ridge Ave.

S = 3.690

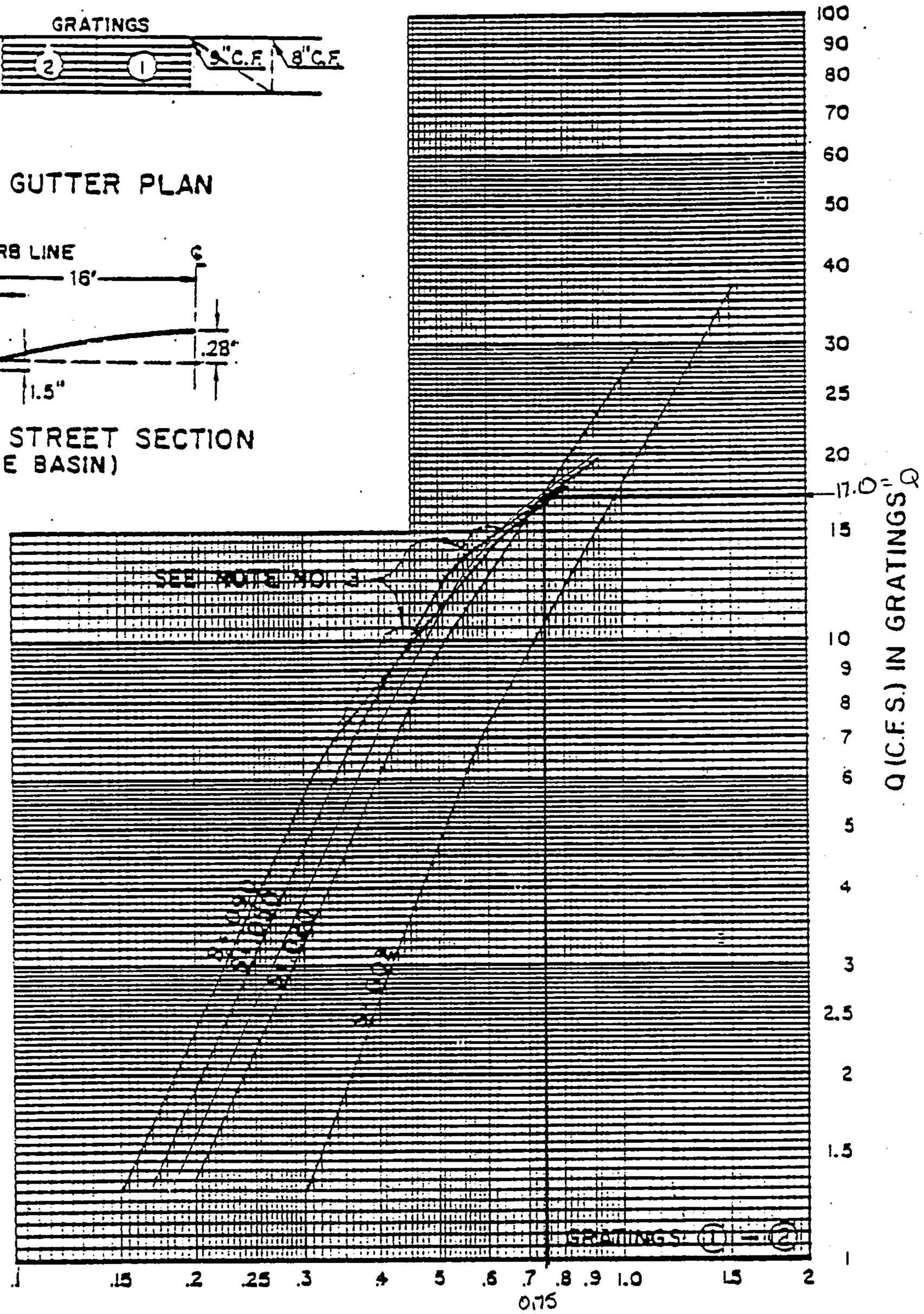
GRATING CAPACITIES FOR TYPE DOUBLE (A) "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Q_1 = 31.44 cfs

d = 0.75'

2(17) = 34 cfs > 31.44 cfs

Inlet has capacity

Street Capacity Calculations

PINON RIDGE ST.

28' F-F Street Section with 8" curb

Slope= 0.018

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000372	0.000744	0.465176	0.004652	0.819765	0.007625
0.02	0.0032	0.340624	0.009395	0.002363	0.004726	0.738421	0.014768	0.920155	0.017881
0.04	0.0128	0.681249	0.018789	0.015004	0.030008	1.17217	0.046887	1.032839	0.041755
0.06	0.0288	1.021873	0.028184	0.044236	0.088472	1.535977	0.092159	1.105048	0.068449
0.08	0.0512	1.362498	0.037578	0.095268	0.190536	1.860704	0.148856	1.159323	0.097126
0.1	0.08	1.703122	0.046973	0.172732	0.345465	2.159156	0.215916	1.20325	0.127359
0.12	0.1152	2.043746	0.056367	0.280882	0.561764	2.438212	0.292585	1.240375	0.158883
0.125	0.125	2.128902	0.058716	0.313185	0.62637	2.505478	0.313185	1.248843	0.166943

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.332728	0.665455	2.453292	0.318928	1.199084	0.164832
0.16	0.225625	3.914252	0.057642	0.558385	1.116771	2.474838	0.395974	1.090332	0.17936
0.2	0.415625	5.954652	0.069798	1.168565	2.337131	2.811586	0.562317	1.10792	0.228936
0.24	0.685625	7.995052	0.085756	2.211319	4.422637	3.22526	0.774062	1.160195	0.291662
0.28	1.035625	10.03545	0.103197	3.778917	7.557834	3.648924	1.021699	1.215228	0.361158
0.2968	**1.206481**	**10.89242**	**0.110763**	**4.615007**	**9.230014**	**3.82518**	**1.135313**	**1.237348**	**0.391748**
0.34	1.710625	13.09605	0.130621	7.303856	14.60771	4.269701	1.451698	1.290417	0.473342
0.365	2.045	14.3713	0.142297	9.244411	18.48882	4.520494	1.64998	1.318595	0.522185

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.115	14.3763	0.147117	9.77553	19.55106	4.622	1.71014	1.339063	0.539688
0.41	2.675	14.4163	0.185554	14.43305	28.86611	5.395534	2.212169	1.484959	0.680088
0.4391	3.0824	**14.4454**	**0.213383**	**18.25505**	**36.5101**	**5.92235**	**2.600504**	**1.575014**	**0.782843**
0.5	3.935	14.5063	0.271261	27.34794	54.69587	6.94992	3.47496	1.732076	1.000017
0.54	4.495	14.5463	0.309013	34.07498	68.14995	7.58064	4.093546	1.817946	1.144332
0.59	5.195	14.5963	0.355912	43.27149	86.54298	8.329449	4.914375	1.911007	1.326577
0.63	5.755	14.6363	0.3932	51.2282	102.4564	8.901512	5.607953	1.976358	1.473798
0.667	6.273	14.6733	0.427511	59.04204	118.0841	9.41209	6.277864	2.030931	1.61105

For water depths greater than 0.667 ft but less than 0.847 ft

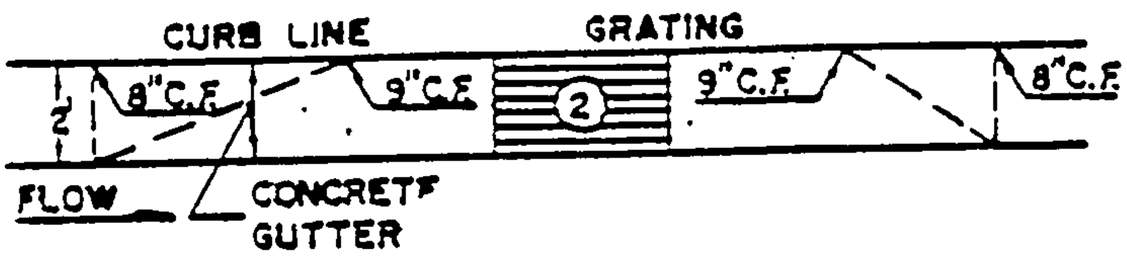
Y3= Y - 0.667
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

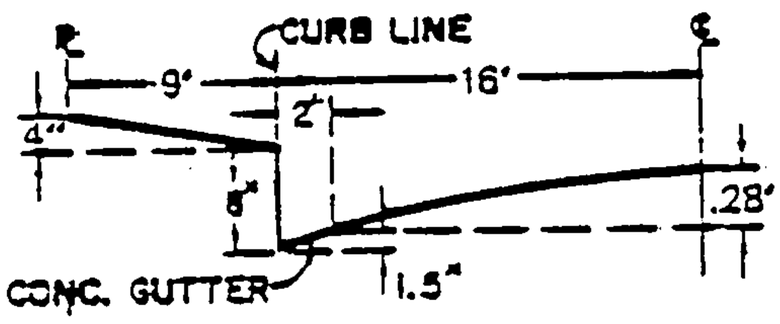
Pinon Ridge St.

S= 2%

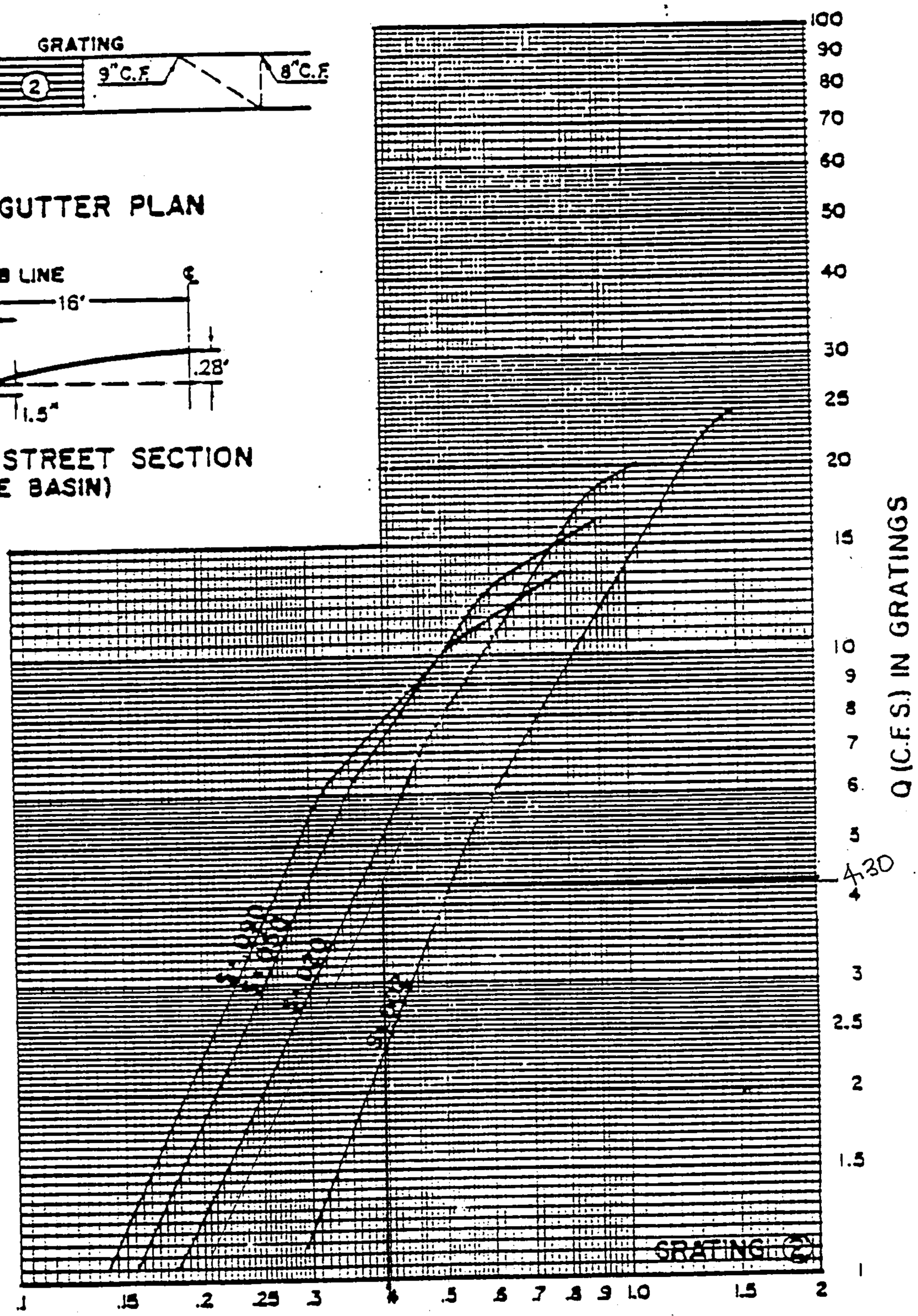
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Q = 9.23 cfs

d = 0.39'

2 catch basins will capture 8.60 cfs.

POND SUMMARY

	Pond 1	Pond 2a	Pond 2b	Total	Pond 3
Area of Pond Top (SF)	23404.34	56300.01	10029.52		71712.41
Area of Pond Bottom (SF)	15010.01	30657.16	4200.00		40930.27
Depth of Pond (FT)	4.50	10.00	3.00		5.00
Volume (CF)	86432.29	434785.85	21344.28		281606.70
Volume (AC-FT)	1.9842	9.9813	0.4900		6.4648
Volume Required (CF)	78727.88			454527.5	255223.98
Volume Required (AC-FT)	1.8073			10.4345	5.8591
Volume Provided (CF)	86432.29			456130.1	281606.7
Volume Provided (AC-FT)	**1.9842**			**10.4713**	**6.4648**

VOLUME CALCULATIONS FOR 10-DAY STORM
POND 1

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
1	298683.06	6.85682	0.010714

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 0.00%
AB = 10.00%
AC = 0.00%
AD = 90.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**1.8400**	**IN**
V-360 =	**1.0514**	**AC-FT**
AD =	**6.1711**	**AC**
V-10 Day =	**1.8073**	**AC-FT**
V-10 DAY =	**78727.88**	**CF**

VOLUME CALCULATIONS FOR 10-DAY STORM

ON-SITE POND 2A AND 2B

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
2	223543.54	5.13185	0.008019
3	124717.65	2.86312	0.004474
4	204349.12	4.69121	0.007330
5	184710.00	4.24036	0.006626
6	202495.68	4.64866	0.007264
7	190736.43	4.37871	0.006842
8	65979.78	1.51469	0.002367
TOTAL	1196532.20	27.46860	0.042920

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 0.00%
AB = 20.00%
AC = 20.00%
AD = 60.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**1.5140**	**IN**
V-360 =	**3.4656**	**AC-FT**
AD =	**16.4812**	**AC**
V-10 Day =	**5.4846**	**AC-FT**
V-10 DAY =	**238907.60**	**CF**

VOLUME CALCULATIONS FOR 10-DAY STORM

ON-SITE POND 2A AND 2B

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
108.1	1912002.97	43.8935	0.068584
109a	2168598.50	49.7842	0.077788
112b	1799941.46	41.3210	0.064564
TOTAL	5880542.93	134.9987	0.210935

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 100.00%
AB = 0.00%
AC = 0.00%
AD = 0.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**0.4400**	**IN**
V-360 =	**4.9500**	**AC-FT**
AD =	**0.0000**	**AC**
V-10 Day =	**4.9500**	**AC-FT**
V-10 DAY =	**215619.91**	**CF**

VOLUME CALCULATIONS FOR 10-DAY STORM

POND 3

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
103	3711300.18	85.1997	0.133125
110	496735.88	11.4035	0.017818
109b	998219.01	22.9160	0.035806
112a	729591.89	16.7491	0.026171
113a	1024806.96	23.5263	0.036760
TOTAL	6960653.92	159.7946	0.249679

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 100.00%
AB = 0.00%
AC = 0.00%
AD = 0.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**0.4400**	**IN**
V-360 =	**5.8591**	**AC-FT**
AD =	**0.0000**	**AC**
V-10 Day =	**5.8591**	**AC-FT**
V-10 DAY =	**255223.98**	**CF**

Concrete Rundown into Pond 1

Curb Cut:

$$Q=CLH^{3/2}$$

Q= 21.26 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L=\frac{21.26}{2.95(0.5)^{3/2}}$$

L = 20.38 ft
Use 20.50 feet for length of curb cut

Concrete Channel:

$$Q=\frac{1.49}{n}AR^{2/3}S^{1/2}$$

Q = 21.26 (cfs)
n = 0.013
A = Area
R = Hydraulic Radius
S = Slope

$$A=5.0*0.5*0.5=1.25$$

$$WP=2*\sqrt{0.5^2+5^2}=5.099$$

$$R=\frac{A}{WP}=\frac{1.25}{5.099}=0.245$$

Manning's Equation:

$$Q=\frac{1.49}{0.013}*1.25*0.245^{2/3}*0.01^{1/2}$$

$$Q=56.12\ cfs$$

21.26 cfs < 56.12 cfs

Concrete Rundown into Pond 2a

Curb Cut:

$$Q=CLH^{3/2}$$

Q= 30.15 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L=\frac{30.15}{2.95(0.67)^{3/2}}$$

L =18.64 ft
Use 19.00 feet for length of curb cut

Concrete Channel:

$$Q=\frac{1.49}{n}AR^{2/3}S^{1/2}$$

Q = 30.15 (cfs)
n = 0.013
A = Area
R = Hydraulic Radius
S = Slope

$$A=8.0*0.67=5.36$$

$$WP=2*0.67+8=9.34$$

$$R=\frac{A}{WP}=\frac{5.36}{9.34}=0.574$$

Manning's Equation:

$$Q=\frac{1.49}{0.013}*5.36*0.574^{2/3}*0.01^{1/2}$$

$$Q=42.42\ cfs$$

42.42 cfs < 30.15 cfs

Emergency Spillway

Pond 1:

$$Q=CLH^{3/2}$$

Q= 21.26 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L=\frac{21.26}{2.95(0.5)^{3/2}}$$

L = 20.38 ft
Use 20.50 feet for length of weir

Pond 2a:
Q= 267.36 cfs
C = 2.95
H = 1.00 ft
L = Length of weir

$$L=\frac{267.36}{2.95(1.0)^{3/2}}$$

L = 90.63 ft
Use 90.0 feet for length of weir

Offsite Pond (Pond 3) :
Q= 205.66 cfs
C = 2.95
H = 1.00 ft
L = Length of weir

$$L=\frac{205.96}{2.95(1.0)^{3/2}}$$

L = 69.82 ft
Use 70.0 feet for length of weir

Future Detention
Pond Calculations

VOLUME CALCULATIONS

POND 2

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = $Ab * D + 0.5 * C * D^2$

C = (At - Ab) / Dt

Ab =	6,241.46
At =	15,683.05
Dt =	5.00
C =	1888.32

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
58	0	0	0.0000
59.50	1.5	0.2637	11.8177
60.00	2	0.3733	20.4689
60.50	2.5	0.4937	26.4252
61.00	3	0.6249	31.2668
61.50	3.5	0.7670	35.4532
62.00	4	0.9199	39.1950
62.50	4.5	1.0837	42.6094
63.00	5	1.2583	45.7699

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in	30
Area (ft^2)=	4.908739
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*****************************************************************
*                  WEST RIDGE MOBILE HOME PARK                  *
*****************************************************************
*          100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)        *
*****************************************************************
START                TIME=0.0
*
* ROUTE 1
*
* BASIN 1
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.1333 HR MASS RAINFALL=-1
* BASIN 1 PONDING
*
ROUTE RESERVOIR      ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                         0.0000            0.0000          58.00
                        11.8177            0.2637          58.50
                        20.4689            0.3733          59.00
                        26.4252            0.4937          59.50
                        31.2668            0.6249          60.00
                        35.4532            0.7670          60.50
                        39.1950            0.9199          61.00
                        42.6094            1.0837          62.50
                        45.7699            1.2583          63.00
*
*
FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 10/29/1997
         START TIME (HR:MIN:SEC) = 10:14:00     USER NO.= R_BOHANN.I01
         INPUT FILE = A:POND.DAT

*****************************************************************
*                  WEST RIDGE MOBILE HOME PARK                  *
*****************************************************************
*          100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)        *
*****************************************************************
START                TIME=0.0
*
* ROUTE 1
*
* BASIN 1
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR

                COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =    .033330 HOURS       END TIME =    19.964670 HOURS
                   .0000   .0016   .0033   .0050   .0067   .0085   .0103
                   .0122   .0141   .0160   .0180   .0201   .0222   .0243
                   .0266   .0289   .0312   .0337   .0362   .0388   .0415
                   .0443   .0472   .0502   .0534   .0567   .0601   .0637
                   .0675   .0715   .0758   .0809   .0865   .0924   .1050
                   .1334   .1771   .2398   .3254   .4379   .5814   .7600
                   .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                  1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                  1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                  1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                  1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                  2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                  2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                  2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                  2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
                  2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
                  2.1292  2.1308  2.1324  2.1340  2.1355  2.1371  2.1386
                  2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                  2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                  2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                  2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                  2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                  2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                  2.1944  2.1956  2.1967  2.1978  2.1989  2.2000  2.2013
                  2.2026  2.2039  2.2052  2.2065  2.2078  2.2091  2.2103
                  2.2116  2.2129  2.2142  2.2155  2.2167  2.2180  2.2193
                  2.2205  2.2218  2.2230  2.2243  2.2255  2.2268  2.2280
                  2.2293  2.2305  2.2318  2.2330  2.2342  2.2354  2.2367
                  2.2379  2.2391  2.2403  2.2415  2.2428  2.2440  2.2452
                  2.2464  2.2476  2.2488  2.2500  2.2512  2.2524  2.2536
                  2.2547  2.2559  2.2571  2.2583  2.2595  2.2606  2.2618
                  2.2630  2.2641  2.2653  2.2665  2.2676  2.2688  2.2699
                  2.2711  2.2722  2.2734  2.2745  2.2757  2.2768  2.2779
                  2.2791  2.2802  2.2813  2.2825  2.2836  2.2847  2.2858
                  2.2870  2.2881  2.2892  2.2903  2.2914  2.2925  2.2936
```

2.2947	2.2958	2.2969	2.2980	2.2991	2.3002	2.3013
2.3024	2.3035	2.3046	2.3057	2.3067	2.3078	2.3089
2.3100	2.3110	2.3121	2.3132	2.3142	2.3153	2.3164
2.3174	2.3185	2.3195	2.3206	2.3216	2.3227	2.3237
2.3248	2.3258	2.3269	2.3279	2.3290	2.3300	2.3310
2.3321	2.3331	2.3341	2.3352	2.3362	2.3372	2.3382
2.3392	2.3403	2.3413	2.3423	2.3433	2.3443	2.3453
2.3463	2.3473	2.3483	2.3493	2.3503	2.3513	2.3523
2.3533	2.3543	2.3553	2.3563	2.3573	2.3583	2.3593
2.3603	2.3612	2.3622	2.3632	2.3642	2.3651	2.3661
2.3671	2.3681	2.3690	2.3700	2.3710	2.3719	2.3729
2.3738	2.3748	2.3758	2.3767	2.3777	2.3786	2.3796
2.3805	2.3815	2.3824	2.3834	2.3843	2.3852	2.3862
2.3871	2.3881	2.3890	2.3899	2.3909	2.3918	2.3927
2.3936	2.3946	2.3955	2.3964	2.3973	2.3983	2.3992
2.4001	2.4010	2.4019	2.4028	2.4038	2.4047	2.4056
2.4065	2.4074	2.4083	2.4092	2.4101	2.4110	2.4119
2.4128	2.4137	2.4146	2.4155	2.4164	2.4173	2.4181
2.4190	2.4199	2.4208	2.4217	2.4226	2.4234	2.4243
2.4252	2.4261	2.4270	2.4278	2.4287	2.4296	2.4304
2.4313	2.4322	2.4331	2.4339	2.4348	2.4356	2.4365
2.4374	2.4382	2.4391	2.4399	2.4408	2.4416	2.4425
2.4434	2.4442	2.4450	2.4459	2.4467	2.4476	2.4484
2.4493	2.4501	2.4510	2.4518	2.4526	2.4535	2.4543
2.4551	2.4560	2.4568	2.4576	2.4585	2.4593	2.4601
2.4609	2.4618	2.4626	2.4634	2.4642	2.4651	2.4659
2.4667	2.4675	2.4683	2.4691	2.4700	2.4708	2.4716
2.4724	2.4732	2.4740	2.4748	2.4756	2.4764	2.4772
2.4780	2.4788	2.4796	2.4804	2.4812	2.4820	2.4828
2.4836	2.4844	2.4852	2.4860	2.4868	2.4876	2.4884
2.4892	2.4899	2.4907	2.4915	2.4923	2.4931	2.4939
2.4946	2.4954	2.4962	2.4970	2.4978	2.4985	2.4993
2.5001	2.5008	2.5016	2.5024	2.5032	2.5039	2.5047
2.5055	2.5062	2.5070	2.5078	2.5085	2.5093	2.5100
2.5108	2.5116	2.5123	2.5131	2.5138	2.5146	2.5153
2.5161	2.5168	2.5176	2.5183	2.5191	2.5198	2.5206
2.5213	2.5221	2.5228	2.5236	2.5243	2.5250	2.5258
2.5265	2.5273	2.5280	2.5287	2.5295	2.5302	2.5309
2.5317	2.5324	2.5331	2.5339	2.5346	2.5353	2.5361
2.5368	2.5375	2.5382	2.5390	2.5397	2.5404	2.5411
2.5418	2.5426	2.5433	2.5440	2.5447	2.5454	2.5462
2.5469	2.5476	2.5483	2.5490	2.5497	2.5504	2.5511
2.5518	2.5526	2.5533	2.5540	2.5547	2.5554	2.5561
2.5568	2.5575	2.5582	2.5589	2.5596	2.5603	2.5610
2.5617	2.5624	2.5631	2.5638	2.5645	2.5652	2.5659
2.5665	2.5672	2.5679	2.5686	2.5693	2.5700	2.5707
2.5714	2.5721	2.5727	2.5734	2.5741	2.5748	2.5755
2.5761	2.5768	2.5775	2.5782	2.5789	2.5795	2.5802
2.5809	2.5816	2.5822	2.5829	2.5836		

```
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.1333 HR MASS RAINFALL=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   101.67    CFS   UNIT VOLUME =    .9993       B =   526.28      P60 = 1.8700
   AREA =       .025753 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 45.680 CFS UNIT VOLUME = 1.000 B = 354.67 P60 = 1.8700
AREA = .017168 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* BASIN 1 PONDING
*
ROUTE RESERVOIR ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	58.00
11.8177	0.2637	58.50
20.4689	0.3733	59.00
26.4252	0.4937	59.50
31.2668	0.6249	60.00
35.4532	0.7670	60.50
39.1950	0.9199	61.00
42.6094	1.0837	62.50
45.7699	1.2583	63.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	58.00	.000	.00
.80	.00	58.00	.000	.00
1.60	70.06	62.57	1.107	43.04
2.40	3.83	58.63	.293	14.12
3.20	.72	58.07	.039	1.76
4.00	.43	58.02	.012	.54
4.80	.42	58.02	.009	.42
5.60	.48	58.02	.010	.46
6.40	.63	58.02	.013	.58
7.20	.61	58.03	.014	.61
8.00	.58	58.02	.013	.59
8.80	.55	58.02	.012	.56
9.60	.52	58.02	.012	.53
10.40	.50	58.02	.011	.51
11.20	.48	58.02	.011	.49
12.00	.46	58.02	.010	.47
12.80	.45	58.02	.010	.45
13.60	.43	58.02	.010	.44
14.40	.42	58.02	.009	.42
15.20	.40	58.02	.009	.41
16.00	.39	58.02	.009	.39
16.80	.38	58.02	.009	.38
17.60	.37	58.02	.008	.37
18.40	.35	58.02	.008	.36
19.20	.34	58.01	.008	.35

PEAK DISCHARGE = 44.781 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = 62.844
MAXIMUM STORAGE = 1.2037 AC-FT INCREMENTAL TIME= .033330HRS

*
*
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 10:14:01

AHYMO
Runoff Input
and
Summary Output
for
Proposed and Existing
Drainage Basins

```
*****************************************************************
*                WESTRIDGE MOBILE HOME PARK                     *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 1
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.010714 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 2
*
COMPUTE NM HYD       ID=1 HYD NO=100.2 AREA=0.008019 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 3
*
COMPUTE NM HYD       ID=1 HYD NO=100.3 AREA=0.004474 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 4
*
COMPUTE NM HYD       ID=1 HYD NO=100.4 AREA=0.007330 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5A
*
COMPUTE NM HYD       ID=1 HYD NO=100.5A AREA=0.005505 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5B
*
COMPUTE NM HYD       ID=1 HYD NO=100.5B AREA=0.001121 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 6
*
COMPUTE NM HYD       ID=1 HYD NO=100.6 AREA=0.007264 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
```

```
* BASIN 7
*
COMPUTE NM HYD       ID=1 HYD NO=100.7 AREA=0.006842 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 8
*
COMPUTE NM HYD       ID=1 HYD NO=100.8 AREA=0.002367 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*****************************************************************
*        10-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 1
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=110.1 AREA=0.010714 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 2
*
COMPUTE NM HYD       ID=1 HYD NO=110.2 AREA=0.008019 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 3
*
COMPUTE NM HYD       ID=1 HYD NO=110.3 AREA=0.004474 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 4
*
COMPUTE NM HYD       ID=1 HYD NO=110.4 AREA=0.007330 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5A
*
COMPUTE NM HYD       ID=1 HYD NO=110.5A AREA=0.005505 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5B
```

```
*
COMPUTE NM HYD      ID=1 HYD NO=110.5B AREA=0.001121 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 6
*
COMPUTE NM HYD      ID=1 HYD NO=110.6 AREA=0.007264 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 7
*
COMPUTE NM HYD      ID=1 HYD NO=110.7 AREA=0.006842 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 8
*
COMPUTE NM HYD      ID=1 HYD NO=110.8 AREA=0.002367 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/13/1997
INPUT FILE = A:E.DAT USER NO.= R_BOHANN.I01

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.10	-	1	.01071	8.84	.382	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.20	-	1	.00802	6.62	.286	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.30	-	1	.00447	3.69	.159	.66800	1.645	1.290	PER IMP= .00
COMPUTE NM HYD	100.40	-	1	.00733	6.05	.261	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.5A	-	1	.00551	4.54	.196	.66800	1.645	1.290	PER IMP= .00
COMPUTE NM HYD	100.5B	-	1	.00112	.93	.040	.66800	1.645	1.300	PER IMP= .00
COMPUTE NM HYD	100.60	-	1	.00726	5.99	.259	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.70	-	1	.00684	5.65	.244	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.80	-	1	.00237	1.96	.084	.66800	1.645	1.293	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.01071	3.02	.128	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.20	-	1	.00802	2.26	.096	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.30	-	1	.00447	1.26	.053	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.40	-	1	.00733	2.07	.088	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.5A	-	1	.00551	1.55	.066	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.5B	-	1	.00112	.32	.013	.22418	1.645	.445	PER IMP= .00
COMPUTE NM HYD	110.60	-	1	.00726	2.05	.087	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.70	-	1	.00684	1.93	.082	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.80	-	1	.00237	.67	.028	.22418	1.645	.442	PER IMP= .00
FINISH										

```
*****************************************************************
*                WEST RIDGE MOBILE HOME PARK                    *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 1
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.010714 SQ MI
                     PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 2
*
COMPUTE NM HYD       ID=1 HYD NO=100.2 AREA=0.008019 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 3
*
COMPUTE NM HYD       ID=1 HYD NO=100.3 AREA=0.004474 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 4
*
COMPUTE NM HYD       ID=1 HYD NO=100.4 AREA=0.007330 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5A
*
COMPUTE NM HYD       ID=1 HYD NO=100.5A AREA=0.005505 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5B
*
COMPUTE NM HYD       ID=1 HYD NO=100.5B AREA=0.001121 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 6
*
COMPUTE NM HYD       ID=1 HYD NO=100.6 AREA=0.007264 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
```

```
* BASIN 7
*
COMPUTE NM HYD       ID=1 HYD NO=100.7 AREA=0.006842 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 8
*
COMPUTE NM HYD       ID=1 HYD NO=100.8 AREA=0.002367 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*****************************************************************
*        10-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 1
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=110.1 AREA=0.010714 SQ MI
                     PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 2
*
COMPUTE NM HYD       ID=1 HYD NO=110.2 AREA=0.008019 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 3
*
COMPUTE NM HYD       ID=1 HYD NO=110.3 AREA=0.004474 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 4
*
COMPUTE NM HYD       ID=1 HYD NO=110.4 AREA=0.007330 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5A
*
COMPUTE NM HYD       ID=1 HYD NO=110.5A AREA=0.005505 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 5B
```

```
*
COMPUTE NM HYD       ID=1 HYD NO=110.5B AREA=0.001121 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 6
*
COMPUTE NM HYD       ID=1 HYD NO=110.6 AREA=0.007264 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 7
*
COMPUTE NM HYD       ID=1 HYD NO=110.7 AREA=0.006842 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 8
*
COMPUTE NM HYD       ID=1 HYD NO=110.8 AREA=0.002367 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/13/1997

INPUT FILE = A:P.DAT USER NO.= R_BOHANN.I01

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.10	-	1	.01071	21.26	1.049	1.83567	1.622	3.100	PER IMP= 90.00
COMPUTE NM HYD	100.20	-	1	.00802	13.43	.644	1.50550	1.622	2.617	PER IMP= 60.00
COMPUTE NM HYD	100.30	-	1	.00447	7.50	.359	1.50550	1.622	2.621	PER IMP= 60.00
COMPUTE NM HYD	100.40	-	1	.00733	12.28	.589	1.50550	1.622	2.618	PER IMP= 60.00
COMPUTE NM HYD	100.5A	-	1	.00551	9.23	.442	1.50550	1.622	2.619	PER IMP= 60.00
COMPUTE NM HYD	100.5B	-	1	.00112	1.90	.090	1.50550	1.622	2.644	PER IMP= 60.00
COMPUTE NM HYD	100.60	-	1	.00726	12.17	.583	1.50550	1.622	2.618	PER IMP= 60.00
COMPUTE NM HYD	100.70	-	1	.00684	11.46	.549	1.50550	1.622	2.618	PER IMP= 60.00
COMPUTE NM HYD	100.80	-	1	.00237	3.98	.190	1.50550	1.622	2.628	PER IMP= 60.00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.01071	13.69	.649	1.13632	1.622	1.997	PER IMP= 90.00
COMPUTE NM HYD	110.20	-	1	.00802	8.07	.372	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.30	-	1	.00447	4.51	.208	.86990	1.622	1.574	PER IMP= 60.00
COMPUTE NM HYD	110.40	-	1	.00733	7.37	.340	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.5A	-	1	.00551	5.54	.255	.86990	1.622	1.573	PER IMP= 60.00
COMPUTE NM HYD	110.5B	-	1	.00112	1.14	.052	.86990	1.622	1.587	PER IMP= 60.00
COMPUTE NM HYD	110.60	-	1	.00726	7.31	.337	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.70	-	1	.00684	6.88	.317	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.80	-	1	.00237	2.39	.110	.86990	1.622	1.577	PER IMP= 60.00
FINISH										

```
*****************************************************************
*          WESTRIDGE MOBILE HOME PARK (OFFSITE BASINS)          *
*****************************************************************
*        100-YEAR, 6-HR STORM  (UNDEVELOPED CONDITIONS)         *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 103a
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.3a AREA=0.074263 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 103b
*
COMPUTE NM HYD       ID=1 HYD NO=100.3b AREA=0.058861 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
* BASIN 108.1
*
COMPUTE NM HYD       ID=1 HYD NO=100.8 AREA=0.068584 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 109a
*
COMPUTE NM HYD       ID=1 HYD NO=100.9a AREA=0.077788 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 109b
*
COMPUTE NM HYD       ID=1 HYD NO=100.9b AREA=0.035806 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1

* BASIN 110

COMPUTE NM HYD       ID=1 HYD NO=100.10 AREA=0.017818 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1

* BASIN 112a

COMPUTE NM HYD       ID=1 HYD NO=100.12a AREA=0.026171 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
```

```
PRINT HYD           ID=1 CODE=1
*
* BASIN 112b
*
COMPUTE NM HYD      ID=1 HYD NO=100.12b AREA=0.064564 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 113a
*
COMPUTE NM HYD      ID=1 HYD NO=100.13a AREA=0.036760 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*
*****************************************************************
*          10-YEAR, 6-HR STORM  (UNDEVELOPED CONDITIONS)        *
*****************************************************************
*
START               TIME=0.0
*
* BASIN 103a
*
RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD      ID=1 HYD NO=110.3a AREA=0.074263 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 103b
*
COMPUTE NM HYD      ID=1 HYD NO=110.3b AREA=0.058861 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 108.1
*
COMPUTE NM HYD      ID=1 HYD NO=110.8 AREA=0.068584 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 109a
*
COMPUTE NM HYD      ID=1 HYD NO=110.9a AREA=0.077788 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
* BASIN 109b
*
COMPUTE NM HYD      ID=1 HYD NO=110.9b AREA=0.035806 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
```

```
*
* BASIN 110
*
COMPUTE NM HYD       ID=1 HYD NO=110.10 AREA=0.017818 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
* BASIN 112a
*
COMPUTE NM HYD       ID=1 HYD NO=110.12a AREA=0.026171 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 112b
*
COMPUTE NM HYD       ID=1 HYD NO=110.12b AREA=0.064564 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 113a
*
COMPUTE NM HYD       ID=1 HYD NO=101.13a AREA=0.036760 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =01/08/1998

INPUT FILE = A:OFF.DAT USER NO.= R_BOHANN.I01

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.3a	-	1	.07426	61.38	2.646	.66800	1.645	1.291	PER IMP= .00
COMPUTE NM HYD	100.3b	-	1	.05886	48.51	2.097	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.80	-	1	.06858	56.60	2.443	.66800	1.645	1.290	PER IMP= .00
COMPUTE NM HYD	100.9a	-	1	.07779	64.35	2.771	.66800	1.645	1.293	PER IMP= .00
COMPUTE NM HYD	100.9b	-	1	.03581	29.51	1.276	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.10	-	1	.01782	14.69	.635	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.12a	-	1	.02617	21.57	.932	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.12b	-	1	.06456	53.23	2.300	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.13a	-	1	.03676	30.30	1.310	.66800	1.645	1.288	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.3a	-	1	.07426	20.90	.888	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.3b	-	1	.05886	16.58	.704	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.80	-	1	.06858	19.31	.820	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.9a	-	1	.07779	21.88	.930	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.9b	-	1	.03581	10.09	.428	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.10	-	1	.01782	5.02	.213	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.12a	-	1	.02617	7.37	.313	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.12b	-	1	.06456	18.18	.772	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	101.13a	-	1	.03676	10.36	.440	.22418	1.645	.440	PER IMP= .00
FINISH										

```
*****************************************************************
*          WESTRIDGE MOBILE HOME PARK (OFFSITE BASINS)          *
*****************************************************************
*         100-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)          *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 112a
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.a AREA=0.026171 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
* BASIN 112b
*
COMPUTE NM HYD       ID=1 HYD NO=100.b AREA=0.064564 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*****************************************************************
*         10-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)           *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 112a
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=110.a AREA=0.026171 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
* BASIN 112b
*
COMPUTE NM HYD       ID=1 HYD NO=110.b AREA=0.064564 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/08/1997

INPUT FILE = a:\offdev.dat USER NO.= R_BOHANN.I01

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	
										TIME=	.00
START											
										RAIN6=	2.200
RAINFALL TYPE= 1											
COMPUTE NM HYD	100.a	-	1	.02617	43.78	2.101	1.50550	1.622	2.614	PER IMP=	60.00
COMPUTE NM HYD	100.b	-	1	.06456	107.98	5.184	1.50550	1.622	2.613	PER IMP=	60.00
										TIME=	.00
START											
										RAIN6=	1.470
RAINFALL TYPE= 1											
COMPUTE NM HYD	110.a	-	1	.02617	26.30	1.214	.86990	1.622	1.570	PER IMP=	60.00
COMPUTE NM HYD	110.b	-	1	.06456	64.80	2.995	.86990	1.622	1.568	PER IMP=	60.00
FINISH											

```
*****************************************************************
*      WESTRIDGE MOBILE HOME PARK (AVALONE OFFSITE BASIN)       *
*****************************************************************
*         100-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)          *
*****************************************************************
*
START                TIME=0.0
*
* AVALON DEVELOPED BASIN
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.0222322 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*****************************************************************
*          10-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)          *
*****************************************************************
*
START                TIME=0.0
*
* AVALON DEVELOPED BASIN
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=110.1 AREA=0.022322 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/10/1997

INPUT FILE = A:\AVALON.DAT USER NO.= R_BOHANN.I01

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.10	-	1	.02223	37.20	1.785	1.50550	1.622	2.614	PER IMP= 60.00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.02232	22.43	1.036	.86990	1.622	1.570	PER IMP= 60.00
FINISH										

```
*****************************************************************
*                WESTRIDGE MOBILE HOME PARK                     *
*****************************************************************
*         UNDEVELOPED LAND WITHIN STATE HIGHWAY ROW             *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
* BASIN 10D
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.10 AREA=0.01955 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 11D
*
COMPUTE NM HYD       ID=1 HYD NO=100.11 AREA=0.01962 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
* BASIN 12D
*
COMPUTE NM HYD       ID=1 HYD NO=100.12 AREA=0.03737 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*****************************************************************
        10-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)        *
*****************************************************************
*
TART                 TIME=0.0

 BASIN 10D
*
AINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
OMPUTE NM HYD        ID=1 HYD NO=110.10 AREA=0.01955 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
RINT HYD             ID=1 CODE=1

 BASIN 11D
*
OMPUTE NM HYD        ID=1 HYD NO=110.11 AREA=0.01962 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
RINT HYD             ID=1 CODE=1

* BASIN 12D
```

```
COMPUTE NM HYD      ID=1 HYD NO=110.12 AREA=0.03737 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =12/03/1997

INPUT FILE = A:ROW.DAT USER NO.= R_BOHANN.I01

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	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	100.10	-	1	.01955	16.12	.697	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.11	-	1	.01962	16.17	.699	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.12	-	1	.03737	30.80	1.331	.66800	1.645	1.288	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	110.10	-	1	.01955	5.51	.234	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.11	-	1	.01962	5.53	.235	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.12	-	1	.03737	10.53	.447	.22418	1.645	.440	PER IMP=	.00
FINISH											

SHORT FORM WARRANTY DEED—See Back Hereof—Form Approved by the State Commission of Bonds and Mortgages

WARRANTY DEED

99042

CLEOFAS APODACA and JESSIE P. APODACA, his wife for consideration paid, grant to JAMES APODACA, as his sole and separate estate the following described real estate in Bernalillo County, New Mexico:

The South 207.40 feet of [redacted] Tract 6, of Plat showing [illegible] of C. H. Hall made by Pete Sandoval dated November 24th, 1948, and more particularly described as follows:

BEGINNING at the Southeast corner, which is the point of intersection of the North line of Volcano Road NW with the West line of a public road, 1110 feet West along said line of Volcano Road NW from the West boundary of the T.W.A. Airport Lease, from which beginning-point the Northwest corner of the Original Townsite of Westland-A Subdivision, as shown on the plat of said Subdivision filed in the office of the County Clerk of Bernalillo County, New Mexico, March 23rd, 1935, bears S. 89° 04' 20" W., 1953.20 feet distant;

Running from said beginning-point West along the North line of Volcano Road NW, 210.00 feet to the Southwest corner;
Thence North, 1037.00 feet to the Northwest corner;
Thence East along the South line of a public road, 210.00 feet to the Northeast corner;
Thence South along the West line of a public road, 1037.00 feet to the place of beginning.

The land herein conveyed contains One (1) Acre, more or less.

No Revenue Stamps attached, as no monetary is passed.

with warranty covenants.

WITNESS our hand S and seal S this 31st day of December 19 58.

(Seal) Cleofas Apodaca (Seal)
(Seal) Jessie P. Apodaca (Seal)

STATE OF NEW MEXICO, County of Bernalillo, } ss. ACKNOWLEDGMENT INDIVIDUAL

On this 31st day of December 19 58, before me personally appeared CLEOFAS APODACA and JESSIE P. APODACA, his wife,

to me known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act and deed.

Witness my hand and seal the day and year last above written.

Notary Public

My commission expires May 23rd, 1959.

STATE OF NEW MEXICO, County of } ss. ACKNOWLEDGMENT CORPORATION

On this day of 19, before me personally appeared, to me personally known, who being by me duly sworn, did say that he is of a corporation organized under the laws of the State of and that the seal affixed to said instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation, by authority of its board of directors, and said acknowledged said instrument to be the free act and deed of said corporation.

Witness my hand and seal the day and year last above written.

My commission expires Notary Public

STATE OF NEW MEXICO, County of BERNALILLO, ss. I hereby certify that this instrument was filed for record on the 30th day of Jan, 19 59, at 8:43 o'clock A M., and duly recorded in Book B-460, page 139, of the Records of Deeds of said county, on this 30 day of Jan, A. D. 19 59.

County Clerk.

By Deputy.

FORM 87-1—Printed and For Sale by Vellum Printing and Stationery Co.

CITY OF ALBUQUERQUE

September 9, 2013

Ronald R. Bohannan, P.E.
Tierra West, LLC.
5571 Midway Park Pl NE
Albuquerque, NM 87109

Re: West Ridge MH Park
Conditional Letter Of Map Revision (CLOMR)
Engineer's Stamp date 8/14/2013 (K-09/D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 8-27-13, the Grading and Drainage Plan is approved for grading permit. Erosion Sediment Control plan and Flood Permit application must be submitted prior to any grading.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for disturbing one acre or more and a Topsoil Disturbance Permit for disturbing ¾ of an acre or more. If you have any questions, you can contact me at 924-3695.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development Review Services

C: e-mail

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: West Ridge Mobile Home Park City Drainage #: K09/D006

DRB#: 1000248 EPC#: Work Order#:

Legal Description: Tract A, West Ridge Mobile Home Park

City Address: 9301 Volcano Road NW, Albuquerque, NM 87121

Engineering Firm: Tierra West, LLC Contact: Jonathan Niski

Address: 5571 Midway Park Place NE

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jniski@tierrawestllc.com

Owner: Western Security Real Estate, Inc. Contact: Fred N. Seeley

Address: 3511 Carlisle NE Albuquerque, NM 87193

Phone#: 505-321-6336 Fax#: 505-888-1415 E-mail: fnseeley@comcast.net

Architect: Contact:

Address:

Phone#: Fax#: E-mail:

Surveyor: Precision Surveys Inc. Contact: Larry Medrano

Address: P.O. Box 90636 Albuquerque, NM 87199

Phone#: 505-856-5700 Fax#: 505-856-7900 E-mail: larry@presurv.com

Contractor: Contact:

Address:

Phone#: Fax#: E-mail:

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
X DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
X GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D APPROVAL
X S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
AUG 27 2013
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes ___ No ___ Copy Provided

DATE SUBMITTED: 08/27/2013 By: Jonathan Niski

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Verbal No Office Need to Match Bottom of Pond

Project Title: West Ridge Mobile Home Park City Drainage #: K09/D006

DRB#: 1000248 EPC#: Work Order#:

Legal Description: Tract A, West Ridge Mobile Home Park

City Address: 9301 Volcano Road NW, Albuquerque, NM 87121

Engineering Firm: Tierra West, LLC Contact: Jonathan Niski

Address: 5571 Midway Park Place NE

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jniski@tierrawestllc.com

Owner: Western Security Real Estate, Inc. Contact: Fred N. Seeley

Address: 3511 Carlisle NE Albuquerque, NM 87193

Phone#: 505-321-6336 Fax#: 505-888-1415 E-mail: fnseeley@comcast.net

Architect: Contact:

Address:

Phone#: Fax#: E-mail:

Surveyor: Precision Surveys Inc. Contact: Larry Medrano

Address: P.O. Box 90636 Albuquerque, NM 87199

Phone#: 505-856-5700 Fax#: 505-856-7900 E-mail: larry@presurv.com

Contractor: Contact:

Address:

Phone#: Fax#: E-mail:

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
X DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
___ GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

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___ S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
X GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED AUG 15 2013 LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes ___ No ___ Copy Provided

DATE SUBMITTED: ~~06/12/2013~~ 8/15/13 By: Jonathan Niski

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
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4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

CITY OF ALBUQUERQUE

June 4, 2013

Ronald R. Bohannan, P.E.
Tierra West, LLC.
5571 Midway Park Pl NE
Albuquerque, NM 87109

Re: West Ridge MH Park
Grading and Drainage Plan
Engineer's Stamp date 05-16-2013 (K-09/D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 05-13-13, the above referenced plan is accepted for Grading Permit. Upon completion of the project, provide an Engineer Certification for our files.

If you have any questions, you can contact me at 924-3695 or Rudy Rael at 924-3977.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

RR/SB
C: Email

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

RAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: West Ridge Mobile Home Park City Drainage #: K-09/D004

DRB#: EPC#: 12EPC-40046/52 Work Order#:

Legal Description: Tract A, West Ridge Mobile Home Park

City Address: Volcano Rd. NW between 98th Street & 90th Street

Engineering Firm: Tierra West, LLC Contact: Jonathan Niski

Address: 5571 Midway Park Pl NE

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jniski@tierrawestllc.com

Owner: Western Security Real Estate Contact: Fred Seeley

Address: P.O. Box 65598 Albuquerque, NM 87193

Phone#: 505-888-9777 Fax#: 505-888-1415 E-mail: fnseeley@comcast.net

Architect: Contact:

Address:

Phone#: Fax#: E-mail:

Surveyor: Contact:

Address:

Phone#: Fax#: E-mail:

Contractor: Contact:

Address:

Phone#: Fax#: E-mail:

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
X DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
___ GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
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___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
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___ S. DEV. PLAN FOR SUB'D APPROVAL
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___ SECTOR PLAN APPROVAL
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___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
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___ GRADING PERMIT APPROVAL
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___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION
___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED MAY 13 2013

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes ___ No ___ Copy Provided

DATE SUBMITTED: 05/13/2013 By:

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, anc scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

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4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

gw

TIERRA WEST, LLC

5571 Midway Park Place NE
(505) 858-3100 Fax (505) 858-1118 1-800-245-3102
tierrawestllc.com
Albuquerque, NM 87109

May 6, 2013

Mr. Shahab Biazar, P.E.
Senior Engineer, Planning Department
Development and Building Services
City of Albuquerque
600 2nd Street. NW
Albuquerque, NM 87103

RE: **WEST RIDGE MH PARK (K-09/E006)**
SEDIMENTATION & EROSION CONTROL PLAN AND GRADING & DRAINAGE PLAN
RESPONSES TO COMMENTS

Mr. Biazar:

Please find responses to comments provided in letters for the Grading and Drainage Plan, and the Sedimentation and Erosion Control Plan, both dated May 1, 2013 below:

Sedimentation and Erosion Control Plan:

- Provide a detail for the entry/exit. Stone path must be at least 40ft long.
  A detail for the construction entrance was added to the plan.

- Provide a detail for the Silt fence.
  A detail for the silt fence was added to the plan.

Grading and Drainage Plan:

- An emergency overflow needs to be added.
  An emergency overflow as added on the south side of the pond and the calculations are attached.

- Label existing contours.
  All existing index contours are now labeled.

If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, PE

Enclosure/s

RRB/jn/djb

JN: 27031

\\Nas01\zdrive\2007\27031\Correspondence\27031 13-05-02 Biazar re Erosion Grading & Drainage Plan.docx

RECEIVED
MAY 13 2013

Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Channel	12	0	0.5	3.00	12.04	0.2491	2	19.25	13.40	4.47
Pond Overflow	21	1	1	11.00	21.10	0.5213	1	81.67	79.24	7.20

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area

R = D/4

S = Slope

n = 0.013

Emergency overflow Capacity

Weir Equation:

$$Q = CLH^{3/2}$$

Q= Flow
C = 2.95
L= Length of weir
H = Height of Weir

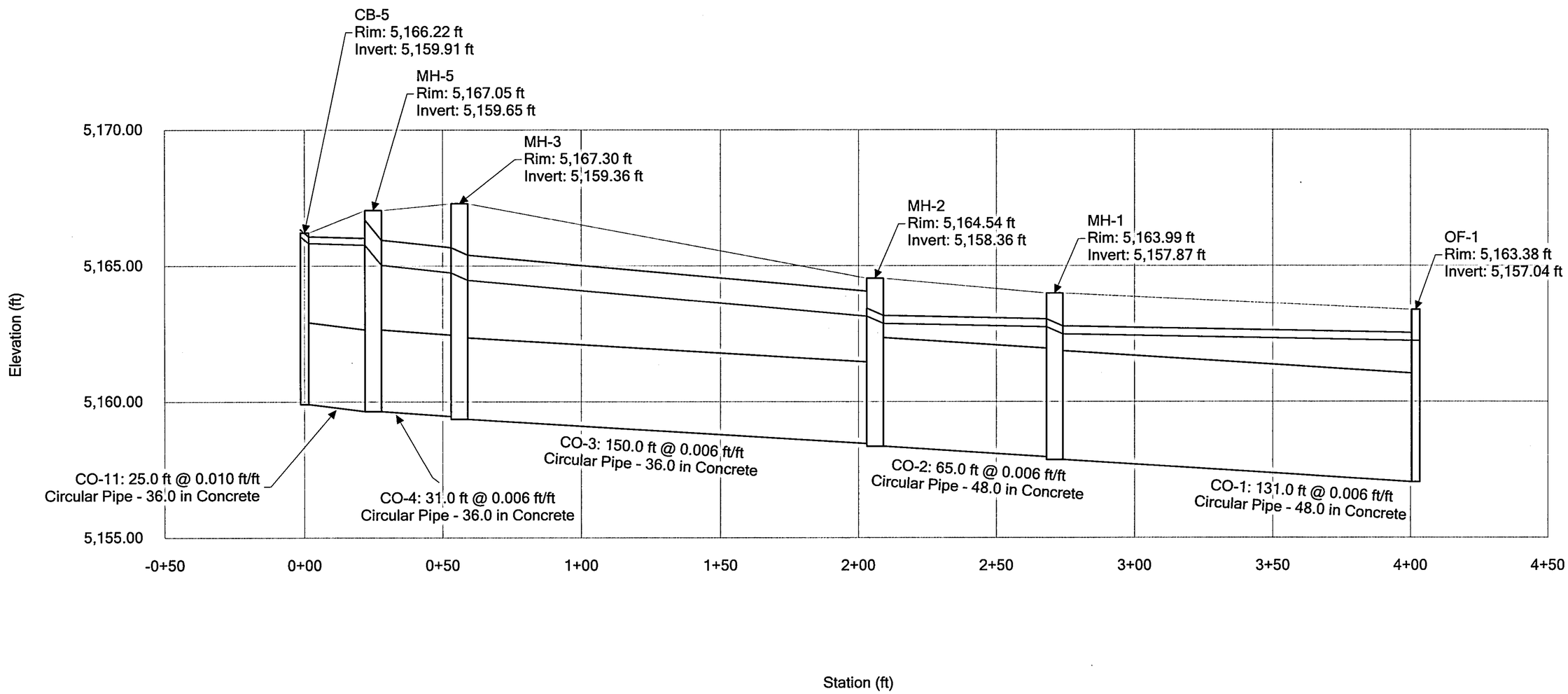
Emergency Overflow

$$Q = 2.95 * 27 * 1.0^{3/2}$$

Q = 79.65 cfs
79.65 cfs > 79.24 cfs

Overflow had Capacity

Profile Report
Engineering Profile - New Section (27031_SD Analysis_9-1-10.stc)



K9-D6

DRAINAGE REPORT
FOR

West Ridge Mobile Home Park
Permanent Detention Pond
City of Albuquerque, New Mexico

Prepared by:

Tierra West, LLC
5571 Midway Park Place
Albuquerque, New Mexico 87109

Prepared for:
Fred N. Seeley
Western Security Real Estate, Inc.
3511 Carlisle NE
PO Box 65598
Albuquerque, NM 87193

September 7, 2007

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the State of New Mexico in good standing.

RONALD RAY BOHANNAN REGISTERED PROFESSIONAL ENGINEER NEW MEXICO 7868

9/10/07

Ronald R. Bohannan
PE No. 7868

RECEIVED
SEP 10 2007
HYDROLOGY SECTION

Job No: 27031

TABLE OF CONTENTS

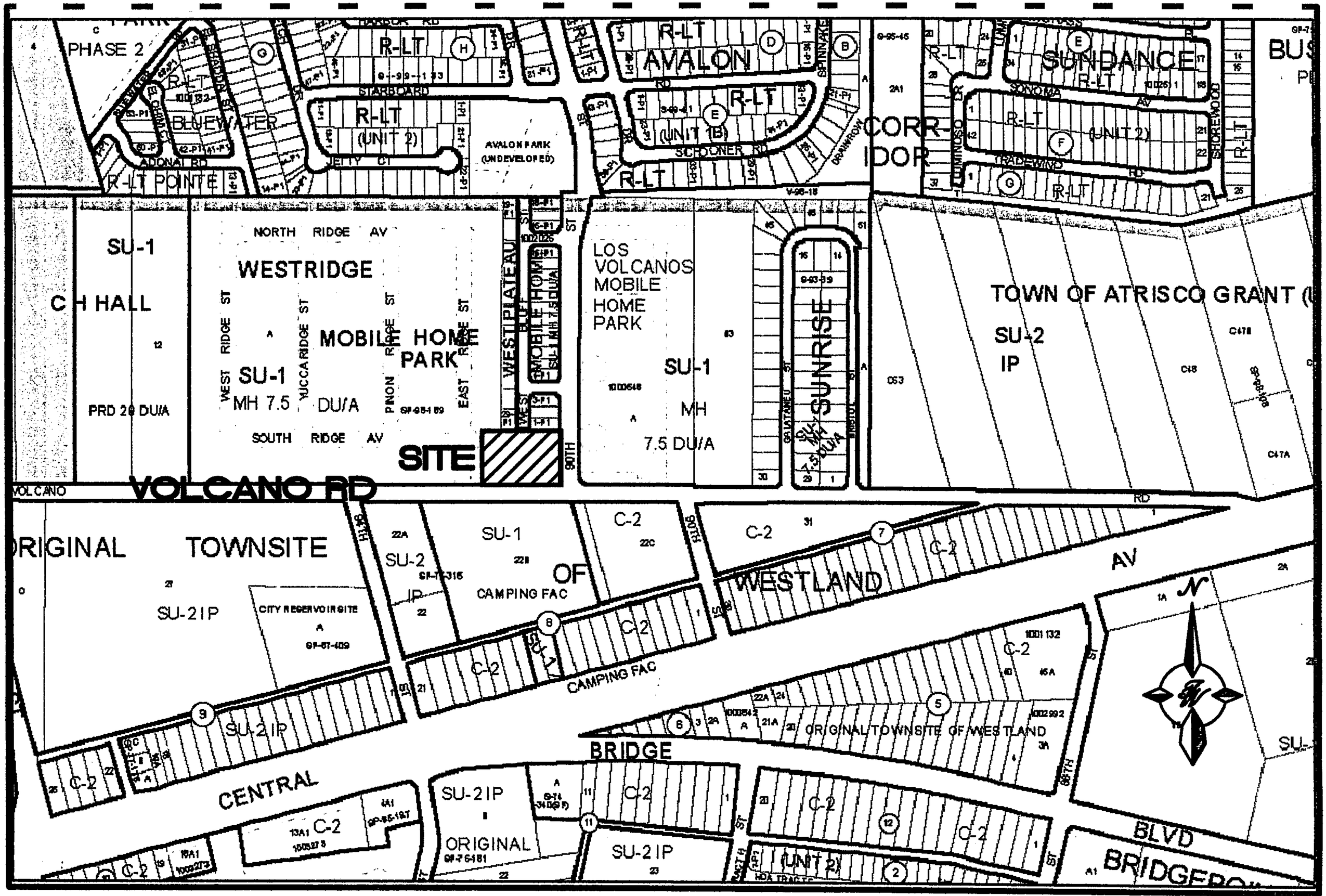
Vicinity Map 1
Location 2
Background 2
Onsite Drainage Plan 2
FEMA Map 3
Summary 4
FEMA Map Exhibit 5

LIST OF APPENDICES

Appendix A Approved West Ridge Mobile Home Park Drainage Report, dated January 1, 1998
Appendix B Onsite Basin Summary
Appendix C Pond Volume & Spillway Calculations
Appendix D AHYMO Pond Routing Input & Output
Appendix E Storm Drain and Inlet Calculations
Appendix F Storm Drain As-Builts

MAP POCKET

Pocket 1 - Grading & Drainage Plan



VICINITY MAP:

K-9-Z

Location

The existing West Ridge Mobile Home Park community is located south of Avalon Road between 90th and 94th Streets. The site is shown on the attached Zone Atlas Map (K-9). The purpose of this report is to connect the site to the City approved outfall eliminating the two temporary on-site retention ponds and replacing them with a permanent detention pond.

Background

The approved drainage report for the West Ridge Mobile Home Park dated January 1, 1998 outlined the necessary drainage improvements needed to develop the mobile home park. The report called for two temporary on-site retention ponds (Ponds 2A and 2B) two be constructed to capture on-site and off-site follows. The temporary retention ponds were to remain until the design and construction of the downstream storm drain improvements were complete. The purpose of this report is to provide drainage analysis supporting the construction of the permanent detention facility outlined in the approved *West Ridge Mobile Home Park Drainage Report, dated January 1, 1998* based on the completion of the downstream drainage facilities. The approved drainage report for the mobile home park determined that the maximum allowable discharge for the development is 56.31 cfs. The construction of the permanent detention pond will allow for the existing temporary retention ponds to be filled and the space used for recreation and storage facilities for the West Ridge Mobile Home Park community. A copy of the approved drainage report for the mobile home park can be found in Appendix A of this report.

Onsite Drainage Plan

With the construction of the downstream storm drain facilities along Volcano Road and 94th street the existing temporary onsite retention ponds (Ponds 2A & 2B) can be filled and replaced with a permanent detention pond located on the southeast corner of the property using a portion of Pond 2A. The remaining portion of Pond 2A not used for the detention pond will then be filled and used as a storage area for mobile home park residences. Pond 2B will be completely filled and used for recreation. The existing 18"

RCP from Pinon Ridge Street to Pond 2B will be abandoned and the existing 18" RCP running south along Pinon Ridge Street from the existing drop inlets will be unplugged allowing the captured flow to go south to South Ridge Avenue existing 24" RCP. The existing outlet pipe from the manhole at the intersection of East Ridge Street and South Ridge will be removed. Captured flow within the existing 24" RCP along South Ridge Avenue will drain to a new double Type C Inlet through a new 30" RCP. The double Type C Inlet is located in a sump and will capture the runoff from Basins 3, 5B, 6, and portions of 7 not captured by inlets along South Ridge Avenue. The total runoff at the inlet is 30.2 cfs. The double Type C Inlet has a capacity of 28.56 cfs. Minimal ponding will occur around the inlet. A new 36-inch RCP will be constructed from the new double Type C Inlet to the permanent detention pound. The new storage area (Basin 8) will surface drain to a concrete run down and outfall into the proposed detention pond.

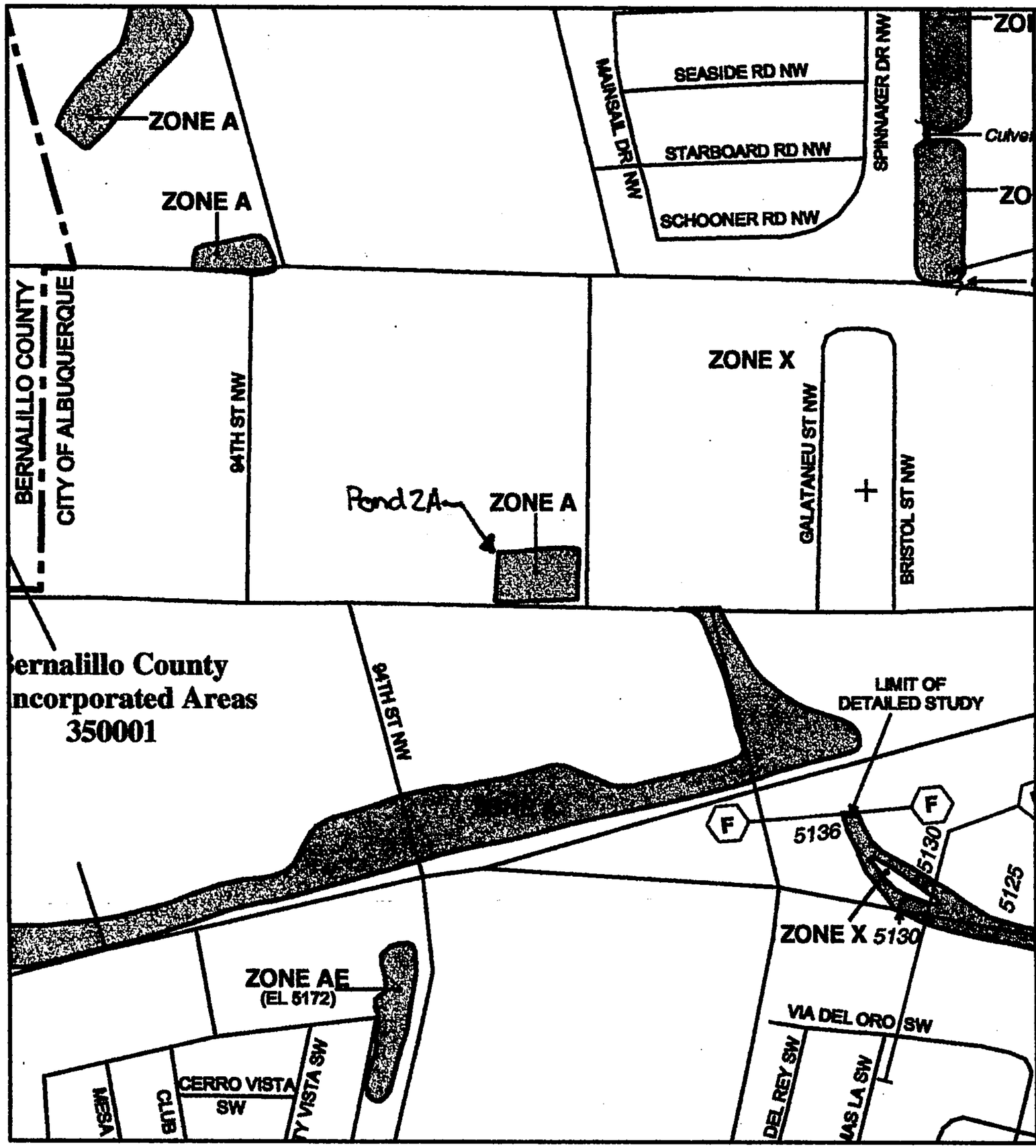
The existing 42 RCP along East Ridge Street will remained plugged. The proposed detention pond will discharge to the existing storm drain along Volcano Road through a 30" RCP line at a flow of 55.34 cfs. Detention pond calculations were done using the AHYMO (Arid –Lands Hydrologic Model) Computer Program, August 1997. Please see Appendix C and D for the pond volume calculations and pond routing input and output data. The connection to the storm drain will be made by adding a manhole along Volcano Road.

FEMA Map

The site is located on FIRM Map 35001C0328E as shown on the attached excerpt. The Map shows that Pond 2A lies within the 100 year flood plain. Following the construction of the proposed improvements a Letter of Map Revision (LOMR) will be submitted for the existing pond area to remove the portion not being used for the permanent detention pond from the flood plain.

SUMMARY

The completed construction of the storm drain along Volcano Road and 90th Street removes the need for the temporary retention Ponds 2A and 2B as described in the approved Drainage Report for West Ridge Mobile Home Park dated January 1, 1998. The two temporary retention ponds will be filled and a permanent detention pond will be built on a portion of the land used for Pond 2A. The detention pond will discharge flow into the existing storm drain system along Volcano Road using a 30" RCP at a flow of 55.34 cfs. This flow is less than the maximum allowable discharged flow of 56.31 calculated in the approved drainage report for the property. The connection to the Volcano Road storm drain will be made by constructing a new manhole within Volcano Road. Upon completion of the proposed improvements a "Letter of Map Revision" will be submitted removing the ponds from the 100 year flood plain.



MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 M

PANEL 0328E

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO
AND INCORPORATED AREAS

PANEL 328 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0328	E
BERNALILLO COUNTY	350001	0328	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
35001C0328E

MAP REVISED
NOVEMBER 19, 2003

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

DRAINAGE REPORT

for

West Ridge Mobile Home Park

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October 1997

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TABLE OF CONTENTS

Zone Atlas Map K-9 1

Location 2

FEMA Map and Soil Conditions 2

Off-site Drainage Management Plan 2

FIRM Map 350001C0328 D 3

Interim Solution 4

Off-site Undeveloped Basin Layout 5

Future Solution 6

City of Albuquerque Developed Basin Map 7

On-Site Drainage Management Plan 8

Developed Basin Layout 9

Summary 12

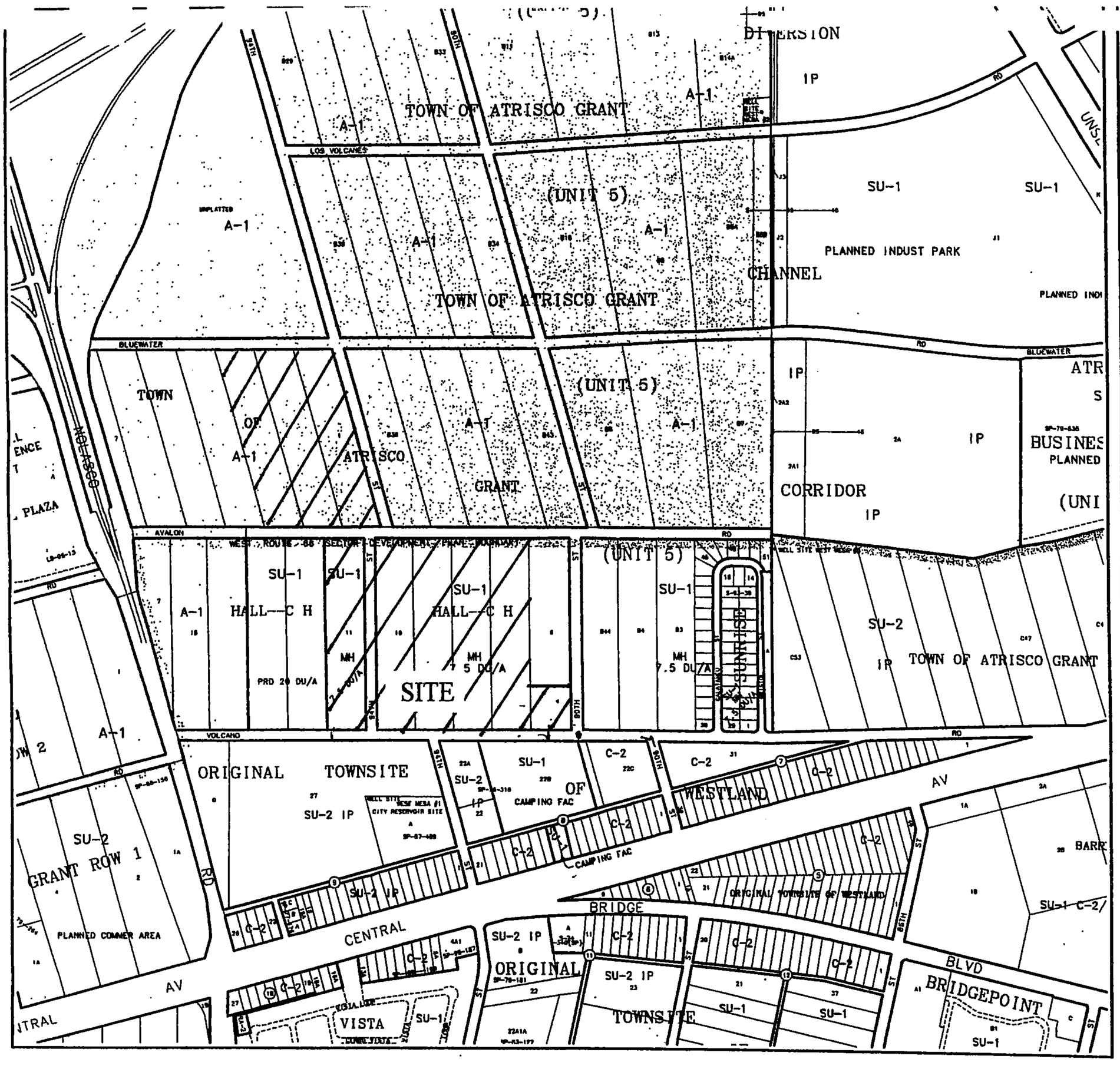
Runoff Calculations 14

Street Capacity 19

Storm Sewer 29

Pond Calculations 38

AHYMO Runoff Input and Summary Output for Proposed and Existing Drainage Basins 53



GRAPHIC SCALE IN FEET

250 0 500 1000

CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

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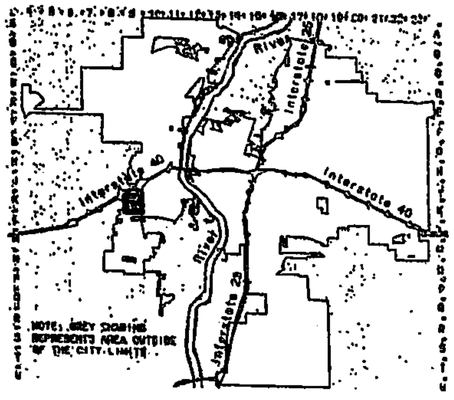
Map Amended through February 27, 1987



LEGAL DESCRIPTION

T10N

R2E

SEC 21

UNIFORM PROPERTY CODE

1-000-067

K-9-Z

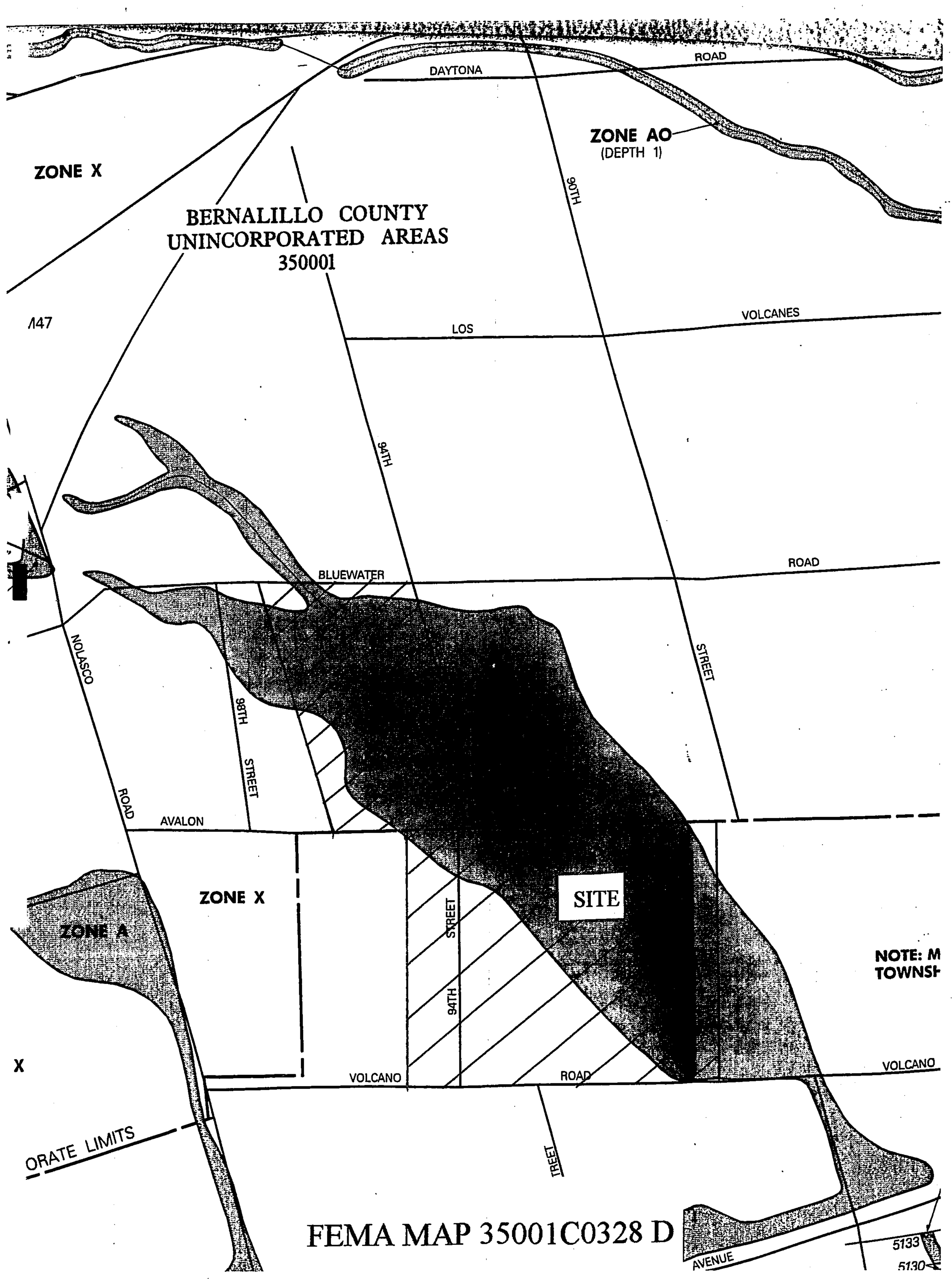
Location

West Ridge Mobile Home Park is located south of Avalon Road between 90th and 94th Streets. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 27.4 acres. The site is identified as Tracts 6, 7, 8, 9, 10, and 11 of C.H. Hall. The purpose of this report is to provide the drainage analysis and management plan for the mobile home park. An RV park is Phase II of the project and is included to the north of the mobile home park. The drainage solution for the RV park is provided here although it is conceptual and a detailed report will be provided when the park is developed.

FEMA Map and Soil Conditions

The site is located on FIRM Map 35001C0328 D as shown on the attached excerpt. The map shows that the site lies within a 100 year flood plain. A Letter of Map Revision (LOMR) will be submitted for the site that will remove the 100 year flood plain. The LOMR will only affect the flood plain downstream of the site and will not remove the flood plain north of the site. Future upstream development will have to submit additional LOMRs after upstream improvements are constructed. The residents of the site will be required to acquire flood insurance until improvements are constructed that remove the flood plain and the LOMR is approved.

The site contains two different soils from the Soil Conservation Service Soil Survey of Bernalillo County. The first is a Pajarito loamy fine sand which has moderately rapid permeability. The second soil is a Bluepoint loamy fine sand and has rapid permeability. Runoff is slow and the hazard of soil blowing is severe for both soils.



FEMA MAP 35001C0328 D

Off-site Drainage Management Plan

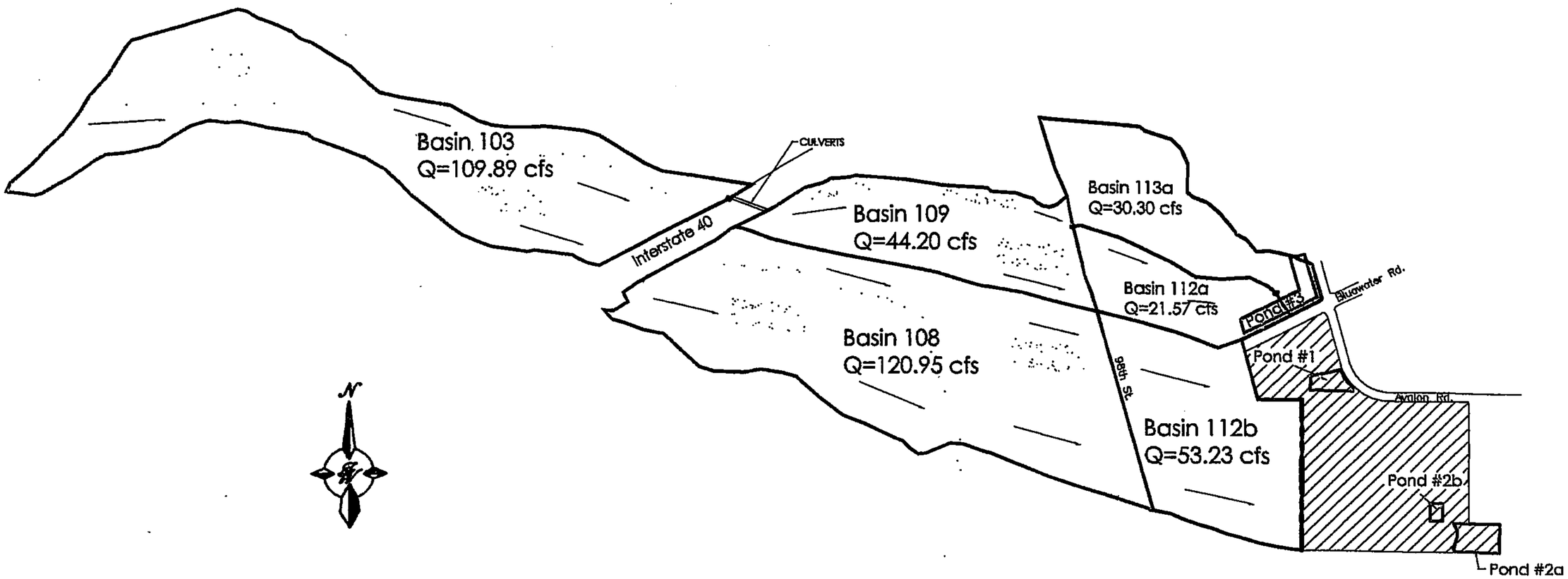
The site is currently undeveloped and drains to the southeast with 44.27 cfs of undeveloped runoff. The offsite undeveloped flows impacting the site have been divided into six basins, Basins 103, 108, 109, 112a, 112b, and 113a. These six basins consist of several smaller basins that were used for ease in computation but are not needed for narrative purposes. Basin 103 consists of basins 103a and 103b. Basin 108 consists of basins 108.1 and 109a. Basin 109 consists of basins 109b and 110. (see attached exhibit). These basins directly impact the site from the northwest.

Undeveloped flows that consist of Basins 103, 109, 112a, 113a will be cut off from the site by Bluewater Road. This undeveloped offsite flow will be ponded in an temporary off-site pond north of Bluewater Road and west of 94th Street (Pond 3). Pond 3 will be designed for the undeveloped upstream runoff. The pond will not have capacity for developed flows and is not intended as an outfall for upstream basins. Offsite Basins 108, and 112b will be captured in a proposed 48" RCP storm sewer in Volcano Road and routed to a proposed retention pond on the mobile home park site (Pond 2a).

In the future, the developed flows from the west will be cut off by Interstate 40 and 98th Street. The temporary retention ponds will be removed and the proposed storm sewer will be designed for the developed flows east of 98th Street.

Interim Solution

Basin 103 consists of the area west of Interstate 40. Basin 103 has an undeveloped runoff of 109.89 cfs . This basin flows southeast and passes under the Interstate through a series of existing culverts. The runoff will be detained in a temporary off-site retention pond located north of Bluewater Road (Pond 3). In the future, the developed runoff from Basin 103 will not affect the site as it will be contained at the Interstate with the I-40 Interceptor Project.



Off-Site Undeveloped Basin Layout

Basins 109 is located between Interstate 40 and 98th Street. Basin 109 has an undeveloped runoff flow of 44.20 cfs. This basin drains southeast towards the site and will be contained in the same temporary off-site retention pond (Pond 3) located north of Bluewater Road (Pond 3). In the future, Basin 109 will be intercepted by 98th Street and will not affect the site.

Basin 112a will have an undeveloped runoff of 21.57 cfs and is located between 98th Street and the site. This runoff will be captured in the temporary retention pond (Pond 3) located north of Bluewater Road.

Basin 113a will have an undeveloped runoff of 30.30 cfs and is located north of basin 112a and east of 98th Street. The basin consists of the northern portion of the floodplain impacting the site. This runoff and the floodplain will be captured in the temporary retention pond (Pond 3) located north of Bluewater Road.

The proposed off-site retention pond (Pond 3) is located north of Bluewater Road. It will collect a total flow of 205.96 cfs. The pond has a capacity of 6.46 ac-ft which is greater than the required capacity of 5.86 ac-ft. In the event of an emergency, the runoff will overflow from a 70.0 foot wide spillway. The pond will be removed after 98th Street is improved and the offsite basins intercepted.

Basin 108 drains east towards the site and is too far south to be captured in the temporary retention pond near Bluewater Road. Basin 108 has an undeveloped runoff of 120.95 cfs. This basin will sheet flow east until it reaches the western edge of the mobile home park and is directed south to Volcano Road via a waterproofed wall. The flows will then be conveyed to Volcano Road and captured in a cattleguard inlet. The proposed 48" RCP storm drain in Volcano Road has been designed to have capacity for the undeveloped flows from west of the site. The 48" RCP storm drain will transport the off-site flows to a proposed on-site temporary retention pond (Pond 2a). In the future, Basin 108 will be intercepted by

improvements in 98th Street and will no longer affect the site.

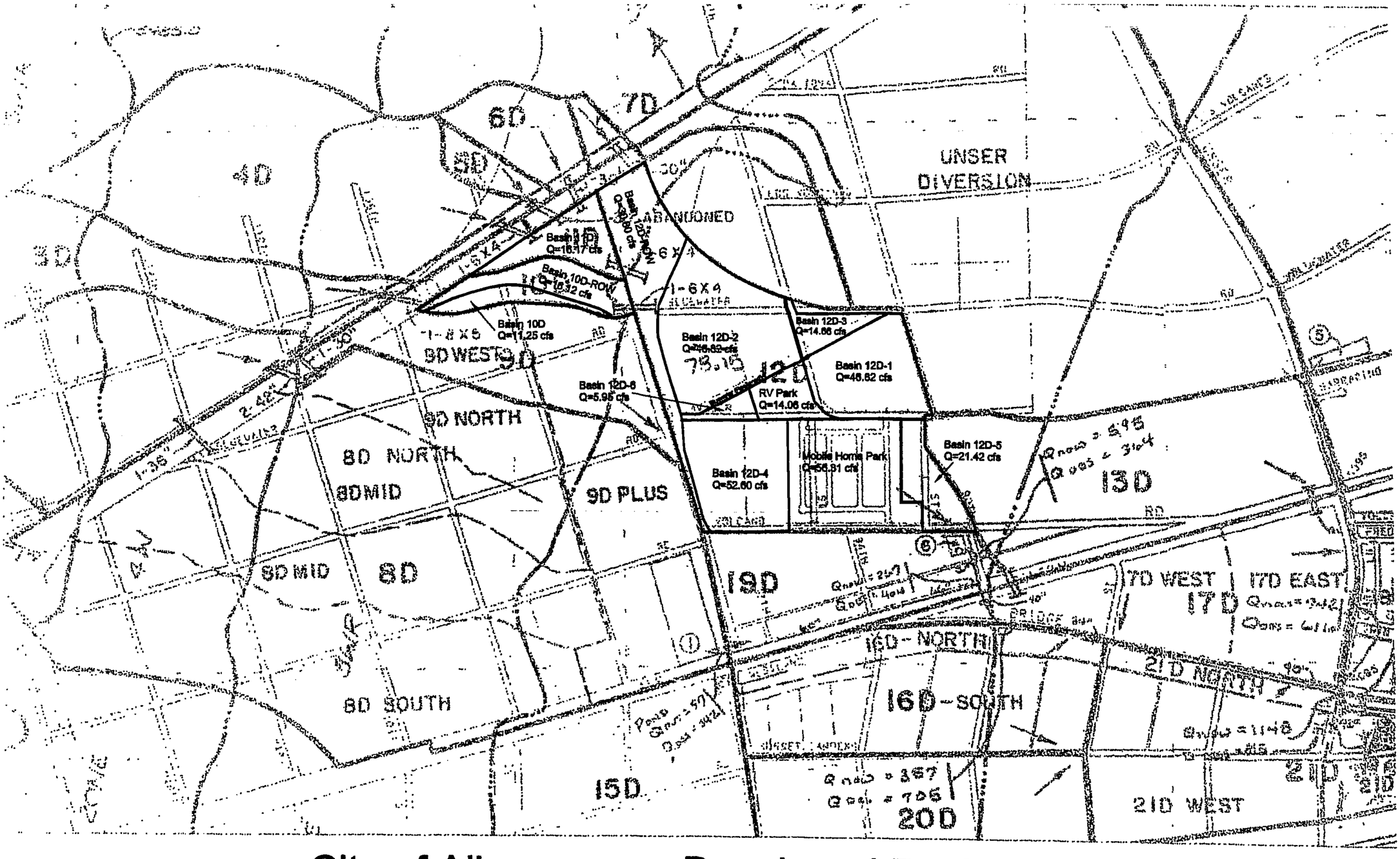
Basin 112b will flow east with an undeveloped runoff of 53.23 cfs. This basin is located between 98th Street and the site, and south of Basin 112a. Basin 112b will be captured by the storm drain in Volcano Road and conveyed to the proposed on-site retention pond (Pond 2a).

Offsite basins 108, and 112b will drain to a proposed on-site retention pond (Pond 2a) located in the southeast corner of the mobile home park. A total of 10.43 ac-ft of volume from the undeveloped off-site flows and the developed on-site flows must be ponded on the site. There will be a large pond (Pond 2a) in the southeast corner of the mobile home park and a second smaller pond (Pond 2b) located near the basketball court in the center of the site. Pond 2a will have a capacity of 9.9813 ac-ft and Pond 2b will have a capacity of 0.49 ac-ft. These two ponds total 10.47 ac-ft which is greater than the 10.43 required. In the event of an emergency, the runoff from Pond 2a will overflow from a 90.0 foot wide spillway.

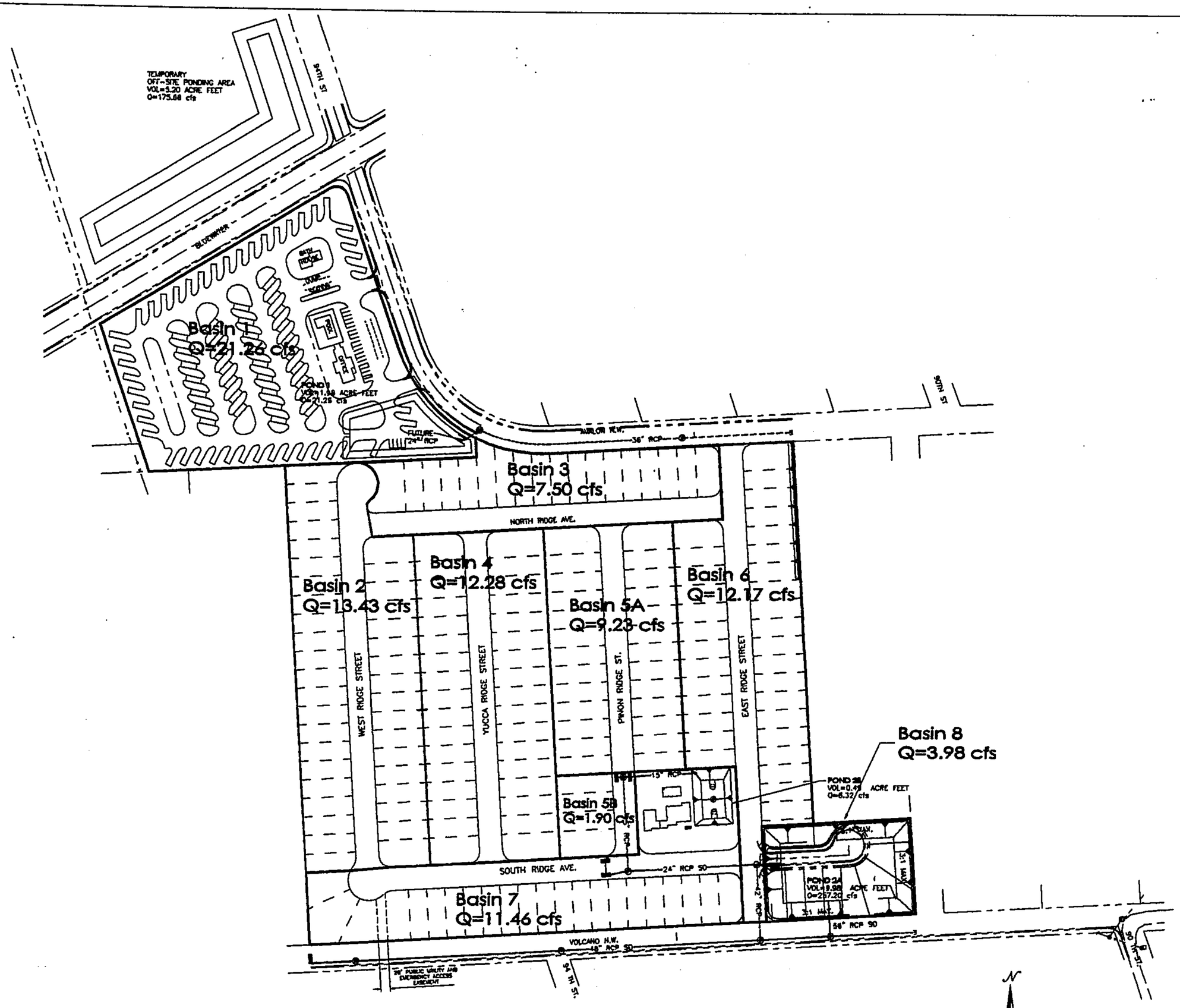
The proposed 48" RCP storm drain in Volcano Road has been designed to carry the undeveloped flow of 174.18 cfs from the offsite basins to the retention pond (Pond 2a). A cattle guard inlet will capture the offsite flows as they enter Volcano Road at the west end of the mobile home park. In the future, when downstream improvements are constructed, the on-site retention ponds will be removed and a permanent detention pond constructed. The upstream basins will be cut off at 98th Street when upstream improvements are constructed. The storm drain in Volcano Road will be required to convey the offsite developed basin 12D-4 with a developed runoff flow of 52.60 cfs and the controlled discharge from the site of 56.31 cfs, which is a total of 108.91 cfs.

Future Solution

The developed future basins are based on the City of Albuquerque's long range storm sewer plan for the 98th Street and I-40 area. According to this plan, the site is located within



City of Albuquerque Developed Basin Map
Sub-basins for Storm Sewer Analysis



Developed Basin Layout

Basin 12D (see attached developed offsite basin map). Basins 10D and 11D are routed through Basin 12D. Basin 10D and 11D are located northwest of the site between 98th Street and I-40. Basin 12D includes the area north of the site all the way to I-40. These three basins flow to a proposed 66" storm drain in 90th Street.

The original hydrology for the proposed storm drain in 90th Street estimated the flow from Basins 10D, 11D, and 12D to be 364 cfs. New hydrology for the area estimates the developed runoff for the area as 595 cfs. The proposed 66" RCP in 90th Steet was designed using the old hydrology and will not have capacity for the new runoff flow of 595 cfs. The City of Albuquerque has made no provisions for the discrepancy. For the purposes of this report, we have assumed each tract will be required to detain the difference in flows onsite. A portion of each basin is right-of-way belonging to the State Highway Department. This ROW is undeveloped with no improvements planned. This land cannot be expected to detain the difference in flows. The undeveloped right-of-way will discharge a total of 63.09 cfs. This leaves 300.70 cfs for the developable portion of the basins to discharge. There is a total of 146.94 developable acres in the three basins. This will be an allowable discharge of 2.05 cfs/acre, not including the ROW which will discharge the existing undeveloped flow rate. The allowable discharge rate includes street flow from streets within and adjacent to each parcel.

This offsite flow must be routed around the site in a storm sewer system located within the public streets. A 48" RCP storm sewer in Bluewater west of 94th Street will collect the offsite flows from the north, which includes Basins 10D, 11D, and 12D-2 and the ROW areas. This is a total developed flow of 152.49 cfs. The storm drain in Bluewater will connect to a proposed 48" RCP storm sewer in 94th Street. The storm drain in 94th Street will connect to a 54" storm drain Avalon. This system will convey the developed flows from the RV Park, Basin 12D-6 and Basin 12D-1, located south of Bluewater Road and north of Avalon Road, and also the incoming flows from the Bluewater storm drain. The Avalon storm sewer will convey a total

of 219.32 cfs from the developed upland basins and the RV park. The 54" storm drain in Avalon will flow east to 90th Street. A second storm drain located west of 94th Street in Bluewater will convey the 14.66 cfs from Basin 12D-3 via a 24" pipe to 90th Street. At 90th Street the 60" RCP storm drain will flow south until it connects with the proposed 66" storm sewer located at the intersection of 90th Street and Volcano Road.

The storm sewer in Volcano Road will collect the flow from the west of the site. The developed offsite basin 12D-3 has a developed runoff of 52.60 cfs. A 48" RCP storm drain in Volcano Road will collect the developed flows from Basin 12D-3. This storm drain has been sized for the offsite undeveloped flow rate of 174.18 and will have capacity for the 52.60 of developed future offsite flows.

When the temporary on-site retention pond is removed, the developed flows from the mobile home park will drain to the storm drain in Volcano Road. The 48" RCP storm drain will contain 108.91 cfs at this point. The 60" RCP in north 90th Street will connect to the storm drain in Volcano and a total of 364.31 cfs will continue to drain east in a 66" RCP in Volcano Road to south 90th Street. This storm sewer will connect to the proposed 66" storm sewer in 90th Street and the flows conveyed south to the eventual outfall.

On-Site Drainage Management Plan

The proposed drainage solution is to route the onsite runoff to three temporary retention ponds located onsite. One retention pond (Pond 1) will be located on the future RV park site. The other two ponds (Ponds 2a and 2b) will be located on the proposed mobile home park site. The undeveloped offsite runoff from basins 108 and 112b will be ponded in the mobile home park site in the onsite retention pond (Ponds 2a).

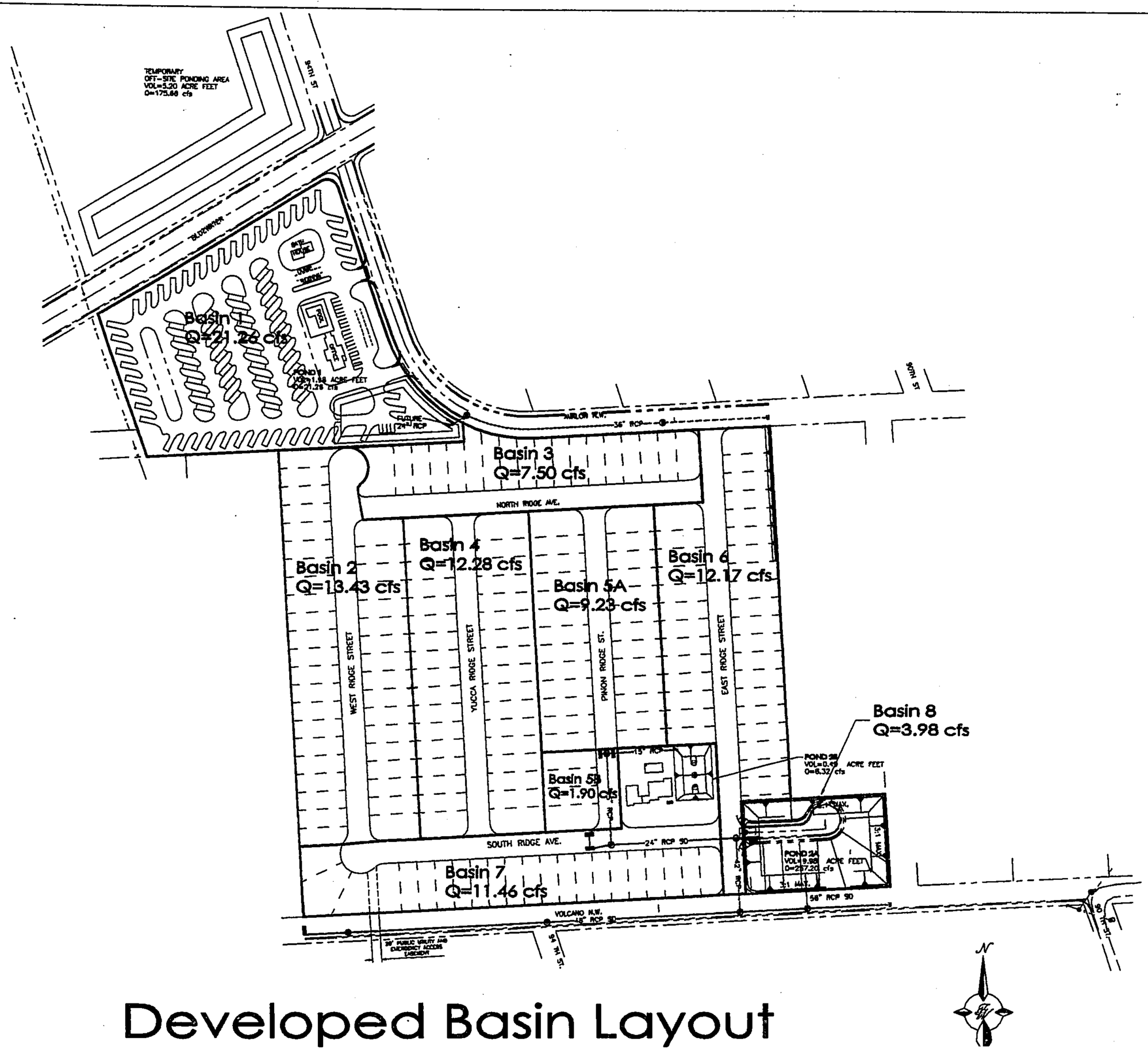
In the future, the developed flows from offsite basins Basin 103, 108, and 109 will be intercepted by Interstate 40 and 98th Street. The offsite developed runoff from basins 112a

and 113a will be included in the developed basin 12D-2 captured in a proposed storm drain in Bluewater Road. The offsite developed runoff from basin 112b will be part of the developed basin 12D-4 and will be conveyed by the proposed 48" storm drain in Volcano Road to a proposed 66" storm drain in 90th Street. At this time the temporary onsite retention ponds (Ponds 2a and 2b) will be removed and a permanent detention pond constructed. The mobile home park will drain to the proposed storm sewer in Volcano Road. The onsite retention pond (Pond 1) in the RV park will also be removed and a permanent detention pond constructed in its place. The RV park will drain to a proposed 60" storm drain in Avalon Road.

The site contains eight on-site proposed basins. The basins, the runoff values and the ponding location are shown in the following table.

Basin	Runoff (cfs)	Location
1	21.26	Pond 1
2	13.43	Pond 2a
3	7.50	Pond 2a
4	12.28	Pond 2a
5a	9.23	Pond 2b
5b	1.90	Pond 2a
6	12.17	Pond 2a
7	11.46	Pond 2a
8	3.98	Pond 2a

Basin 1 consists of the future proposed RV park and will drain to a proposed temporary retention pond (Pond 1) located in the southeast corner of the basin. Basin 1 has 21.26 cfs of developed runoff flow. Pond 1 will have a capacity of 1.9842 ac-ft which is greater than the required capacity of 1.8073 ac-ft. In the event of an emergency, the runoff will overflow from a 20.50 foot wide spillway. When the area is fully developed the retention pond will be removed and a permanent detention pond constructed. The detention pond will drain to a proposed 60" RCP storm drain in Avalon Road. The storm drain in Avalon Road has been designed to carry



Developed Basin Layout

the developed controlled flows from the RV park, the developed flows from the upstream basin 12D-1 and 12D-6 and the incoming flows from the Bluewater storm sewer.

The on-site basins 2 thru 8 consist of the mobile home park and will drain to the two proposed retention ponds (Pond 2a and Pond 2b) located in the southeast corner of the mobile home park. A proposed 24" RCP storm drain system in South Ridge Avenue will collect the flows from the site and convey them to retention Pond 2a. An eight foot channel will transport the flows that are not intercepted by the proposed 24" RCP storm drain system into Pond 2a. A total of 65.6 cfs will be retained from the mobile home park in Pond 2a. An 18" RCP pipe with a 13" orifice plate in Pinon Ridge Street will convey 6.32 cfs from Basin 5A into Pond 2b. The remaining flow from Basin 5A will drain to Pond 2a. When the retention ponds are removed the 18" storm drain will connect to the 24" RCP storm drain in South Ridge Street and eventually drain to the proposed 48" RCP in Volcano Road.

Summary

Basin 1 consists of the RV park and a total of 21.26 cfs will be ponded in a proposed on-site retention pond. Basin 2 thru 8 consist of the mobile home park and will be ponded in two proposed on-site retention ponds. When downstream improvements are constructed the retention ponds will be removed and permanent detention ponds constructed.

The offsite flows from the northwest (Basins 103, 109, 112a, and 113a), will be ponded in a temporary retention pond located north of Bluewater Road (Pond 3). When upstream improvements are constructed the offsite flows will be cut off at 98th Street and the retention pond removed. The storm drain in Bluewater will be designed the convey the offsite developed basin east and north of 98th Street.

The offsite flows from the west (Basins 108, and 112b), will be retained in the two proposed retention on-site ponds in the mobile home park (Pond 2a and 2b). When

downstream improvements are constructed the ponds will be removed and a permanent detention pond constructed. The site will discharge to Volcano Road at a controlled rate. The developed flows from the west will be cut off at 98th Street and the developed flows from east of the site will be conveyed via the 48" RCP pipe in Volcano Road. Storm drains in Bluewater and Avalon will convey the flow from the developed basin (Basin 12D) to the proposed 66" storm drain located at 90th Street and Volcano.

RUNOFF CALCULATIONS

The site is @ Zone 1

LAND TREATMENT

Proposed
B = 20%
C = 20%
D = 60 %

Existing
B = 100%

DEPTH (INCHES) @ 100-YEAR STORM

P_{60} = 1.87 inches

P_{360} = 2.20 inches

P_{1440} = 2.66 inches

DEPTH (INCHES) @ 10-YEAR STORM

P_{60} = 1.87 x 0.667
= 1.25 inches

P_{360} = 1.47

P_{1440} = 1.77

ON-SITE DRAINAGE BASINS

Existing

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
1	298683.06	6.8568	0.010714
2	223543.54	5.1319	0.008019
3	124717.65	2.8631	0.004474
4	204349.12	4.6912	0.007330
5A	153472.50	3.5232	0.005505
5B	31237.50	0.7171	0.001120
6	202495.68	4.6487	0.007264
7	190736.43	4.3787	0.006842
8	65979.78	1.5147	0.002367
	1495215.26	34.3254	0.053633

RUNOFF CALCULATION RESULTS

Existing

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	8.84	3.02	0.382	0.128
2	6.62	2.26	0.286	0.096
3	3.69	1.26	0.159	0.053
4	6.05	2.07	0.261	0.088
5A	4.54	1.55	0.196	0.066
5B	0.93	0.32	0.040	0.013
6	5.99	2.05	0.259	0.087
7	5.65	1.93	0.244	0.082
8	1.96	0.67	0.084	0.028
	44.27	15.13	1.911	0.641

Proposed

SUB-BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	21.26	13.69	1.049	0.649
2	13.43	8.07	0.644	0.372
3	7.50	4.51	0.359	0.208
4	12.28	7.37	0.589	0.340
5A	9.23	5.54	0.442	0.255
5B	1.90	1.14	0.090	0.052
6	12.17	7.31	0.583	0.337
7	11.46	6.88	0.549	0.317
8	3.98	2.39	0.190	0.110
	93.21	56.9	4.495	2.640

OFF-SITE UNDEVELOPED DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
103a	2070346.36	47.5286	0.074263
103b	1640953.82	37.6711	0.058861
108.1	1912002.97	43.8935	0.068584
109a	2168598.50	49.7842	0.077788
109b	998219.01	22.9160	0.035806
110	496735.88	11.4035	0.017818
112a	729591.89	16.7491	0.026171
112b	1799941.46	41.3210	0.064564
113a	1024806.96	23.5263	0.036760
Total	12841196.85	294.7933	0.460615

RUNOFF CALCULATION RESULTS

Undeveloped

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
103a	61.38	20.90	2.646	0.888
103b	48.51	16.58	2.097	0.704
108.1	56.60	19.31	2.443	0.820
109a	64.35	21.88	2.771	0.930
109b	29.51	10.09	1.276	0.428
110	14.69	5.02	0.635	0.213
112a	21.57	7.37	0.932	0.313
112b	53.23	18.18	2.300	0.772
113a	30.30	10.36	1.310	0.440
Total	380.14	129.69	16.410	5.508

Estimated Allowable Discharge for Future Developed Basins

Basin	Area w/o ROW (acres)	Flow (cfs)
10D	5.49	11.25
12D-1	22.84	46.82
12D-2	38.12	78.15
12D-3	7.15	14.66
12D-4	25.66	52.60
12D-5	10.45	21.42
12D-6	2.90	5.95
Site		
RV Park	6.86	14.06
MHP	27.47	56.31
Total	146.94	301.23

Estimated Discharge from State Highway Right-of-Way

Basin	ROW Area (acres)	Flow (cfs)
10D-ROW	12.51	16.12
11D	12.56	16.17
12D- ROW	23.92	30.80
Total	48.99	63.09

Allowable Discharge = 364 cfs-63.30 = 300.70 cfs/146.94 = 2.05 cfs/acre

Street Capacity Calculations

BLUEWATER ROAD

48' F-F Street Section with 8" curb

Slope= 0.0146

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0002	0.0005	0.2962	0.0030	0.5221	0.0039
0.020	0.0032	0.3406	0.0094	0.0015	0.0030	0.4703	0.0094	0.5860	0.0094
0.040	0.0128	0.6812	0.0188	0.0096	0.0191	0.7465	0.0299	0.6577	0.0222
0.060	0.0288	1.0219	0.0282	0.0282	0.0563	0.9782	0.0587	0.7037	0.0368
0.080	0.0512	1.3625	0.0376	0.0607	0.1213	1.1850	0.0948	0.7383	0.0526
0.100	0.0800	1.7031	0.0470	0.1100	0.2200	1.3750	0.1375	0.7663	0.0693
0.120	0.1152	2.0437	0.0564	0.1789	0.3577	1.5527	0.1863	0.7899	0.0869
0.125	0.1250	2.1289	0.0587	0.1994	0.3989	1.5956	0.1994	0.7953	0.0914

For water depths greater than 0.125 ft but less than 0.565 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2119	0.4238	1.5623	0.2031	0.7636	0.0897
0.185	0.3350	5.1895	0.0646	0.5694	1.1388	1.6996	0.3144	0.6964	0.1118
0.240	0.6856	7.9951	0.0858	1.4082	2.8165	2.0540	0.4929	0.7389	0.1580
0.295	1.1875	10.8006	0.1099	2.8785	5.7571	2.4240	0.7151	0.7865	0.2122
0.350	1.8406	13.6062	0.1353	5.1231	10.2462	2.7833	0.9742	0.8291	0.2711
0.405	2.6450	16.4117	0.1612	8.2735	16.5469	3.1280	1.2668	0.8662	0.3333
0.460	3.6006	19.2173	0.1874	12.4523	24.9045	3.4584	1.5908	0.8986	0.3982
0.515	4.7075	22.0228	0.2138	17.7752	35.5505	3.7759	1.9446	0.9272	0.4653
0.565	5.8450	24.5733	0.2379	23.6998	47.3996	4.0547	2.2909	0.9506	0.5279

For water depths greater than 0.565 ft but less than 0.667 ft

Y2= Y - 0.565

A3= A2 + Y2*24

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.570	5.9650	24.5783	0.2427	24.5130	49.0259	4.1095	2.3424	0.9592	0.5391
0.580	6.2050	24.5883	0.2524	26.1716	52.3432	4.2178	2.4463	0.9760	0.5615
0.595	6.5650	24.6033	0.2668	28.7392	57.4785	4.3776	2.6047	1.0001	0.5951
0.605	6.8050	24.6133	0.2765	30.5033	61.0066	4.4825	2.7119	1.0156	0.6176
0.620	7.1650	24.6283	0.2909	33.2264	66.4529	4.6373	2.8751	1.0379	0.6514
0.635	7.5250	24.6433	0.3054	36.0405	72.0811	4.7894	3.0413	1.0592	0.6853
0.645	7.7650	24.6533	0.3150	37.9663	75.9327	4.8894	3.1537	1.0729	0.7079
0.667	8.2930	24.6753	0.3361	42.3406	84.6813	5.1056	3.4054	1.1017	0.7579

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 24 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	9.1122	26.3256	0.3461	47.4462	94.8923	5.2069	3.6448	1.0967	0.7907
0.730	9.9042	27.8259	0.3559	52.5389	105.0777	5.3047	3.8724	1.0941	0.8221
0.753	**10.5419**	**28.9762**	**0.3638**	**56.7436**	**113.4873**	**5.3827**	**4.0532**	**1.0931**	**0.8470**
0.770	11.0302	29.8263	0.3698	60.0234	120.0467	5.4417	4.1901	1.0929	0.8658
0.800	11.9272	31.3266	0.3807	66.1764	132.3527	5.5483	4.4387	1.0932	0.8999
0.820	12.5502	32.3268	0.3882	70.5435	141.0869	5.6209	4.6091	1.0939	0.9231
0.850	13.5222	33.8271	0.3997	77.5026	155.0053	5.7315	4.8718	1.0955	0.9588

Street Capacity Calculations

94TH STREET

40' F-F Street Section with 8" curb

Slope= 0.0151

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0002	0.0005	0.3013	0.0030	0.5309	0.0040
0.020	0.0032	0.3406	0.0094	0.0015	0.0031	0.4782	0.0096	0.5959	0.0096
0.040	0.0128	0.6812	0.0188	0.0097	0.0194	0.7592	0.0304	0.6689	0.0228
0.060	0.0288	1.0219	0.0282	0.0286	0.0573	0.9948	0.0597	0.7157	0.0377
0.080	0.0512	1.3625	0.0376	0.0617	0.1234	1.2051	0.0964	0.7508	0.0539
0.100	0.0800	1.7031	0.0470	0.1119	0.2237	1.3984	0.1398	0.7793	0.0710
0.120	0.1152	2.0437	0.0564	0.1819	0.3638	1.5791	0.1895	0.8033	0.0889
0.125	0.1250	2.1289	0.0587	0.2028	0.4057	1.6227	0.2028	0.8088	0.0935

For water depths greater than 0.125 ft but less than 0.485 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2155	0.4310	1.5889	0.2066	0.7766	0.0919
0.175	0.2875	4.6794	0.0614	0.4808	0.9617	1.6725	0.2927	0.7045	0.1076
0.220	0.5406	6.9749	0.0775	1.0557	2.1113	1.9527	0.4296	0.7337	0.1434
0.265	0.8950	9.2703	0.0965	2.0232	4.0464	2.2605	0.5990	0.7739	0.1863
0.310	1.3506	11.5658	0.1168	3.4660	6.9321	2.5662	0.7955	0.8123	0.2334
0.355	1.9075	13.8612	0.1376	5.4613	10.9227	2.8631	1.0164	0.8468	0.2832
0.400	2.5656	16.1567	0.1588	8.0813	16.1625	3.1498	1.2599	0.8777	0.3353
0.445	3.3250	18.4521	0.1802	11.3941	22.7882	3.4268	1.5249	0.9053	0.3891
0.485	4.0850	20.4925	0.1993	14.9732	29.9464	3.6654	1.7777	0.9275	0.4383

For water depths greater than 0.485 ft but less than 0.667 ft

Y2= Y - 0.485

A3= A2 + Y2*20

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.490	4.1850	20.4975	0.2042	15.5866	31.1731	3.7244	1.8249	0.9376	0.4494
0.515	4.6850	20.5225	0.2283	18.7970	37.5939	4.0122	2.0663	0.9852	0.5049
0.540	5.1850	20.5475	0.2523	22.2399	44.4799	4.2893	2.3162	1.0286	0.5606
0.565	5.6850	20.5725	0.2763	25.9070	51.8141	4.5571	2.5748	1.0684	0.6167
0.590	6.1850	20.5975	0.3003	29.7908	59.5815	4.8166	2.8418	1.1051	0.6731
0.615	6.6850	20.6225	0.3242	33.8844	67.7688	5.0687	3.1173	1.1390	0.7298
0.666	**7.7070**	**20.6736**	**0.3728**	**42.8802**	**85.7603**	**5.5638**	**3.7060**	**1.2014**	**0.8466**
0.667	7.7250	20.6745	0.3736	43.0460	86.0919	5.5723	3.7167	1.2024	0.8487

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 16 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	8.2802	22.3248	0.3709	45.9131	91.8262	5.5449	3.8814	1.1679	0.8580
0.730	8.8322	23.8251	0.3707	48.9574	97.9148	5.5430	4.0464	1.1433	0.8705
0.750	9.2252	24.8253	0.3716	51.2181	102.4362	5.5520	4.1640	1.1298	0.8806
0.770	9.6382	25.8255	0.3732	53.6645	107.3290	5.5679	4.2873	1.1182	0.8921
0.800	10.2952	27.3258	0.3768	57.6858	115.3717	5.6032	4.4825	1.1040	0.9115
0.820	10.7582	28.3260	0.3798	60.6041	121.2083	5.6333	4.6193	1.0963	0.9258
0.850	11.4902	29.8263	0.3852	65.3440	130.6881	5.6869	4.8339	1.0870	0.9491

Street Capacity Calculations

AVALON ROAD

40' F-F Street Section with 8" curb

Slope= 0.023

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0003	0.0006	0.3718	0.0037	0.6552	0.0055
0.020	0.0032	0.3406	0.0094	0.0019	0.0038	0.5902	0.0118	0.7355	0.0131
0.040	0.0128	0.6812	0.0188	0.0120	0.0240	0.9369	0.0375	0.8256	0.0308
0.060	0.0288	1.0219	0.0282	0.0354	0.0707	1.2277	0.0737	0.8833	0.0507
0.080	0.0512	1.3625	0.0376	0.0761	0.1523	1.4873	0.1190	0.9267	0.0722
0.100	0.0800	1.7031	0.0470	0.1381	0.2761	1.7258	0.1726	0.9618	0.0949
0.120	0.1152	2.0437	0.0564	0.2245	0.4490	1.9489	0.2339	0.9914	0.1186
0.125	0.1250	2.1289	0.0587	0.2503	0.5007	2.0026	0.2503	0.9982	0.1247

For water depths greater than 0.125 ft but less than 0.485 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2660	0.5319	1.9609	0.2549	0.9584	0.1228
0.175	0.2875	4.6794	0.0614	0.5934	1.1869	2.0641	0.3612	0.8695	0.1448
0.220	0.5406	6.9749	0.0775	1.3029	2.6058	2.4099	0.5302	0.9055	0.1924
0.265	0.8950	9.2703	0.0965	2.4969	4.9939	2.7899	0.7393	0.9551	0.2492
0.310	1.3506	11.5658	0.1168	4.2777	8.5554	3.1672	0.9818	1.0025	0.3110
0.355	1.9075	13.8612	0.1376	6.7402	13.4804	3.5335	1.2544	1.0451	0.3764
0.400	2.5656	16.1567	0.1588	9.9737	19.9473	3.8874	1.5550	1.0832	0.4446
0.445	3.3250	18.4521	0.1802	14.0623	28.1246	4.2293	1.8820	1.1173	0.5150
0.485	4.0850	20.4925	0.1993	18.4795	36.9590	4.5237	2.1940	1.1447	0.5793

For water depths greater than 0.485 ft but less than 0.667 ft

Y2= Y - 0.485

A3= A2 + Y2*20

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.490	4.1850	20.4975	0.2042	19.2365	38.4730	4.5965	2.2523	1.1572	0.5935
0.515	4.6850	20.5225	0.2283	23.1987	46.3973	4.9517	2.5501	1.2160	0.6648
0.540	5.1850	20.5475	0.2523	27.4479	54.8958	5.2937	2.8586	1.2695	0.7364
0.565	5.6850	20.5725	0.2763	31.9737	63.9474	5.6242	3.1777	1.3186	0.8083
0.578	**5.9530**	**20.5859**	**0.2892**	**34.5102**	**69.0203**	**5.7971**	**3.3530**	**1.3433**	**0.8470**
0.615	6.6850	20.6225	0.3242	41.8192	83.6383	6.2557	3.8472	1.4058	0.9532
0.640	7.1850	20.6475	0.3480	47.1231	94.2461	6.5585	4.1975	1.4447	1.0262
0.667	7.7250	20.6745	0.3736	53.1261	106.2522	6.8772	4.5871	1.4839	1.1055

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 16 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	8.2802	22.3248	0.3709	56.6646	113.3292	6.8434	4.7904	1.4414	1.1192
0.730	8.8322	23.8251	0.3707	60.4218	120.8436	6.8411	4.9940	1.4110	1.1367
0.750	9.2252	24.8253	0.3716	63.2119	126.4238	6.8521	5.1391	1.3943	1.1507
0.770	9.6382	25.8255	0.3732	66.2312	132.4624	6.8717	5.2912	1.3800	1.1663
0.800	10.2952	27.3258	0.3768	71.1942	142.3884	6.9153	5.5322	1.3625	1.1925
0.820	10.7582	28.3260	0.3798	74.7959	149.5918	6.9524	5.7010	1.3530	1.2117
0.850	11.4902	29.8263	0.3852	80.6457	161.2915	7.0186	5.9658	1.3416	1.2427

Street Capacity Calculations

VOLCANO ROAD

40' F-F Street Section with 8" curb

Slope= 0.0275

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) ÷ Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.0008	0.1703	0.0047	0.0003	0.0007	0.4066	0.0041	0.7165	0.0063
0.020	0.0032	0.3406	0.0094	0.0021	0.0041	0.6454	0.0129	0.8042	0.0148
0.040	0.0128	0.6812	0.0188	0.0131	0.0262	1.0245	0.0410	0.9027	0.0348
0.060	0.0288	1.0219	0.0282	0.0387	0.0773	1.3425	0.0805	0.9658	0.0573
0.080	0.0512	1.3625	0.0376	0.0833	0.1665	1.6263	0.1301	1.0133	0.0814
0.100	0.0800	1.7031	0.0470	0.1510	0.3019	1.8871	0.1887	1.0516	0.1069
0.120	0.1152	2.0437	0.0564	0.2455	0.4910	2.1310	0.2557	1.0841	0.1335
0.125	0.1250	2.1289	0.0587	0.2737	0.5475	2.1898	0.2737	1.0915	0.1403

For water depths greater than 0.125 ft but less than 0.485 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.130	0.1356	2.3840	0.0569	0.2908	0.5816	2.1442	0.2787	1.0480	0.1383
0.175	0.2875	4.6794	0.0614	0.6489	1.2978	2.2570	0.3950	0.9508	0.1636
0.220	0.5406	6.9749	0.0775	1.4246	2.8493	2.6352	0.5797	0.9901	0.2171
0.265	0.8950	9.2703	0.0965	2.7303	5.4606	3.0506	0.8084	1.0443	0.2807
0.310	1.3506	11.5658	0.1168	4.6775	9.3550	3.4632	1.0736	1.0961	0.3499
0.355	1.9075	13.8612	0.1376	7.3702	14.7403	3.8638	1.3716	1.1428	0.4231
0.400	2.5656	16.1567	0.1588	10.9058	21.8116	4.2507	1.7003	1.1844	0.4992
0.445	3.3250	18.4521	0.1802	15.3765	30.7531	4.6245	2.0579	1.2217	0.5779
0.485	4.0850	20.4925	0.1993	20.2066	40.4132	4.9465	2.3991	1.2517	0.6496

For water depths greater than 0.485 ft but less than 0.667 ft

Y2= Y - 0.485

A3= A2 + Y2*20

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.490	4.1850	20.4975	0.2042	21.0343	42.0686	5.0261	2.4628	1.2653	0.6654
0.515	4.6850	20.5225	0.2283	25.3668	50.7336	5.4145	2.7885	1.3296	0.7445
0.547	**5.3310**	**20.5548**	**0.2594**	**31.4274**	**62.8548**	**5.8952**	**3.2265**	**1.4043**	**0.8472**
0.565	5.6850	20.5725	0.2763	34.9619	69.9239	6.1499	3.4747	1.4418	0.9037
0.590	6.1850	20.5975	0.3003	40.2031	80.4062	6.5001	3.8351	1.4913	0.9838
0.615	6.6850	20.6225	0.3242	45.7275	91.4550	6.8403	4.2068	1.5371	1.0643
0.640	7.1850	20.6475	0.3480	51.5271	103.0542	7.1715	4.5898	1.5798	1.1452
0.667	7.7250	20.6745	0.3736	58.0912	116.1824	7.5199	5.0158	1.6226	1.2330

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 16 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.700	8.2802	22.3248	0.3709	61.9604	123.9208	7.4829	5.2381	1.5761	1.2491
0.730	8.8322	23.8251	0.3707	66.0688	132.1375	7.4804	5.4607	1.5429	1.2691
0.750	9.2252	24.8253	0.3716	69.1196	138.2392	7.4925	5.6193	1.5246	1.2850
0.770	9.6382	25.8255	0.3732	72.4211	144.8422	7.5139	5.7857	1.5090	1.3027
0.800	10.2952	27.3258	0.3768	77.8479	155.6959	7.5616	6.0492	1.4898	1.3324
0.820	10.7582	28.3260	0.3798	81.7862	163.5724	7.6022	6.2338	1.4795	1.3540
0.850	11.4902	29.8263	0.3852	88.1828	176.3656	7.6746	6.5234	1.4670	1.3869

Street Capacity Calculations

WEST RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0081

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.00036	0.000721	0.225292	0.002253	0.397025	0.002518
0.02	0.0064	0.660312	0.009692	0.002289	0.004578	0.357629	0.007153	0.445646	0.00609
0.025	0.01	0.825391	0.012115	0.00415	0.0083	0.414992	0.010375	0.462532	0.008083
0.035	0.0196	1.155547	0.016962	0.010179	0.020358	0.519348	0.018177	0.489211	0.012376
0.045	0.0324	1.485703	0.021808	0.019896	0.039792	0.614075	0.027633	0.510137	0.017
0.055	0.0484	1.815859	0.026654	0.033976	0.067951	0.701974	0.038609	0.527487	0.021892
0.06	0.0576	1.980937	0.029077	0.042849	0.085697	0.743898	0.044634	0.535192	0.024427
0.0625	0.0625	2.063476	0.030289	0.047776	0.095553	0.764421	0.047776	0.538846	0.025715

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.048665	0.09733	0.766303	0.048277	0.538025	0.025859
0.1	0.172656	3.976351	0.043421	0.1678	0.335601	0.971876	0.097188	0.541605	0.04147
0.13	0.311406	5.506651	0.056551	0.360938	0.721876	1.159059	0.150678	0.566508	0.05777
0.16	0.495156	7.036951	0.070365	0.663936	1.327873	1.340862	0.214538	0.59074	0.07578
0.2	0.810156	9.077351	0.08925	1.27288	2.545761	1.571154	0.314231	0.619122	0.101655
0.24	1.205156	11.11775	0.108399	2.15546	4.310921	1.788532	0.429248	0.643373	0.129168
0.28	1.680156	13.15815	0.127689	3.351701	6.703402	1.994875	0.558565	0.664368	0.158009
0.3025	1.9825	14.30588	0.138579	4.176618	8.353236	2.106743	0.63729	0.675027	0.174738

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	4.201128	8.402255	2.11165	0.63983	0.67604	0.175412
0.308	2.0595	14.31138	0.143906	4.449328	8.898657	2.160393	0.665401	0.686008	0.18216
0.3102	2.0903	14.31358	0.146036	4.560313	9.120626	2.181655	0.676749	0.690299	0.185135
0.316	2.1715	14.31938	0.151648	4.858058	9.716117	2.23719	0.706952	0.701345	0.192997
0.32	2.2275	14.32338	0.155515	5.067709	10.13542	2.275066	0.728021	0.708747	0.198435
0.324	2.2835	14.32738	0.15938	5.28084	10.56168	2.312608	0.749285	0.715981	0.203884
0.331	2.3815	14.33438	0.166139	5.6621	11.3242	2.377535	0.786964	0.728258	0.213451
0.333	2.4095	14.33638	0.168069	5.772949	11.5459	2.395911	0.797839	0.731679	0.216191

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	5.858376	11.71675	2.403338	0.805118	0.731753	0.217521
0.354	**2.714525**	**15.38659**	**0.176422**	**6.717494**	**13.43499**	**2.474648**	**0.876025**	**0.732966**	**0.230404**
0.38	3.122725	16.68685	0.187137	8.037466	16.07493	2.573863	0.978068	0.73581	0.248704
0.41	3.635725	18.18715	0.199906	9.778849	19.5577	2.689656	1.102759	0.740247	0.270659
0.45	4.389725	20.18755	0.217447	12.48779	24.97558	2.844777	1.28015	0.747333	0.301137
0.48	5.007725	21.68785	0.2309	14.82753	29.65507	2.960932	1.421247	0.753147	0.324783
0.513	5.7395	23.33818	0.245928	17.72384	35.44769	3.088047	1.584168	0.759796	0.351482

Street Capacity Calculations

NORTH RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0192

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000555	0.00111	0.34686	0.003469	0.61126	0.004986
0.02	0.0064	0.660312	0.009692	0.003524	0.007048	0.550606	0.011012	0.686117	0.011831
0.025	0.01	0.825391	0.012115	0.006389	0.012778	0.638922	0.015973	0.712114	0.015609
0.035	0.0196	1.155547	0.016962	0.015672	0.031344	0.799588	0.027986	0.753189	0.023684
0.045	0.0324	1.485703	0.021808	0.030632	0.061264	0.94543	0.042544	0.785407	0.032314
0.055	0.0484	1.815859	0.026654	0.052309	0.104618	1.08076	0.059442	0.81212	0.041395
0.06	0.0576	1.980937	0.029077	0.06597	0.131939	1.145306	0.068718	0.823983	0.046082
0.0625	0.0625	2.063476	0.030289	0.073556	0.147113	1.176903	0.073556	0.829608	0.048459

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.074925	0.149849	1.1798	0.074327	0.828343	0.048743
0.1	0.172656	3.976351	0.043421	0.258346	0.516691	1.496301	0.14963	0.833856	0.078087
0.13	0.311406	5.506651	0.056551	0.555701	1.111402	1.784488	0.231983	0.872196	0.108025
0.16	0.495156	7.036951	0.070365	1.022197	2.044394	2.064393	0.330303	0.909504	0.1408
0.2	0.810156	9.077351	0.08925	1.959728	3.919455	2.41895	0.48379	0.9532	0.187554
0.24	1.205156	11.11775	0.108399	3.318548	6.637096	2.753625	0.66087	0.990538	0.236974
0.2505	**1.3221**	**11.65336**	**0.113452**	**3.752842**	**7.505685**	**2.838547**	**0.711056**	**0.999457**	**0.250319**
0.3025	1.9825	14.30588	0.138579	6.430324	12.86065	3.243543	0.981172	1.039272	0.318373

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	4.201128	8.402255	2.11165	0.63983	0.67604	0.175412
0.308	2.0595	14.31138	0.143906	4.449328	8.898657	2.160393	0.665401	0.686008	0.18216
0.3102	2.0903	14.31358	0.146036	4.560313	9.120626	2.181655	0.676749	0.690299	0.185135
0.316	2.1715	14.31938	0.151648	4.858058	9.716117	2.23719	0.706952	0.701345	0.192997
0.32	2.2275	14.32338	0.155515	5.067709	10.13542	2.275066	0.728021	0.708747	0.198435
0.324	2.2835	14.32738	0.15938	5.28084	10.56168	2.312608	0.749285	0.715981	0.203884
0.331	2.3815	14.33438	0.166139	5.6621	11.3242	2.377535	0.786964	0.728258	0.213451
0.333	2.4095	14.33638	0.168069	5.772949	11.5459	2.395911	0.797839	0.731679	0.216191

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	5.858376	11.71675	2.403338	0.805118	0.731753	0.217521
0.36	2.805725	15.68665	0.178861	7.007033	14.01407	2.497406	0.899066	0.733516	0.234562
0.3654	2.889344	15.9567	0.181074	7.27527	14.55054	2.517966	0.920065	0.73407	0.238338
0.397	3.4079	17.53702	0.194326	8.9947	17.9894	2.639367	1.047829	0.738204	0.261042
0.45	4.389725	20.18755	0.217447	12.48779	24.97558	2.844777	1.28015	0.747333	0.301137
0.48	5.007725	21.68785	0.2309	14.82753	29.65507	2.960932	1.421247	0.753147	0.324783
0.513	5.7395	23.33818	0.245928	17.72384	35.44769	3.088047	1.584168	0.759796	0.351482

Street Capacity Calculations

YUCCA RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0121

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000441	0.000881	0.275357	0.002754	0.485253	0.003491
0.02	0.0064	0.660312	0.009692	0.002797	0.005595	0.437102	0.008742	0.544678	0.008367
0.025	0.01	0.825391	0.012115	0.005072	0.010144	0.507212	0.01268	0.565316	0.011074
0.035	0.0196	1.155547	0.016962	0.012441	0.024883	0.634758	0.022217	0.597924	0.016883
0.045	0.0324	1.485703	0.021808	0.024317	0.048635	0.750536	0.033774	0.623501	0.023115
0.055	0.0484	1.815859	0.026654	0.041526	0.083051	0.857969	0.047188	0.644707	0.029692
0.06	0.0576	1.980937	0.029077	0.05237	0.104741	0.909209	0.054553	0.654124	0.033093
0.0625	0.0625	2.063476	0.030289	0.058393	0.116787	0.934293	0.058393	0.65859	0.034819

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.059479	0.118959	0.936592	0.059005	0.657586	0.035019
0.1	0.172656	3.976351	0.043421	0.205089	0.410179	1.187848	0.118785	0.661962	0.056131
0.13	0.311406	5.506651	0.056551	0.441147	0.882293	1.416628	0.184162	0.692399	0.077931
0.16	0.495156	7.036951	0.070365	0.811478	1.622956	1.638832	0.262213	0.722015	0.101909
0.2	0.810156	9.077351	0.08925	1.555743	3.111486	1.9203	0.38406	0.756704	0.136237
0.24	1.205156	11.11775	0.108399	2.634451	5.268903	2.185983	0.524636	0.786345	0.172631
0.28	1.680156	13.15815	0.127689	4.096523	8.193047	2.43818	0.68269	0.812005	0.210694
0.3025	1.9825	14.30588	0.138579	5.104755	10.20951	2.574908	0.77891	0.825033	0.232741

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	5.134712	10.26942	2.580906	0.782014	0.826272	0.233614
0.308	2.0595	14.31138	0.143906	5.438068	10.87614	2.64048	0.813268	0.838455	0.242353
0.312	2.1155	14.31538	0.147778	5.68568	11.37136	2.68763	0.83854	0.847938	0.24936
0.316	2.1715	14.31938	0.151648	5.937627	11.87525	2.734343	0.864053	0.857199	0.256379
0.3192	**2.2163**	**14.32258**	**0.154742**	**6.142277**	**12.28455**	**2.77141**	**0.884634**	**0.864453**	**0.262005**
0.324	2.2835	14.32738	0.15938	6.45436	12.90872	2.826521	0.915793	0.875088	0.270459
0.331	2.3815	14.33438	0.166139	6.920344	13.84069	2.905876	0.961845	0.890093	0.282822
0.333	2.4095	14.33638	0.168069	7.055826	14.11165	2.928336	0.975136	0.894275	0.286362

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	7.160238	14.32048	2.937413	0.984033	0.894365	0.288122
0.35	2.654725	15.18655	0.174808	7.98036	15.96072	3.006097	1.052134	0.895449	0.301522
0.39	3.288725	17.18695	0.19135	10.50049	21.00097	3.192874	1.245221	0.900993	0.338827
0.42	3.816725	18.68725	0.204242	12.72772	25.45543	3.334722	1.400583	0.906791	0.368097
0.45	4.389725	20.18755	0.217447	15.26285	30.52571	3.47695	1.564627	0.913407	0.398315
0.48	5.007725	21.68785	0.2309	18.12254	36.24508	3.618917	1.73708	0.920513	0.42937
0.513	5.7395	23.33818	0.245928	21.66247	43.32495	3.774279	1.936205	0.92864	0.464396

Street Capacity Calculations

PINON RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0163

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000511	0.001023	0.319593	0.003196	0.563209	0.004404
0.02	0.0064	0.660312	0.009692	0.003247	0.006494	0.507322	0.010146	0.63218	0.010487
0.025	0.01	0.825391	0.012115	0.005887	0.011774	0.588695	0.014717	0.656134	0.013851
0.035	0.0196	1.155547	0.016962	0.01444	0.02888	0.736732	0.025786	0.693981	0.021051
0.045	0.0324	1.485703	0.021808	0.028224	0.056448	0.871109	0.0392	0.723666	0.028756
0.055	0.0484	1.815859	0.026654	0.048197	0.096394	0.995801	0.054769	0.748278	0.036872
0.06	0.0576	1.980937	0.029077	0.060784	0.121567	1.055273	0.063316	0.759209	0.041064
0.0625	0.0625	2.063476	0.030289	0.067774	0.135548	1.084386	0.067774	0.764392	0.04319

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.069035	0.13807	1.087055	0.068484	0.763226	0.043442
0.1	0.172656	3.976351	0.043421	0.238037	0.476074	1.378676	0.137868	0.768306	0.069607
0.13	0.311406	5.506651	0.056551	0.512017	1.024034	1.644208	0.213747	0.803632	0.096412
0.16	0.495156	7.036951	0.070365	0.941841	1.883683	1.902109	0.304338	0.838007	0.125804
0.2	0.810156	9.077351	0.08925	1.805672	3.611344	2.228795	0.445759	0.878268	0.167784
0.24	1.205156	11.11775	0.108399	3.057675	6.11535	2.537161	0.608919	0.912671	0.212202
0.2959	**1.891189**	**13.96921**	**0.135383**	**5.564686**	**11.12937**	**2.942427**	**0.870664**	**0.953247**	**0.277504**
0.3025	1.9825	14.30588	0.138579	5.924832	11.84966	2.988566	0.904041	0.957574	0.28543

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	5.959601	11.9192	2.995527	0.907645	0.959012	0.28648
0.308	2.0595	14.31138	0.143906	6.311691	12.62338	3.064672	0.943919	0.973152	0.296991
0.312	2.1155	14.31538	0.147778	6.599083	13.19817	3.119396	0.973252	0.984159	0.305416
0.316	2.1715	14.31938	0.151648	6.891504	13.78301	3.173615	1.002862	0.994908	0.313855
0.32	2.2275	14.32338	0.155515	7.188908	14.37782	3.227344	1.03275	1.005408	0.322308
0.325	2.2975	14.32838	0.160346	7.567601	15.1352	3.293842	1.070499	1.0182	0.332895
0.331	2.3815	14.33438	0.166139	8.032094	16.06419	3.372704	1.116365	1.033086	0.345628
0.333	2.4095	14.33638	0.168069	8.189342	16.37868	3.398772	1.131791	1.037939	0.349879

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	8.310527	16.62105	3.409307	1.142118	1.038044	0.352028
0.36	2.805725	15.68665	0.178861	9.939979	19.87996	3.542749	1.27539	1.040546	0.379504
0.39	3.288725	17.18695	0.19135	12.18738	24.37477	3.705808	1.445265	1.045737	0.413842
0.42	3.816725	18.68725	0.204242	14.77242	29.54484	3.870444	1.625586	1.052466	0.449463
0.45	4.389725	20.18755	0.217447	17.71482	35.42965	4.03552	1.815984	1.060145	0.486202
0.48	5.007725	21.68785	0.2309	21.03392	42.06784	4.200294	2.016141	1.068393	0.523929
0.513	5.7395	23.33818	0.245928	25.14254	50.28508	4.380615	2.247256	1.077826	0.566448

Street Capacity Calculations

EAST RIDGE ST.

28' F-F Street Section with 4" curb

Slope= 0.0201

For water depths less than 0.0625 feet

Y= Water depth

Area = 16*Y^2

P= SQRT(1025*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000568	0.001136	0.354896	0.003549	0.625423	0.00516
0.02	0.0064	0.660312	0.009692	0.003606	0.007211	0.563363	0.011267	0.702013	0.012232
0.025	0.01	0.825391	0.012115	0.006537	0.013074	0.653725	0.016343	0.728613	0.016133
0.035	0.0196	1.155547	0.016962	0.016035	0.03207	0.818114	0.028634	0.77064	0.024468
0.045	0.0324	1.485703	0.021808	0.031342	0.062683	0.967334	0.04353	0.803605	0.033372
0.055	0.0484	1.815859	0.026654	0.053521	0.107041	1.1058	0.060819	0.830936	0.042739
0.06	0.0576	1.980937	0.029077	0.067498	0.134996	1.171842	0.070311	0.843074	0.047573
0.0625	0.0625	2.063476	0.030289	0.075261	0.150521	1.204171	0.075261	0.848829	0.050025

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.076661	0.153321	1.207135	0.07605	0.847535	0.050318
0.1	0.172656	3.976351	0.043421	0.264331	0.528663	1.530969	0.153097	0.853175	0.080607
0.13	0.311406	5.506651	0.056551	0.568576	1.137152	1.825833	0.237358	0.892404	0.111473
0.16	0.495156	7.036951	0.070365	1.04588	2.091761	2.112223	0.337956	0.930576	0.14525
0.2	0.810156	9.077351	0.08925	2.005133	4.010266	2.474995	0.494999	0.975285	0.193419
0.24	1.205156	11.11775	0.108399	3.395436	6.790872	2.817424	0.676182	1.013488	0.244319
0.28	1.680156	13.15815	0.127689	5.27984	10.55968	3.14247	0.879892	1.04656	0.297426
0.3025	1.9825	14.30588	0.138579	6.579309	13.15862	3.318693	1.003905	1.063351	0.328137

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	6.617918	13.23584	3.326423	1.007906	1.064948	0.329328
0.308	2.0595	14.31138	0.143906	7.008902	14.0178	3.403206	1.048187	1.08065	0.341259
0.3102	2.0903	14.31358	0.146036	7.183733	14.36747	3.4367	1.066064	1.087409	0.346515
0.316	2.1715	14.31938	0.151648	7.652763	15.30553	3.524183	1.113642	1.104808	0.360394
0.32	2.2275	14.32338	0.155515	7.983019	15.96604	3.583847	1.146831	1.116469	0.369985
0.324	2.2835	14.32738	0.15938	8.318758	16.63752	3.642986	1.180327	1.127865	0.37959
0.3241	2.2849	14.32748	0.159477	8.327222	16.65444	3.644458	1.181169	1.128146	0.37983
0.333	2.4095	14.33638	0.168069	9.093964	18.18793	3.774212	1.256813	1.152594	0.401257

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3438	**2.563616**	**14.87648**	**0.172327**	**9.838359**	**19.67672**	**3.837688**	**1.319397**	**1.153424**	**0.414657**
0.36	2.805725	15.68665	0.178861	11.03798	22.07596	3.934093	1.416273	1.155488	0.4352
0.39	3.288725	17.18695	0.19135	13.53364	27.06729	4.115164	1.604914	1.161253	0.474508
0.42	3.816725	18.68725	0.204242	16.40423	32.80846	4.297986	1.805154	1.168725	0.515256
0.45	4.389725	20.18755	0.217447	19.67166	39.34333	4.481297	2.016584	1.177252	0.557256
0.48	5.007725	21.68785	0.2309	23.3574	46.71479	4.664273	2.238851	1.186412	0.600363
0.513	5.7395	23.33818	0.245928	27.91987	55.83974	4.864513	2.495495	1.196886	0.648923

Street Capacity Calculations

SOUTH RIDGE ST. - BETWEEN WEST RIDGE AND YUCCA RIDGE

28' F-F Street Section with 4" curb

Slope= 0.0295

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) ÷ Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.330156	0.004846	0.000688	0.001376	0.429947	0.004299	0.757681	0.006824
0.02	0.0064	0.660312	0.009692	0.004368	0.008736	0.682498	0.01365	0.850469	0.016051
0.025	0.01	0.825391	0.012115	0.00792	0.015839	0.791969	0.019799	0.882694	0.021118
0.035	0.0196	1.155547	0.016962	0.019426	0.038852	0.991121	0.034689	0.933608	0.031914
0.045	0.0324	1.485703	0.021808	0.037969	0.075939	1.171897	0.052735	0.973544	0.043415
0.055	0.0484	1.815859	0.026654	0.064839	0.129678	1.339645	0.07368	1.006654	0.055488
0.06	0.0576	1.980937	0.029077	0.081772	0.163544	1.419653	0.085179	1.021359	0.061711
0.0625	0.0625	2.063476	0.030289	0.091176	0.182352	1.458818	0.091176	1.028332	0.064865

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.088981	0.030401	0.092872	0.185744	1.462409	0.092132	1.026764	0.065251
0.1	0.172656	3.976351	0.043421	0.32023	0.640459	1.854724	0.185472	1.033597	0.104488
0.13	0.311406	5.506651	0.056551	0.688813	1.377626	2.211944	0.287553	1.081121	0.14412
0.16	0.495156	7.036951	0.070365	1.267054	2.534107	2.558896	0.409423	1.127366	0.187344
0.2	0.810156	9.077351	0.08925	2.42916	4.85832	2.998385	0.599677	1.181529	0.248828
0.24	1.205156	11.11775	0.108399	4,113472	8.226944	3.413227	0.819174	1.227811	0.313666
0.28	1.680156	13.15815	0.127689	6.396373	12.79275	3.807011	1.065963	1.267877	0.381208
0.3025	1.9825	14.30588	0.138579	7.970641	15.94128	4.0205	1.216201	1.288218	0.420228

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.9895	14.30638	0.139064	8.017415	16.03483	4.029864	1.221049	1.290153	0.421722
0.308	2.0595	14.31138	0.143906	8.491081	16.98216	4.122884	1.269848	1.309176	0.436676
0.3094	**2.0791**	**14.31278**	**0.145262**	**8.625626**	**17.25125**	**4.148731**	**1.283617**	**1.314399**	**0.440868**
0.316	2.1715	14.31938	0.151648	9.271099	18.5422	4.269445	1.349145	1.338443	0.460655
0.32	2.2275	14.32338	0.155515	9.671195	19.34239	4.341726	1.389352	1.352569	0.472669
0.324	2.2835	14.32738	0.15938	10.07793	20.15587	4.413371	1.429932	1.366375	0.4847
0.331	2.3815	14.33438	0.166139	10.80553	21.61106	4.537278	1.501839	1.389804	0.505795
0.333	2.4095	14.33638	0.168069	11.01707	22.03414	4.572348	1.522592	1.396334	0.511831

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.4376	14.4364	0.168851	11.1801	22.3602	4.58652	1.536484	1.396474	0.51497
0.36	2.805725	15.68665	0.178861	13.37219	26.74439	4.766039	1.715774	1.39984	0.555062
0.3654	2.889344	15.9567	0.181074	13.8841	27.76819	4.805276	1.755848	1.400897	0.563917
0.397	3.4079	17.53702	0.194326	17.16545	34.3309	5.036958	1.999672	1.408786	0.616981
0.45	4.389725	20.18755	0.217447	23.83165	47.6633	5.428961	2.443033	1.426207	0.710105
0.48	5.007725	21.68785	0.2309	28.29681	56.59361	5.650631	2.712303	1.437303	0.764758
0.513	5.7395	23.33818	0.245928	33.82411	67.64822	5.893216	3.02322	1.449992	0.826277

Street Capacity Calculations

SOUTH RIDGE ST. - BETWEEN PINON RIDGE AND EAST RIDGE

28' F-F Street Section with 8" curb

Slope= 0.0295

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000337	0.000674	0.421092	0.004211	0.742077	0.006625
0.02	0.0032	0.340624	0.009395	0.002139	0.004278	0.668442	0.013369	0.832954	0.015594
0.04	0.0128	0.681249	0.018789	0.013582	0.027164	1.061086	0.042443	0.934959	0.036544
0.06	0.0288	1.021873	0.028184	0.040044	0.080088	1.390415	0.083425	1.000325	0.060026
0.08	0.0512	1.362498	0.037578	0.08624	0.172479	1.684368	0.134749	1.049456	0.085289
0.1	0.08	1.703122	0.046973	0.156363	0.312726	1.954536	0.195454	1.08922	0.111951
0.12	0.1152	2.043746	0.056367	0.254263	0.508527	2.207147	0.264858	1.122827	0.139773
0.125	0.125	2.128902	0.058716	0.283505	0.56701	2.268038	0.283505	1.130492	0.14689

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.301196	0.602391	2.220798	0.288704	1.085449	0.144876
0.16	0.225625	3.914252	0.057642	0.505468	1.010936	2.240302	0.358448	0.987003	0.157229
0.2	0.415625	5.954652	0.069798	1.057822	2.115645	2.545136	0.509027	1.002924	0.20078
0.24	0.685625	7.995052	0.085756	2.001756	4.003512	2.919607	0.700706	1.050246	0.256122
0.28	1.035625	10.03545	0.103197	3.420796	6.841591	3.303122	0.924874	1.100063	0.317548
0.32	1.465625	12.07585	0.121368	5.393953	10.78791	3.680309	1.177699	1.146519	0.382965
0.34	1.710625	13.09605	0.130621	6.611682	13.22336	3.865068	1.314123	1.168126	0.416836
0.365	2.045	14.3713	0.142297	8.368334	16.73667	4.092095	1.493615	1.193634	0.4601

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3657	**2.0548**	**14.372**	**0.142972**	**8.435004**	**16.87001**	**4.105024**	**1.501207**	**1.196259**	**0.462284**
0.41	2.675	14.4163	0.185554	13.06526	26.13051	4.884208	2.002525	1.344232	0.600931
0.45	3.235	14.4563	0.223778	17.90193	35.80386	5.533827	2.490222	1.453756	0.727131
0.5	3.935	14.5063	0.271261	24.75622	49.51244	6.291288	3.145644	1.56793	0.886531
0.54	4.495	14.5463	0.309013	30.84575	61.6915	6.862236	3.705607	1.645663	1.015428
0.59	5.195	14.5963	0.355912	39.17072	78.34145	7.540081	4.448648	1.729904	1.178245
0.63	5.755	14.6363	0.3932	46.37339	92.74678	8.057931	5.076496	1.789062	1.3098
0.667	6.273	14.6733	0.427511	53.44673	106.8935	8.520123	5.682922	1.838463	1.432463

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

Street Capacity Calculations

EAST RIDGE ST - AT SOUTH RIDGE ST

28' F-F Street Section with 8" curb

Slope= 0.0201

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000278	0.000556	0.347587	0.003476	0.612542	0.005002
0.02	0.0032	0.340624	0.009395	0.001766	0.003531	0.551761	0.011035	0.687556	0.011867
0.04	0.0128	0.681249	0.018789	0.011211	0.022422	0.875865	0.035035	0.771755	0.02802
0.06	0.0288	1.021873	0.028184	0.033054	0.066108	1.147708	0.068863	0.825711	0.046216
0.08	0.0512	1.362498	0.037578	0.071186	0.142372	1.39035	0.111228	0.866266	0.065855
0.1	0.08	1.703122	0.046973	0.129069	0.258137	1.613358	0.161336	0.899089	0.086628
0.12	0.1152	2.043746	0.056367	0.20988	0.41976	1.821874	0.218625	0.926829	0.108344
0.125	0.125	2.128902	0.058716	0.234017	0.468034	1.872136	0.234017	0.933156	0.113903

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.24862	0.49724	1.833142	0.238308	0.895976	0.112084
0.16	0.225625	3.914252	0.057642	0.417235	0.83447	1.849241	0.295879	0.814715	0.120959
0.2	0.415625	5.954652	0.069798	0.873172	1.746344	2.100865	0.420173	0.827857	0.154613
0.24	0.685625	7.995052	0.085756	1.652335	3.30467	2.409969	0.578393	0.866918	0.197771
0.28	1.035625	10.03545	0.103197	2.823671	5.647343	2.726538	0.763431	0.908039	0.245859
0.2968	1.206481	10.89242	0.110763	3.448412	6.896824	2.85824	0.848326	0.924568	0.267083
0.34	1.710625	13.09605	0.130621	5.457566	10.91513	3.190393	1.084734	0.964221	0.323814
0.365	2.045	14.3713	0.142297	6.907582	13.81516	3.377791	1.232894	0.985277	0.357841

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.115	14.3763	0.147117	7.304442	14.60888	3.453637	1.277846	1.000571	0.370282
0.41	2.675	14.4163	0.185554	10.78462	21.56925	4.031635	1.65297	1.109587	0.47024
0.4816	**3.6774**	**14.4879**	**0.253826**	**18.26974**	**36.53948**	**4.968113**	**2.392643**	**1.261596**	**0.651558**
0.5	3.935	14.5063	0.271261	20.43484	40.86969	5.193099	2.596549	1.294237	0.698696
0.54	4.495	14.5463	0.309013	25.4614	50.92281	5.664383	3.058767	1.3584	0.801938
0.59	5.195	14.5963	0.355912	32.33319	64.66639	6.223906	3.672105	1.427937	0.932428
0.63	5.755	14.6363	0.3932	38.27859	76.55717	6.651362	4.190358	1.476768	1.037915
0.667	6.273	14.6733	0.427511	44.11722	88.23444	7.032874	4.690927	1.517547	1.136308

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

Street Capacity Calculations

AVALON ROAD

32' F-F Street Section with 8" curb

Slope= 0.0234

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.0003	0.0006	0.375037	0.00375	0.660916	0.0056
0.02	0.0032	0.340624	0.009395	0.001905	0.00381	0.595334	0.011907	0.741853	0.013244
0.04	0.0128	0.681249	0.018789	0.012096	0.024193	0.945034	0.037801	0.832702	0.031175
0.06	0.0288	1.021873	0.028184	0.035664	0.071329	1.238344	0.074301	0.890918	0.051332
0.08	0.0512	1.362498	0.037578	0.076808	0.153615	1.500148	0.120012	0.934676	0.073059
0.1	0.08	1.703122	0.046973	0.139261	0.278523	1.740767	0.174077	0.970092	0.096019
0.12	0.1152	2.043746	0.056367	0.226454	0.452909	1.965749	0.23589	1.000022	0.120004
0.125	0.125	2.128902	0.058716	0.252498	0.504995	2.019981	0.252498	1.006849	0.126142

For water depths greater than 0.125 ft but less than 0.405 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.268254	0.536507	1.977907	0.257128	0.966732	0.124245
0.16	0.225625	3.914252	0.057642	0.450185	0.900369	1.995278	0.319244	0.879054	0.134392
0.196	0.393025	5.750612	0.068345	0.878487	1.756974	2.235194	0.438098	0.889732	0.167379
0.246	0.733025	8.301112	0.088304	1.943651	3.887302	2.651548	0.652281	0.942115	0.227078
0.28	1.035625	10.03545	0.103197	3.04666	6.093321	2.941857	0.82372	0.979748	0.272448
0.32	1.465625	12.07585	0.121368	4.804012	9.608024	3.277791	1.048893	1.021124	0.329023
0.36	1.975625	14.11625	0.139954	7.120969	14.24194	3.604413	1.297589	1.058657	0.388243
0.395	2.4875	15.9016	0.156431	9.656559	19.31312	3.882034	1.533403	1.088511	0.441828
0.405	2.645	16.4117	0.161165	10.47414	20.94827	3.959976	1.60379	1.096572	0.457406

For water depths greater than 0.405 ft but less than 0.667 ft

Y2= Y - 0.405
A3= A2 + Y2*16
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.41	2.725	16.4167	0.165989	11.0052	22.01041	4.038607	1.655829	1.111506	0.4713
0.43	3.045	16.4367	0.185256	13.23164	26.46327	4.345365	1.868507	1.167788	0.526978
0.48	3.845	16.4867	0.233218	19.47971	38.95942	5.066245	2.431798	1.288658	0.667096
0.52	4.485	16.5267	0.271379	25.13764	50.27527	5.604824	2.914508	1.369722	0.780296
0.5434	**4.8594**	**16.5501**	**0.293618**	**28.7044**	**57.4088**	**5.906984**	**3.209855**	**1.412141**	**0.847003**
0.59	5.605	16.5967	0.337718	36.34595	72.69189	6.484558	3.825889	1.487738	0.980919
0.6658	6.8178	16.6725	0.408925	50.22474	100.4495	7.366708	4.904754	1.591013	1.201714
0.667	6.837	16.6737	0.410047	50.45828	100.9166	7.380178	4.922579	1.592487	1.205238

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667
A4= A3 + 16 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	7.392225	18.32403	0.403417	53.96627	107.9325	7.30041	5.110287	1.537695	1.211959
0.73	7.944225	19.82433	0.400731	57.73839	115.4768	7.26797	5.305618	1.499076	1.22507
0.75	8.337225	20.82453	0.400356	60.55688	121.1138	7.263434	5.447576	1.478031	1.236915
0.77	8.750225	21.82473	0.400932	63.61759	127.2352	7.270395	5.598204	1.460107	1.250924
0.8	9.407225	23.32503	0.40331	68.56449	137.329	7.299123	5.839298	1.438129	1.275504
0.82	9.870225	24.32523	0.405761	72.33551	144.671	7.328659	6.009501	1.42623	1.293996
0.85	10.60223	25.82553	0.410533	78.3081	156.6162	7.386006	6.278105	1.411797	1.324502

Pipe Capacity

Manning's Equation:
Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
CB1 TO MH1	48	2.88	12.57	1	244.43	174.18	13.86
MH1 TO MH2	48	2.75	12.57	1	238.85	174.18	13.86
MH2 TO MH3	48	2.02	12.57	1	204.71	174.18	13.86
MH3 TO MH4	48	2.03	12.57	1	205.21	174.18	13.86
MH4 to POND 2A	54	1	15.90	1.125	197.18	174.18	10.95
MH4 to EX.	48	1.99	12.57	1	203.18	174.18	13.86
CB2 to MH3	18	15.93	1.77	0.375	42.04	6.32	3.58
CB6 to CB7	12	2	0.79	0.25	5.05	4.30	5.47
CB7 to POND 2B	13	2.22	0.92	0.270833	6.59	6.32	6.86
CB7 to MH7	18	3.44	1.77	0.375	19.54	6.32	3.58
MH7 to MH6	18	2.13	1.77	0.375	15.37	6.32	3.58
CB3 to CB4	18	3	1.77	0.375	18.24	15.72	8.90
CB4 to MH6	18	4.19	1.77	0.375	21.56	15.72	8.90
MH6 to MH5	24	2.92	3.14	0.5	38.76	37.76	12.02
CB5 to MH5	36	0.6	7.07	0.75	51.80	34.13	4.83
MH5 to MH2	42	0.84	9.62	0.875	92.46	71.95	7.48

HYDRAULIC GRADE LINE

MANNING'S EQUATION
Q=1.49/n * A * R^(3/2) * S^(1/2)

PIPE	LOCATION	DEPTH (IN)	DEPTH (FT)	DIAMETER (IN)	SLOPE (FT/FT)	THETA	AREA (FT^2)	WP	R	Q (CFS)	V (FT/SEC)
MH5 to MH2	East Ridge	27.85	2.32	42	0.0084	3.81	6.77	6.66	1.02	71.95	10.62
CB4 to MH6	South Ridge	11.51	0.96	18	0.0419	3.71	1.19	2.78	0.43	15.92	13.35
MH6 to MH5	South Ridge	19.13	1.59	24	0.0292	4.41	2.68	4.41	0.61	37.75	14.06
CB5 to MH5	South Ridge	21.33	1.78	36	0.006	3.51	4.36	5.27	0.83	34.14	7.83
CB7 to MH7	Pinon Ridge	7.04	0.59	18	0.0344	2.70	0.64	2.03	0.32	6.32	9.86
MH7 to MH6	Pinon Ridge	8.04	0.67	18	0.0213	2.93	0.76	2.20	0.35	6.32	8.27
CB6 to CB7	Pinon Ridge	8.50	0.71	12	0.02	4.00	0.59	2.00	0.30	4.30	7.22
CB7 to Pond	Common Area	7.95	0.66	18	0.0222	2.91	0.75	2.18	0.35	6.32	8.40
CB1 to MH1	Volcano	29.95	2.50	48	0.0288	3.64	8.25	7.28	1.13	174.18	21.12
MH1 to MH2	Volcano	30.42	2.54	48	0.0275	3.68	8.40	7.37	1.14	174.17	20.74
MH2 to MH3	Volcano	34.02	2.84	48	0.0202	4.00	9.52	8.01	1.19	174.17	18.29
MH3 to MH4	Volcano	33.96	2.83	48	0.0203	4.00	9.50	7.99	1.19	174.18	18.33
MH4 to End	Volcano	34.22	2.85	48	0.0199	4.02	9.58	8.04	1.19	174.17	18.17

Offsite Developed Pipe Capacity

Manning's Equation:
Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
Bluewater							
West of 94th Stree	48	1.46	12.57	1	174.03	152.49	12.13
East of 94th Street	24	1	3.14	0.5	22.68	14.66	4.67
94th Street	48	1.51	12.57	1	176.99	152.49	12.13
Avalon	54	2.3	15.90	1.125	299.04	219.32	13.79
90th Street	60	1	19.63	1.25	261.14	255.40	13.01
Volcano							
West End of Site	48	2	12.57	1	203.69	174.18	13.86
Site Entrance	48	2	12.57	1	203.69	108.91	8.67
North 90th Street	66	1.5	23.76	1.375	412.39	364.31	15.33

DROP INLET CALCULATIONS

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

	PIPE SIZE (IN)	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
CB-1	18	1.77	15.72	3.41	4.00
CB-2	18	1.77	15.72	3.41	4.93
CB-3	12	0.79	4.30	1.29	4.00
CB-4	15	1.23	6.32	1.14	4.62
CB-5	48	12.57	174.18	8.29	9.00
MH-1	24	3.14	37.76	6.23	6.60
MH-2	30	4.91	50.00	4.48	4.50
MH-4	48	12.57	174.18	8.29	9.00
MH-5	48	12.57	174.18	8.29	9.00
MH-6	48	12.57	174.18	8.29	9.00
MH-7	48	12.57	174.18	8.29	9.00

STORM DROP INLET-EFFECTIVE AREA
Double 'A'

<u>Area at the grate:</u>

L $= 88\ ¾" - 2(6"_{ends}) - 6"_{center\ piece} - 14(½_{\ middle\ bars})$
$= 63\ ¾"$
$= 5.3125'$

W $= 25\ ½" - 13(½"_{\ middle\ bars})$
$= 19"$
$= 1.5833'$

Area $= 5.3125' \times 1.5833'$
$= 8.41\ ft^2$

Effective Area $= 8.41 - 8.41\ (0.5_{\ clogging\ factor})$
$= 4.21\ ft^2$ at the grate

<u>Area at the throat:</u>

L $= 13.50"$

H $= 10\ ¾" - 4\ ½"$
$= 6\ ¼"$
$= 0.5208'$

Area $= 13.50' \times 0.5208'$
$= 7.03\ ft^2$ at the throat

<u>Total Area:</u>

Area $= 4.21_{grate} + 7.03_{throat}$
$= 11.24\ ft^2$

Street Capacity Calculations

SOUTH RIDGE ST. - BETWEEN YUCCA RIDGE AND PINON RIDGE

28' F-F Street Section with 8" curb

Slope= 0.036

For water depths less than 0.125 feet

Y= Water depth
Area = 8*Y^2
P= SQRT(257*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000372	0.000744	0.465176	0.004652	0.819765	0.007625
0.02	0.0032	0.340624	0.009395	0.002363	0.004726	0.738421	0.014768	0.920155	0.017881
0.04	0.0128	0.681249	0.018789	0.015004	0.030008	1.17217	0.046887	1.032839	0.041755
0.06	0.0288	1.021873	0.028184	0.044236	0.088472	1.535977	0.092159	1.105048	0.068449
0.08	0.0512	1.362498	0.037578	0.095268	0.190536	1.860704	0.148856	1.159323	0.097126
0.1	0.08	1.703122	0.046973	0.172732	0.345465	2.159156	0.215916	1.20325	0.127359
0.12	0.1152	2.043746	0.056367	0.280882	0.561764	2.438212	0.292585	1.240375	0.158883
0.125	0.125	2.128902	0.058716	0.313185	0.62637	2.505478	0.313185	1.248843	0.166943

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.332728	0.665455	2.453292	0.318928	1.199084	0.164832
0.16	0.225625	3.914252	0.057642	0.558385	1.116771	2.474838	0.395974	1.090332	0.17936
0.2	0.415625	5.954652	0.069798	1.168565	2.337131	2.811586	0.562317	1.10792	0.228936
0.24	0.685625	7.995052	0.085756	2.211319	4.422637	3.22526	0.774062	1.160195	0.291662
0.28	1.035625	10.03545	0.103197	3.778917	7.557834	3.648924	1.021699	1.215228	0.361158
0.32	1.465625	12.07585	0.121368	5.958643	11.91729	4.065599	1.300992	1.266548	0.435087
0.3388	**1.695361**	**13.03484**	**0.130064**	**7.218068**	**14.43614**	**4.257541**	**1.442455**	**1.289019**	**0.471025**
0.365	2.045	14.3713	0.142297	9.244411	18.48882	4.520494	1.64998	1.318595	0.522185

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365
A3= A2 + Y2*14
P3= P2 + Y2

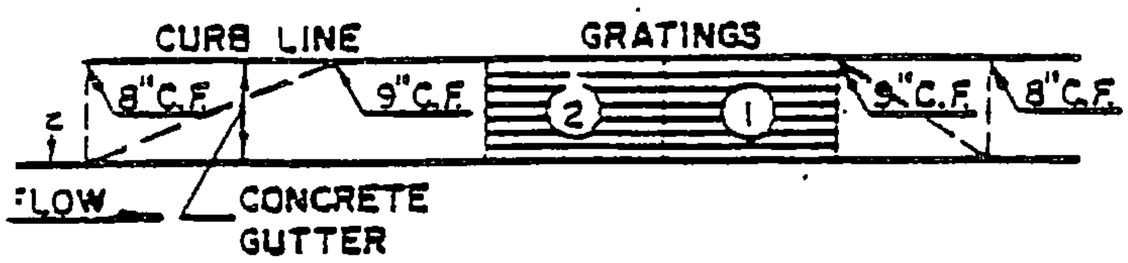
Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.115	14.3763	0.147117	9.77553	19.55106	4.622	1.71014	1.339063	0.539688
0.41	2.675	14.4163	0.185554	14.43305	28.86611	5.395534	2.212169	1.484959	0.680088
0.4796	**2.821**	**14.4859**	**0.194741**	**15.71916**	**31.43831**	**5.572193**	**2.672424**	**1.417943**	**0.751375**
0.49	3.795	14.4963	0.261791	25.75744	51.51487	6.787203	3.325729	1.708696	0.964147
0.54	4.495	14.5463	0.309013	34.07498	68.14995	7.58064	4.093546	1.817946	1.144332
0.59	5.195	14.5963	0.355912	43.27149	86.54298	8.329449	4.914375	1.911007	1.326577
0.63	5.755	14.6363	0.3932	51.2282	102.4564	8.901512	5.607953	1.976358	1.473798
0.667	6.273	14.6733	0.427511	59.04204	118.0841	9.41209	6.277864	2.030931	1.61105

For water depths greater than 0.667 ft but less than 0.847 ft

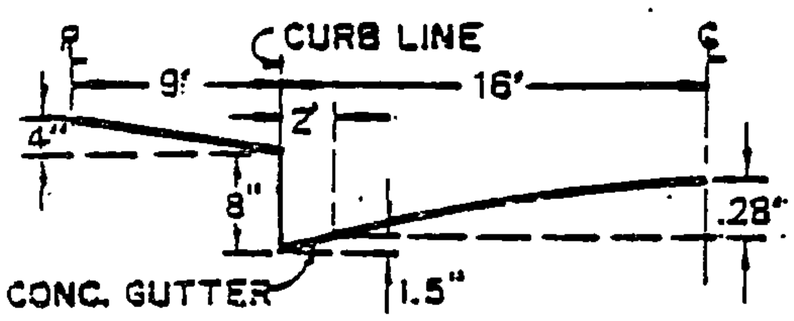
Y3= Y - 0.667
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

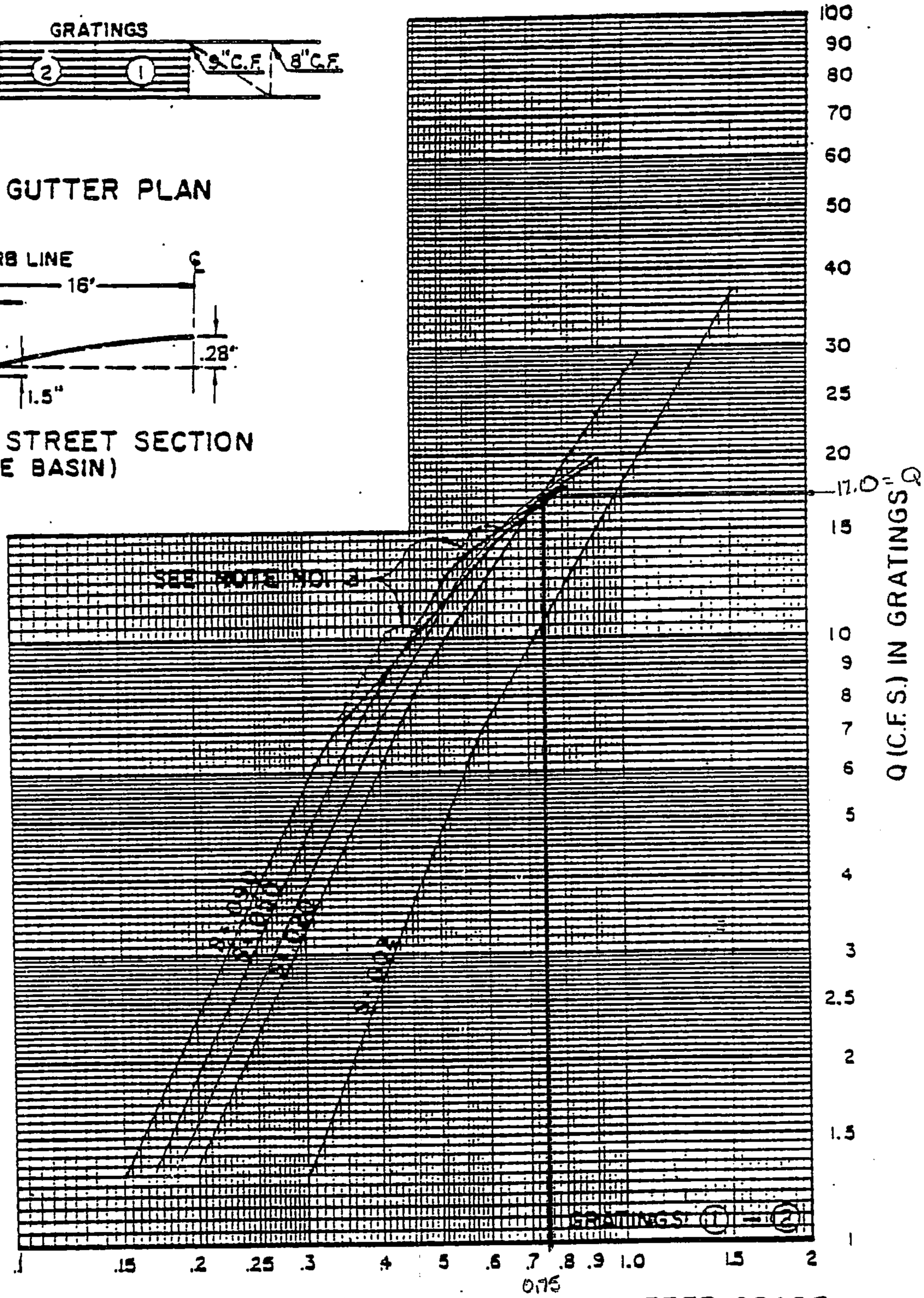
GRATING CAPACITIES FOR TYPE DOUBLE (A) "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Q = 31.44 cfs

d = 0.75'

2(17) = 24 cfs 721.44 cfs

Inlet has capacity

Street Capacity Calculations

PINON RIDGE ST.

28' F-F Street Section with 8" curb

Slope= 0.018

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.170312	0.004697	0.000372	0.000744	0.465176	0.004652	0.819765	0.007625
0.02	0.0032	0.340624	0.009395	0.002363	0.004726	0.738421	0.014768	0.920155	0.017881
0.04	0.0128	0.681249	0.018789	0.015004	0.030008	1.17217	0.046887	1.032839	0.041755
0.06	0.0288	1.021873	0.028184	0.044236	0.088472	1.535977	0.092159	1.105048	0.068449
0.08	0.0512	1.362498	0.037578	0.095268	0.190536	1.860704	0.148856	1.159323	0.097126
0.1	0.08	1.703122	0.046973	0.172732	0.345465	2.159156	0.215916	1.20325	0.127359
0.12	0.1152	2.043746	0.056367	0.280882	0.561764	2.438212	0.292585	1.240375	0.158883
0.125	0.125	2.128902	0.058716	0.313185	0.62637	2.505478	0.313185	1.248843	0.166943

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.135625	2.383952	0.056891	0.332728	0.665455	2.453292	0.318928	1.199084	0.164832
0.16	0.225625	3.914252	0.057642	0.558385	1.116771	2.474838	0.395974	1.090332	0.17936
0.2	0.415625	5.954652	0.069798	1.168565	2.337131	2.811586	0.562317	1.10792	0.228936
0.24	0.685625	7.995052	0.085756	2.211319	4.422637	3.22526	0.774062	1.160195	0.291662
0.28	1.035625	10.03545	0.103197	3.778917	7.557834	3.648924	1.021699	1.215228	0.361158
0.2968	**1.206481**	**10.89242**	**0.110763**	**4.615007**	**9.230014**	**3.82518**	**1.135313**	**1.237348**	**0.391748**
0.34	1.710625	13.09605	0.130621	7.303856	14.60771	4.269701	1.451698	1.290417	0.473342
0.365	2.045	14.3713	0.142297	9.244411	18.48882	4.520494	1.64998	1.318595	0.522185

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.115	14.3763	0.147117	9.77553	19.55106	4.622	1.71014	1.339063	0.539688
0.41	2.675	14.4163	0.185554	14.43305	28.86611	5.395534	2.212169	1.484959	0.680088
0.4391	3.0824	**14.4454**	**0.213383**	**18.25505**	**36.5101**	**5.92235**	**2.600504**	**1.575014**	**0.782843**
0.5	3.935	14.5063	0.271261	27.34794	54.69587	6.94992	3.47496	1.732076	1.000017
0.54	4.495	14.5463	0.309013	34.07498	68.14995	7.58064	4.093546	1.817946	1.144332
0.59	5.195	14.5963	0.355912	43.27149	86.54298	8.329449	4.914375	1.911007	1.326577
0.63	5.755	14.6363	0.3932	51.2282	102.4564	8.901512	5.607953	1.976358	1.473798
0.667	6.273	14.6733	0.427511	59.04204	118.0841	9.41209	6.277864	2.030931	1.61105

For water depths greater than 0.667 ft but less than 0.847 ft

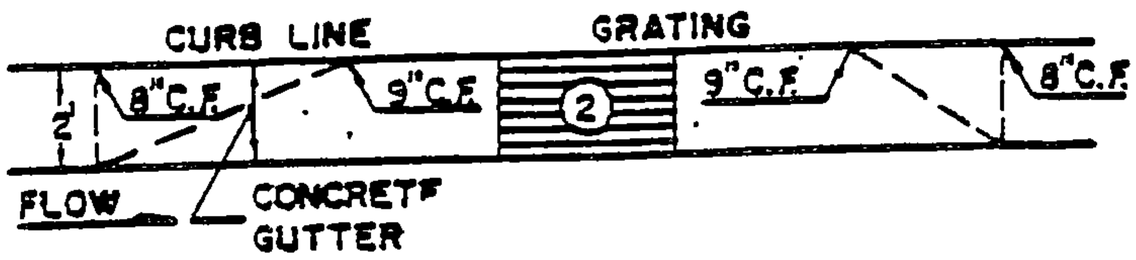
Y3= Y - 0.667

A4= A3 + 14 * Y3 + 25 * Y3^2

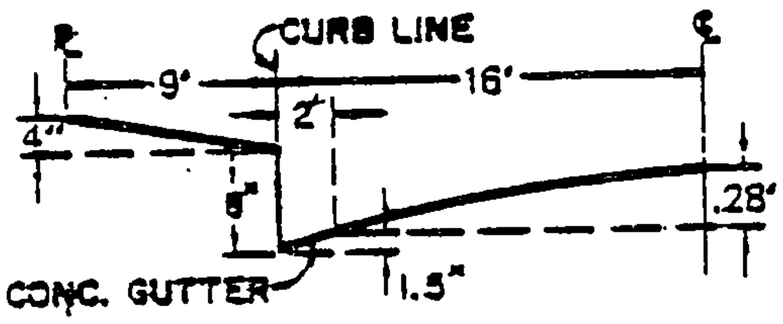
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.762225	16.32363	0.41426	62.32457	124.6491	9.216578	6.451604	1.9413	1.603401
0.72	7.085225	17.32383	0.408987	64.74624	129.4925	9.138206	6.579508	1.897871	1.605723
0.74	7.428225	18.32403	0.405382	67.48111	134.9622	9.084419	6.72247	1.86103	1.612436
0.76	7.791225	19.32423	0.403184	70.52275	141.0455	9.051561	6.879186	1.829737	1.622982
0.78	8.174225	20.32443	0.402187	73.86746	147.7349	9.036632	7.048573	1.803148	1.636902
0.8	8.577225	21.32463	0.402221	77.51364	155.0273	9.037146	7.229717	1.780567	1.65381
0.847	9.603	23.6751	0.405616	87.2713	174.5426	9.08792	7.697469	1.740183	1.703545

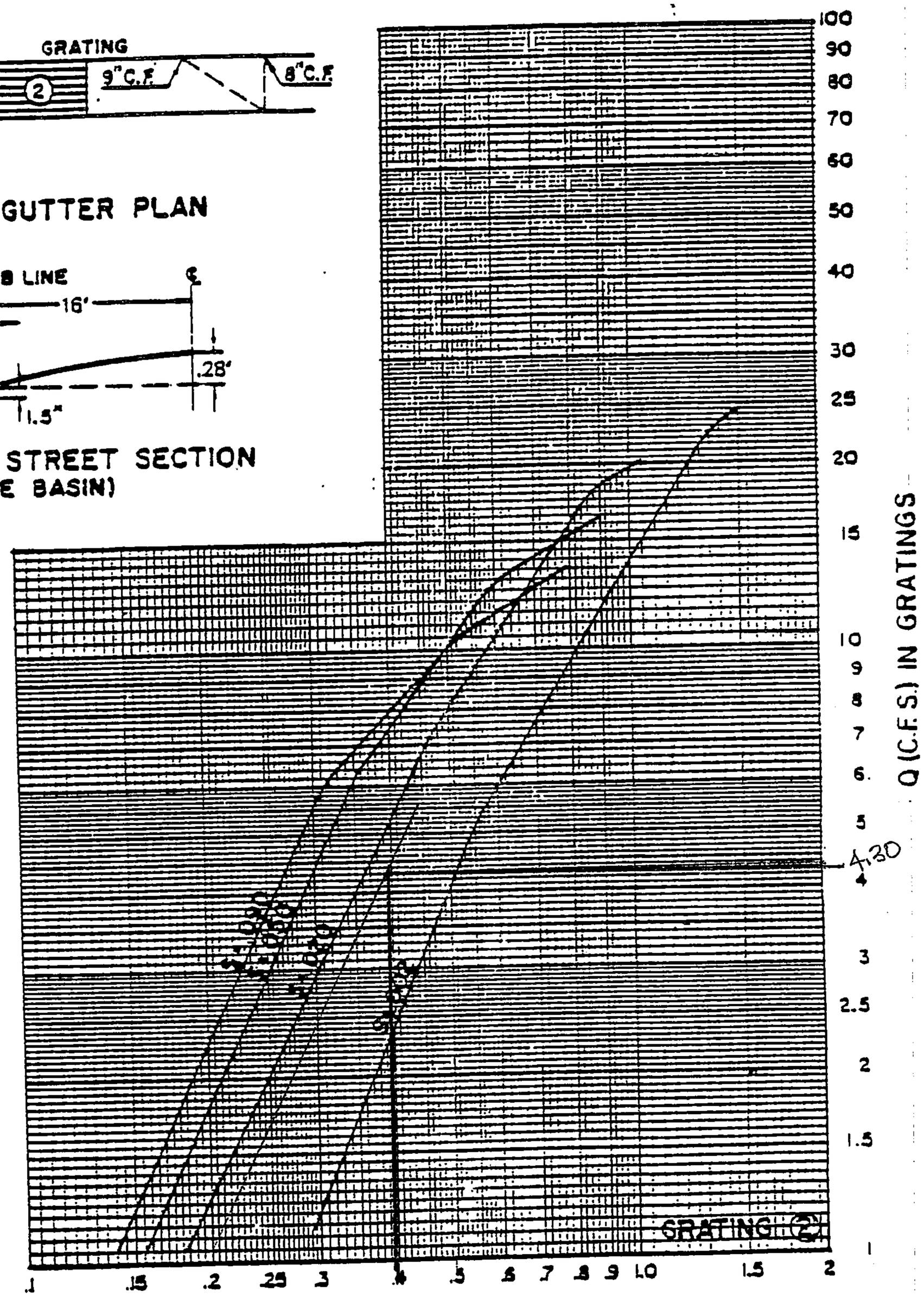
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Q = 9.23 cfs

d = 0.39'

2 Grate Locations 4.30
8.60 cfs.

POND SUMMARY

	Pond 1	Pond 2a	Pond 2b	Total	Pond 3
Area of Pond Top (SF)	23404.34	56300.01	10029.52		71712.41
Area of Pond Bottom (SF)	15010.01	30657.16	4200.00		40930.27
Depth of Pond (FT)	4.50	10.00	3.00		5.00
Volume (CF)	86432.29	434785.85	21344.28		281606.70
Volume (AC-FT)	1.9842	9.9813	0.4900		6.4648
Volume Required (CF)	78727.88			454527.5	255223.98
Volume Required (AC-FT)	1.8073			10.4345	5.8591
Volume Provided (CF)	86432.29			456130.1	281606.7
Volume Provided (AC-FT)	**1.9842**			**10.4713**	**6.4648**

VOLUME CALCULATIONS FOR 10-DAY STORM
POND 1

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI^2)
1	298683.06	6.85682	0.010714

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 0.00%
AB = 10.00%
AC = 0.00%
AD = 90.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**1.8400**	**IN**
V-360 =	**1.0514**	**AC-FT**
AD =	**6.1711**	**AC**
V-10 Day =	**1.8073**	**AC-FT**
V-10 DAY =	**78727.88**	**CF**

VOLUME CALCULATIONS FOR 10-DAY STORM

ON-SITE POND 2A AND 2B

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
2	223543.54	5.13185	0.008019
3	124717.65	2.86312	0.004474
4	204349.12	4.69121	0.007330
5	184710.00	4.24036	0.006626
6	202495.68	4.64866	0.007264
7	190736.43	4.37871	0.006842
8	65979.78	1.51469	0.002367
TOTAL	1196532.20	27.46860	0.042920

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 0.00%
AB = 20.00%
AC = 20.00%
AD = 60.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**1.5140**	**IN**
V-360 =	**3.4656**	**AC-FT**
AD =	**16.4812**	**AC**
V-10 Day =	**5.4846**	**AC-FT**
V-10 DAY =	**238907.60**	**CF**

VOLUME CALCULATIONS FOR 10-DAY STORM

ON-SITE POND 2A AND 2B

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
108.1	1912002.97	43.8935	0.068584
109a	2168598.50	49.7842	0.077788
112b	1799941.46	41.3210	0.064564
TOTAL	5880542.93	134.9987	0.210935

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 100.00%
AB = 0.00%
AC = 0.00%
AD = 0.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**0.4400**	**IN**
V-360 =	**4.9500**	**AC-FT**
AD =	**0.0000**	**AC**
V-10 Day =	**4.9500**	**AC-FT**
V-10 DAY =	**215619.91**	**CF**

V101.WK4

VOLUME CALCULATIONS FOR 10-DAY STORM

POND 3

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC-FT)	AREA (MI²)
103	3711300.18	85.1997	0.133125
110	496735.88	11.4035	0.017818
109b	998219.01	22.9160	0.035806
112a	729591.89	16.7491	0.026171
113a	1024806.96	23.5263	0.036760
TOTAL	6960653.92	159.7946	0.249679

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 100.00%
AB = 0.00%
AC = 0.00%
AD = 0.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**0.4400**	**IN**
V-360 =	**5.8591**	**AC-FT**
AD =	**0.0000**	**AC**
V-10 Day =	**5.8591**	**AC-FT**
V-10 DAY =	**255223.98**	**CF**

VOLUME CALCULATIONS FOR 10-DAY STORM

POND 4 - UPLAND POND FOR OFFSITE FLOWS

ZONE = 1

DRAINAGE BASINS

BASIN	AREA (SF)	AREA (AC)	AREA (MI²)
103	9607480.34	220.5574	0.344621

$$E = \frac{EA(AA) + EB(AB) + EC(AC) + ED(AD)}{AA + AB + AC + AD}$$

V-360 = E (AA + AB + AC + AD)

V-10 Day = V-360 + AD (P-10 Day - P-360) / 12 in/ft

EA = 0.44
EB = 0.67
EC = 0.99
ED = 1.97

AA = 100.00%
AB = 0.00%
AC = 0.00%
AD = 0.00%

P-60 = 1.87
P-360 = 2.20
P-1440 = 2.66
P-10 Day = 3.67

E =	**0.4400**	**IN**
V-360 =	**8.0871**	**AC-FT**
AD =	**0.0000**	**AC**
V-10 Day =	**8.0871**	**AC-FT**
V-10 DAY =	**352274.28**	**CF**

8.0871
5.9591
13.046 total pond

V101.WK4

Concrete Rundown into Pond 1

Curb Cut:

$$Q=CLH^{3/2}$$

Q= 21.26 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L=\frac{21.26}{2.95(0.5)^{3/2}}$$

L = 20.38 ft
Use 20.50 feet for length of curb cut

Concrete Channel:

$$Q=\frac{1.49}{n}AR^{2/3}S^{1/2}$$

Q = 21.26 (cfs)
n = 0.013
A = Area
R = Hydraulic Radius
S = Slope

$$A=5.0*0.5*0.5=1.25$$

$$WP=2*\sqrt{0.5^2+5^2}=5.099$$

$$R=\frac{A}{WP}=\frac{1.25}{5.099}=0.245$$

Manning's Equation:

$$Q=\frac{1.49}{0.013}*1.25*0.245^{2/3}*0.01^{1/2}$$

$$Q=56.12\ cfs$$

21.26 cfs < 56.12 cfs

Concrete Rundown into Pond 2a

Curb Cut:

$$Q=CLH^{3/2}$$

Q= 30.15 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L=\frac{30.15}{2.95(0.67)^{3/2}}$$

L =18.64 ft
Use 19.00 feet for length of curb cut

Concrete Channel:

$$Q=\frac{1.49}{n}AR^{2/3}S^{1/2}$$

Q = 30.15 (cfs)
n = 0.013
A = Area
R = Hydraulic Radius
S = Slope

$$A=8.0*0.67=5.36$$

$$WP=2*0.67+8=9.34$$

$$R=\frac{A}{WP}=\frac{5.36}{9.34}=0.574$$

Manning's Equation:

$$Q=\frac{1.49}{0.013}*5.36*0.574^{2/3}*0.01^{1/2}$$

$$Q=42.42\ cfs$$

42.42 cfs < 30.15 cfs

Emergency Spillway

<u>Pond 1</u>:

$$Q=CLH^{3/2}$$

Q= 21.26 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L=\frac{21.26}{2.95(0.5)^{3/2}}$$

L = 20.38 ft
Use 20.50 feet for length of weir

<u>Pond 2a</u>:
Q= 267.36 cfs
C = 2.95
H = 1.00 ft
L = Length of weir

$$L=\frac{267.36}{2.95(1.0)^{3/2}}$$

L = 90.63 ft
Use 90.0 feet for length of weir

<u>Offsite Pond (Pond 3)</u>:
Q= 205.66 cfs
C = 2.95
H = 1.00 ft
L = Length of weir

$$L=\frac{205.96}{2.95(1.0)^{3/2}}$$

L = 69.82 ft
Use 70.0 feet for length of weir

VOLUME CALCULATIONS

POND 2

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2

C = (At - Ab) / Dt

Ab =	6,241.46
At =	15,683.05
Dt =	5.00
C =	1888.32

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
58	0	0	0.0000
59.50	1.5	0.2637	11.8177
60.00	2	0.3733	20.4689
60.50	2.5	0.4937	26.4252
61.00	3	0.6249	31.2668
61.50	3.5	0.7670	35.4532
62.00	4	0.9199	39.1950
62.50	4.5	1.0837	42.6094
63.00	5	1.2583	45.7699

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in	30
Area (ft^2)=	4.908739
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*****************************************************************
*                  WEST RIDGE MOBILE HOME PARK                  *
*****************************************************************
*         100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)         *
*****************************************************************
START                TIME=0.0

  ROUTE 1
*
  BASIN 1

RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR
  MPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.1333 HR MASS RAINFALL=-1
  BASIN 1 PONDING
*
  UTE RESERVOIR      ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                         0.0000            0.0000          58.00
                        11.8177            0.2637          58.50
                        20.4689            0.3733          59.00
                        26.4252            0.4937          59.50
                        31.2668            0.6249          60.00
                        35.4532            0.7670          60.50
                        39.1950            0.9199          61.00
                        42.6094            1.0837          62.50
                        45.7699            1.2583          63.00

FINISH
```

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 10/29/1997
     START TIME (HR:MIN:SEC) = 10:14:00     USER NO.= R_BOHANN.I01
     INPUT FILE = A:POND.DAT

**********************************************************************
*                   WEST RIDGE MOBILE HOME PARK                      *
**********************************************************************
*          100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)             *
**********************************************************************
START                TIME=0.0
*
* ROUTE 1
*
* BASIN 1
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR

               COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
               DT =     .033330 HOURS       END TIME =    19.964670 HOURS
                  .0000   .0016   .0033   .0050   .0067   .0085   .0103
                  .0122   .0141   .0160   .0180   .0201   .0222   .0243
                  .0266   .0289   .0312   .0337   .0362   .0388   .0415
                  .0443   .0472   .0502   .0534   .0567   .0601   .0637
                  .0675   .0715   .0758   .0809   .0865   .0924   .1050
                  .1334   .1771   .2398   .3254   .4379   .5814   .7600
                  .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                 1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                 1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                 1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                 1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                 2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                 2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                 2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                 2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                 2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                 2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
                 2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
                 2.1292  2.1308  2.1324  2.1340  2.1355  2.1371  2.1386
                 2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                 2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                 2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                 2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                 2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                 2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                 2.1944  2.1956  2.1967  2.1978  2.1989  2.2000  2.2013
                 2.2026  2.2039  2.2052  2.2065  2.2078  2.2091  2.2103
                 2.2116  2.2129  2.2142  2.2155  2.2167  2.2180  2.2193
                 2.2205  2.2218  2.2230  2.2243  2.2255  2.2268  2.2280
                 2.2293  2.2305  2.2318  2.2330  2.2342  2.2354  2.2367
                 2.2379  2.2391  2.2403  2.2415  2.2428  2.2440  2.2452
                 2.2464  2.2476  2.2488  2.2500  2.2512  2.2524  2.2536
                 2.2547  2.2559  2.2571  2.2583  2.2595  2.2606  2.2618
                 2.2630  2.2641  2.2653  2.2665  2.2676  2.2688  2.2699
                 2.2711  2.2722  2.2734  2.2745  2.2757  2.2768  2.2779
                 2.2791  2.2802  2.2813  2.2825  2.2836  2.2847  2.2858
                 2.2870  2.2881  2.2892  2.2903  2.2914  2.2925  2.2936
```

2.2947	2.2958	2.2969	2.2980	2.2991	2.3002	2.3013
2.3024	2.3035	2.3046	2.3057	2.3067	2.3078	2.3089
2.3100	2.3110	2.3121	2.3132	2.3142	2.3153	2.3164
2.3174	2.3185	2.3195	2.3206	2.3216	2.3227	2.3237
2.3248	2.3258	2.3269	2.3279	2.3290	2.3300	2.3310
2.3321	2.3331	2.3341	2.3352	2.3362	2.3372	2.3382
2.3392	2.3403	2.3413	2.3423	2.3433	2.3443	2.3453
2.3463	2.3473	2.3483	2.3493	2.3503	2.3513	2.3523
2.3533	2.3543	2.3553	2.3563	2.3573	2.3583	2.3593
2.3603	2.3612	2.3622	2.3632	2.3642	2.3651	2.3661
2.3671	2.3681	2.3690	2.3700	2.3710	2.3719	2.3729
2.3738	2.3748	2.3758	2.3767	2.3777	2.3786	2.3796
2.3805	2.3815	2.3824	2.3834	2.3843	2.3852	2.3862
2.3871	2.3881	2.3890	2.3899	2.3909	2.3918	2.3927
2.3936	2.3946	2.3955	2.3964	2.3973	2.3983	2.3992
2.4001	2.4010	2.4019	2.4028	2.4038	2.4047	2.4056
2.4065	2.4074	2.4083	2.4092	2.4101	2.4110	2.4119
2.4128	2.4137	2.4146	2.4155	2.4164	2.4173	2.4181
2.4190	2.4199	2.4208	2.4217	2.4226	2.4234	2.4243
2.4252	2.4261	2.4270	2.4278	2.4287	2.4296	2.4304
2.4313	2.4322	2.4331	2.4339	2.4348	2.4356	2.4365
2.4374	2.4382	2.4391	2.4399	2.4408	2.4416	2.4425
2.4434	2.4442	2.4450	2.4459	2.4467	2.4476	2.4484
2.4493	2.4501	2.4510	2.4518	2.4526	2.4535	2.4543
2.4551	2.4560	2.4568	2.4576	2.4585	2.4593	2.4601
2.4609	2.4618	2.4626	2.4634	2.4642	2.4651	2.4659
2.4667	2.4675	2.4683	2.4691	2.4700	2.4708	2.4716
2.4724	2.4732	2.4740	2.4748	2.4756	2.4764	2.4772
2.4780	2.4788	2.4796	2.4804	2.4812	2.4820	2.4828
2.4836	2.4844	2.4852	2.4860	2.4868	2.4876	2.4884
2.4892	2.4899	2.4907	2.4915	2.4923	2.4931	2.4939
2.4946	2.4954	2.4962	2.4970	2.4978	2.4985	2.4993
2.5001	2.5008	2.5016	2.5024	2.5032	2.5039	2.5047
2.5055	2.5062	2.5070	2.5078	2.5085	2.5093	2.5100
2.5108	2.5116	2.5123	2.5131	2.5138	2.5146	2.5153
2.5161	2.5168	2.5176	2.5183	2.5191	2.5198	2.5206
2.5213	2.5221	2.5228	2.5236	2.5243	2.5250	2.5258
2.5265	2.5273	2.5280	2.5287	2.5295	2.5302	2.5309
2.5317	2.5324	2.5331	2.5339	2.5346	2.5353	2.5361
2.5368	2.5375	2.5382	2.5390	2.5397	2.5404	2.5411
2.5418	2.5426	2.5433	2.5440	2.5447	2.5454	2.5462
2.5469	2.5476	2.5483	2.5490	2.5497	2.5504	2.5511
2.5518	2.5526	2.5533	2.5540	2.5547	2.5554	2.5561
2.5568	2.5575	2.5582	2.5589	2.5596	2.5603	2.5610
2.5617	2.5624	2.5631	2.5638	2.5645	2.5652	2.5659
2.5665	2.5672	2.5679	2.5686	2.5693	2.5700	2.5707
2.5714	2.5721	2.5727	2.5734	2.5741	2.5748	2.5755
2.5761	2.5768	2.5775	2.5782	2.5789	2.5795	2.5802
2.5809	2.5816	2.5822	2.5829	2.5836		

```
COMPUTE NM HYD      ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.1333 HR MASS RAINFALL=-1

   K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   101.67    CFS   UNIT VOLUME =    .9993       B =   526.28      P60 = 1.8700
   AREA =      .025753 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330
```

K = .118429HR TP = .133300HR K/TP RATIO = .888442 SHAPE CONSTANT, N = 3.992480
UNIT PEAK = 45.680 CFS UNIT VOLUME = 1.000 B = 354.67 P60 = 1.8700
AREA = .017168 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

* BASIN 1 PONDING
*
ROUTE RESERVOIR ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	58.00
11.8177	0.2637	58.50
20.4689	0.3733	59.00
26.4252	0.4937	59.50
31.2668	0.6249	60.00
35.4532	0.7670	60.50
39.1950	0.9199	61.00
42.6094	1.0837	62.50
45.7699	1.2583	63.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	58.00	.000	.00
.80	.00	58.00	.000	.00
1.60	70.06	62.57	1.107	43.04
2.40	3.83	58.63	.293	14.12
3.20	.72	58.07	.039	1.76
4.00	.43	58.02	.012	.54
4.80	.42	58.02	.009	.42
5.60	.48	58.02	.010	.46
6.40	.63	58.02	.013	.58
7.20	.61	58.03	.014	.61
8.00	.58	58.02	.013	.59
8.80	.55	58.02	.012	.56
9.60	.52	58.02	.012	.53
10.40	.50	58.02	.011	.51
11.20	.48	58.02	.011	.49
12.00	.46	58.02	.010	.47
12.80	.45	58.02	.010	.45
13.60	.43	58.02	.010	.44
14.40	.42	58.02	.009	.42
15.20	.40	58.02	.009	.41
16.00	.39	58.02	.009	.39
16.80	.38	58.02	.009	.38
17.60	.37	58.02	.008	.37
18.40	.35	58.02	.008	.36
19.20	.34	58.01	.008	.35

PEAK DISCHARGE = 44.781 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = 62.844
MAXIMUM STORAGE = 1.2037 AC-FT INCREMENTAL TIME= .033330HRS

*
*
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 10:14:01

AHYMO
Runoff Input
and
Summary Output
for
Proposed and Existing
Drainage Basins

```
*****************************************************************
*                WESTRIDGE MOBILE HOME PARK                     *
*****************************************************************
      100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)          *
*****************************************************************
*
 TART              TIME=0.0

* BASIN 1

 AINFALL           TYPE=1 RAIN QUARTER=0.0 IN
                   RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                   RAIN DAY=2.66 IN DT=0.02253 HR
 OMPUTE NM HYD     ID=1 HYD NO=100.1 AREA=0.010714 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD          ID=1 CODE=1

* BASIN 2

 OMPUTE NM HYD     ID=1 HYD NO=100.2 AREA=0.008019 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD          ID=1 CODE=1

* BASIN 3

 OMPUTE NM HYD     ID=1 HYD NO=100.3 AREA=0.004474 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD          ID=1 CODE=1

* BASIN 4

 OMPUTE NM HYD     ID=1 HYD NO=100.4 AREA=0.007330 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD          ID=1 CODE=1

* BASIN 5A

 OMPUTE NM HYD     ID=1 HYD NO=100.5A AREA=0.005505 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD          ID=1 CODE=1

* BASIN 5B

 OMPUTE NM HYD     ID=1 HYD NO=100.5B AREA=0.001121 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD          ID=1 CODE=1
*
 BASIN 6

COMPUTE NM HYD     ID=1 HYD NO=100.6 AREA=0.007264 SQ MI
                   PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                   TP=-0.24 HR MASS RAINFALL=-1
 INT HYD           ID=1 CODE=1
*
```

```
  BASIN 7
*
 OMPUTE NM HYD        ID=1 HYD NO=100.7 AREA=0.006842 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1

  BASIN 8
*
 OMPUTE NM HYD        ID=1 HYD NO=100.8 AREA=0.002367 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1

*********************************************************************
         10-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)      *
 *********************************************************************
*
 TART                 TIME=0.0

  BASIN 1
*
 AINFALL              TYPE=1 RAIN QUARTER=0.0 IN
                      RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                      RAIN DAY=1.77 IN DT=0.02253 HR
 OMPUTE NM HYD        ID=1 HYD NO=110.1 AREA=0.010714 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1

  BASIN 2
*
 OMPUTE NM HYD        ID=1 HYD NO=110.2 AREA=0.008019 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1

  BASIN 3
*
 OMPUTE NM HYD        ID=1 HYD NO=110.3 AREA=0.004474 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD             ID=1 CODE=1

- BASIN 4
*
 OMPUTE NM HYD        ID=1 HYD NO=110.4 AREA=0.007330 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD             ID=1 CODE=1

* BASIN 5A
*
 OMPUTE NM HYD        ID=1 HYD NO=110.5A AREA=0.005505 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD             ID=1 CODE=1

* BASIN 5B
```

```
COMPUTE NM HYD       ID=1 HYD NO=110.5B AREA=0.001121 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  BASIN 6

COMPUTE NM HYD       ID=1 HYD NO=110.6 AREA=0.007264 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  BASIN 7

COMPUTE NM HYD       ID=1 HYD NO=110.7 AREA=0.006842 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  BASIN 8

COMPUTE NM HYD       ID=1 HYD NO=110.8 AREA=0.002367 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1


*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/13/1997

INPUT FILE = A:E.DAT USER NO.= R_BOHANN.I01

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.10	-	1	.01071	8.84	.382	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.20	-	1	.00802	6.62	.286	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.30	-	1	.00447	3.69	.159	.66800	1.645	1.290	PER IMP= .00
COMPUTE NM HYD	100.40	-	1	.00733	6.05	.261	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.5A	-	1	.00551	4.54	.196	.66800	1.645	1.290	PER IMP= .00
COMPUTE NM HYD	100.5B	-	1	.00112	.93	.040	.66800	1.645	1.300	PER IMP= .00
COMPUTE NM HYD	100.60	-	1	.00726	5.99	.259	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.70	-	1	.00684	5.65	.244	.66800	1.645	1.289	PER IMP= .00
COMPUTE NM HYD	100.80	-	1	.00237	1.96	.084	.66800	1.645	1.293	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.01071	3.02	.128	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.20	-	1	.00802	2.26	.096	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.30	-	1	.00447	1.26	.053	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.40	-	1	.00733	2.07	.088	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.5A	-	1	.00551	1.55	.066	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.5B	-	1	.00112	.32	.013	.22418	1.645	.445	PER IMP= .00
COMPUTE NM HYD	110.60	-	1	.00726	2.05	.087	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.70	-	1	.00684	1.93	.082	.22418	1.645	.441	PER IMP= .00
COMPUTE NM HYD	110.80	-	1	.00237	.67	.028	.22418	1.645	.442	PER IMP= .00
FINISH										

```
*****************************************************************
*                WEST RIDGE MOBILE HOME PARK                    *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
 RT                TIME=0.0
*
* BASIN 1
*
 NFALL              TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.02253 HR
 PUTE NM HYD        ID=1 HYD NO=100.1 AREA=0.010714 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=-0.24 HR MASS RAINFALL=-1
 NT HYD             ID=1 CODE=1
*
* BASIN 2

 PUTE NM HYD        ID=1 HYD NO=100.2 AREA=0.008019 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 NT HYD             ID=1 CODE=1

* BASIN 3

 PUTE NM HYD        ID=1 HYD NO=100.3 AREA=0.004474 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 NT HYD             ID=1 CODE=1

* BASIN 4

 PUTE NM HYD        ID=1 HYD NO=100.4 AREA=0.007330 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*
* BASIN 5A

 PUTE NM HYD        ID=1 HYD NO=100.5A AREA=0.005505 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*
 BASIN 5B

 PUTE NM HYD        ID=1 HYD NO=100.5B AREA=0.001121 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*
 BASIN 6

COMPUTE NM HYD      ID=1 HYD NO=100.6 AREA=0.007264 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
```

```
 BASIN 7
*
 MPUTE NM HYD       ID=1 HYD NO=100.7 AREA=0.006842 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

* BASIN 8
*
 MPUTE NM HYD       ID=1 HYD NO=100.8 AREA=0.002367 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

*
*****************************************************************
        10-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)        *
 *****************************************************************
*
 ART                TIME=0.0

* BASIN 1

 INFALL             TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.02253 HR
 MPUTE NM HYD       ID=1 HYD NO=110.1 AREA=0.010714 SQ MI
                    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

* BASIN 2
*
 MPUTE NM HYD       ID=1 HYD NO=110.2 AREA=0.008019 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

* BASIN 3

 MPUTE NM HYD       ID=1 HYD NO=110.3 AREA=0.004474 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

* BASIN 4

 MPUTE NM HYD       ID=1 HYD NO=110.4 AREA=0.007330 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

* BASIN 5A

 MPUTE NM HYD       ID=1 HYD NO=110.5A AREA=0.005505 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*
* BASIN 5B
```

```
COMPUTE NM HYD       ID=1 HYD NO=110.5B AREA=0.001121 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  BASIN 6

COMPUTE NM HYD       ID=1 HYD NO=110.6 AREA=0.007264 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  BASIN 7
*
COMPUTE NM HYD       ID=1 HYD NO=110.7 AREA=0.006842 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1

  BASIN 8
*
COMPUTE NM HYD       ID=1 HYD NO=110.8 AREA=0.002367 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1


*
  NISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/13/1997

INPUT FILE = A:P.DAT USER NO.= R_BOHANN.I01

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.10	-	1	.01071	21.26	1.049	1.83567	1.622	3.100	PER IMP= 90.00
COMPUTE NM HYD	100.20	-	1	.00802	13.43	.644	1.50550	1.622	2.617	PER IMP= 60.00
COMPUTE NM HYD	100.30	-	1	.00447	7.50	.359	1.50550	1.622	2.621	PER IMP= 60.00
COMPUTE NM HYD	100.40	-	1	.00733	12.28	.589	1.50550	1.622	2.618	PER IMP= 60.00
COMPUTE NM HYD	100.5A	-	1	.00551	9.23	.442	1.50550	1.622	2.619	PER IMP= 60.00
COMPUTE NM HYD	100.5B	-	1	.00112	1.90	.090	1.50550	1.622	2.644	PER IMP= 60.00
COMPUTE NM HYD	100.60	-	1	.00726	12.17	.583	1.50550	1.622	2.618	PER IMP= 60.00
COMPUTE NM HYD	100.70	-	1	.00684	11.46	.549	1.50550	1.622	2.618	PER IMP= 60.00
COMPUTE NM HYD	100.80	-	1	.00237	3.98	.190	1.50550	1.622	2.628	PER IMP= 60.00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.01071	13.69	.649	1.13632	1.622	1.997	PER IMP= 90.00
COMPUTE NM HYD	110.20	-	1	.00802	8.07	.372	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.30	-	1	.00447	4.51	.208	.86990	1.622	1.574	PER IMP= 60.00
COMPUTE NM HYD	110.40	-	1	.00733	7.37	.340	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.5A	-	1	.00551	5.54	.255	.86990	1.622	1.573	PER IMP= 60.00
COMPUTE NM HYD	110.5B	-	1	.00112	1.14	.052	.86990	1.622	1.587	PER IMP= 60.00
COMPUTE NM HYD	110.60	-	1	.00726	7.31	.337	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.70	-	1	.00684	6.88	.317	.86990	1.622	1.572	PER IMP= 60.00
COMPUTE NM HYD	110.80	-	1	.00237	2.39	.110	.86990	1.622	1.577	PER IMP= 60.00
FINISH										

```
 ***************************************************************
*          WESTRIDGE MOBILE HOME PARK (OFFSITE BASINS)          *
 ***************************************************************
         100-YEAR, 6-HR STORM  (UNDEVELOPED CONDITIONS)         *
***************************************************************
*
 ART                TIME=0.0

* BASIN 103a

 INFALL             TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.02253 HR
 MPUTE NM HYD       ID=1 HYD NO=100.3a AREA=0.074263 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

* BASIN 103b

 MPUTE NM HYD       ID=1 HYD NO=100.3b AREA=0.058861 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1

*
 BASIN 108.1

COMPUTE NM HYD      ID=1 HYD NO=100.8 AREA=0.068584 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD           ID=1 CODE=1
*
 BASIN 109a

COMPUTE NM HYD      ID=1 HYD NO=100.9a AREA=0.077788 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
RINT HYD            ID=1 CODE=1
*
 BASIN 109b

COMPUTE NM HYD      ID=1 HYD NO=100.9b AREA=0.035806 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
 BASIN 110
*
 OMPUTE NM HYD      ID=1 HYD NO=100.10 AREA=0.017818 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
 RINT HYD           ID=1 CODE=1

* BASIN 112a

 OMPUTE NM HYD      ID=1 HYD NO=100.12a AREA=0.026171 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
```

```
  INT HYD            ID=1 CODE=1
*
  BASIN 112b

COMPUTE NM HYD       ID=1 HYD NO=100.12b AREA=0.064564 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
  INT HYD            ID=1 CODE=1
*
  BASIN 113a

COMPUTE NM HYD       ID=1 HYD NO=100.13a AREA=0.036760 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
  INT HYD            ID=1 CODE=1
*

  ***************************************************************
*          10-YEAR, 6-HR STORM  (UNDEVELOPED CONDITIONS)        *
  ***************************************************************

START                TIME=0.0
*
  BASIN 103a

RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=110.3a AREA=0.074263 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
  INT HYD            ID=1 CODE=1
*
  BASIN 103b

COMPUTE NM HYD       ID=1 HYD NO=110.3b AREA=0.058861 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
...INT HYD           ID=1 CODE=1
*
  BASIN 108.1

COMPUTE NM HYD       ID=1 HYD NO=110.8 AREA=0.068584 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  BASIN 109a

COMPUTE NM HYD       ID=1 HYD NO=110.9a AREA=0.077788 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1

  BASIN 109b
*
COMPUTE NM HYD       ID=1 HYD NO=110.9b AREA=0.035806 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
```

```
* BASIN 110

  IPUTE NM HYD        ID=1 HYD NO=110.10 AREA=0.017818 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
   NT HYD             ID=1 CODE=1

*
  BASIN 112a

COMPUTE NM HYD        ID=1 HYD NO=110.12a AREA=0.026171 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1
*
  BASIN 112b

COMPUTE NM HYD        ID=1 HYD NO=110.12b AREA=0.064564 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1
*
  BASIN 113a

COMPUTE NM HYD        ID=1 HYD NO=101.13a AREA=0.036760 SQ MI
                      PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=1 CODE=1

  NISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =01/08/1998

INPUT FILE = A:OFF.DAT USER NO.= R_BOHANN.I01

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	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	100.3a	-	1	.07426	61.38	2.646	.66800	1.645	1.291	PER IMP=	.00
COMPUTE NM HYD	100.3b	-	1	.05886	48.51	2.097	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.80	-	1	.06858	56.60	2.443	.66800	1.645	1.290	PER IMP=	.00
COMPUTE NM HYD	100.9a	-	1	.07779	64.35	2.771	.66800	1.645	1.293	PER IMP=	.00
COMPUTE NM HYD	100.9b	-	1	.03581	29.51	1.276	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.10	-	1	.01782	14.69	.635	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.12a	-	1	.02617	21.57	.932	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.12b	-	1	.06456	53.23	2.300	.66800	1.645	1.288	PER IMP=	.00
COMPUTE NM HYD	100.13a	-	1	.03676	30.30	1.310	.66800	1.645	1.288	PER IMP=	.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	110.3a	-	1	.07426	20.90	.888	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.3b	-	1	.05886	16.58	.704	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.80	-	1	.06858	19.31	.820	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.9a	-	1	.07779	21.88	.930	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.9b	-	1	.03581	10.09	.428	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.10	-	1	.01782	5.02	.213	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.12a	-	1	.02617	7.37	.313	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	110.12b	-	1	.06456	18.18	.772	.22418	1.645	.440	PER IMP=	.00
COMPUTE NM HYD	101.13a	-	1	.03676	10.36	.440	.22418	1.645	.440	PER IMP=	.00
FINISH											

```
*****************************************************************
*          WESTRIDGE MOBILE HOME PARK (OFFSITE BASINS)          *
*****************************************************************
*          100-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)         *
*****************************************************************
*
 ART                TIME=0.0
*
* BASIN 112a
*
 NFALL              TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.02253 HR
 PUTE NM HYD        ID=1 HYD NO=100.a AREA=0.026171 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 NT HYD             ID=1 CODE=1
*
*
 BASIN 112b

 MPUTE NM HYD       ID=1 HYD NO=100.b AREA=0.064564 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 NT HYD             ID=1 CODE=1
*

 *****************************************************************
*          10-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)          *
*****************************************************************

 ART                TIME=0.0
*
 BASIN 112a

RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.02253 HR
 MPUTE NM HYD       ID=1 HYD NO=110.a AREA=0.026171 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*

 BASIN 112b

COMPUTE NM HYD      ID=1 HYD NO=110.b AREA=0.064564 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1


*
 NISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/08/1997

USER NO.= R_BOHANN.I01

INPUT FILE = a:\offdev.dat

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	
										TIME=	.00
START										RAIN6=	2.200
RAINFALL TYPE= 1											
COMPUTE NM HYD	100.a	-	1	.02617	43.78	2.101	1.50550	1.622	2.614	PER IMP=	60.00
COMPUTE NM HYD	100.b	-	1	.06456	107.98	5.184	1.50550	1.622	2.613	PER IMP=	60.00
										TIME=	.00
START										RAIN6=	1.470
RAINFALL TYPE= 1											
COMPUTE NM HYD	110.a	-	1	.02617	26.30	1.214	.86990	1.622	1.570	PER IMP=	60.00
COMPUTE NM HYD	110.b	-	1	.06456	64.80	2.995	.86990	1.622	1.568	PER IMP=	60.00
FINISH											

```
*****************************************************************
*      WESTRIDGE MOBILE HOME PARK (AVALONE OFFSITE BASIN)       *
*****************************************************************
*          100-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)         *
*****************************************************************

 ART                TIME=0.0
*
* AVALON DEVELOPED BASIN

RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN DT=0.02253 HR
 MPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.0222322 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*

 *****************************************************************
*          10-YEAR, 6-HR STORM  (DEVELOPED CONDITIONS)          *
*****************************************************************

 ART                TIME=0.0
*
 AVALON DEVELOPED BASIN

RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                    RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                    RAIN DAY=1.77 IN DT=0.02253 HR
 MPUTE NM HYD       ID=1 HYD NO=110.1 AREA=0.022322 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.24 HR MASS RAINFALL=-1
 INT HYD            ID=1 CODE=1
*
*
 NISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/10/1997

INPUT FILE = A:\AVALON.DAT USER NO.= R_BOHANN.I01

PAGE = 1

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	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
COMPUTE NM HYD	100.10	-	1	.02223	37.20	1.785	1.50550	1.622	2.614	PER IMP=	60.00
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	1.470
COMPUTE NM HYD	110.10	-	1	.02232	22.43	1.036	.86990	1.622	1.570	PER IMP=	60.00

FINISH

```
*****************************************************************
*                WESTRIDGE MOBILE HOME PARK                     *
*****************************************************************
*         UNDEVELOPED LAND WITHIN STATE HIGHWAY ROW             *
*****************************************************************
*      100-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)        *
*****************************************************************

START                TIME=0.0
*
  BASIN 10D
*
  RAINFALL           TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=100.10 AREA=0.01955 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  ASIN 11D
*
COMPUTE NM HYD       ID=1 HYD NO=100.11 AREA=0.01962 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  ASIN 12D
*
  PUTE NM HYD        ID=1 HYD NO=100.12 AREA=0.03737 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*
*****************************************************************
*      10-YEAR, 6-HR STORM  (UNDER EXISTING CONDITIONS)         *
*****************************************************************
*
START                TIME=0.0
*
  BASIN 10D
*
  RAINFALL           TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
                     RAIN DAY=1.77 IN DT=0.02253 HR
COMPUTE NM HYD       ID=1 HYD NO=110.10 AREA=0.01955 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
  ASIN 11D
*
  PUTE NM HYD        ID=1 HYD NO=110.11 AREA=0.01962 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                     TP=-0.24 HR MASS RAINFALL=-1
  NT HYD             ID=1 CODE=1
*
  ASIN 12D
*
```

```
MPUTE NM HYD        ID=1 HYD NO=110.12 AREA=0.03737 SQ MI
                    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=-0.24 HR MASS RAINFALL=-1
INT HYD             ID=1 CODE=1
*
*
NISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =12/03/1997

INPUT FILE = A:ROW.DAT USER NO.= R_BOHANN.I01

PAGE = 1

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
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.200
COMPUTE NM HYD	100.10	-	1	.01955	16.12	.697	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.11	-	1	.01962	16.17	.699	.66800	1.645	1.288	PER IMP= .00
COMPUTE NM HYD	100.12	-	1	.03737	30.80	1.331	.66800	1.645	1.288	PER IMP= .00
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 1.470
COMPUTE NM HYD	110.10	-	1	.01955	5.51	.234	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.11	-	1	.01962	5.53	.235	.22418	1.645	.440	PER IMP= .00
COMPUTE NM HYD	110.12	-	1	.03737	10.53	.447	.22418	1.645	.440	PER IMP= .00
FINISH										

APPENDIX B
(Onsite Basin Summary)

WEST RIDGE MOBILE HOME PARK
ONSITE BASINS SUMMARY

SUB-BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
2	13.43	8.07	0.64	0.37
3	7.50	4.51	0.36	0.21
4	12.28	7.37	0.59	0.34
5A	9.23	5.54	0.44	0.26
5B	1.90	1.14	0.09	0.05
6	12.17	7.31	0.58	0.34
7	11.46	6.88	0.55	0.32
8	3.98	2.39	0.19	0.11
	71.95	43.21	3.45	1.99

APPENDIX C

(Pond Volume & Spillway Calculations)

VOLUME CALCULATIONS
POND

$$V = \frac{L}{2}(A1 + A2)$$

V = Volume

L = Length (Distance between sections)

A1 = Area of section 1

A2 = Area of section 2

STAGE	AREA		VOLUME		Q
	[ft^2]	[acres]	INC [acre-feet]	CUM [acre-feet]	[cfs]
55.7	1,963	0.05	0.00	0.0000	0.00
56.7	3,261	0.07	0.06	0.0600	23.64
57.7	4,687	0.11	0.09	0.1512	33.43
58.7	6,241	0.14	0.13	0.2766	40.94
59.7	7,923	0.18	0.16	0.4392	47.27
60.7	9,733	0.22	0.20	0.6419	52.85
61.7	11,671	0.27	0.25	0.8876	57.89
62.7	13,737	0.32	0.29	1.1792	62.53

<u>Orifice Equation</u>

Q = CA SQRT(2gH)

C =	0.6
Diameter (i	30
Area (ft^2):	4.909
g =	32.2

H (Ft) = Depth of water above center of orifice

Q (CFS)= Flow

Pond Spillway

Project Description

Solve For	Crest Length

Input Data

Discharge	67.75	ft^3/s
Headwater Elevation	62.70	ft
Crest Elevation	61.70	ft
Tailwater Elevation	0.00	ft
Weir Coefficient	2.95	US
Number Of Contractions	1	

Results

Crest Length	23.07	ft
Headwater Height Above Crest	1.00	ft
Tailwater Height Above Crest	-61.70	ft
Flow Area	23.07	ft^2
Velocity	2.94	ft/s
Wetted Perimeter	25.07	ft
Top Width	23.07	ft

APPENDIX D

(Pond Routing Input & Output Data)

```
*****************************************************************
*                  WEST RIDGE MOBILE HOME PARK                  *
*****************************************************************
*          100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)        *
*****************************************************************
START                TIME=0.0
*
* ROUTE 1
*
* BASIN 1
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.1333 HR MASS RAINFALL=-1
* BASIN 1 PONDING
*
ROUTE RESERVOIR      ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                         0.0000            0.0000          55.72
                        23.6354            0.0600          56.72
                        33.4255            0.1512          57.72
                        40.9378            0.2766          58.72
                        47.2709            0.4392          59.72
                        52.8505            0.6419          60.72
                        57.8948            0.8876          61.72
                        62.5335            1.1792          62.72
*
*
FINISH
```

```
AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
     RUN DATE (MON/DAY/YR) = 05/23/2007
     START TIME (HR:MIN:SEC) = 16:39:46     USER NO.= AHYMO-S-9702d3TierraW-AH
     INPUT FILE = Z:\2007\27031\Reports\Drainage\AHYMO\2731-POND.DAT

*******************************************************************
*                   WEST RIDGE MOBILE HOME PARK                   *
*******************************************************************
*          100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)          *
*******************************************************************
START                TIME=0.0
*
* ROUTE 1
*
* BASIN 1
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR

                COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033330 HOURS        END TIME =    19.964670 HOURS
                   .0000   .0016   .0033   .0050   .0067   .0085   .0103
                   .0122   .0141   .0160   .0180   .0201   .0222   .0243
                   .0266   .0289   .0312   .0337   .0362   .0388   .0415
                   .0443   .0472   .0502   .0534   .0567   .0601   .0637
                   .0675   .0715   .0758   .0809   .0865   .0924   .1050
                   .1334   .1771   .2398   .3254   .4379   .5814   .7600
                   .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                  1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                  1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                  1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                  1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                  2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                  2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                  2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                  2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
                  2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
                  2.1292  2.1308  2.1324  2.1340  2.1355  2.1371  2.1386
                  2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                  2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                  2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                  2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                  2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                  2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                  2.1944  2.1956  2.1967  2.1978  2.1989  2.2000  2.2013
                  2.2026  2.2039  2.2052  2.2065  2.2078  2.2091  2.2103
                  2.2116  2.2129  2.2142  2.2155  2.2167  2.2180  2.2193
                  2.2205  2.2218  2.2230  2.2243  2.2255  2.2268  2.2280
                  2.2293  2.2305  2.2318  2.2330  2.2342  2.2354  2.2367
                  2.2379  2.2391  2.2403  2.2415  2.2428  2.2440  2.2452
                  2.2464  2.2476  2.2488  2.2500  2.2512  2.2524  2.2536
                  2.2547  2.2559  2.2571  2.2583  2.2595  2.2606  2.2618
                  2.2630  2.2641  2.2653  2.2665  2.2676  2.2688  2.2699
                  2.2711  2.2722  2.2734  2.2745  2.2757  2.2768  2.2779
                  2.2791  2.2802  2.2813  2.2825  2.2836  2.2847  2.2858
                  2.2870  2.2881  2.2892  2.2903  2.2914  2.2925  2.2936
                  2.2947  2.2958  2.2969  2.2980  2.2991  2.3002  2.3013
                  2.3024  2.3035  2.3046  2.3057  2.3067  2.3078  2.3089
                  2.3100  2.3110  2.3121  2.3132  2.3142  2.3153  2.3164
                  2.3174  2.3185  2.3195  2.3206  2.3216  2.3227  2.3237
                  2.3248  2.3258  2.3269  2.3279  2.3290  2.3300  2.3310
                  2.3321  2.3331  2.3341  2.3352  2.3362  2.3372  2.3382
                  2.3392  2.3403  2.3413  2.3423  2.3433  2.3443  2.3453
                  2.3463  2.3473  2.3483  2.3493  2.3503  2.3513  2.3523
                  2.3533  2.3543  2.3553  2.3563  2.3573  2.3583  2.3593
                  2.3603  2.3612  2.3622  2.3632  2.3642  2.3651  2.3661
                  2.3671  2.3681  2.3690  2.3700  2.3710  2.3719  2.3729
                  2.3738  2.3748  2.3758  2.3767  2.3777  2.3786  2.3796
                  2.3805  2.3815  2.3824  2.3834  2.3843  2.3852  2.3862
                  2.3871  2.3881  2.3890  2.3899  2.3909  2.3918  2.3927
                  2.3936  2.3946  2.3955  2.3964  2.3973  2.3983  2.3992
                  2.4001  2.4010  2.4019  2.4028  2.4038  2.4047  2.4056
                  2.4065  2.4074  2.4083  2.4092  2.4101  2.4110  2.4119
                  2.4128  2.4137  2.4146  2.4155  2.4164  2.4173  2.4181
```

2.4190	2.4199	2.4208	2.4217	2.4226	2.4234	2.4243
2.4252	2.4261	2.4270	2.4278	2.4287	2.4296	2.4304
2.4313	2.4322	2.4331	2.4339	2.4348	2.4356	2.4365
2.4374	2.4382	2.4391	2.4399	2.4408	2.4416	2.4425
2.4434	2.4442	2.4450	2.4459	2.4467	2.4476	2.4484
2.4493	2.4501	2.4510	2.4518	2.4526	2.4535	2.4543
2.4551	2.4560	2.4568	2.4576	2.4585	2.4593	2.4601
2.4609	2.4618	2.4626	2.4634	2.4642	2.4651	2.4659
2.4667	2.4675	2.4683	2.4691	2.4700	2.4708	2.4716
2.4724	2.4732	2.4740	2.4748	2.4756	2.4764	2.4772
2.4780	2.4788	2.4796	2.4804	2.4812	2.4820	2.4828
2.4836	2.4844	2.4852	2.4860	2.4868	2.4876	2.4884
2.4892	2.4899	2.4907	2.4915	2.4923	2.4931	2.4939
2.4946	2.4954	2.4962	2.4970	2.4978	2.4985	2.4993
2.5001	2.5008	2.5016	2.5024	2.5032	2.5039	2.5047
2.5055	2.5062	2.5070	2.5078	2.5085	2.5093	2.5100
2.5108	2.5116	2.5123	2.5131	2.5138	2.5146	2.5153
2.5161	2.5168	2.5176	2.5183	2.5191	2.5198	2.5206
2.5213	2.5221	2.5228	2.5236	2.5243	2.5250	2.5258
2.5265	2.5273	2.5280	2.5287	2.5295	2.5302	2.5309
2.5317	2.5324	2.5331	2.5339	2.5346	2.5353	2.5361
2.5368	2.5375	2.5382	2.5390	2.5397	2.5404	2.5411
2.5418	2.5426	2.5433	2.5440	2.5447	2.5454	2.5462
2.5469	2.5476	2.5483	2.5490	2.5497	2.5504	2.5511
2.5518	2.5526	2.5533	2.5540	2.5547	2.5554	2.5561
2.5568	2.5575	2.5582	2.5589	2.5596	2.5603	2.5610
2.5617	2.5624	2.5631	2.5638	2.5645	2.5652	2.5659
2.5665	2.5672	2.5679	2.5686	2.5693	2.5700	2.5707
2.5714	2.5721	2.5727	2.5734	2.5741	2.5748	2.5755
2.5761	2.5768	2.5775	2.5782	2.5789	2.5795	2.5802
2.5809	2.5816	2.5822	2.5829	2.5836		

```
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.1333 HR MASS RAINFALL=-1

     K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    101.67    CFS   UNIT VOLUME =     .9993       B =   526.28       P60 = 1.8700
     AREA =       .025753 SQ MI    IA =     .10000 INCHES    INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .118429HR    TP =    .133300HR    K/TP RATIO =    .888442     SHAPE CONSTANT, N =  3.992480
     UNIT PEAK =    45.680    CFS   UNIT VOLUME =    1.000       B =   354.67       P60 = 1.8700
     AREA =       .017168 SQ MI    IA =     .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

* BASIN 1 PONDING
*
ROUTE RESERVOIR      ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                         0.0000            0.0000          55.72
                        23.6354            0.0600          56.72
                        33.4255            0.1512          57.72
                        40.9378            0.2766          58.72
                        47.2709            0.4392          59.72
                        52.8505            0.6419          60.72
                        57.8948            0.8876          61.72
                        62.5335            1.1792          62.72

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

    TIME       INFLOW     ELEV       VOLUME     OUTFLOW
    (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

     .00         .00      55.72       .000        .00
     .80         .00      55.72       .000        .00
    1.60       70.06      61.11       .737      54.80
    2.40        3.83      55.90       .011       4.21
    3.20         .72      55.75       .002        .76
    4.00         .43      55.74       .001        .43
    4.80         .42      55.74       .001        .42
    5.60         .48      55.74       .001        .48
    6.40         .63      55.75       .002        .63
    7.20         .61      55.75       .002        .61
    8.00         .58      55.74       .001        .58
    8.80         .55      55.74       .001        .55
    9.60         .52      55.74       .001        .53
   10.40         .50      55.74       .001        .50
```

```
   11.20        .48     55.74       .001       .48
   12.00        .46     55.74       .001       .46
   12.80        .45     55.74       .001       .45
   13.60        .43     55.74       .001       .43
   14.40        .42     55.74       .001       .42
   15.20        .40     55.74       .001       .40
   16.00        .39     55.74       .001       .39
   16.80        .38     55.74       .001       .38
   17.60        .37     55.74       .001       .37
   18.40        .35     55.73       .001       .35
   19.20        .34     55.73       .001       .34
PEAK DISCHARGE =        55.340 CFS - PEAK OCCURS AT HOUR    1.63
MAXIMUM WATER SURFACE ELEVATION =      61.213
MAXIMUM STORAGE =          .7631 AC-FT      INCREMENTAL TIME=     .033330HRS

*
*
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:39:46
```

APPENDIX E

(Storm Drain & Inlet Calculations)

FlexTable: Conduit Table (27031.stc)

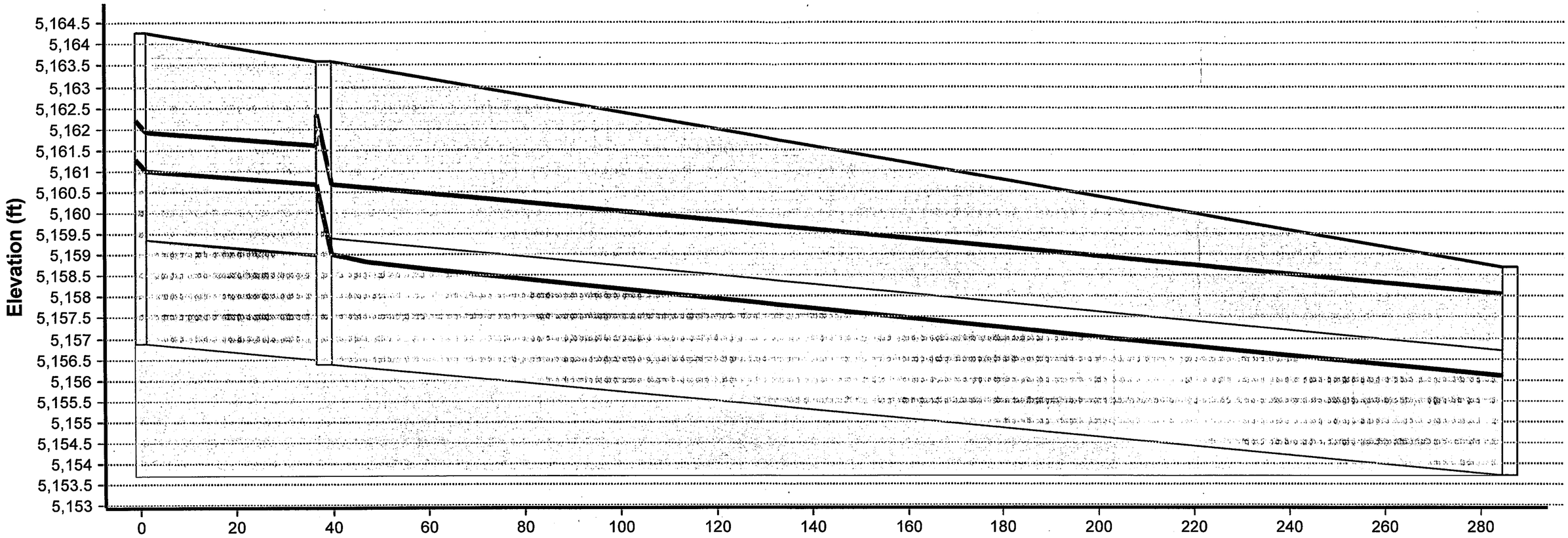
Current Time: 0.000 min

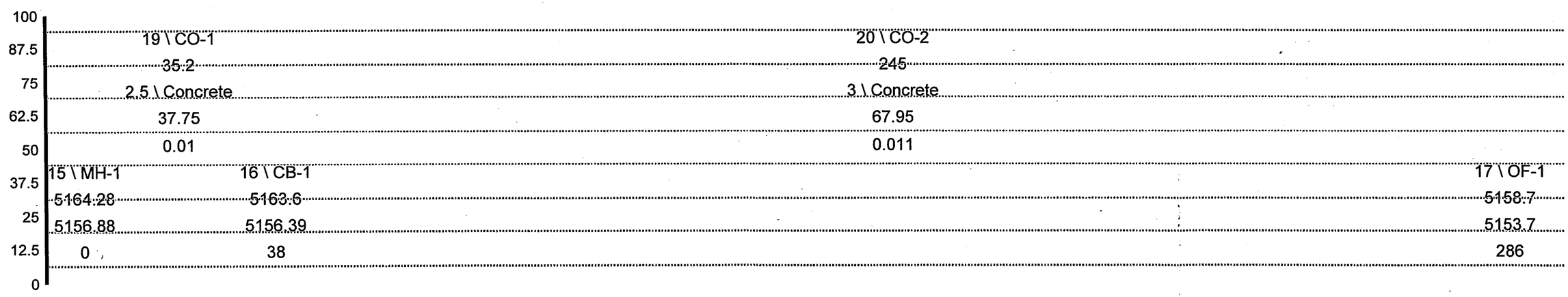
Label	Start Node	Invert (Upstream) (ft)	Stop Node	Invert (Downstream) (ft)	Material	Manning's n	Diameter (in)	Flow (ft^3/s)	Length (ft)	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)
CO-1	MH-1	5,156.88	CB-1	5,156.49	Concrete	0.013	30.0	37.75	38.0	0.010	41.55
CO-2	CB-1	5,156.39	OF-1	5,153.70	Concrete	0.013	36.0	67.95	248.0	0.011	69.46

Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Velocity (Average) (ft/s)
5,164.28	5,163.60	5,161.00	5,160.68	7.69
5,163.60	5,158.70	5,159.02	5,156.10	11.20

Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W Watertown, CT 06795 USA
+1-203-755-1666

WestRidge Storm Drain - Base





CAPACITY OF DOUBLE 'C' STORM DROP INLET

Capacity of the grate:

L = 88.75" - 2(6" $_{ends}$) - 6" $_{center\ piece}$ - 14(½" $_{middle\ bars}$)
= 63.75"
= 5.3125'

W = 25.5" - 13(½" $_{middle\ bars}$)
= 19"
= 1.583'

Area = 1.583' x 5.3125'
= 8.41 ft^2

Effective Area = 8.41- 8.41 (0.5 $_{clogging\ factor}$)
= 4.21 ft^2 at the grate

Orifice Equation
Q = CA sqrt(2gH)
Q = 0.6*4.21*sqrt(2*32.2*0.67)
Q = 16.59 cfs

Capacity of the throat:

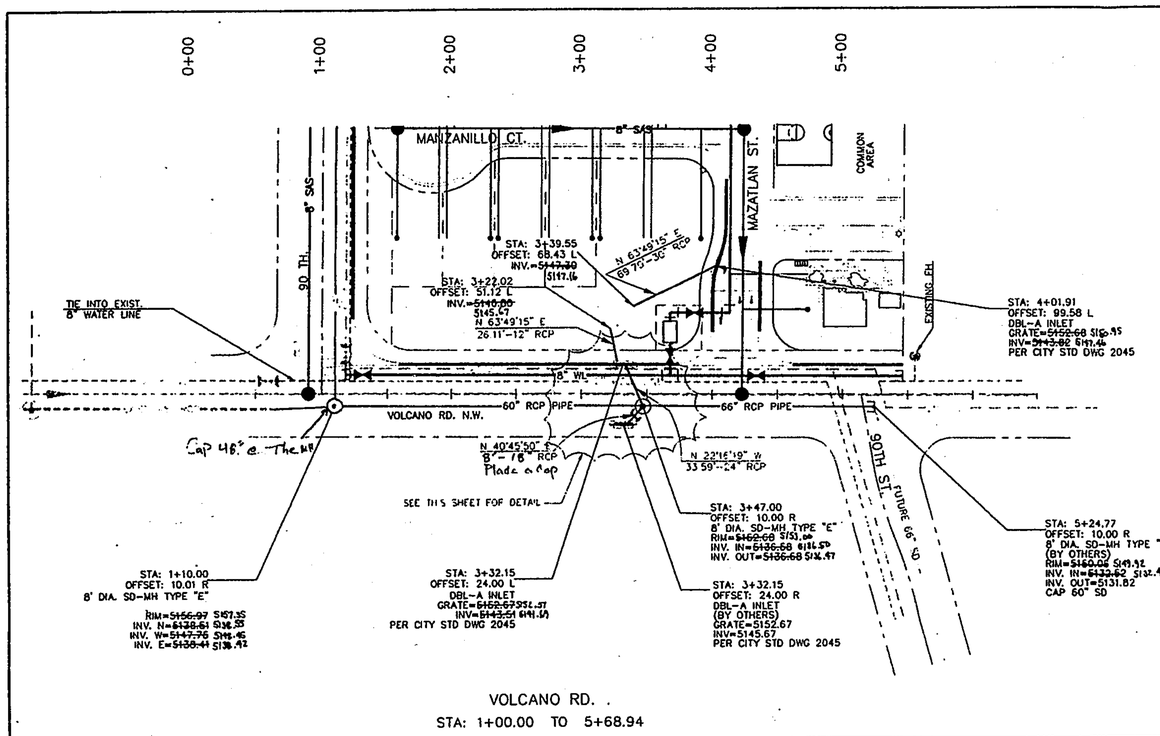
L = 88-¾"
= 7.3958'

Weir Equation
Q = CLH^(3/2)
Q = 2.95 * 7.3958 * 0.67^(3/2)
Q = 11.97 cfs

Total Capacity:

Q = 16.59_{grate} + 11.97_{throat}
Q = 28.56 cfs

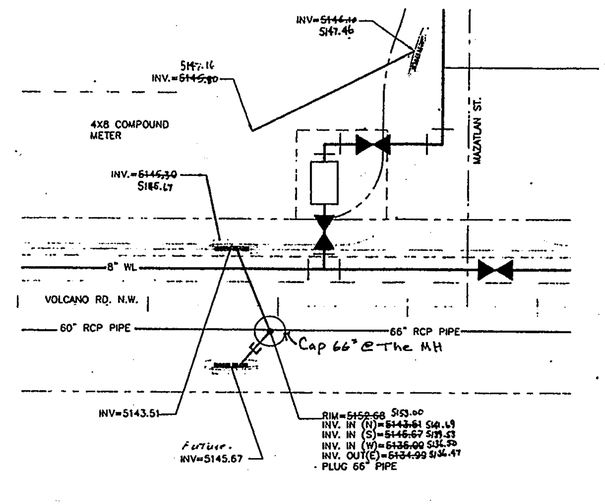
APPENDIX F
(Storm Drain As-Builts)



VOLCANO RD.

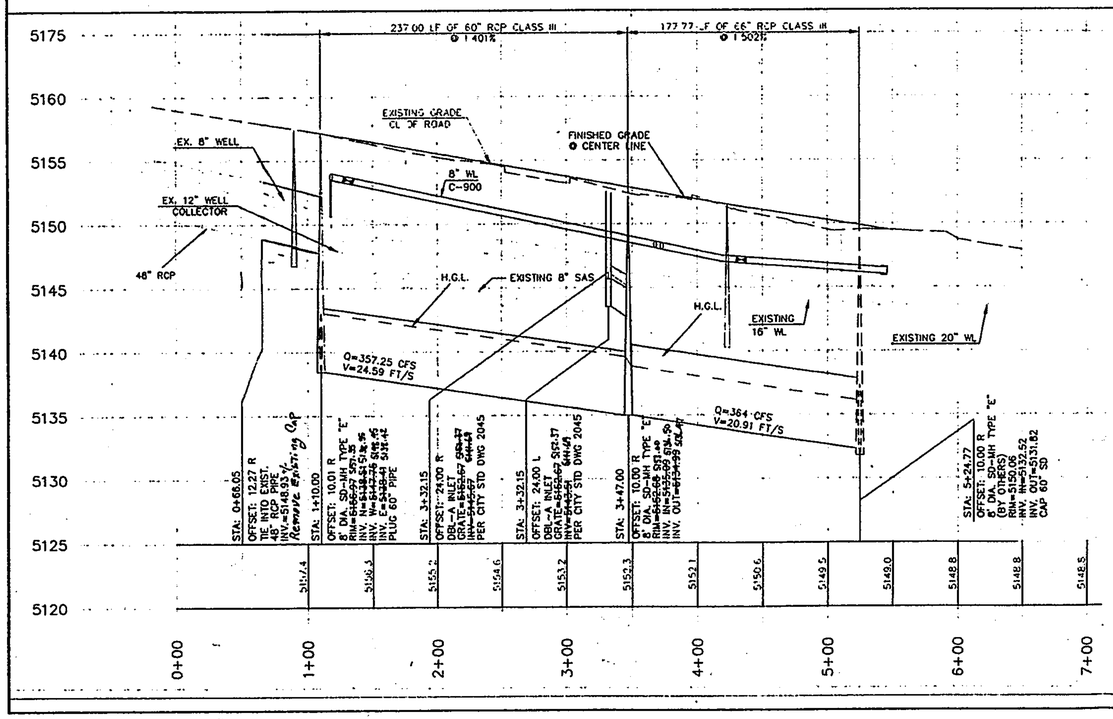
STA: 1+00.00 TO 5+68.94

NOTE:
TRENCH BOX WILL BE REQUIRED FOR THE CONSTRUCTION OF THE STORM SEWER PIPES



DETAIL

SCALE: HORIZ. 1"=50'
VERT. 1"= 5'



ADVANCED ENGINEERING and CONSULTING, LLC
18205 SNOWFLAKE CT., NW
ALBUQUERQUE, NEW MEXICO 87114
(505)899-5570

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: VOLCANO ROAD
STORM SEWER IMPROVEMENTS

DESIGN REVIEW COMMITTEE — REVIEW COMMITTEE
CITY ENGINEER DESIGN — APPROVED — CITY ENGINEER
MO/DAY/YR — MO/DAY/YR — MO/DAY/YR

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
660881	K-9-Z	12	22

AS BUILT INFORMATION
CONTRACTOR Albuquerque Excavators LTD. DATE 11-1-97
WORK STAKED BY Romero Eng. DATE 11-1-97
INSPECTOR'S ACCEPTANCE BY Advanced Eng. DATE 11/6/97
FIELD DRAWINGS BY Romero Eng. DATE 11/6/97
CORRECTED BY Romero Eng. DATE 11/6/97
MICRO-FILM INFORMATION
RECORDED BY DATE
NO

BENCH MARKS
ACS "7-K9", LOCATED AT THE CL OF CENTRAL (MEDIAN) ±530' EAST CL OF 90TH ST & ±0.14 MI TO CL 86TH ST
CENTRAL STATION DATA-NAD 1927
NM STATE PLANE COORDINATES
X=355,815.77
Y=1,482,842.09
C-G=0.99987820
Do=-00°16'37"
ELEV=5137.363 NGVD 1929

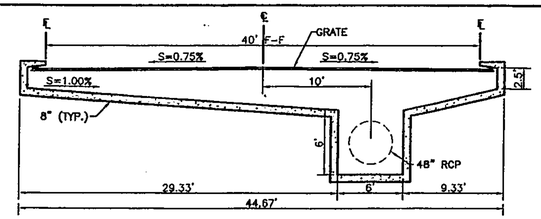
SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
STANLEY BAILEY REGISTERED

NO.	DATE	REMARKS	BY
REVISIONS			

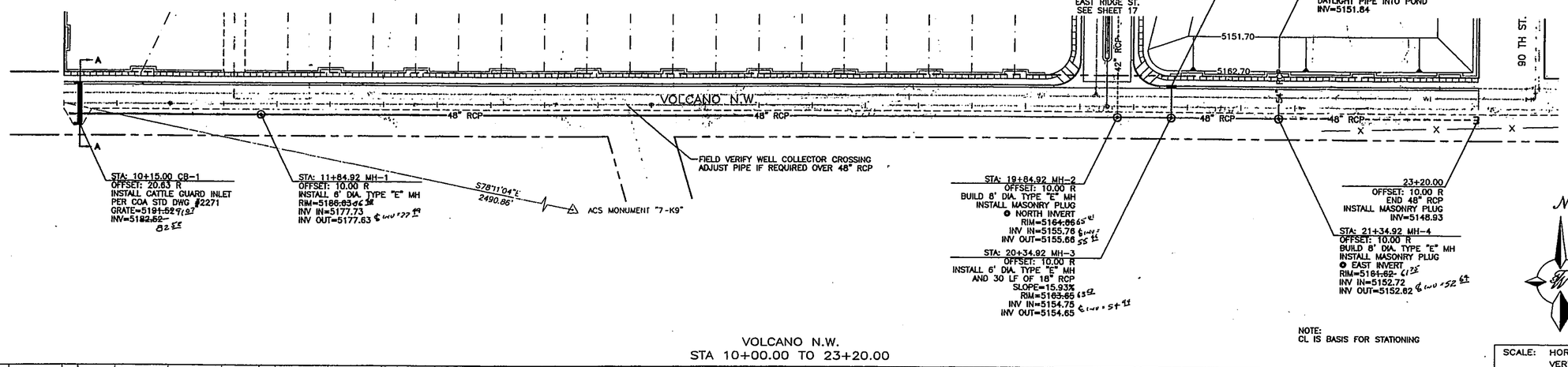
DESIGN		
DESIGNED BY	SB	DATE 8-01
DRAWN BY	SB	DATE 8-01
CHECKED BY	SB	DATE 8-01

CAUTION:
SOME EXISTING UTILITIES MAY NOT BE SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.



SECTION A-A

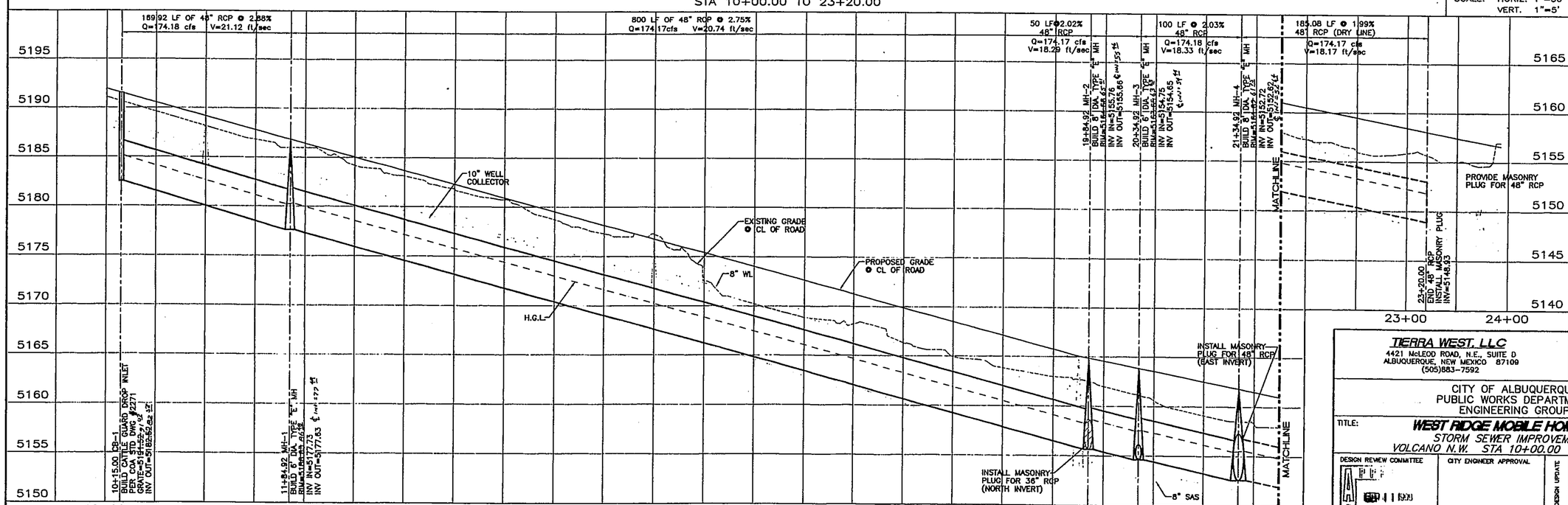
NTS



NOTE:
CL IS BASIS FOR STATIONING

VOLCANO N.W.
STA 10+00.00 TO 23+20.00

SCALE: HORIZ. 1"=50'
VERT. 1"=5'



50\960073\VOLSS.DWG\JDN\07-01-98

RECORD DRAWING

DATE: 5/27/99	DRAFTED BY: RJ TIERRA WEST DEV.

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE DOCUMENT AS A RESULT.

AS BUILT INFORMATION
CONTRACTOR Carpi Construct DATE
WORK STAKED BY Carpi Surveys DATE
INSPECTOR'S FIELD CHANGES BY Tierra West DATE
FIELD VERIFICATION BY Confirmed DATE
CORRECTED BY Tierra West DATE
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
ACS "7-K9"
CENTRAL STATION DATA
NM STATE PLANE COORDINATES
Central Zone
X=35815.77
Y=1482842.09
G-Q=0.99967820
Δ = -00°16'37"
ELEV=5237.363

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL
REGISTERED RAY JOHANNAN NEW MEXICO PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGN
DESIGNED BY RRB DATE
DRAWN BY JDN DATE
CHECKED BY RRB DATE

TIERRA WEST, LLC
4421 McLEOD ROAD, N.E., SUITE D
ALBUQUERQUE, NEW MEXICO 87109
(505)883-7592

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: **WEST RIDGE MOBILE HOME PARK**
STORM SEWER IMPROVEMENTS
VOLCANO N.W. STA 10+00.00 TO 23+20.00

DESIGN REVIEW COMMITTEE | CITY ENGINEER APPROVAL | LAST DESIGN UPDATE | MO./DAY/YR. | MO./DAY/YR.

CITY PROJECT NO. 593081 | ZONE MAP NO. K-9-Z | SHEET 16 OF 33

CITY OF ALBUQUERQUE

December 17, 2010

Ronald R. Bohannan, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

Re: West Ridge MH Park Detention Pond
Grading and Drainage Plan
Engineer's Stamp dated 12-10-10 (K9-D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 12-13-2010, the above referenced plan is approved for Grading Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology along with a private facilities maintenance agreement.

A separate Work Order permit is required for construction within the city right of way.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge.

This project also requires a Topsoil Disturbance Permit since it is disturbing ¾ of an acre or more.

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

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, P.E., C.F.M.
City Hydrologist, Planning Department
Development and Building Services

C: File

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: West Ridge Mobile Home Park Detention Pond ZONE MAP/DRG. FILE # K9-~~D~~ D006

DRB : ***1000248*** EPC #: WORK ORDER #:

LEGAL DESCRIPTION Tract A, West Ridge Mobile Home Park

CITY ADDRESS: 9301 Volcano Road NW, Albuquerque, New Mexico 87121

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	~~Jonathan Niski~~ Joel
ADDRESS:	5571 Midway Park Place NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
OWNER:	Fred N. Seeley	CONTACT:	Fred Seeley
ADDRESS:	P.O. Box 65598	PHONE:	(505) 888-9777
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87193
ARCHITECT:	N/A	CONTACT:	N/A
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	Precision Surveys Inc.	CONTACT:	Larry Medrano
ADDRESS:	P.O. Box 90636	PHONE:	(505) 856- 5700
CITY, STATE:	Albuquerque, New Mexico	ZIP CODE:	87199
CONTRACTOR:	N/A	CONTACT:	N/A
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	

CHECK TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- X DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANACIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- X SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- X NO
- ___ COPY PROVIDED

RECEIVED
DEC 1 3 2010
HYDROLOGY SECTION

DATE SUBMITTED: 12/13/2010 BY: Jonathan Niski, P.E.

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of sumbittal may be required based on the following:

1. **Conceptual Grading and Drainage Plans**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

gw

TIERRA WEST, LLC

5571 Midway Park Place NE
(505) 858-3100 Fax (505) 858-1118 1-800-245-3102
tierrawestllc.com
Albuquerque, NM 87109

December 10, 2010

Brad Bingham, P.E.
Section Manager, City Hydrology
City of Albuquerque
Plaza Del Sol
600 N. Second Street NW
Albuquerque, NM 87102

RE: ADMINISTRATIVE AMENDMENT FOR WEST RIDGE MOBILE HOME PARK ADDITIONAL SPACES AND PERMANENT DETENTION POND.

Dear Mr. Bingham:

The purpose of this addendum is to modify the approved grading and drainage plan dated October 8, 2007 for the proposed West Ridge Mobile Home Park permanent detention pond as well as update the approved drainage report titled "West Ridge Mobile Home Park Permanent Detention Pond" dated September 7, 2007. To dated no improvements have been made to the temporary retention pond constructed with West Ridge Mobile Home Park.

Tierra West is proposing to modify the design of the permanent detention pond to accommodate the construction of 8 additional mobile home spaces. To make room the pond size was modified to allow the appropriate depth for each mobile home spaces. AHYMO analysis of the proposed pond was conducted to show that the proposed pond will handle the 100-year flood event without over topping while maintaining an allow discharge less than 56.31 cfs. Based on the updated AHYMO analysis the 100-year water service elevation for the revised pond is 5162.33 feet and a peak discharge of 56.28 cfs.

Attached are copies of the revised pond volume calculations, AHYMO inputs and outputs, StormCad Analysis of new storm sewer and the revised grading and drainage plan.

Sincerely,

Ronald R. Bohannan, P.E.

RECEIVED
DEC 1 3 2010
HYDROLOGY SECTION

Enclosure/s

cc: Fred Seeley – Western Security Real Estate, Inc.

JN: 27031
RRB/JC/cla

```
AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
     RUN DATE (MON/DAY/YR) = 12/07/2010
     START TIME (HR:MIN:SEC) = 11:13:31     USER NO.=
AHYMO-S-9702d3TierraW-AH
     INPUT FILE = Z:\2007\27031\Reports\Drainage\AHYMO\27031-~1.TXT

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

*                WEST RIDGE MOBILE HOME PARK                    *

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

*       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *

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

*

START                TIME=0.0

*

*

RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN

                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN

                     RAIN DAY=2.66 IN DT=0.02253 HR

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 -
PEAK AT 1.40 HR.
                DT =     .022530 HOURS        END TIME =     5.992981 HOURS
                   .0000   .0011   .0022   .0033   .0045   .0056   .0068
                   .0080   .0092   .0105   .0117   .0130   .0143   .0156
                   .0169   .0183   .0197   .0211   .0225   .0240   .0255
                   .0270   .0286   .0301   .0318   .0334   .0351   .0368
                   .0386   .0404   .0423   .0442   .0461   .0481   .0502
                   .0523   .0545   .0567   .0590   .0614   .0639   .0664
                   .0691   .0718   .0747   .0779   .0814   .0852   .0890
                   .0931   .1009   .1168   .1389   .1682   .2060   .2533
                   .3113   .3814   .4648   .5627   .6765   .8073   .9567
                  1.1258  1.2045  1.2601  1.3098  1.3554  1.3977  1.4374
                  1.4748  1.5103  1.5441  1.5763  1.6070  1.6365  1.6648
                  1.6919  1.7180  1.7432  1.7673  1.7906  1.8131  1.8348
                  1.8557  1.8758  1.8953  1.9141  1.9322  1.9468  1.9509
                  1.9548  1.9586  1.9623  1.9659  1.9693  1.9727  1.9759
                  1.9791  1.9822  1.9852  1.9881  1.9910  1.9938  1.9965
                  1.9992  2.0018  2.0043  2.0068  2.0093  2.0117  2.0141
                  2.0164  2.0187  2.0209  2.0231  2.0253  2.0274  2.0295
                  2.0316  2.0336  2.0356  2.0376  2.0396  2.0415  2.0434
                  2.0453  2.0471  2.0489  2.0507  2.0525  2.0543  2.0560
                  2.0577  2.0594  2.0611  2.0627  2.0644  2.0660  2.0676
                  2.0692  2.0708  2.0723  2.0738  2.0754  2.0769  2.0784
                  2.0798  2.0813  2.0828  2.0842  2.0856  2.0870  2.0884
                  2.0898  2.0912  2.0925  2.0939  2.0952  2.0965  2.0979
                  2.0992  2.1005  2.1017  2.1030  2.1043  2.1055  2.1068
                  2.1080  2.1092  2.1104  2.1117  2.1129  2.1140  2.1152
                  2.1164  2.1176  2.1187  2.1199  2.1210  2.1221  2.1233
                  2.1244  2.1255  2.1266  2.1277  2.1288  2.1299  2.1310
```

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2.1320  2.1331  2.1341  2.1352  2.1362  2.1373  2.1383
2.1393  2.1404  2.1414  2.1424  2.1434  2.1444  2.1454
2.1464  2.1473  2.1483  2.1493  2.1502  2.1512  2.1522
2.1531  2.1541  2.1550  2.1559  2.1569  2.1578  2.1587
2.1596  2.1605  2.1614  2.1623  2.1632  2.1641  2.1650
2.1659  2.1668  2.1677  2.1685  2.1694  2.1703  2.1711
2.1720  2.1728  2.1737  2.1745  2.1754  2.1762  2.1770
2.1779  2.1787  2.1795  2.1803  2.1812  2.1820  2.1828
2.1836  2.1844  2.1852  2.1860  2.1868  2.1876  2.1883
2.1891  2.1899  2.1907  2.1915  2.1922  2.1930  2.1938
2.1945  2.1953  2.1960  2.1968  2.1975  2.1983  2.1990
2.1998

*

* BASIN 2

*

COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.008019 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1

        K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
        UNIT PEAK =   10.551    CFS   UNIT VOLUME =    .9989       B =   526.28
  P60 = 1.8700
        AREA =      .004811 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530


        K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
        UNIT PEAK =   4.7401    CFS   UNIT VOLUME =    .9970       B =   354.67
  P60 = 1.8700
        AREA =      .003208 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1


                                          OUTFLOW HYDROGRAPH REACH      .00

        RUNOFF VOLUME =       .00000 INCHES      =       .0000 ACRE-FEET
        PEAK DISCHARGE RATE =       .00 CFS  AT     .000 HOURS   BASIN AREA =
.0000 SQ. MI.


*

* BASIN 3

*
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```
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.004474 SQ MI

                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00

                     TP=-0.24 HR MASS RAINFALL=-1

          K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   5.8864    CFS   UNIT VOLUME =    .9979       B =   526.28
  P60 = 1.8700
          AREA =      .002684 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

          K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
          UNIT PEAK =   2.6446    CFS   UNIT VOLUME =    .9946       B =   354.67
  P60 = 1.8700
          AREA =      .001790 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1

                                          OUTFLOW HYDROGRAPH REACH      .00

          RUNOFF VOLUME =      .00000 INCHES     =        .0000 ACRE-FEET
          PEAK DISCHARGE RATE =      .00 CFS   AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.

     *
     * BASIN 4
     *

     COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007330 SQ MI

                          PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00

                          TP=-0.24 HR MASS RAINFALL=-1

          K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   9.6440    CFS   UNIT VOLUME =    .9988       B =   526.28
  P60 = 1.8700
          AREA =      .004398 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

          K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
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```
          UNIT PEAK =   4.3329    CFS   UNIT VOLUME =    .9967       B =   354.67
  P60 = 1.8700
          AREA =      .002932 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1

                                                OUTFLOW HYDROGRAPH REACH      .00

          RUNOFF VOLUME =       .00000 INCHES     =        .0000 ACRE-FEET
          PEAK DISCHARGE RATE =        .00 CFS  AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.


     *

     * BASIN 5A

     *

     COMPUTE NM HYD       ID=5 HYD NO=100.5A AREA=0.005505 SQ MI

                          PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00

                          TP=-0.24 HR MASS RAINFALL=-1

          K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   7.2429    CFS   UNIT VOLUME =    .9983       B =   526.28
  P60 = 1.8700
          AREA =      .003303 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530


          K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
          UNIT PEAK =   3.2541    CFS   UNIT VOLUME =    .9956       B =   354.67
  P60 = 1.8700
          AREA =      .002202 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1

                                                OUTFLOW HYDROGRAPH REACH      .00

          RUNOFF VOLUME =       .00000 INCHES     =        .0000 ACRE-FEET
          PEAK DISCHARGE RATE =        .00 CFS  AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.
```

```
*
* BASIN 5B
*
COMPUTE NM HYD       ID=6 HYD NO=100.5B AREA=0.001121 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1

          K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   1.4749    CFS   UNIT VOLUME =    .9914       B =   526.28
  P60 = 1.8700
          AREA =      .000673 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

          K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
          UNIT PEAK =   .66264    CFS   UNIT VOLUME =    .9786       B =   354.67
  P60 = 1.8700
          AREA =      .000448 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

PRINT HYD            ID=1 CODE=1

                                                OUTFLOW HYDROGRAPH REACH      .00

        RUNOFF VOLUME =      .00000 INCHES     =        .0000 ACRE-FEET
        PEAK DISCHARGE RATE =      .00 CFS  AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.

*
* BASIN 6
*
COMPUTE NM HYD       ID=7 HYD NO=100.6 AREA=0.007264 SQ MI
                     PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                     TP=-0.24 HR MASS RAINFALL=-1

          K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   9.5572    CFS   UNIT VOLUME =    .9988       B =   526.28
  P60 = 1.8700
          AREA =      .004358 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
```

```
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

          K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
          UNIT PEAK =   4.2939    CFS   UNIT VOLUME =    .9967       B =   354.67
  P60 = 1.8700
          AREA =      .002906 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1

                                                OUTFLOW HYDROGRAPH REACH      .00

         RUNOFF VOLUME =      .00000 INCHES     =        .0000 ACRE-FEET
         PEAK DISCHARGE RATE =        .00 CFS  AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.


     *

     * BASIN 7

     *

     COMPUTE NM HYD       ID=8 HYD NO=100.7 AREA=0.006842 SQ MI

                          PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00

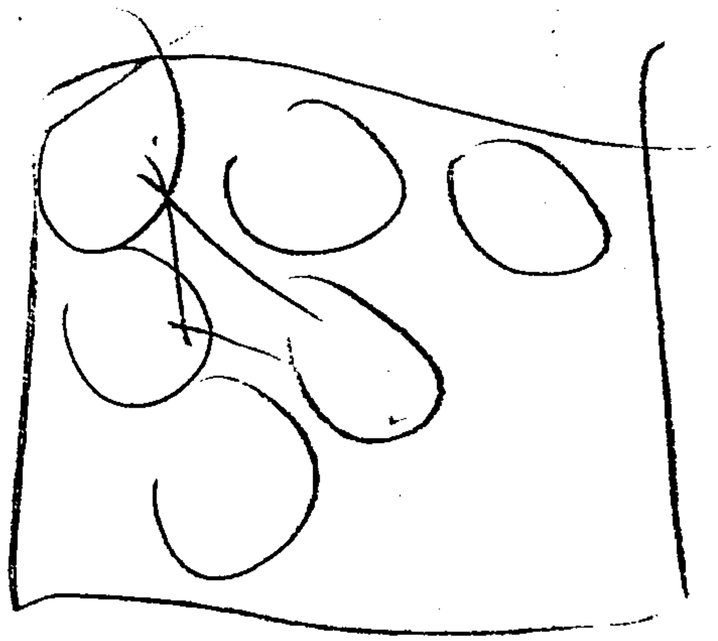
                          TP=-0.24 HR MASS RAINFALL=-1

          K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   9.0019    CFS   UNIT VOLUME =    .9987       B =   526.28
  P60 = 1.8700
          AREA =      .004105 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

          K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
          UNIT PEAK =   4.0444    CFS   UNIT VOLUME =    .9966       B =   354.67
  P60 = 1.8700
          AREA =      .002737 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1

                                                OUTFLOW HYDROGRAPH REACH      .00
```



```
        RUNOFF VOLUME =      .00000 INCHES     =        .0000 ACRE-FEET
        PEAK DISCHARGE RATE =        .00 CFS  AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.


     *

     * BASIN 8

     *

     COMPUTE NM HYD       ID=9 HYD NO=100.8 AREA=0.002367 SQ MI

                          PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00

                          TP=-0.24 HR MASS RAINFALL=-1


        K =   .130800HR    TP =   .240000HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
        UNIT PEAK =   3.1142    CFS   UNIT VOLUME =    .9959       B =   526.28
  P60 = 1.8700
        AREA =      .001420 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530


        K =   .213226HR    TP =   .240000HR    K/TP RATIO =   .888442     SHAPE
CONSTANT, N =  3.992480
        UNIT PEAK =   1.3992    CFS   UNIT VOLUME =    .9898       B =   354.67
  P60 = 1.8700
        AREA =      .000947 SQ MI    IA =    .42500 INCHES    INF =   1.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.022530

     PRINT HYD            ID=1 CODE=1


                                          OUTFLOW HYDROGRAPH REACH      .00


        RUNOFF VOLUME =      .00000 INCHES     =        .0000 ACRE-FEET
        PEAK DISCHARGE RATE =        .00 CFS  AT    .000 HOURS   BASIN AREA =
.0000 SQ. MI.


     *

     *

     ADD HYD              ID=10 HYD NO=100.9 ID I=2 ID II=3

     *

     ADD HYD              ID=11 HYD NO=100.10 ID I=10 ID II=4

     *

     ADD HYD              ID=12 HYD NO=100.11 ID I=11 ID II=5
```

```
*

ADD HYD              ID=13 HYD NO=100.12 ID I=12 ID II=6

*

ADD HYD              ID=14 HYD NO=100.13 ID I=13 ID II=7

*

ADD HYD              ID=15 HYD NO=100.14 ID I=14 ID II=8

*

ADD HYD              ID=16 HYD NO=100.15 ID I=15 ID II=9

*

PRINT HYD            ID=16 CODE=1

                                    PARTIAL HYDROGRAPH   100.15

     RUNOFF VOLUME =      1.50542 INCHES      =      3.4461 ACRE-FEET
     PEAK DISCHARGE RATE =      71.95 CFS  AT   1.622 HOURS   BASIN AREA =
.0429 SQ. MI.

*

ROUTE RESERVOIR      ID=17 HYD NO=200 INFLOW ID=16 CODE=24
```

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	53.69
7.7949	0.0004	55.00
22.0153	0.0007	56.00
30.1427	0.0116	57.00
36.5034	0.0404	58.00
41.9095	0.0845	59.00
46.6939	0.1452	60.00
51.0317	0.2201	61.00
55.0286	0.3068	62.00
58.7542	0.4067	63.00

pond bottom is at 57

```
* * * * * * * * * * * * * * * * *

  TIME      INFLOW    ELEV      VOLUME    OUTFLOW
  (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)
```

T	Q_{in}	EL	V	Q_{out}
.00	.00	53.69	.000	.00
.54	.00	53.69	.000	.00
1.08	.00	53.69	.000	.00
1.62	71.95	61.10	.229	51.45
2.16	18.95	55.79	.001	18.96
2.70	4.09	54.38	.000	4.10
3.24	1.57	53.95	.000	1.57
3.79	.73	53.81	.000	.73
4.33	.48	53.77	.000	.48
4.87	.42	53.76	.000	.42
5.41	.45	53.77	.000	.45
5.95	.50	53.77	.000	.50
6.49	.08	53.70	.000	.08
7.03	.02	53.69	.000	.02

PEAK DISCHARGE = 56.284 CFS - PEAK OCCURS AT HOUR 1.76
MAXIMUM WATER SURFACE ELEVATION = 62.337
MAXIMUM STORAGE = .3405 AC-FT INCREMENTAL TIME= .022530HRS

*

*

FINISH

when probe reference major facility been > 50 cfs

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:13:31

CITY OF ALBUQUERQUE

October 18, 2007

Ronald R. Bohannan, P.E.
Tierra West, LLC.
5571 Midway Park Place NE
Albuquerque, NM 87109

Re: Westridge Mobile Home Park, 9301 Volcano NW
Engineer's Stamp dated 10-8-07, (K9/D6)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received on October 9, 2007, the above referenced plan is approved for both Building Permit (A-A) and SO-19 Permit. Construction of the proposed storm drain manhole in Volcano Road is inclusive in the SO-19 permit. Contact Duane Schmitz at 235-8016 to schedule an inspection.

Please attach a copy of this letter and the approved plan **along with a private facilities maintenance agreement** to the construction sets to obtain sign-off by Hydrology. Upon project completion, please provide a certified, as-built copy of the plan for our records.

This project will also require a National Pollutant Discharge Elimination System (NPDES) permit. Inquiries regarding this permit should be directed to Sertil Kandar at 768-3645. In addition to submitting an NOI to the EPA and preparing a SWPPP, please send a copy of the SWPPP on a CD in .pdf format to Kathy Verhage with the Department of Municipal Development Storm Drainage Division at the following address.

Department of Municipal Development
Storm Drainage Division
P.O. Box 1293, One Civic Plaza, Rm. 301
Attn: Kathy Verhage
Albuquerque, NM 87103

If you have any questions or need additional information, feel free to contact me at 924-3990.

Sincerely,

Jeremy Hoover, P.E., C.F.M.
Senior Engineer
Hydrology Section
Development and Building Services

cc: file (K9/D6)

Kathy Verhage, DMD Storm Drainage Division
Duane Schmitz, DMD Street / Storm Maintenance
Antoinette Baldonado, Construction Services

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: West Ridge Mobile Home Park Detention Pond
ZONE MAP/DRG. FILE #: K9-Z/D806
DRB #: EPC #:
WORK ORDER #:

LEGAL DESCRIPTION:
CITY ADDRESS: 9301 Volcano Road NW, Albuquerque, New Mexico 87121

ENGINEERING FIRM: Tierra West, LLC
ADDRESS: 5571 Midway Park Place NE
CITY, STATE: Albuquerque, NM
CONTACT: Jason Casuga
PHONE: (505) 858-3100
ZIP CODE: 87109

OWNER:
ADDRESS: P.O. Box 65598
CITY, STATE: Albuquerque, NM
CONTACT: Fred Seeley
PHONE: (505) 888-9777
ZIP CODE: 87193

ARCHITECT:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

SURVEYOR: Precision Surveys Inc.
ADDRESS: 8500 A Jefferson NE
CITY, STATE: Albuquerque, New Mexico
CONTACT: Larry Medrano
PHONE: (505) 856-5700
ZIP CODE: 87113

CONTRACTOR:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

CHECK TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- X DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANACIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- X SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- X NO
- ___ COPY PROVIDED

DATE SUBMITTED: J. M. G. BY: 10-9-07

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of sumbittal may be required based on the following:

1. **Conceptual Grading and Drainage Plans:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

LETTER OF TRANSMITTAL

Tierra West, LLC.

(505) 858-3100

5571 Midway Park Place NE, Albuquerque, NM 87109

DATE: 10/9/2007	JOB NO: 27031
ATTENTION: Jeremy Hoover, Senior Engineer	
RE: West Ridge Mobile Home Park	
PHONE:	

TO Hydrology Section
City of Albuquerque
Plaza Del Sol
Albuquerque, NM 87103

WE ARE SENDING YOU [X] Attached [ ] Under Separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [X] Plans [ ] Samples [ ] Specifications

[ ] Copy of letter [ ] Change order [ ] _____

COPIES	DATED	NO.	DESCRIPTION
			Response Letter
			Storm Sewer Improvements - 90th Street
			Storm Sewer Improvements - Volcano Road

THESE ARE TRANSMITTED as checked below:

[ ] For approval [ ] Approved as submitted [ ] **FOR SIGNATURE(S)**

[ ] For your use [ ] Approved as noted [ ] _____

[X] As requested [ ] Returned for corrections

[ ] For review and comments [ ] _____

[ ] FOR BIDS DUE _____ 20 _____ [ ] PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

RECEIVED
OCT 09 2007
HYDROLOGY SECTION

COPY TO _____

RECEIVED BY Sandy Handley Date 10/09/07 SIGNED Barbara Mallak for Jason M. Casuga, EI

FAX (505) 858-1118 If enclosures are not as noted, kindly notify us at once Email: twllc@tierrawestllc.com

TIERRA WEST, LLC

5571 Midway Park Place NE
Albuquerque, NM 87109

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

October 8, 2007

Mr. Jeremy Hoover
Senior Engineer, Hydrology Section
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Westridge Mobile Home Park

Dear Mr. Hoover:

Per your meeting with Jason Casuga from our office, the Grading and Drainage Plan for the West Ridge Mobile Home Park detention pond was updated to show the following changes.

The outlet pipe from the detention pond to the storm drain system located in Volcano Road was upsized from 24-inchs to 30-inchs. The new 100-year water surface elevation for the pond is 5160.20 feet with a peak discharge of 53.86 cfs. By increasing the diameter of the outlet pipe the pond water surface elevation has dropped by 1.55 ft while at the same time not exceeding the allowable discharge of 56.31 cfs. The storm drain network for the Volcano road was modeled using StormCAD to show the calculated HGL s in the outlet pipe and the Volcano Road Storm Drain.

Attached to this letter is the updated Grading and Drainage Plan, Pond Volume and Orifice Calculations, StormCAD Profiles and Summary Tables, and the AHYMO Pond Routing out put.

Should you have any questions or comments please do not hesitate to give me a call.

Sincerely,

RONALD RAY BOHANNAN 10/07
NEW MEXICO
7868
REGISTERED PROFESSIONAL ENGINEER

Ronald R. Bohannan, P.E.

Enclosure/s

JN: 27031
RRB/JMC/bdm

RECEIVED
OCT 08 2007
HYDROLOGY SECTION

Z:\2007\27031\Correspondence\27031-COA Transmittal Letter10-08-07.doc

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02d RUN DATE (MON/DAY/YR) =10/08/2007
INPUT FILE = Z:\2007\27031\Reports\Drainage\AHYMO\2731-P~2.TXT USER NO.= AHYMO-S-9702d3TierraW-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
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
COMPUTE NM HYD	101.10	-	1	.04292	98.81	3.968	1.73335	1.500	3.597	PER IMP= 60.00
ROUTE RESERVOIR	501.10	1	2	.04292	53.86	3.967	1.73277	1.667	1.961	AC-FT= .831
FINISH										

RECEIVED
OCT 09 2007
HYDROLOGY SECTION

```
AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02d
     RUN DATE (MON/DAY/YR) = 10/08/2007
     START TIME (HR:MIN:SEC) = 12:51:52     USER NO.= AHYMO-S-9702d3TierraW-AH
     INPUT FILE = Z:\2007\27031\Reports\Drainage\AHYMO\2731-P~2.TXT

*****************************************************************
*                  WEST RIDGE MOBILE HOME PARK                  *
*****************************************************************
*          100-YEAR, 24-HR STORM  (PONDING CALCULATIONS)        *
*****************************************************************
START                TIME=0.0
*
* ROUTE 1
*
* BASIN 1
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.03333 HR

                COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =    .033330 HOURS       END TIME =    19.964670 HOURS
                   .0000   .0016   .0033   .0050   .0067   .0085   .0103
                   .0122   .0141   .0160   .0180   .0201   .0222   .0243
                   .0266   .0289   .0312   .0337   .0362   .0388   .0415
                   .0443   .0472   .0502   .0534   .0567   .0601   .0637
                   .0675   .0715   .0758   .0809   .0865   .0924   .1050
                   .1334   .1771   .2398   .3254   .4379   .5814   .7600
                   .9780  1.1804  1.2649  1.3363  1.3997  1.4575  1.5106
                  1.5600  1.6061  1.6493  1.6900  1.7284  1.7646  1.7989
                  1.8314  1.8623  1.8915  1.9193  1.9456  1.9518  1.9576
                  1.9630  1.9682  1.9732  1.9780  1.9825  1.9869  1.9912
                  1.9953  1.9993  2.0031  2.0068  2.0104  2.0140  2.0174
                  2.0207  2.0240  2.0272  2.0303  2.0333  2.0363  2.0392
                  2.0420  2.0448  2.0475  2.0502  2.0528  2.0554  2.0580
                  2.0605  2.0629  2.0653  2.0677  2.0700  2.0723  2.0746
                  2.0768  2.0790  2.0812  2.0833  2.0855  2.0875  2.0896
                  2.0916  2.0936  2.0956  2.0976  2.0995  2.1014  2.1033
                  2.1051  2.1070  2.1088  2.1106  2.1124  2.1141  2.1159
                  2.1176  2.1193  2.1210  2.1227  2.1244  2.1260  2.1276
                  2.1292  2.1308  2.1324  2.1340  2.1355  2.1371  2.1386
                  2.1401  2.1416  2.1431  2.1446  2.1460  2.1475  2.1489
                  2.1504  2.1518  2.1532  2.1546  2.1560  2.1573  2.1587
                  2.1600  2.1614  2.1627  2.1640  2.1654  2.1667  2.1680
                  2.1692  2.1705  2.1718  2.1731  2.1743  2.1756  2.1768
                  2.1780  2.1792  2.1804  2.1817  2.1829  2.1840  2.1852
                  2.1864  2.1876  2.1887  2.1899  2.1910  2.1922  2.1933
                  2.1944  2.1956  2.1967  2.1978  2.1989  2.2000  2.2013
                  2.2026  2.2039  2.2052  2.2065  2.2078  2.2091  2.2103
                  2.2116  2.2129  2.2142  2.2155  2.2167  2.2180  2.2193
                  2.2205  2.2218  2.2230  2.2243  2.2255  2.2268  2.2280
                  2.2293  2.2305  2.2318  2.2330  2.2342  2.2354  2.2367
                  2.2379  2.2391  2.2403  2.2415  2.2428  2.2440  2.2452
                  2.2464  2.2476  2.2488  2.2500  2.2512  2.2524  2.2536
                  2.2547  2.2559  2.2571  2.2583  2.2595  2.2606  2.2618
                  2.2630  2.2641  2.2653  2.2665  2.2676  2.2688  2.2699
                  2.2711  2.2722  2.2734  2.2745  2.2757  2.2768  2.2779
                  2.2791  2.2802  2.2813  2.2825  2.2836  2.2847  2.2858
                  2.2870  2.2881  2.2892  2.2903  2.2914  2.2925  2.2936
                  2.2947  2.2958  2.2969  2.2980  2.2991  2.3002  2.3013
                  2.3024  2.3035  2.3046  2.3057  2.3067  2.3078  2.3089
                  2.3100  2.3110  2.3121  2.3132  2.3142  2.3153  2.3164
                  2.3174  2.3185  2.3195  2.3206  2.3216  2.3227  2.3237
                  2.3248  2.3258  2.3269  2.3279  2.3290  2.3300  2.3310
                  2.3321  2.3331  2.3341  2.3352  2.3362  2.3372  2.3382
                  2.3392  2.3403  2.3413  2.3423  2.3433  2.3443  2.3453
                  2.3463  2.3473  2.3483  2.3493  2.3503  2.3513  2.3523
                  2.3533  2.3543  2.3553  2.3563  2.3573  2.3583  2.3593
                  2.3603  2.3612  2.3622  2.3632  2.3642  2.3651  2.3661
                  2.3671  2.3681  2.3690  2.3700  2.3710  2.3719  2.3729
                  2.3738  2.3748  2.3758  2.3767  2.3777  2.3786  2.3796
                  2.3805  2.3815  2.3824  2.3834  2.3843  2.3852  2.3862
                  2.3871  2.3881  2.3890  2.3899  2.3909  2.3918  2.3927
                  2.3936  2.3946  2.3955  2.3964  2.3973  2.3983  2.3992
                  2.4001  2.4010  2.4019  2.4028  2.4038  2.4047  2.4056
                  2.4065  2.4074  2.4083  2.4092  2.4101  2.4110  2.4119
                  2.4128  2.4137  2.4146  2.4155  2.4164  2.4173  2.4181
                  2.4190  2.4199  2.4208  2.4217  2.4226  2.4234  2.4243
                  2.4252  2.4261  2.4270  2.4278  2.4287  2.4296  2.4304
                  2.4313  2.4322  2.4331  2.4339  2.4348  2.4356  2.4365
                  2.4374  2.4382  2.4391  2.4399  2.4408  2.4416  2.4425
                  2.4434  2.4442  2.4450  2.4459  2.4467  2.4476  2.4484
                  2.4493  2.4501  2.4510  2.4518  2.4526  2.4535  2.4543
                  2.4551  2.4560  2.4568  2.4576  2.4585  2.4593  2.4601
                  2.4609  2.4618  2.4626  2.4634  2.4642  2.4651  2.4659
                  2.4667  2.4675  2.4683  2.4691  2.4700  2.4708  2.4716
                  2.4724  2.4732  2.4740  2.4748  2.4756  2.4764  2.4772
                  2.4780  2.4788  2.4796  2.4804  2.4812  2.4820  2.4828
                  2.4836  2.4844  2.4852  2.4860  2.4868  2.4876  2.4884
                  2.4892  2.4899  2.4907  2.4915  2.4923  2.4931  2.4939
```


RECEIVED
OCT 09 2007
HYDROLOGY SECTION

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2.4946  2.4954  2.4962  2.4970  2.4978  2.4985  2.4993
2.5001  2.5008  2.5016  2.5024  2.5032  2.5039  2.5047
2.5055  2.5062  2.5070  2.5078  2.5085  2.5093  2.5100
2.5108  2.5116  2.5123  2.5131  2.5138  2.5146  2.5153
2.5161  2.5168  2.5176  2.5183  2.5191  2.5198  2.5206
2.5213  2.5221  2.5228  2.5236  2.5243  2.5250  2.5258
2.5265  2.5273  2.5280  2.5287  2.5295  2.5302  2.5309
2.5317  2.5324  2.5331  2.5339  2.5346  2.5353  2.5361
2.5368  2.5375  2.5382  2.5390  2.5397  2.5404  2.5411
2.5418  2.5426  2.5433  2.5440  2.5447  2.5454  2.5462
2.5469  2.5476  2.5483  2.5490  2.5497  2.5504  2.5511
2.5518  2.5526  2.5533  2.5540  2.5547  2.5554  2.5561
2.5568  2.5575  2.5582  2.5589  2.5596  2.5603  2.5610
2.5617  2.5624  2.5631  2.5638  2.5645  2.5652  2.5659
2.5665  2.5672  2.5679  2.5686  2.5693  2.5700  2.5707
2.5714  2.5721  2.5727  2.5734  2.5741  2.5748  2.5755
2.5761  2.5768  2.5775  2.5782  2.5789  2.5795  2.5802
2.5809  2.5816  2.5822  2.5829  2.5836

COMPUTE NM HYD      ID=1 HYD NO=101.1 AREA=0.042921 SQ MI
                    PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                    TP=-0.1333 HR MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   101.67    CFS   UNIT VOLUME =    .9993       B =   526.28      P60 = 1.8700
    AREA =      .025753 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330


    K =   .118429HR    TP =   .133300HR    K/TP RATIO =   .888442     SHAPE CONSTANT, N =  3.992480
    UNIT PEAK =   45.680    CFS   UNIT VOLUME =    1.000       B =   354.67      P60 = 1.8700
    AREA =      .017168 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

* BASIN 1 PONDING
*
ROUTE RESERVOIR     ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                    OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                        0.0000            0.0000          55.00
                       23.6355            0.0927          56.00
                       33.4256            0.2143          57.00
                       40.9378            0.3674          58.00
                       47.2709            0.5545          59.00
                       52.8505            0.7782          60.00
                       57.8948            1.0411          61.00

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

  TIME      INFLOW     ELEV      VOLUME    OUTFLOW
  (HRS)     (CFS)      (FEET)    (AC-FT)   (CFS)

   .00        .00      55.00      .000       .00
   .80        .00      55.00      .000       .00
  1.60      70.06      60.07      .796     53.20
  2.40       3.83      55.19      .018      4.61
  3.20        .72      55.03      .003       .78
  4.00        .43      55.02      .002       .43
  4.80        .42      55.02      .002       .42
  5.60        .48      55.02      .002       .48
  6.40        .63      55.03      .002       .63
  7.20        .61      55.03      .002       .61
  8.00        .58      55.02      .002       .58
  8.80        .55      55.02      .002       .55
  9.60        .52      55.02      .002       .53
 10.40        .50      55.02      .002       .50
 11.20        .48      55.02      .002       .48
 12.00        .46      55.02      .002       .46
 12.80        .45      55.02      .002       .45
 13.60        .43      55.02      .002       .43
 14.40        .42      55.02      .002       .42
 15.20        .40      55.02      .002       .40
 16.00        .39      55.02      .002       .39
 16.80        .38      55.02      .001       .38
 17.60        .37      55.02      .001       .37
 18.40        .35      55.02      .001       .35
 19.20        .34      55.01      .001       .35
 PEAK DISCHARGE =       53.861 CFS - PEAK OCCURS AT HOUR    1.67
 MAXIMUM WATER SURFACE ELEVATION =       60.200
 MAXIMUM STORAGE =          .8309 AC-FT      INCREMENTAL TIME=     .033330HRS
*
*
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 12:51:52
```

VOLUME CALCULATIONS
POND

$$V = \frac{L}{2}(A1 + A2)$$

V = Volume

L = Length (Distance between sections)

A1 = Area of section 1

A2 = Area of section 2

STAGE	DEPTH	AREA		VOLUME		Q
		[ft^2]	[acres]	INC [acre-feet]	CUM [acre-feet]	[cfs]
55	0.00	3,437	0.08	0.00	0.0000	0.0000
56	1.00	4,640	0.11	0.09	0.0927	23.6355
57	2.00	5,954	0.14	0.12	0.2143	33.4256
58	3.00	7,381	0.17	0.15	0.3674	40.9378
59	4.00	8,920	0.20	0.19	0.5545	47.2709
60	5.00	10,571	0.24	0.22	0.7782	52.8505
61	6.00	12,333	0.28	0.26	1.0411	57.8948

<u>Orifice Equation</u>

Q = CA SQRT(2gH)

C =	0.6
Diameter (i	30
Area (ft^2):	4.909
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

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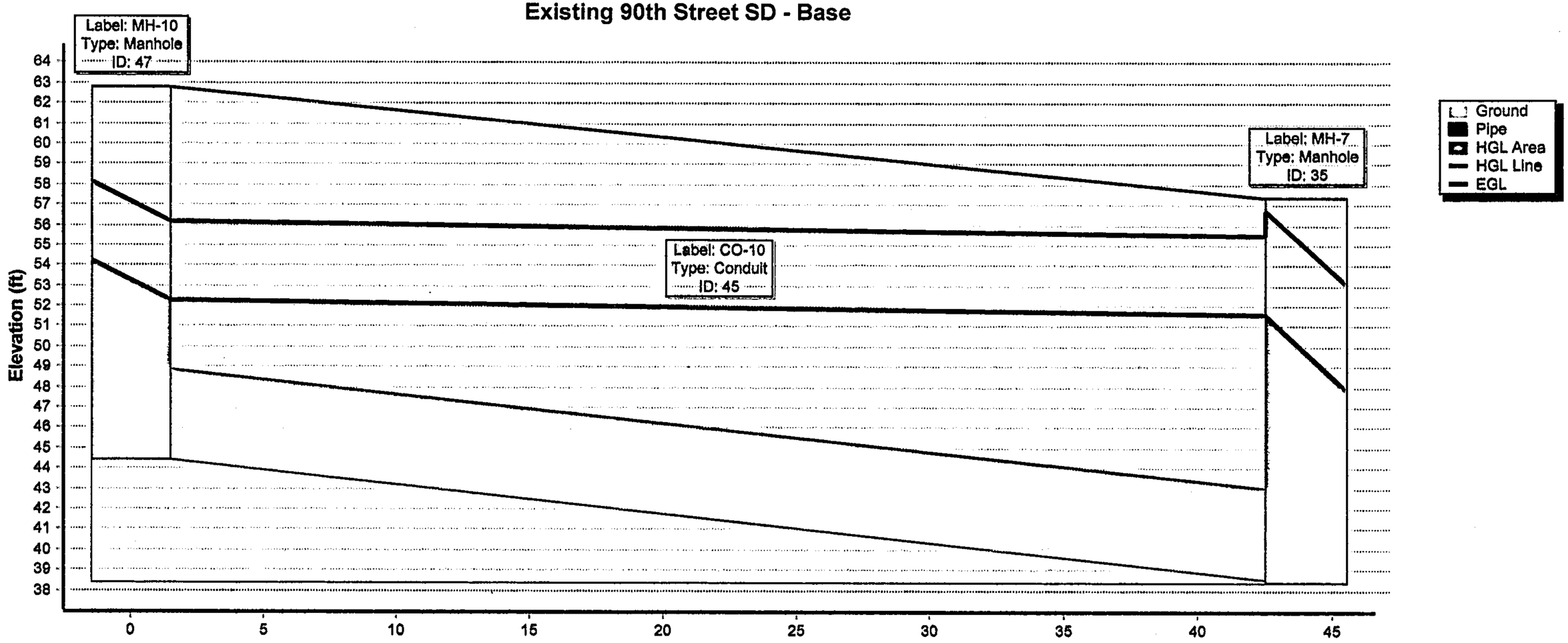
HYDROLOGY SECTION

FlexTable: Conduit Table (27031add.stc)
Current Time: 0.000 min

Label	Start Node	Invert (Upstream) (ft)	Stop Node	Invert (Downstream) (ft)	Manning's n	Diameter (in)	Flow (ft^3/s)	Length (ft)	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Velocity (Average) (ft/s)
CO-5	MH-9	52.64	MH-2	49.95	0.013	48	52.6	144	0.019	196.32	54.82	54.19	13.24
CO-6	MH-2	49.95	MH-7	48.45	0.013	48	106.46	73	0.021	205.9	53.07	50.76	16.52
CO-8	MH-7	38.42	MH-8	36.5	0.013	60	358.46	237	0.008	234.4	47.93	43.44	18.26
CO-9	MH-8	36.47	OF-1	32.4	0.013	66	358.46	177.8	0.023	508.09	41.53	36.16	23.18
CO-10	MH-10	44.4	MH-7	38.55	0.013	54	252	44	0.133	717	52.28	51.55	15.84
CO-11	CB-7	50.35	MH-10	44.4	0.013	54	252	31	0.192	861.48	54.63	54.23	47.02
CO-12	CB-6	54.44	MH-9	52.64	0.013	48	52.6	100	0.018	192.71	56.62	55.26	13.06
CO-13	CB-8	55	MH-2	49.95	0.013	30	53.86	67	0.075	112.6	57.34	54.19	22.68

Existing 90th Street SD - Base



ID\Label		45 \ CO-10	
Link Length (ft)		41	
Rise\Material		4.5 \	
Flow (ft³/s)		252	
Slope (ft/ft)		0.133	
ID\Label	47 \ MH-10		35 \ MH-7
Ground (ft)	62.81		57.35
Invert (ft)	44.4		38.42
Station (ft)	0		44

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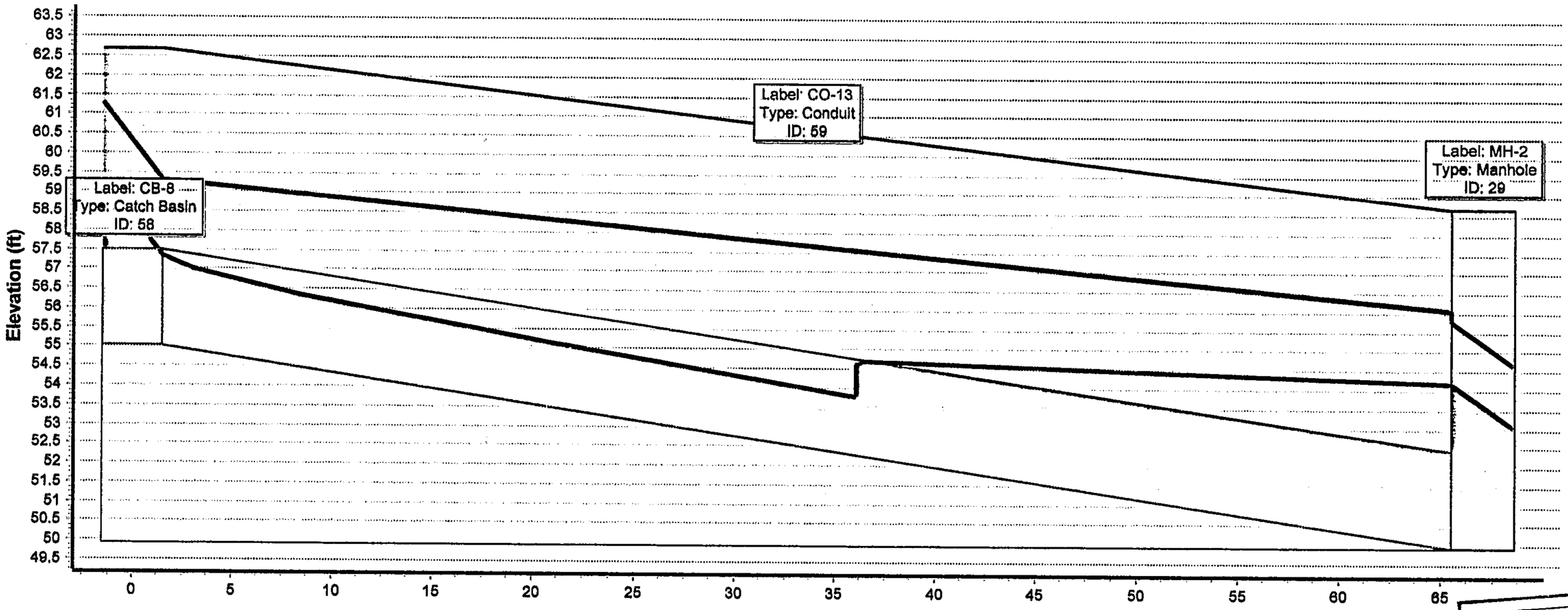
OCT 09 2007
HYDROLOGY SECTION

CB8(Pond Outlet) to MH2 - Base



ID\Label		59 \ CO-13	
Link Length (ft)		64	
Rise\Material		2.5 \	
Flow (ft³/s)		53.86	
Slope (ft/ft)		0.075	
ID\Label	58 \ CB-8		29 \ MH-2
Ground (ft)	62.7		58.63
Invert (ft)	55		49.95
Station (ft)	0		67

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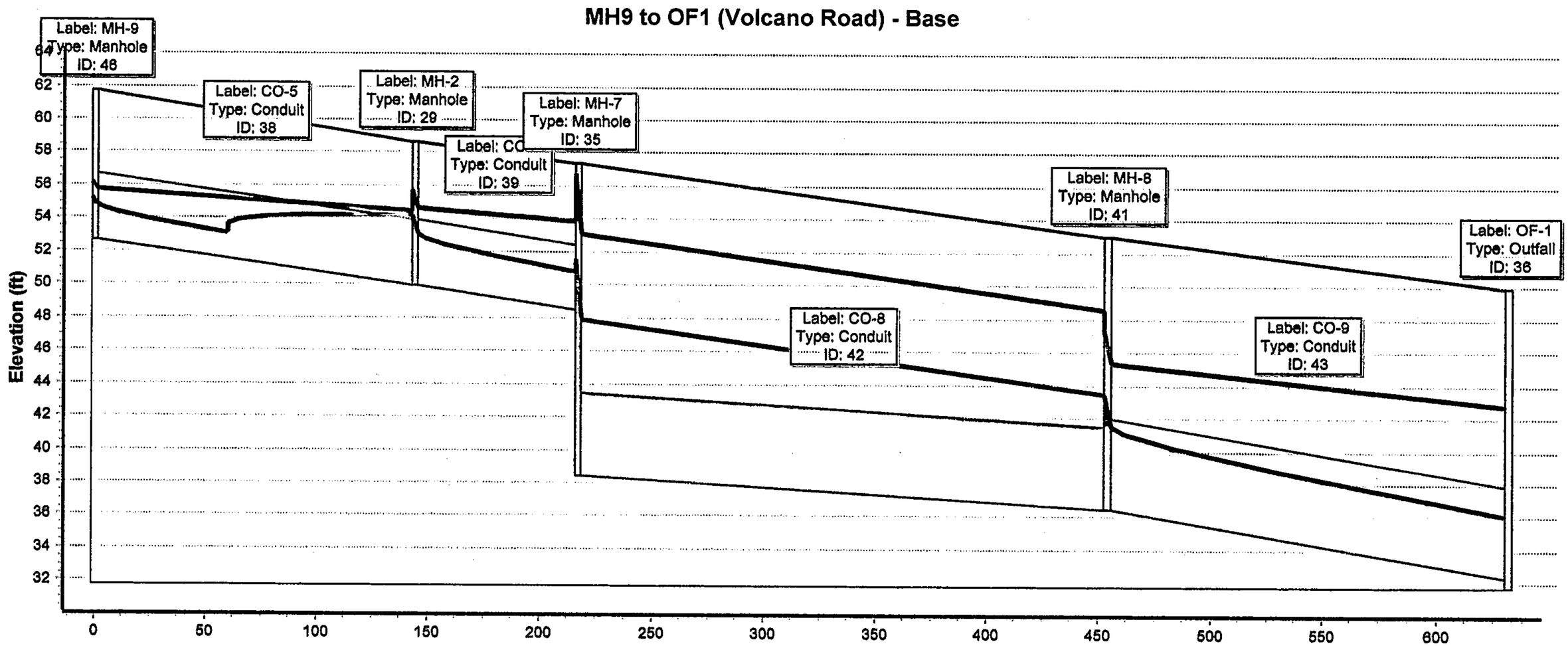
OCT 09 2007
HYDROLOGY SECTION



ID\Label	38 \ CO-5	39 \ CO-6	42 \ CO-8	43 \ CO-9
Link Length (ft)	141	70	234	174.8
Rise\Material	4 \	4 \	5 \	5.5 \
Flow (ft³/s)	52.6	106.46	358.46	358.46
Slope (ft/ft)	0.019	0.021	0.008	0.023

ID\Label	46 \ MH-9	29 \ MH-2	35 \ MH-7	41 \ MH-8	36 \ OF-1
Ground (ft)	61.75	58.67	57.35	53	49.92
Invert (ft)	52.64	49.95	38.42	36.47	31.82
Station (ft)	0	144	217	454	631.77

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *West Ridge Mobile Home Park* ZONE ATLAS/DRNG. FILE #: *K9/D6*

DRB #: *97-451* EPC #: WORK ORDER #: *593081*

LEGAL DESCRIPTION: *Tracts 6, 7, 8, 9, 10, 11 C.H. Hall*

CITY ADDRESS: *North of Volcano Road between 90th and 94th Streets*

ENGINEERING FIRM: *TIERRA WEST, LLC* CONTACT: *RONALD R. BOHANNAN*

ADDRESS: *4421 McCleod Rd. NE Suite D, 87109* PHONE: *(505) 883-7592*

OWNER: *Great Western Realty* CONTACT: *Fred Seeley*

ADDRESS: *3511 Carlisle NE 87110* PHONE: *(505) 888-9777*

ARCHITECT: *SLNB Architects* CONTACT: *James Lewis*

ADDRESS: *1620 Central Avenue SE 87106* PHONE: *(505) 247-1529*

SURVEYOR: *Community Sciences* CONTACT: *Cliff Spirock*

ADDRESS: *424 Shirk SW, 87109* PHONE: *(505) 897-0000*

CONTRACTOR: *Construction Contract Management* CONTACT: *Peter Steen*

ADDRESS: *8019 Edith 87113* PHONE: *(505) 898-7777*

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- X OTHER, GRADING AND DRAINAGE PLAN, AS-BUILTS

PRE-DESIGN MEETING:

- ____ YES
- X NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SKETCH PLAN APPROVAL
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- X CERTIFICATE OF OCCUPANCY APPROVAL Temp CO for Comm. Bldg. only
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S. A. D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- X *RELEASE OF FINANCIAL GUARANTEES* for mobile Home pads

DATE SUBMITTED: October 18, 1999

BY: *Ronald R. Bohannan, P.E.*

CITY OF ALBUQUERQUE

March 7, 2011

Ronald R. Bohannan, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

Re: West Ridge MH Park Detention Pond
Grading and Drainage Plan
Engineer's Stamp dated 3-4-2011 (K9-D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 3-04-2011, the above referenced plan is approved for Grading Permit. This new detail sheet will be the sheet used for Certification. Upon completion of the project, please provide an Engineer Certification for our files.

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

Sincerely,

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

C: File

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

TIERRA WEST LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

Phone: 505-858-3100
Fax: 505-858-3100

POND VOLUME CALCULATIONS

Date: December 7, 2010

$$V = \frac{L}{2}(A1 + A2)$$

V = Volume
L = Length (Distance between sections)
A1 = Area of section 1
A2 = Area of section 2

ELV	STAGE	H (ft)	AREA		VOLUME		Q
			[ft^2]	[acres]	INC [acre-feet]	CUM [acre-feet]	[cfs]
53.69	0	0.00	12.57	0.00029	0.00000	0.000000	0.0000
55	1.31	0.14	12.57	0.00029	0.00038	0.000378	7.7949
56	2.31	1.14	12.57	0.00029	0.00029	0.000667	22.0153
57	3.31	2.14	936.52	0.02	0.01	0.0116	30.1427
58	4.31	3.14	1574.89	0.04	0.03	0.0404	36.5034
59	5.31	4.14	2269.28	0.05	0.04	0.0845	41.9095
60	6.31	5.14	3019.71	0.07	0.06	0.1452	46.6939
61	7.31	6.14	3504.36	0.08	0.07	0.2201	51.0317
62	8.31	7.14	4048.96	0.09	0.09	0.3068	55.0286
63	9.31	8.14	4653.53	0.11	0.10	0.4067	58.7542

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C = 0.6
Diameter (in)= 28 Diameter (ft)= 2.33
Area (ft^2)= 4.276
g = 32.2
H (Ft) = Depth of water above center of orifice
Q (CFS)= Flow

Weir Equation

Center of Orifice 54.86

Tierra West, LLC

October 18, 1999

Ms. Susan M. Calongne, P.E.
Albuquerque Public Works Dept.
P.O. Box 1293
Albuquerque, New Mexico 87103

RE: Final Certification of Drainage
Temporary Certification of Drainage for Certificate of Occupancy
West Ridge Mobile Home Park
Zone Atlas/Drainage File: K-9/D-6
3901 Volcano NE

Dear Susan:

Enclosed please find one copy of the as-built Grading and Drainage Plan and information sheet for the West Ridge Mobile Home Park. Also enclosed are the detailed as-builts for the Community Center. Paving improvements for the site are complete and the outfall is in place and functional. The detention ponds are in place and functional. Installation of the underground utilities is also complete and all work is in substantial compliance with the approved plans. Construction of the Community Center is 95% complete.

As-built grading information was supplied by Community Sciences and Precision Surveys. We are, therefore, requesting 60-day temporary Certification of Drainage for the site for Certificate of Occupancy while you review the project. We will request the Release of Financial Guarantees when the project Letter of Map Revision is granted.

Should you have any questions, please do not hesitate to contact our office.

Sincerely,

Ronald R. Bohannan, P. E.

Enclosure

cc: Fred Seeley

RECEIVED
OCT 22 1999
HYDROLOGY SECTION

JN: 960073
RRB/rw

960073:H2oFinal

4421 McLeod Rd. NE, Suite D • Albuquerque, NM 87109 • (505) 883-7592
fax (505) 883-7034 • e-mail: twdms@aol

WEST RIDGE MOBILE HOME PARK JN: 960073

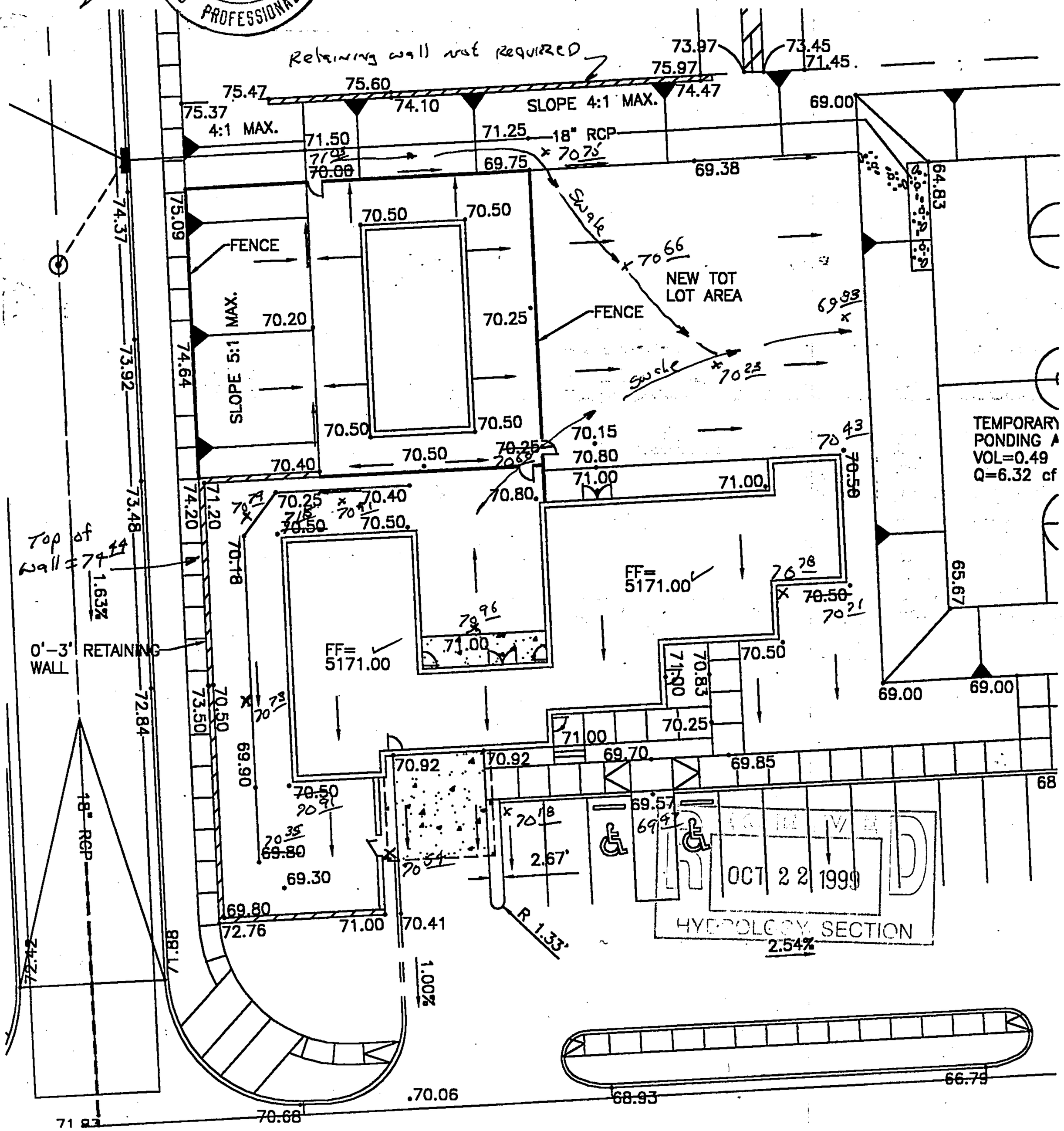
960073
Drainage.

I certify that the grades shown on the plans have been built in substantial compliance with approved grading and drainage plan dated 1-9-98. Survey information was supplied by Precision Surveys in accordance with normal surveying practices.

RONALD RAY BOHANNAN NEW MEXICO 7868 REGISTERED PROFESSIONAL ENGINEER

10/22/99

Ronald R. Bohannan #7868



Tierra West, LLC

November 19, 1999

Ms. Laura D. Bittner
Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304

Re: West Ridge LOMR (Case No. 00-06-089P)

Dear Ms. Bittner:

In your letter, dated November 1, 1999, you requested evidence that the downstream depth was less than one foot. I have provided grading plans for the mobile home park and the subdivision that are downstream of the retention pond. The pond cuts off all upstream flows entering the downstream properties.

West Ridge Mobile Home Park has several temporary retention ponds located on-site. These ponds are temporary until the City of Albuquerque completes a proposed 66" storm drain system to Volcano Road. Until that time, the project retains all developed flows on-site. When the proposed storm drain system is installed the temporary ponds will be removed and the lots developed.

There is a storm drain system within West Ridge that captures the developed flows and conveys them to the on-site retention ponds. The drainage from each lot flows to the front of the lot and enters the streets. The streets then convey the water to the storm drain system and eventually to the retention ponds. There are no areas within the mobile home park, excepting the retention ponds, where the water reaches a depth of one foot. The curb height is 4" to 8" within the streets and does not allow the water to reach a depth of one foot.

Avalon Subdivision is located east of West Ridge and has a similar drainage management plan. All the lots drain to the street which conveys the flows to a new storm drain system. The storm drain has an outfall in a temporary retention pond located in the southeast corner of the site. When the City of Albuquerque completes the proposed storm drain system in the area the retention pond will be removed and a small detention pond will remain. There is no area, except the retention pond, where the depth of flow reaches greater than one foot.

If you have any questions or comments regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, P.E.

Enclosures

cc: Fred Seeley
Bo Johnson

JN: 960073
scl

960073: 9673-fema-review.ltr.wpd

4421 McLeod Rd. NE, Suite D • Albuquerque, NM 87109 • (505) 883-7592
fax (505) 883-7034 • e-mail: twdms@aol

LETTER OF TRANSMITTAL

Tierra West LLC

(505) 883-7592 FAX: (505) 883-7034

4421 McLeod Road NE Suite D, Albuquerque, NM 87109

DATE: 11-19-99	JOB NO: 960073
ATTENTION: Susan Calongne	
RE: West Ridge Mobile Home Park LOMR	

TO Plaza del Sol

WE ARE SENDING YOU [X] Attached [ ] Under Separate cover via _____ the following items:

[ ] Shop drawings [X] Prints [ ] Plans [ ] Samples [ ] Specification

[ ] Copy of letter [ ] Change order [ ] Disk

COPIES	DATED	NO.	DESCRIPTION
1			Grading and Drainage Plan for West Ridge
1			Grading and Drainage Plan for Avalon
1			Letter

THESE ARE TRANSMITTED as checked below:

[ ] For approval [ ] Approved as submitted [ ] FOR SIGNATURE(S)

[X] For your use [ ] Approved as noted [ ] _____

[X] As requested [ ] Returned for corrections

[ ] For review & comments [ ] For Payment

[ ] FOR BIDS DUE _____ 19 ___ [ ] PRINTS RETURNED AFTER LOAN TO US

REMARKS

RECEIVED
NOV 19 1999
HYDROLOGY SECTION

COPY TO

RECEIVED BY SIGNED Sara Lavy

If enclosures are not as noted, kindly notify us at once

K9/D006 593081

File

#2

(NO PUBLIC EASEMENT)

DRAINAGE COVENANT

This Drainage Covenant, between **West Ridge MHP LP** ("Owner"), whose address is **3511 Carlisle NE Albuquerque, NM 87110**, and the City of Albuquerque, New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. Owner is the owner of certain real property described as: **West Ridge Mobile Home Park, Recorded December 15, 1998, Book 98C, page 350** in Bernalillo County, New Mexico (the "Property"). (Give legal description and filing information.)

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain Drainage Facilities on the Property, and the parties wish to enter into this Agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standard plans and specifications approved by the City pursuant to Drainage File No. **K9/D6**:
Private Detention Pond

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection, maintenance or repair of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility within 30 days ("Deadline") of receipt of the Notice, as provided in Section 11, and the Owner will comply promptly with the requirements of the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

Doc# 2008001771
01/07/2008 10:35 AM Page: 1 of 6
CNVY R:$19.00 M. Toulouse, Bernalillo County

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. Owner agrees to indemnify and save the City, its officials, agents and employees harmless from all claims, actions, suits and proceedings arising out of or resulting from the Owner's negligent maintenance, construction, repair or use of the Drainage Facility. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

9. Cancellation of Agreement and Release of Covenant. This Agreement may be released if the Drainage Facility is no longer required for the protection of the public health, safety and welfare by the City filing "Notice of Release" with the Bernalillo County Clerk. The Notice of Release must be signed by the City's Chief Administrative Officer, or his designee, and the approval of the City Hydrologist must be endorsed thereon.

10. Assessment. Nothing in this agreement shall be construed to relieve the Owner, his heirs, assigns, and successors from an assessment against Owner's Property for improvements to the property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

11. Notice. For purposes of given formal written notice to the Owner, Owner's address is:

West Ridge MHP LP
3511 Carlisle NE
Albuquerque, NM 87110

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within three days after the notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by given written notice of the change by Certified Mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico, 87103.

12. Term. This Agreement shall continue until terminated by the City pursuant to Section 9 above.

13. Binding on Owner's Property. The covenants and obligations of the Owner said forth herein shall be binding on Owner, its heirs, personal representatives, assigns and successors and on Owner's Property and shall constitute covenants running the Owner's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understanding, oral or written, whether previous to the execution hereof or contemporaneous herewith regarding this subject matter.

15. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning of construction of any of its provisions.

CITY OF ALBUQUERQUE:

By: _____

Dated: _____

REVIEWED BY:

City Engineer

1-2-08

OWNER: West Ridge MHP LP

By: Fred N. Seeley
Name: **Fred N. Seeley**
Its: **Managing General Partner**
Dated: 12/28/07

CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on January 7, 2008, by ~~James Lewis, Chief Administrative Officer~~ Richard Dourte, City Engineer for the City of Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.

Notary Public

My Commission Expires:
October 7, 2008

OWNER'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on December 28, 2007, by **Fred N. Seeley**, **Managing General Partner**, on behalf of **West Ridge MHP LP**.

My Commission Expires:
March 6, 2010

Notary Public Keli D. Krueger

OFFICIAL SEAL
KELI D. KRUEGER
NOTARY PUBLIC - STATE OF NEW MEXICO
My Commission Expires: March 6, 2010

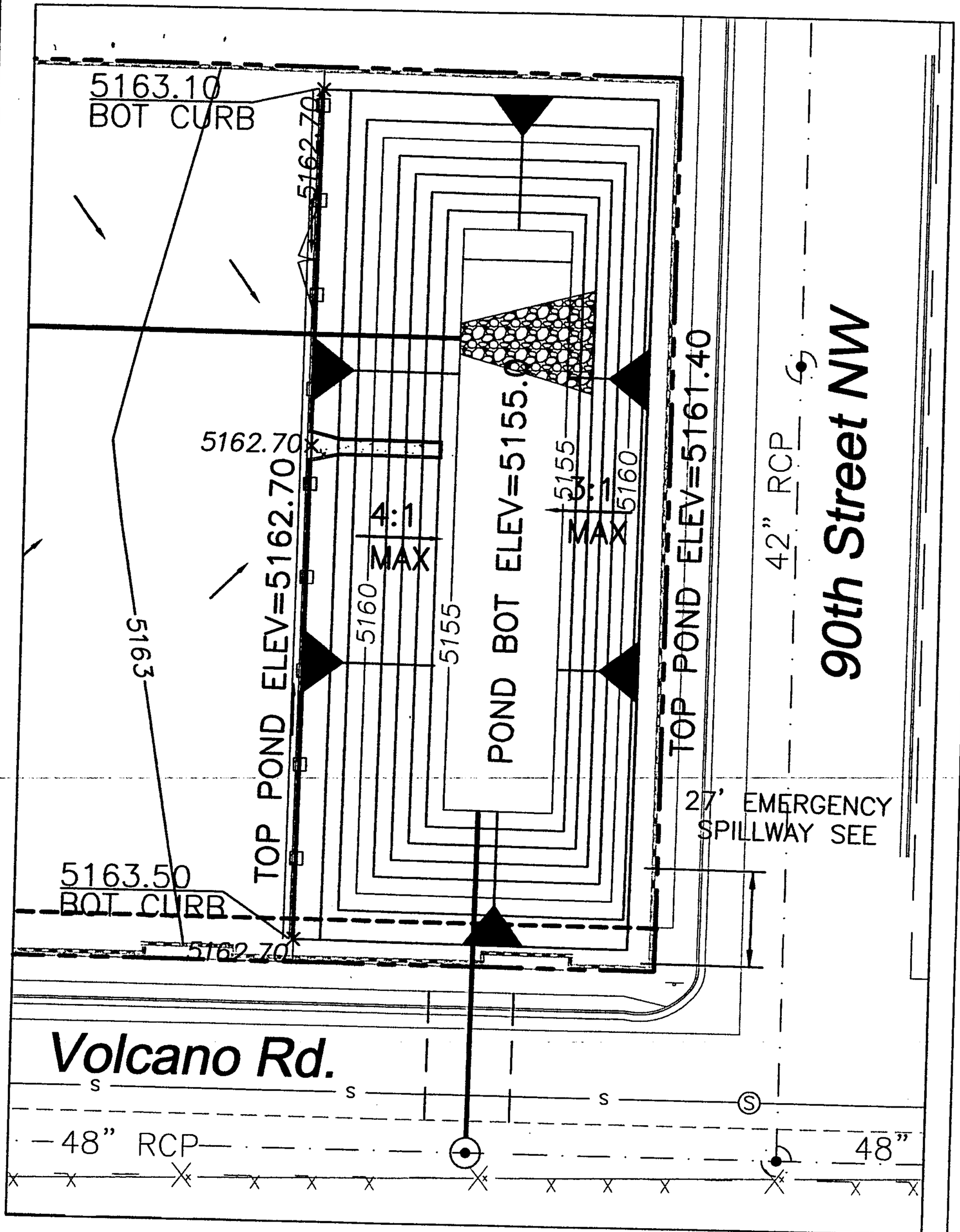
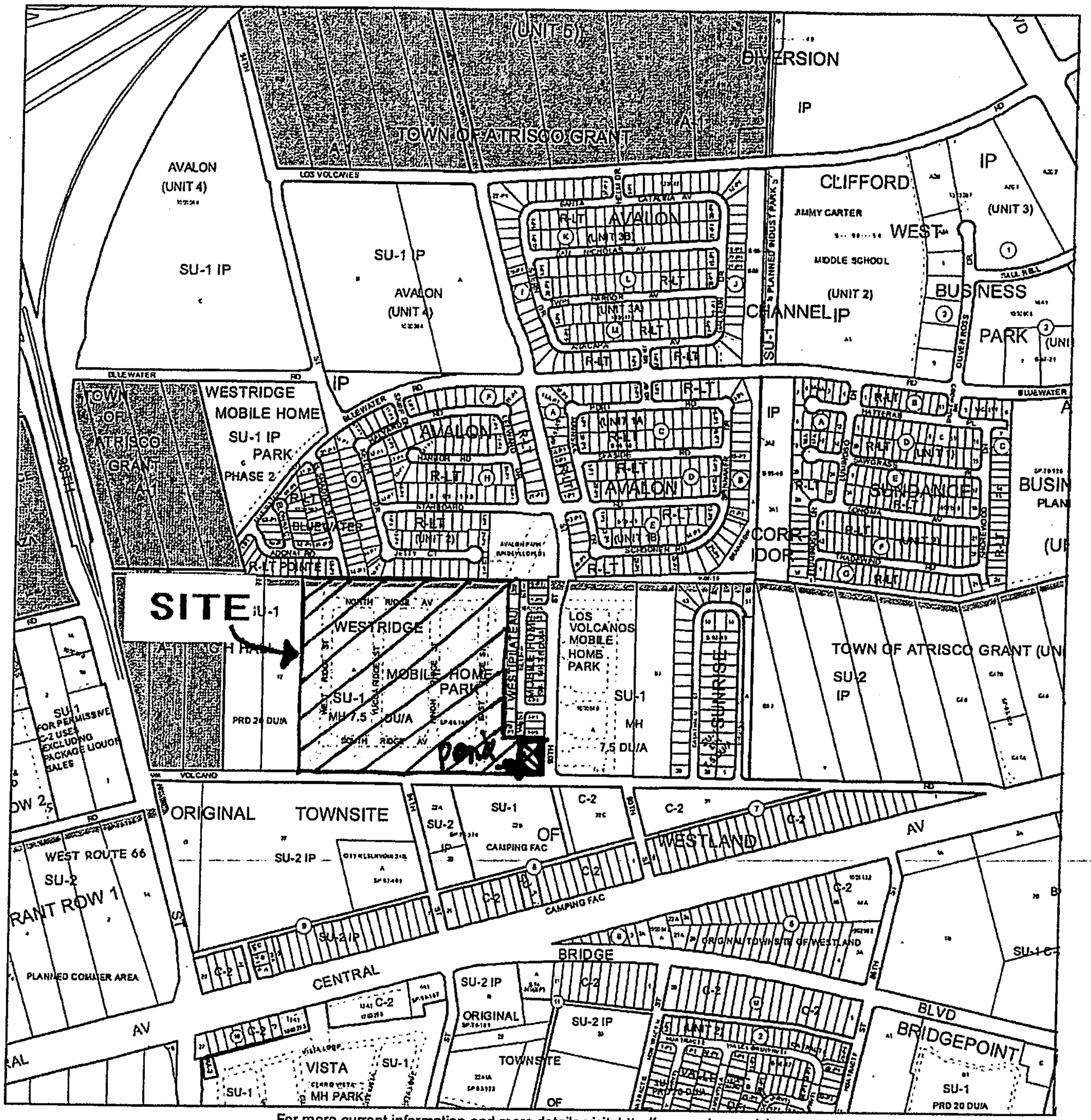

5163.10
BOT CURB
5162.70
5162.70
5162.70
ELEV=5162.70
TOP POND
4:1
MAX
5160
5155
POND BOT ELEV=5155.00
5155
3:1
MAX
5160
TOP POND ELEV=5161.40
5163
42" RCP
90th Street NW
27' EMERGENCY
SPILLWAY SEE
5163.50
BOT CURB
5162.70
Volcano Rd.
S
S
S
S
48" RCP
48"

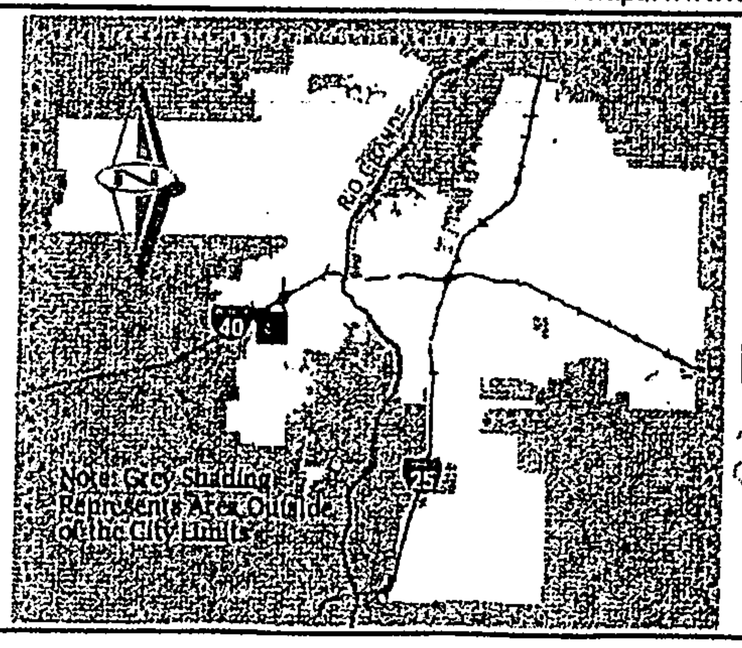
Exhibit A



For more current information and more details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 5/1/2006



Zone Atlas Page:

K-09-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

0 — 750 — 1,500 Feet

CITY OF ALBUQUERQUE

May 1, 2013

Ronald R. Bohannan, P.E.
Tierra West, LLC.
5571 Midway Park Pl NE
Albuquerque, NM 87109

Re: West Ridge MH Park
Grading and Drainage Plan
Engineer's Stamp date 04-15-2013 (K-09/D006)

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 04-22-13, the above referenced plan can not be approved for Grading Permit until the following comments are addressed.

- An emergency overflow needs to be added.
- Label existing contours.

If you have any questions, you can contact me at 924-3695 or Rudy Rael at 924-3977.

Sincerely,

Shahab Biazar, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

RR/SB
C: Email

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

RAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

RECEIVED APR 17 2013 LAND DEVELOPMENT SECTION

Follow process

Project Title: West Ridge Mobile Home Park City Drainage #: K09D006.

DRB#: EPC#: 100248 Work Order#:

Legal Description: Tract A, West Ridge Mobile Home Park

City Address: Volcano Rd. NW Between 98th Street and 90th Street

Engineering Firm: Tierra West, LLC Contact: Ronald R. Bohannan

Address: 5571 Midway Park Place, NE Albuquerqu, NM 87109

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: rrb@tierrawestllc.com

Owner: Western Security Real Estate Contact: Fred Seeley

Address: P.O. Box 65598 Albuquerque, NM 87193

Phone#: 505-321-6336 Fax#: 505-888-1415 E-mail: fnseeley@comcast.net

Architect: Contact:

Address:

Phone#: Fax#: E-mail:

Surveyor: Precision Surveys, Inc. Contact: Larry Medrano

Address: P.O. Box 90636 Albuquerque, NM 87199

Phone#: 505-856-5700 Fax#: 505-856-7900 E-mail: Larry@presurv.com

Contractor: Contact:

Address:

Phone#: Fax#: E-mail:

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
X DRAINAGE PLAN 1st SUBMITTAL
___ DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
___ GRADING PLAN
X EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
___ GRADING PERMIT APPROVAL ___ SO-19 APPROVAL
___ PAVING PERMIT APPROVAL ___ ESC PERMIT APPROVAL
___ WORK ORDER APPROVAL ___ ESC CERT. ACCEPTANCE
___ GRADING CERTIFICATION ___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes ___ No ___ Copy Provided

DATE SUBMITTED: 4·17·2013 By:

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

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gaw

TIERRA WEST, LLC

5571 Midway Park Place NE
(505) 858-3100 Fax (505) 858-1118
tierrawestllc.com
Albuquerque, NM 87109
1-800-245-3102

April 17, 2013

Curtis Cherne, P.E.
Section Manager, City Hydrology
City of Albuquerque
Plaza Del Sol
600 N. Second Street NW
Albuquerque, NM 87102

RE: WEST RIDGE MOBILE HOME PARK
REVISED DETENTION POND LOCATION (K9-D006)

Dear Mr. Cherne:

The purpose of this addendum is to modify the approved grading and drainage plan dated December 10, 2010 for the proposed West Ridge Mobile Home Park permanent detention pond as well as update the approved drainage report titled "West Ridge Mobile Home Park Permanent Detention Pond" dated December 10, 2010. To date no improvements have been made to the temporary retention pond constructed with West Ridge Mobile Home Park.

Tierra West proposes to modify the design of the permanent detention pond to accommodate the construction of storage units and RV parking. To provide room for these changes, the pond size was modified to allow the property owner to reclaim as much usable land as possible. AHYMO analysis of the proposed pond was conducted to show that the proposed pond will handle the 100-year flood event without over topping while maintaining the allowable discharge of less than 56.31 cfs. Based on the updated AHYMO analysis the 100-year water service elevation for the revised pond is 5163.88 feet and a peak discharge of 56.17 cfs.

On behalf of the owner, Tierra West will submit a CLOMR once this revision is approved by City Hydrology. Attached are copies of the revised pond volume calculations, AHYMO inputs and outputs, analysis of new storm sewer and the revised grading and drainage plan.

If you have any questions or need additional information regarding this matter, please do not hesitate to contact me or Jon Niski.

Sincerely,

Ronald R. Bohannan, P.E.

Enclosure/s

cc: Fred Seeley – Western Security Real Estate, Inc.

JN: 27031
RRB/jdn

Z:\2007\27031\Correspondence\27031Curtis Cherne Drainage Letter 04-09-13.doc

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APR 22 2013
LAND DEVELOPMENT SECTION

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                                        PARTIAL HYDROGRAPH   100.70

        RUNOFF VOLUME =     1.55651 INCHES     =       0.5680 ACRE-FEET
        PEAK DISCHARGE RATE =      12.62 CFS  AT   1.645 HOURS   BASIN AREA =
0.0068 SQ. MI.


    *
    * BASIN 8
    *
    COMPUTE NM HYD       ID=9 HYD NO=100.8 AREA=0.002367 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

        K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   3.1142    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 1.8700
        AREA =     0.001420 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530


        K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
        UNIT PEAK =   1.3991    CFS   UNIT VOLUME =   0.9898       B =   354.66
 P60 = 1.8700
        AREA =     0.000947 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=9 CODE=1

                                        PARTIAL HYDROGRAPH   100.80


        RUNOFF VOLUME =     1.55651 INCHES     =       0.1965 ACRE-FEET
        PEAK DISCHARGE RATE =       4.38 CFS  AT   1.645 HOURS   BASIN AREA =
0.0024 SQ. MI.


    *
    *
    ADD HYD              ID=10 HYD NO=100.9 ID I=2 ID II=3
    *
    ADD HYD              ID=11 HYD NO=100.10 ID I=10 ID II=4
    *
    ADD HYD              ID=12 HYD NO=100.11 ID I=11 ID II=5
    *
    ADD HYD              ID=13 HYD NO=100.12 ID I=12 ID II=6
    *
    ADD HYD              ID=14 HYD NO=100.13 ID I=13 ID II=7
    *
    ADD HYD              ID=15 HYD NO=100.14 ID I=14 ID II=8
    *
    ADD HYD              ID=16 HYD NO=100.15 ID I=15 ID II=9
    *
```

```
*****************************************************************
*                  WEST RIDGE MOBILE HOME PARK                  *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
START                   TIME=0.0
*
*
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                        RAIN DAY=2.66 IN DT=0.02253 HR
*
* BASIN 2
*
COMPUTE NM HYD          ID=2 HYD NO=100.2 AREA=0.008019 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
*
* BASIN 3
*
COMPUTE NM HYD          ID=3 HYD NO=100.3 AREA=0.004474 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=3 CODE=1
*
* BASIN 4
*
COMPUTE NM HYD          ID=4 HYD NO=100.4 AREA=0.007330 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=4 CODE=1
*
* BASIN 5A
*
COMPUTE NM HYD          ID=5 HYD NO=100.5A AREA=0.005505 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=5 CODE=1
*
* BASIN 5B
*
COMPUTE NM HYD          ID=6 HYD NO=100.5B AREA=0.001121 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=6 CODE=1
*
* BASIN 6
*
COMPUTE NM HYD          ID=7 HYD NO=100.6 AREA=0.007264 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=7 CODE=1
*
* BASIN 7
*
COMPUTE NM HYD          ID=8 HYD NO=100.7 AREA=0.006842 SQ MI
                        PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD               ID=8 CODE=1
*
* BASIN 8
```

```
*
COMPUTE NM HYD        ID=9 HYD NO=100.8 AREA=0.002367 SQ MI
                      PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                      TP=-0.24 HR MASS RAINFALL=-1
PRINT HYD             ID=9 CODE=1
*
*
ADD HYD               ID=10 HYD NO=100.9 ID I=2 ID II=3
*
ADD HYD               ID=11 HYD NO=100.10 ID I=10 ID II=4
*
ADD HYD               ID=12 HYD NO=100.11 ID I=11 ID II=5
*
ADD HYD               ID=13 HYD NO=100.12 ID I=12 ID II=6
*
ADD HYD               ID=14 HYD NO=100.13 ID I=13 ID II=7
*
ADD HYD               ID=15 HYD NO=100.14 ID I=14 ID II=8
*
ADD HYD               ID=16 HYD NO=100.15 ID I=15 ID II=9
*
PRINT HYD             ID=16 CODE=1
*
ROUTE RESERVOIR       ID=17 HYD NO=200 INFLOW ID=16 CODE=24
                      OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                          0.0000            0.0000          5155.00
                         18.5761            0.0260          5157.00
                         34.1031            0.0910          5159.00
                         39.6483            0.1526          5160.00
                         44.5080            0.2337          5161.00
                         48.8870            0.3343          5162.00
                         52.9047            0.4543          5163.00
                         56.6382            0.5938          5164.00

PRINT HYD             ID=17 CODE=1

*
FINISH
```

```
        AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
             RUN DATE (MON/DAY/YR) = 12/11/2012
             START TIME (HR:MIN:SEC) = 09:21:37     USER NO.=
AHYMO_Temp_User:20122010
             INPUT FILE =
Z:\2007\27031\Reports\Drainage\AHYMO\27031-Pond_12-11-2012.txt

    ***************************************************************
    *                  WEST RIDGE MOBILE HOME PARK                *
    ***************************************************************
    *       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)     *
    ***************************************************************
    *
    START                TIME=0.0
    *
    *
    RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                         RAIN DAY=2.66 IN DT=0.02253 HR

                    6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                    DT =   0.022530 HOURS       END TIME =     5.992980 HOURS
                      0.0000  0.0010  0.0020  0.0030  0.0040  0.0051  0.0062
                      0.0073  0.0085  0.0097  0.0109  0.0122  0.0136  0.0150
                      0.0164  0.0181  0.0211  0.0241  0.0271  0.0303  0.0337
                      0.0371  0.0405  0.0442  0.0479  0.0516  0.0553  0.0592
                      0.0631  0.0670  0.0710  0.0750  0.0791  0.0832  0.0877
                      0.0923  0.0969  0.1014  0.1067  0.1119  0.1171  0.1245
                      0.1367  0.1489  0.1610  0.1758  0.1921  0.2084  0.2248
                      0.2471  0.2699  0.2928  0.3181  0.3524  0.3867  0.4210
                      0.4682  0.5274  0.5867  0.6459  0.7859  0.9436  1.1014
                      1.2506  1.3381  1.4255  1.5130  1.5821  1.6260  1.6700
                      1.7139  1.7461  1.7737  1.8014  1.8289  1.8481  1.8673
                      1.8865  1.9040  1.9180  1.9321  1.9461  1.9580  1.9686
                      1.9793  1.9899  1.9952  2.0001  2.0050  2.0097  2.0140
                      2.0184  2.0227  2.0266  2.0301  2.0337  2.0372  2.0405
                      2.0438  2.0470  2.0503  2.0534  2.0565  2.0596  2.0621
                      2.0636  2.0651  2.0666  2.0681  2.0695  2.0710  2.0725
                      2.0738  2.0752  2.0765  2.0779  2.0792  2.0805  2.0818
                      2.0831  2.0844  2.0856  2.0869  2.0881  2.0893  2.0905
                      2.0917  2.0929  2.0940  2.0952  2.0963  2.0975  2.0986
                      2.0997  2.1008  2.1019  2.1029  2.1040  2.1051  2.1061
                      2.1071  2.1082  2.1092  2.1102  2.1112  2.1122  2.1132
                      2.1141  2.1151  2.1161  2.1170  2.1179  2.1189  2.1198
                      2.1207  2.1217  2.1226  2.1235  2.1244  2.1253  2.1262
                      2.1271  2.1279  2.1288  2.1297  2.1306  2.1314  2.1323
                      2.1331  2.1340  2.1348  2.1357  2.1365  2.1373  2.1382
                      2.1390  2.1398  2.1406  2.1414  2.1422  2.1430  2.1438
                      2.1446  2.1454  2.1462  2.1470  2.1477  2.1485  2.1493
                      2.1500  2.1508  2.1516  2.1523  2.1531  2.1538  2.1545
                      2.1553  2.1560  2.1567  2.1575  2.1582  2.1589  2.1596
                      2.1604  2.1611  2.1618  2.1625  2.1632  2.1639  2.1646
                      2.1653  2.1660  2.1666  2.1673  2.1680  2.1687  2.1694
                      2.1700  2.1707  2.1714  2.1720  2.1727  2.1733  2.1740
                      2.1746  2.1753  2.1759  2.1766  2.1772  2.1779  2.1785
                      2.1791  2.1798  2.1804  2.1810  2.1816  2.1823  2.1829
                      2.1835  2.1841  2.1847  2.1853  2.1859  2.1865  2.1871
                      2.1877  2.1883  2.1889  2.1895  2.1901  2.1907  2.1913
                      2.1919  2.1925  2.1930  2.1936  2.1942  2.1948  2.1953
                      2.1959  2.1965  2.1970  2.1976  2.1982  2.1987  2.1993
                      2.2000
```

```
    *
    * BASIN 2
    *
    COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.008019 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

         K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   10.551    CFS   UNIT VOLUME =   0.9989       B =   526.28
 P60 = 1.8700
         AREA =     0.004811 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530


         K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
         UNIT PEAK =    4.7401    CFS   UNIT VOLUME =   0.9970       B =   354.66
 P60 = 1.8700
         AREA =     0.003208 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=2 CODE=1

                                          PARTIAL HYDROGRAPH   100.20


        RUNOFF VOLUME =     1.55651 INCHES     =       0.6657 ACRE-FEET
        PEAK DISCHARGE RATE =      14.79 CFS  AT   1.645 HOURS   BASIN AREA =
0.0080 SQ. MI.


    *
    * BASIN 3
    *
    COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.004474 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

         K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =    5.8864    CFS   UNIT VOLUME =   0.9979       B =   526.28
 P60 = 1.8700
         AREA =     0.002684 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530


         K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
         UNIT PEAK =    2.6446    CFS   UNIT VOLUME =   0.9946       B =   354.66
 P60 = 1.8700
         AREA =     0.001790 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530
```

```
    PRINT HYD            ID=3 CODE=1

                                          PARTIAL HYDROGRAPH   100.30

        RUNOFF VOLUME =     1.55651 INCHES     =       0.3714 ACRE-FEET
        PEAK DISCHARGE RATE =       8.26 CFS  AT   1.645 HOURS   BASIN AREA =
0.0045 SQ. MI.

    *
    * BASIN 4
    *
    COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.007330 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

        K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   9.6440    CFS   UNIT VOLUME =   0.9988       B =   526.28
 P60 = 1.8700
        AREA =     0.004398 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530


        K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
        UNIT PEAK =   4.3328    CFS   UNIT VOLUME =   0.9967       B =   354.66
 P60 = 1.8700
        AREA =     0.002932 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=4 CODE=1

                                          PARTIAL HYDROGRAPH   100.40

        RUNOFF VOLUME =     1.55651 INCHES     =       0.6085 ACRE-FEET
        PEAK DISCHARGE RATE =      13.52 CFS  AT   1.645 HOURS   BASIN AREA =
0.0073 SQ. MI.


    *
    * BASIN 5A
    *
    COMPUTE NM HYD       ID=5 HYD NO=100.5A AREA=0.005505 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

        K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   7.2429    CFS   UNIT VOLUME =   0.9983       B =   526.28
 P60 = 1.8700
        AREA =     0.003303 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
```

```
0.022530

        K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
        UNIT PEAK =   3.2540    CFS   UNIT VOLUME =   0.9956       B =   354.66
 P60 = 1.8700
        AREA =     0.002202 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=5 CODE=1

                                                HYDROGRAPH FROM AREA 100.5A


        RUNOFF VOLUME =     1.55651 INCHES     =       0.4570 ACRE-FEET
        PEAK DISCHARGE RATE =      10.16 CFS  AT   1.645 HOURS   BASIN AREA =
0.0055 SQ. MI.


    *
    * BASIN 5B
    *
    COMPUTE NM HYD       ID=6 HYD NO=100.5B AREA=0.001121 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

        K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   1.4749    CFS   UNIT VOLUME =   0.9914       B =   526.28
 P60 = 1.8700
        AREA =     0.000673 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530


        K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
        UNIT PEAK =  0.66263    CFS   UNIT VOLUME =   0.9786       B =   354.66
 P60 = 1.8700
        AREA =     0.000448 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=6 CODE=1

                                                HYDROGRAPH FROM AREA 100.5B


        RUNOFF VOLUME =     1.55651 INCHES     =       0.0931 ACRE-FEET
        PEAK DISCHARGE RATE =       2.09 CFS  AT   1.645 HOURS   BASIN AREA =
0.0011 SQ. MI.


    *
```

```
    * BASIN 6
    *
    COMPUTE NM HYD       ID=7 HYD NO=100.6 AREA=0.007264 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

         K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   9.5572    CFS   UNIT VOLUME =   0.9988       B =   526.28
 P60 = 1.8700
         AREA =     0.004358 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530


         K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
         UNIT PEAK =   4.2938    CFS   UNIT VOLUME =   0.9967       B =   354.66
 P60 = 1.8700
         AREA =     0.002906 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=7 CODE=1

                                        PARTIAL HYDROGRAPH   100.60


        RUNOFF VOLUME =     1.55651 INCHES     =       0.6030 ACRE-FEET
        PEAK DISCHARGE RATE =      13.40 CFS  AT   1.645 HOURS   BASIN AREA =
0.0073 SQ. MI.


    *
    * BASIN 7
    *
    COMPUTE NM HYD       ID=8 HYD NO=100.7 AREA=0.006842 SQ MI
                         PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
                         TP=-0.24 HR MASS RAINFALL=-1

         K =  0.130800HR    TP =  0.240000HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   9.0019    CFS   UNIT VOLUME =   0.9987       B =   526.28
 P60 = 1.8700
         AREA =     0.004105 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

         K =  0.213226HR    TP =  0.240000HR    K/TP RATIO =  0.888442     SHAPE
CONSTANT, N =  3.992344
         UNIT PEAK =   4.0444    CFS   UNIT VOLUME =   0.9966       B =   354.66
 P60 = 1.8700
         AREA =     0.002737 SQ MI    IA =   0.42500 INCHES    INF =   1.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.022530

    PRINT HYD            ID=8 CODE=1
```

```
PRINT HYD              ID=16 CODE=1

                                        PARTIAL HYDROGRAPH   100.15

      RUNOFF VOLUME =      1.55642 INCHES      =        3.5629 ACRE-FEET
      PEAK DISCHARGE RATE =       79.24 CFS  AT   1.645 HOURS   BASIN AREA =
0.0429 SQ. MI.


*
ROUTE RESERVOIR      ID=17 HYD NO=200 INFLOW ID=16 CODE=24
                     OUTFLOW(CFS)       STORAGE(AC-FT)  ELEVATION(FT)
                         0.0000              0.0000          5155.00
                        18.5761              0.0260          5157.00
                        34.1031              0.0910          5159.00
                        39.6483              0.1526          5160.00
                        44.5080              0.2337          5161.00
                        48.8870              0.3343          5162.00
                        52.9047              0.4543          5163.00
                        56.6382              0.5938          5164.00


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

   TIME       INFLOW     ELEV       VOLUME     OUTFLOW
   (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

    0.00        0.00    5155.00      0.000       0.00
    0.54        0.00    5155.00      0.000       0.00
    1.08        2.03    5155.18      0.002       1.65
    1.62       78.98    5162.08      0.344      49.21
    2.16       13.66    5157.58      0.045      23.05
    2.70        3.44    5155.39      0.005       3.59
    3.24        1.11    5155.12      0.002       1.15
    3.79        0.39    5155.04      0.001       0.40
    4.33        0.23    5155.02      0.000       0.23
    4.87        0.21    5155.02      0.000       0.21
    5.41        0.27    5155.03      0.000       0.27
    5.95        0.35    5155.04      0.000       0.35
    6.49        0.06    5155.01      0.000       0.06
    7.03        0.01    5155.00      0.000       0.01
 PEAK DISCHARGE =        56.170 CFS - PEAK OCCURS AT HOUR    1.78
 MAXIMUM WATER SURFACE ELEVATION =     5163.875
 MAXIMUM STORAGE =         0.5763 AC-FT      INCREMENTAL TIME=    0.022530HRS

PRINT HYD                ID=17 CODE=1

                                        PARTIAL HYDROGRAPH   200.00

      RUNOFF VOLUME =      1.55642 INCHES      =        3.5629 ACRE-FEET
      PEAK DISCHARGE RATE =       56.17 CFS  AT   1.780 HOURS   BASIN AREA =
0.0429 SQ. MI.


*
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 09:21:37
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =12/11/2012
INPUT FILE = Z:\2007\27031\Reports\Drainage\AHYMO\27031-Pond_12-11-2012.txt USER NO.= AHYMO_Temp_User:20122010

PAGE = 1

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
START									
TIME= 0.00									
RAINFALL TYPE= 1 NOAA 14									
RAIN6= 2.200									
COMPUTE NM HYD	100.20	-	2	0.00802	14.79	0.666	1.55651	1.645	2.882
PER IMP= 60.00									
COMPUTE NM HYD	100.30	-	3	0.00447	8.26	0.371	1.55651	1.645	2.886
PER IMP= 60.00									
COMPUTE NM HYD	100.40	-	4	0.00733	13.52	0.608	1.55651	1.645	2.883
PER IMP= 60.00									
COMPUTE NM HYD	100.5A	-	5	0.00551	10.16	0.457	1.55651	1.645	2.885
PER IMP= 60.00									
COMPUTE NM HYD	100.5B	-	6	0.00112	2.09	0.093	1.55651	1.645	2.913
PER IMP= 60.00									
COMPUTE NM HYD	100.60	-	7	0.00726	13.40	0.603	1.55651	1.645	2.883
PER IMP= 60.00									
COMPUTE NM HYD	100.70	-	8	0.00684	12.62	0.568	1.55651	1.645	2.883
PER IMP= 60.00									
COMPUTE NM HYD	100.80	-	9	0.00237	4.38	0.196	1.55651	1.645	2.894
PER IMP= 60.00									
ADD HYD	100.90	2& 3	10	0.01249	23.06	1.037	1.55643	1.645	2.884
ADD HYD	100.10	10& 4	11	0.01982	36.58	1.646	1.55644	1.645	2.883
ADD HYD	100.11	11& 5	12	0.02533	46.74	2.102	1.55643	1.645	2.884
ADD HYD	100.12	12& 6	13	0.02645	48.83	2.196	1.55642	1.645	2.885
ADD HYD	100.13	13& 7	14	0.03371	62.24	2.798	1.55642	1.645	2.884
ADD HYD	100.14	14& 8	15	0.04056	74.86	3.366	1.55643	1.645	2.884
ADD HYD	100.15	15& 9	16	0.04292	79.24	3.563	1.55642	1.645	2.885
ROUTE RESERVOIR	200.00	16	17	0.04292	56.17	3.563	1.55642	1.780	2.045
AC-FT= 0.576									
FINISH									

VOLUME CALCULATIONS
POND

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab	=	567.00
At	=	8,194.00
Dt	=	9.00
C	=	847.44

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5155.00	0.00	0.00	0.0000
5157.00	2.00 1.910	0.0260	18.5761
5159.00	4.00	0.0910	34.1031
5160.00	5.00	0.1526	39.6483
5161.00	6.00	0.2337	44.5080
5162.00	7.00	0.3343	48.8870
5163.00	8.00	0.4543	52.9047
5164.00	9.00	0.5938	56.6382

28.4
2.5" .002'
40.4
45.2
60.6

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	27.75
Area (ft^2)=	4.200
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

$Q = 2.52\sqrt{2gH}$
64.4

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
Ex MH1 to New MH	30	1.58	4.91	0.625	67.21	65.84	13.41
New MH to Pond	30	1.58	4.91	0.625	67.21	65.84	13.41

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.01

Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
Channel	12	0	0.5	3.00	12.04	0.2491	2	19.25	13.40	4.47

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area

R = D/4

S = Slope

n = 0.013

VISTA DEL VALLE SUBDIVISION

ALBUQUERQUE, NEW MEXICO

DECEMBER, 1994

AHYMO DATA

RECEIVED
DEC 21 1994
HYDROLOGY DIVISION

EXISTING CONDITIONS

5-YEAR, 24 HOUR EVENT

INPUT DATA

```
START                    0.0 HRS
*************************************************************************
*       DATE:   08/18/94                                                *
*       BY:     JEFF MORTENSEN & ASSOC., INC.                           *
*               6010B MIDWAY PARK BLVD. N.E.                            *
*               ALBUQUERQUE, NM  87109                                  *
*               (505) 345-4250                                          *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,* 
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 5-YEAR, 24-HOUR EVENT             *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.05IN
                    RAIN SIX=1.25IN  RAIN DAY=1.53IN  DT=.05
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 109                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=109         DA=.234    SQ MI
                        PER A=95        B=0     C=0     D=5
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 109
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=109
                                                   II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 109 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ANY RUNOFF GREATER THAN 342 cfs WILL CROSS 98th ST. INTO BASIN 112
* SPLIT HYDROGRAPH 109 TO ACCOUNT FOR RUNOFF CROSSING 98th STREET.
DIVIDE HYD              ID=1    Q=342           ID   I=11    HYD   I=109.91
                                                ID  II=12    HYD  II=109.92
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=103         DA=.118    SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133    HRS          RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID    I=1     HYD    I=103
                                                ID   II=16    HYD   II=000
* PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'   DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=32        NSEGS=3
                  ELMIN=0   ELMAX=20   CH SLP=.059 ft/ft  FP SLP=.059 ft/ft
                  N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630
                  DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
```

```
                    0    20    300    0    330    0    630   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=4560  ft              SLP=.059  ft/ft
*
ROUTE                   ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD          ID=3    HYD=110         DA=0.015        SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133 HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD               ID=3    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=3    PER=-117        ID   I=3     HYD   I=110
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
PRINT HYD               ID=3    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 103.8 AND 110 AT 110.9                             #
*#######################################################################
ADD HYD                 ID=5    HYD=110.9       ID   I=2     ID   II=3
PRINT HYD               ID=5    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 110.9 AND 109.92 AT 110.99                         #
*#######################################################################
ADD HYD                 ID=7    HYD=110.99      ID   I=12    ID   II=5
PRINT HYD               ID=7    CODE=1
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=40        NSEGS=3
                    ELMIN=0  ELMAX=20  CH SLP=.024  ft/ft  FP SLP=.024  ft/ft
                    N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                    DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0    20    300    0    700    0   1000   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft
*
ROUTE                   ID=2    HYD=110.8       INFLOW HYD=7    DT=.05
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                     *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=112
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=1    CODE=1
*#######################################################################
```

```
* COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9                          #
*#######################################################################
ADD HYD                 ID=5    HYD=112.9       ID   I=1     ID  II=2
PRINT HYD               ID=5    CODE=1
*
COMPUTE TRAVEL TIME     ID=9    REACH=1         NO VS=1
                        L=1700  ft      SLP=.024        ft/ft
*
ROUTE                   ID=9    HYD=112.8       INFLOW HYD=5    DT=.05
PRINT HYD               ID=9    CODE=1

************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                    *
************************************************************************
COMPUTE NM HYD          ID=10   HYD=112.1         DA=.057     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=10   CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=10   PER=-117     ID   I=10    HYD   I=112.1
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=10   CODE=1
*
COMPUTE TRAVEL TIME     ID=13   REACH=1         NO VS=1
                        L=1300  ft      SLP=.024        ft/ft
*
ROUTE                   ID=13   HYD=112.7       INFLOW HYD=10   DT=.05
PRINT HYD               ID=13   CODE=1

************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112c                                    *
************************************************************************
COMPUTE NM HYD          ID=11   HYD=112.2         DA=.053     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD               ID=11   CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=11   PER=-117     ID   I=11    HYD   I=112.2
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
PRINT HYD               ID=11   CODE=1
*
* COMPUTE AND PRINT TOTAL RUNOFF THROUGH SITE
*
ADD HYD                 ID=14   HYD=112.5   ID I=11     ID II=13
ADD HYD                 ID=15   HYD=112.5   ID I=9      ID II=14
PRINT HYD               ID=15   CODE=1
FINISH
```

EXISTING CONDITIONS

5-YEAR, 24 HOUR EVENT

OUTPUT DATA

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 12/01/1994
     START TIME (HR:MIN:SEC) = 10:43:04     USER NO.= J_MORTEN.I01
     INPUT FILE = VDVXIST5.INP

START                 0.0 HRS
*************************************************************************
*      DATE:   08/18/94                                                 *
*      BY:     JEFF MORTENSEN & ASSOC., INC.                            *
*              6010B MIDWAY PARK BLVD. N.E.                             *
*              ALBUQUERQUE, NM  87109                                   *
*              (505) 345-4250                                           *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 5-YEAR, 24-HOUR EVENT             *
*************************************************************************
*2345678901234567890
RAINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.05IN
                  RAIN SIX=1.25IN  RAIN DAY=1.53IN  DT=.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =    .050000 HOURS       END TIME =    24.000000 HOURS
   .0000   .0016   .0032   .0050   .0067   .0085   .0104
   .0124   .0144   .0166   .0188   .0211   .0235   .0261
   .0288   .0317   .0347   .0379   .0414   .0452   .0492
   .0537   .0586   .0727   .1062   .1638   .2528   .3811
   .5564   .6947   .7572   .8093   .8550   .8959   .9329
   .9666   .9976  1.0261  1.0524  1.0767  1.0992  1.1044
  1.1092  1.1137  1.1179  1.1219  1.1256  1.1292  1.1326
  1.1358  1.1390  1.1420  1.1448  1.1476  1.1503  1.1529
  1.1555  1.1579  1.1603  1.1626  1.1649  1.1671  1.1693
  1.1714  1.1734  1.1754  1.1774  1.1793  1.1812  1.1831
  1.1849  1.1867  1.1884  1.1901  1.1918  1.1935  1.1951
  1.1967  1.1983  1.1999  1.2014  1.2029  1.2044  1.2059
  1.2074  1.2088  1.2102  1.2116  1.2130  1.2143  1.2157
  1.2170  1.2183  1.2196  1.2209  1.2222  1.2234  1.2247
  1.2259  1.2271  1.2283  1.2295  1.2306  1.2318  1.2330
  1.2341  1.2352  1.2363  1.2375  1.2386  1.2396  1.2407
  1.2418  1.2428  1.2439  1.2449  1.2460  1.2470  1.2480
  1.2490  1.2500  1.2512  1.2524  1.2536  1.2547  1.2559
  1.2571  1.2582  1.2594  1.2605  1.2617  1.2628  1.2640
  1.2651  1.2663  1.2674  1.2685  1.2696  1.2708  1.2719
  1.2730  1.2741  1.2752  1.2763  1.2774  1.2785  1.2796
  1.2807  1.2818  1.2829  1.2839  1.2850  1.2861  1.2871
  1.2882  1.2893  1.2903  1.2914  1.2924  1.2935  1.2945
  1.2956  1.2966  1.2976  1.2987  1.2997  1.3007  1.3018
  1.3028  1.3038  1.3048  1.3058  1.3068  1.3078  1.3088
  1.3098  1.3108  1.3118  1.3128  1.3138  1.3148  1.3158
  1.3167  1.3177  1.3187  1.3197  1.3206  1.3216  1.3226
  1.3235  1.3245  1.3254  1.3264  1.3273  1.3283  1.3292
```

1.3302	1.3311	1.3320	1.3330	1.3339	1.3348	1.3358
1.3367	1.3376	1.3385	1.3395	1.3404	1.3413	1.3422
1.3431	1.3440	1.3449	1.3458	1.3467	1.3476	1.3485
1.3494	1.3503	1.3512	1.3521	1.3529	1.3538	1.3547
1.3556	1.3564	1.3573	1.3582	1.3591	1.3599	1.3608
1.3616	1.3625	1.3634	1.3642	1.3651	1.3659	1.3668
1.3676	1.3685	1.3693	1.3701	1.3710	1.3718	1.3727
1.3735	1.3743	1.3751	1.3760	1.3768	1.3776	1.3784
1.3793	1.3801	1.3809	1.3817	1.3825	1.3833	1.3841
1.3849	1.3857	1.3866	1.3874	1.3882	1.3889	1.3897
1.3905	1.3913	1.3921	1.3929	1.3937	1.3945	1.3953
1.3960	1.3968	1.3976	1.3984	1.3992	1.3999	1.4007
1.4015	1.4022	1.4030	1.4038	1.4045	1.4053	1.4061
1.4068	1.4076	1.4083	1.4091	1.4098	1.4106	1.4113
1.4121	1.4128	1.4136	1.4143	1.4151	1.4158	1.4165
1.4173	1.4180	1.4187	1.4195	1.4202	1.4209	1.4217
1.4224	1.4231	1.4238	1.4246	1.4253	1.4260	1.4267
1.4274	1.4282	1.4289	1.4296	1.4303	1.4310	1.4317
1.4324	1.4331	1.4338	1.4345	1.4352	1.4359	1.4366
1.4373	1.4380	1.4387	1.4394	1.4401	1.4408	1.4415
1.4422	1.4429	1.4436	1.4442	1.4449	1.4456	1.4463
1.4470	1.4476	1.4483	1.4490	1.4497	1.4503	1.4510
1.4517	1.4524	1.4530	1.4537	1.4544	1.4550	1.4557
1.4563	1.4570	1.4577	1.4583	1.4590	1.4596	1.4603
1.4610	1.4616	1.4623	1.4629	1.4636	1.4642	1.4649
1.4655	1.4661	1.4668	1.4674	1.4681	1.4687	1.4694
1.4700	1.4706	1.4713	1.4719	1.4725	1.4732	1.4738
1.4744	1.4751	1.4757	1.4763	1.4769	1.4776	1.4782
1.4788	1.4794	1.4801	1.4807	1.4813	1.4819	1.4825
1.4832	1.4838	1.4844	1.4850	1.4856	1.4862	1.4868
1.4874	1.4880	1.4887	1.4893	1.4899	1.4905	1.4911
1.4917	1.4923	1.4929	1.4935	1.4941	1.4947	1.4953
1.4959	1.4965	1.4971	1.4976	1.4982	1.4988	1.4994
1.5000	1.5006	1.5012	1.5018	1.5024	1.5029	1.5035
1.5041	1.5047	1.5053	1.5059	1.5064	1.5070	1.5076
1.5082	1.5087	1.5093	1.5099	1.5105	1.5110	1.5116
1.5122	1.5127	1.5133	1.5139	1.5145	1.5150	1.5156
1.5161	1.5167	1.5173	1.5178	1.5184	1.5190	1.5195
1.5201	1.5206	1.5212	1.5218	1.5223	1.5229	1.5234
1.5240	1.5245	1.5251	1.5256	1.5262	1.5267	1.5273
1.5278	1.5284	1.5289	1.5295	1.5300		

```
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 109                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=109         DA=.234    SQ MI
                        PER A=95        B=0     C=0     D=5
                        TP=.19  HRS     RAIN=-1

K =   .124193HR    TP =   .190000HR    K/TP RATIO =   .653647     SHAPE CONSTANT, N =  5.665960
UNIT PEAK =   27.967    CFS   UNIT VOLUME =    .9997       B =   454.16      P60 = 1.0500
AREA =      .011700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .249983HR    TP =   .190000HR    K/TP RATIO =  1.315700     SHAPE CONSTANT, N =  2.727515
UNIT PEAK =   302.79    CFS   UNIT VOLUME =    .9991       B =   258.80      P60 = 1.0500
AREA =      .222300 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
```

```
* PRINT HYDROGRAPH FOR BASIN 109
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   109.00


   RUNOFF VOLUME =      .08184 INCHES     =       1.0214 ACRE-FEET
   PEAK DISCHARGE RATE =      19.12 CFS  AT   1.550 HOURS   BASIN AREA =   .2340 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=109
                                                 II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 109 (WITH BULKING)
   PRINT HYD             ID=1    CODE=1

                                PARTIAL HYDROGRAPH   109.00


   RUNOFF VOLUME =      .09575 INCHES     =       1.1950 ACRE-FEET
   PEAK DISCHARGE RATE =      22.37 CFS  AT   1.550 HOURS   BASIN AREA =   .2340 SQ. MI.


   * ANY RUNOFF GREATER THAN 342 cfs WILL CROSS 98th ST. INTO BASIN 112
   * SPLIT HYDROGRAPH 109 TO ACCOUNT FOR RUNOFF CROSSING 98th STREET.
   DIVIDE HYD            ID=1    Q=342           ID   I=11    HYD   I=109.91
                                                 ID  II=12    HYD  II=109.92
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                      *
*************************************************************************
COMPUTE NM HYD           ID=1    HYD=103         DA=.118    SQ MI
                         PER A=100       B=0     C=0     D=0
                         TP=.133    HRS          RAIN=-1

   K =   .178074HR    TP =   .133000HR    K/TP RATIO =  1.338900     SHAPE CONSTANT, N =  2.686614
   UNIT PEAK =   226.41    CFS   UNIT VOLUME =    .9970       B =   255.19      P60 = 1.0500
   AREA =      .118000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   103.00


   RUNOFF VOLUME =      .01771 INCHES     =        .1115 ACRE-FEET
   PEAK DISCHARGE RATE =       3.97 CFS  AT   1.550 HOURS   BASIN AREA =   .1180 SQ. MI.


   * ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD            ID=1    PER=-117        ID    I=1      HYD    I=103
                                                 ID   II=16     HYD   II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
   PRINT HYD             ID=1    CODE=1
```

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = .02072 INCHES = .1304 ACRE-FEET
PEAK DISCHARGE RATE = 4.65 CFS AT 1.550 HOURS BASIN AREA = .1180 SQ. MI.

* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H BOT.WIDTH=30' DEPTH=20'
COMPUTE RATING CURVE RC=1 VS NO=32 NSEGS=3
ELMIN=0 ELMAX=20 CH SLP=.059 ft/ft FP SLP=.059 ft/ft
N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	20	300	0	330	0	630	20

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	48.20	504.73	61.58
2.11	129.64	1956.63	93.16
3.16	244.32	4542.10	124.74
4.21	392.24	8461.04	156.32
5.26	573.41	13903.86	187.89
6.32	787.81	21051.38	219.47
7.37	1035.46	30076.03	251.05
8.42	1316.34	41143.06	282.63
9.47	1630.47	54411.52	314.21
10.53	1977.84	70035.09	345.79
11.58	2358.45	88162.69	377.37
12.63	2772.30	108939.00	408.95
13.68	3219.39	132504.90	440.53
14.74	3699.72	158997.90	472.11
15.79	4213.30	188552.30	503.68
16.84	4760.11	221299.50	535.26
17.89	5340.17	257368.50	566.84
18.95	5953.46	296885.60	598.42
20.00	6600.00	339975.00	630.00

*
COMPUTE TRAVEL TIME ID=2 REACH=1 NO VS=1
L=4560 ft SLP=.059 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	48.199	504.73	.1210
2.105	129.640	1956.63	.0839
3.158	244.321	4542.10	.0681
4.211	392.244	8461.04	.0587
5.263	573.407	13903.86	.0522
6.316	787.812	21051.38	.0474
7.368	1035.457	30076.03	.0436
8.421	1316.343	41143.06	.0405
9.474	1630.471	54411.52	.0380

```
                    10.526    1977.839    70035.09        .0358
                    11.579    2358.448    88162.69        .0339
                    12.632    2772.299   108939.00        .0322
                    13.684    3219.390   132504.90        .0308
                    14.737    3699.722   158997.90        .0295
                    15.789    4213.295   188552.30        .0283
                    16.842    4760.110   221299.50        .0272
                    17.895    5340.165   257368.50        .0263
                    18.947    5953.462   296885.60        .0254
                    20.000    6599.999   339975.00        .0246
*
ROUTE                    ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD                ID=2    CODE=1

                              PARTIAL HYDROGRAPH   103.80


   RUNOFF VOLUME =      .02072 INCHES     =        .1304 ACRE-FEET
   PEAK DISCHARGE RATE =      3.29 CFS  AT   1.650 HOURS   BASIN AREA =   .1180 SQ. MI.


*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD           ID=3    HYD=110         DA=0.015        SQ MI
                         PER A=100       B=0     C=0     D=0
                         TP=.133 HRS     RAIN=-1

   K =   .179550HR    TP =   .133000HR    K/TP RATIO =  1.350000     SHAPE CONSTANT, N =  2.667659
   UNIT PEAK =   28.591    CFS   UNIT VOLUME =    .9964       B =   253.50      P60 = 1.0500
   AREA =      .015000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD                ID=3    CODE=1

                              PARTIAL HYDROGRAPH   110.00


   RUNOFF VOLUME =      .01771 INCHES     =        .0142 ACRE-FEET
   PEAK DISCHARGE RATE =       .50 CFS  AT   1.550 HOURS   BASIN AREA =   .0150 SQ. MI.


   * ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD               ID=3    PER=-117        ID   I=3     HYD   I=110
                                                    ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
   PRINT HYD                ID=3    CODE=1

                              PARTIAL HYDROGRAPH   110.00


      RUNOFF VOLUME =      .02067 INCHES     =        .0165 ACRE-FEET
      PEAK DISCHARGE RATE =       .59 CFS  AT   1.550 HOURS   BASIN AREA =   .0150 SQ. MI.
```

```
*#################################################################
* COMBINE HYDROGRAPH 103.8 AND 110 AT 110.9                      #
*#################################################################
ADD HYD                ID=5    HYD=110.9      ID   I=2     ID   II=3
PRINT HYD              ID=5    CODE=1

                              PARTIAL HYDROGRAPH   110.90


   RUNOFF VOLUME =      .02071 INCHES     =        .1469 ACRE-FEET
   PEAK DISCHARGE RATE =      3.68 CFS  AT   1.650 HOURS   BASIN AREA =   .1330 SQ. MI.


*#################################################################
* COMBINE HYDROGRAPH 110.9 AND 109.92 AT 110.99                  #
*#################################################################
ADD HYD                ID=7    HYD=110.99     ID   I=12    ID   II=5
PRINT HYD              ID=7    CODE=1

                              PARTIAL HYDROGRAPH   110.99


   RUNOFF VOLUME =      .02071 INCHES     =        .1469 ACRE-FEET
   PEAK DISCHARGE RATE =      3.68 CFS  AT   1.650 HOURS   BASIN AREA =   .1330 SQ. MI.


*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=40        NSEGS=3
                  ELMIN=0  ELMAX=20  CH SLP=.024  ft/ft  FP SLP=.024  ft/ft
                  N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                  DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                    0    20    300    0    700    0   1000   20
```

RATING CURVE VALLEY SECTION 40.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	437.67	2569.83	431.58
2.11	908.59	8356.38	463.16
3.16	1412.74	16813.49	494.74
4.21	1950.14	27785.06	526.32
5.26	2520.78	41212.46	557.89
6.32	3124.65	57080.23	589.47
7.37	3761.77	75396.17	621.05
8.42	4432.13	96181.98	652.63
9.47	5135.73	119468.30	684.21
10.53	5872.58	145291.80	715.79
11.58	6642.66	173693.20	747.37
12.63	7445.98	204716.30	778.95
13.68	8282.55	238407.00	810.53
14.74	9152.35	274812.70	842.11
15.79	10055.40	313981.90	873.68
16.84	10991.69	355964.10	905.26

17.89	11961.22	400809.20	936.84
18.95	12963.99	448567.40	968.42
20.00	14000.00	499289.40	1000.00

```
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft
```

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	437.673	2569.83	.1041
2.105	908.587	8356.38	.0664
3.158	1412.742	16813.49	.0513
4.211	1950.139	27785.06	.0429
5.263	2520.776	41212.46	.0374
6.316	3124.654	57080.23	.0335
7.368	3761.772	75396.17	.0305
8.421	4432.133	96181.98	.0282
9.474	5135.733	119468.30	.0263
10.526	5872.576	145291.80	.0247
11.579	6642.659	173693.20	.0234
12.632	7445.982	204716.30	.0222
13.684	8282.547	238407.00	.0212
14.737	9152.354	274812.70	.0204
15.789	10055.400	313981.90	.0196
16.842	10991.690	355964.10	.0189
17.895	11961.220	400809.20	.0182
18.947	12963.990	448567.40	.0177
20.000	14000.000	499289.40	.0171

```
*
ROUTE                   ID=2    HYD=110.8       INFLOW HYD=7    DT=.05
PRINT HYD               ID=2    CODE=1
```

PARTIAL HYDROGRAPH 110.80

```
RUNOFF VOLUME =      .02072 INCHES     =       .1470 ACRE-FEET
PEAK DISCHARGE RATE =      3.10 CFS  AT   1.750 HOURS   BASIN AREA =   .1330 SQ. MI.
```

```
**********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                  *
**********************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1

K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   11.633    CFS   UNIT VOLUME =    .9994       B =   526.28      P60 = 1.0500
AREA =      .004200 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .228807HR    TP =   .190000HR    K/TP RATIO =  1.204249     SHAPE CONSTANT, N =  2.951631
UNIT PEAK =   55.278    CFS   UNIT VOLUME =    .9994       B =   277.85      P60 = 1.0500
AREA =      .037800 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
```

```
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


    RUNOFF VOLUME =      .18541 INCHES     =        .4153 ACRE-FEET
    PEAK DISCHARGE RATE =      8.70 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=112
                                                     ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
    PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


    RUNOFF VOLUME =      .21691 INCHES     =        .4859 ACRE-FEET
    PEAK DISCHARGE RATE =     10.18 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


    *#################################################################
    * COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9                      #
    *#################################################################
    ADD HYD                  ID=5    HYD=112.9       ID   I=1     ID  II=2
    PRINT HYD                ID=5    CODE=1

                                PARTIAL HYDROGRAPH   112.90


    RUNOFF VOLUME =      .06780 INCHES     =        .6328 ACRE-FEET
    PEAK DISCHARGE RATE =     12.12 CFS  AT   1.600 HOURS   BASIN AREA =   .1750 SQ. MI.


    *
    COMPUTE TRAVEL TIME      ID=9    REACH=1         NO VS=1
                             L=1700  ft      SLP=.024        ft/ft

                             TRAVEL TIME TABLE
                                        REACH=  1.0

                             WATER      AVERAGE     FLOW        TRAVEL
                             DEPTH      AREA        RATE        TIME
                             FEET       SQ.FT.      CFS         HRS
                               1.053     437.673    2569.83       .0804
                               2.105     908.587    8356.38       .0513
                               3.158    1412.742   16813.49       .0397
                               4.211    1950.139   27785.06       .0331
                               5.263    2520.776   41212.46       .0289
                               6.316    3124.654   57080.23       .0259
                               7.368    3761.772   75396.17       .0236
                               8.421    4432.133   96181.98       .0218
```

```
                    9.474    5135.733   119468.30       .0203
                   10.526    5872.576   145291.80       .0191
                   11.579    6642.659   173693.20       .0181
                   12.632    7445.982   204716.30       .0172
                   13.684    8282.547   238407.00       .0164
                   14.737    9152.354   274812.70       .0157
                   15.789   10055.400   313981.90       .0151
                   16.842   10991.690   355964.10       .0146
                   17.895   11961.220   400809.20       .0141
                   18.947   12963.990   448567.40       .0136
                   20.000   14000.000   499289.40       .0132
*
ROUTE                    ID=9    HYD=112.8       INFLOW HYD=5    DT=.05
PRINT HYD                ID=9    CODE=1

                                PARTIAL HYDROGRAPH   112.80


   RUNOFF VOLUME =      .06780 INCHES     =        .6328 ACRE-FEET
   PEAK DISCHARGE RATE =      10.76 CFS  AT   1.700 HOURS   BASIN AREA =   .1750 SQ. MI.


*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                     *
*************************************************************************
COMPUTE NM HYD           ID=10    HYD=112.1       DA=.057     SQ MI
                         PER A=65        B=0     C=25    D=10
                         TP=.19  HRS     RAIN=-1

   K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   15.788    CFS   UNIT VOLUME =    .9996       B =   526.28      P60 = 1.0500
   AREA =      .005700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


   K =   .228807HR    TP =   .190000HR    K/TP RATIO =  1.204249     SHAPE CONSTANT, N =  2.951631
   UNIT PEAK =   75.021    CFS   UNIT VOLUME =    .9995       B =   277.85      P60 = 1.0500
   AREA =      .051300 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=10    CODE=1

                                PARTIAL HYDROGRAPH   112.10


      RUNOFF VOLUME =      .18541 INCHES     =        .5636 ACRE-FEET
      PEAK DISCHARGE RATE =      11.81 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


   * ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD               ID=10    PER=-117     ID   I=10    HYD   I=112.1
                                                  ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
   PRINT HYD                ID=10    CODE=1
```

PARTIAL HYDROGRAPH 112.10

RUNOFF VOLUME = .21692 INCHES = .6594 ACRE-FEET
PEAK DISCHARGE RATE = 13.82 CFS AT 1.550 HOURS BASIN AREA = .0570 SQ. MI.

*
COMPUTE TRAVEL TIME ID=13 REACH=1 NO VS=1
L=1300 ft SLP=.024 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	437.673	2569.83	.0615
2.105	908.587	8356.38	.0393
3.158	1412.742	16813.49	.0303
4.211	1950.139	27785.06	.0253
5.263	2520.776	41212.46	.0221
6.316	3124.654	57080.23	.0198
7.368	3761.772	75396.17	.0180
8.421	4432.133	96181.98	.0166
9.474	5135.733	119468.30	.0155
10.526	5872.576	145291.80	.0146
11.579	6642.659	173693.20	.0138
12.632	7445.982	204716.30	.0131
13.684	8282.547	238407.00	.0125
14.737	9152.354	274812.70	.0120
15.789	10055.400	313981.90	.0116
16.842	10991.690	355964.10	.0112
17.895	11961.220	400809.20	.0108
18.947	12963.990	448567.40	.0104
20.000	14000.000	499289.40	.0101

*
ROUTE ID=13 HYD=112.7 INFLOW HYD=10 DT=.05
PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 112.70

RUNOFF VOLUME = .21693 INCHES = .6595 ACRE-FEET
PEAK DISCHARGE RATE = 12.51 CFS AT 1.650 HOURS BASIN AREA = .0570 SQ. MI.

****
* COMPUTE HYDROGRAPH FOR BASIN 112c *
****
COMPUTE NM HYD ID=11 HYD=112.2 DA=.053 SQ MI
PER A=65 B=0 C=25 D=10
TP=.19 HRS RAIN=-1

K = .103550HR TP = .190000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.680 CFS UNIT VOLUME = .9995 B = 526.28 P60 = 1.0500
AREA = .005300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

```
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .228807HR    TP =   .190000HR    K/TP RATIO =  1.204249     SHAPE CONSTANT, N =  2.951631
UNIT PEAK =   69.756    CFS   UNIT VOLUME =    .9995       B =   277.85      P60 = 1.0500
AREA =      .047700 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD              ID=11    CODE=1

                          PARTIAL HYDROGRAPH   112.20


    RUNOFF VOLUME =      .18541 INCHES     =        .5241 ACRE-FEET
    PEAK DISCHARGE RATE =      10.98 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


  * ADD 17% BULKING FACTOR TO HYDROGRAPH
  DIVIDE HYD             ID=11    PER=-117     ID   I=11    HYD   I=112.2
                                                ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
  * PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
  PRINT HYD              ID=11    CODE=1

                          PARTIAL HYDROGRAPH   112.20


    RUNOFF VOLUME =      .21692 INCHES     =        .6131 ACRE-FEET
    PEAK DISCHARGE RATE =      12.85 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


*
* COMPUTE AND PRINT TOTAL RUNOFF THROUGH SITE
*
ADD HYD                ID=14    HYD=112.5    ID I=11      ID II=13
ADD HYD                ID=15    HYD=112.5    ID I=9       ID II=14
PRINT HYD              ID=15    CODE=1

                          PARTIAL HYDROGRAPH   112.50


    RUNOFF VOLUME =      .12535 INCHES     =       1.9054 ACRE-FEET
    PEAK DISCHARGE RATE =      34.38 CFS  AT   1.600 HOURS   BASIN AREA =   .2850 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:43:15
```

EXISTING CONDITIONS

10-YEAR, 24 HOUR EVENT

INPUT DATA

```
START                    0.0 HRS
*************************************************************************
*       DATE:   08/18/94                                                *
*       BY:     JEFF MORTENSEN & ASSOC., INC.                           *
*               6010B MIDWAY PARK BLVD. N.E.                            *
*               ALBUQUERQUE, NM  87109                                  *
*               (505) 345-4250                                          *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,* 
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 10-YEAR, 24-HOUR EVENT            *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.23IN
                    RAIN SIX=1.47IN  RAIN DAY=1.80IN  DT=.05
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 109                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=109         DA=.234    SQ MI
                        PER A=95        B=0     C=0     D=5
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 109
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=109
                                                   II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 109 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ANY RUNOFF GREATER THAN 342 cfs WILL CROSS 98th ST. INTO BASIN 112
* SPLIT HYDROGRAPH 109 TO ACCOUNT FOR RUNOFF CROSSING 98th STREET.
DIVIDE HYD              ID=1    Q=342           ID   I=11    HYD   I=109.91
                                                ID  II=12    HYD  II=109.92
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=103         DA=.118    SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133    HRS          RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID    I=1      HYD    I=103
                                                ID   II=16     HYD   II=000
* PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'   DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=32        NSEGS=3
                    ELMIN=0   ELMAX=20   CH SLP=.059 ft/ft  FP SLP=.059 ft/ft
                    N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630
                    DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
```

```
                    0    20    300    0    330    0    630   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=4560  ft              SLP=.059  ft/ft
*
ROUTE                   ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD          ID=3    HYD=110         DA=0.015        SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133 HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD               ID=3    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=3    PER=-117        ID   I=3     HYD   I=110
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
PRINT HYD               ID=3    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 103.8 AND 110 AT 110.9                             #
*#######################################################################
ADD HYD                 ID=5    HYD=110.9       ID   I=2     ID   II=3
PRINT HYD               ID=5    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 110.9 AND 109.92 AT 110.99                         #
*#######################################################################
ADD HYD                 ID=7    HYD=110.99      ID   I=12    ID   II=5
PRINT HYD               ID=7    CODE=1
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=40        NSEGS=3
                  ELMIN=0  ELMAX=20  CH SLP=.024  ft/ft  FP SLP=.024  ft/ft
                  N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                  DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                    0    20    300    0    700    0   1000   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft
*
ROUTE                   ID=2    HYD=110.8       INFLOW HYD=7    DT=.05
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                     *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=112
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=1    CODE=1
*#######################################################################
```

```
* COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9                          #
*#######################################################################
ADD HYD                 ID=5    HYD=112.9       ID   I=1     ID  II=2
PRINT HYD               ID=5    CODE=1
*
COMPUTE TRAVEL TIME     ID=9    REACH=1         NO VS=1
                        L=1700  ft      SLP=.024        ft/ft
*
ROUTE                   ID=9    HYD=112.8       INFLOW HYD=5    DT=.05
PRINT HYD               ID=9    CODE=1

***********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                   *
***********************************************************************
COMPUTE NM HYD          ID=10   HYD=112.1         DA=.057     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=10   CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=10   PER=-117     ID   I=10    HYD   I=112.1
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=10   CODE=1
*
COMPUTE TRAVEL TIME     ID=13   REACH=1         NO VS=1
                        L=1300  ft      SLP=.024        ft/ft
*
ROUTE                   ID=13   HYD=112.7       INFLOW HYD=10   DT=.05
PRINT HYD               ID=13   CODE=1

***********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112c                                   *
***********************************************************************
COMPUTE NM HYD          ID=11   HYD=112.2         DA=.053     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD               ID=11   CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=11   PER=-117     ID   I=11    HYD   I=112.2
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
PRINT HYD               ID=11   CODE=1
*
* COMPUTE AND PRINT TOTAL RUNOFF THROUGH SITE
*
ADD HYD                 ID=14   HYD=112.5   ID I=11     ID II=13
ADD HYD                 ID=15   HYD=112.5   ID I=9      ID II=14
PRINT HYD               ID=15   CODE=1
FINISH
```

EXISTING CONDITIONS

10-YEAR, 24 HOUR EVENT

OUTPUT DATA

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 12/01/1994
     START TIME (HR:MIN:SEC) = 10:50:11     USER NO.= J_MORTEN.I01
     INPUT FILE = VDVXISTO.INP

START                 0.0 HRS
*************************************************************************
*      DATE:   08/18/94                                                 *
*      BY:     JEFF MORTENSEN & ASSOC., INC.                            *
*              6010B MIDWAY PARK BLVD. N.E.                             *
*              ALBUQUERQUE, NM  87109                                   *
*              (505) 345-4250                                           *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 10-YEAR, 24-HOUR EVENT            *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.23IN
                    RAIN SIX=1.47IN  RAIN DAY=1.80IN  DT=.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =    .050000 HOURS       END TIME =    24.000000 HOURS
   .0000   .0020   .0040   .0061   .0082   .0105   .0128
   .0152   .0177   .0203   .0231   .0259   .0289   .0320
   .0354   .0389   .0426   .0466   .0508   .0554   .0604
   .0656   .0713   .0879   .1271   .1946   .2989   .4491
   .6545   .8165   .8897   .9508  1.0043  1.0522  1.0955
  1.1351  1.1713  1.2047  1.2356  1.2640  1.2904  1.2965
  1.3022  1.3075  1.3125  1.3172  1.3216  1.3258  1.3299
  1.3337  1.3374  1.3410  1.3444  1.3477  1.3509  1.3540
  1.3570  1.3600  1.3628  1.3656  1.3683  1.3709  1.3735
  1.3760  1.3784  1.3808  1.3832  1.3855  1.3877  1.3899
  1.3921  1.3942  1.3963  1.3984  1.4004  1.4024  1.4043
  1.4063  1.4081  1.4100  1.4118  1.4137  1.4154  1.4172
  1.4189  1.4206  1.4223  1.4240  1.4257  1.4273  1.4289
  1.4305  1.4320  1.4336  1.4351  1.4366  1.4381  1.4396
  1.4411  1.4425  1.4440  1.4454  1.4468  1.4482  1.4496
  1.4509  1.4523  1.4536  1.4550  1.4563  1.4576  1.4589
  1.4601  1.4614  1.4627  1.4639  1.4652  1.4664  1.4676
  1.4688  1.4700  1.4714  1.4728  1.4742  1.4756  1.4770
  1.4783  1.4797  1.4811  1.4824  1.4838  1.4851  1.4865
  1.4878  1.4892  1.4905  1.4918  1.4932  1.4945  1.4958
  1.4971  1.4984  1.4997  1.5010  1.5023  1.5036  1.5049
  1.5062  1.5074  1.5087  1.5100  1.5113  1.5125  1.5138
  1.5150  1.5163  1.5175  1.5188  1.5200  1.5212  1.5225
  1.5237  1.5249  1.5261  1.5274  1.5286  1.5298  1.5310
  1.5322  1.5334  1.5346  1.5358  1.5370  1.5381  1.5393
  1.5405  1.5417  1.5429  1.5440  1.5452  1.5463  1.5475
  1.5487  1.5498  1.5510  1.5521  1.5532  1.5544  1.5555
  1.5566  1.5578  1.5589  1.5600  1.5611  1.5623  1.5634
```

1.5645	1.5656	1.5667	1.5678	1.5689	1.5700	1.5711
1.5722	1.5733	1.5743	1.5754	1.5765	1.5776	1.5786
1.5797	1.5808	1.5818	1.5829	1.5840	1.5850	1.5861
1.5871	1.5882	1.5892	1.5903	1.5913	1.5923	1.5934
1.5944	1.5954	1.5965	1.5975	1.5985	1.5995	1.6006
1.6016	1.6026	1.6036	1.6046	1.6056	1.6066	1.6076
1.6086	1.6096	1.6106	1.6116	1.6126	1.6136	1.6145
1.6155	1.6165	1.6175	1.6185	1.6194	1.6204	1.6214
1.6223	1.6233	1.6243	1.6252	1.6262	1.6271	1.6281
1.6290	1.6300	1.6309	1.6319	1.6328	1.6338	1.6347
1.6356	1.6366	1.6375	1.6384	1.6393	1.6403	1.6412
1.6421	1.6430	1.6440	1.6449	1.6458	1.6467	1.6476
1.6485	1.6494	1.6503	1.6512	1.6521	1.6530	1.6539
1.6548	1.6557	1.6566	1.6575	1.6584	1.6593	1.6601
1.6610	1.6619	1.6628	1.6637	1.6645	1.6654	1.6663
1.6671	1.6680	1.6689	1.6697	1.6706	1.6715	1.6723
1.6732	1.6740	1.6749	1.6757	1.6766	1.6774	1.6783
1.6791	1.6800	1.6808	1.6816	1.6825	1.6833	1.6842
1.6850	1.6858	1.6866	1.6875	1.6883	1.6891	1.6900
1.6908	1.6916	1.6924	1.6932	1.6940	1.6949	1.6957
1.6965	1.6973	1.6981	1.6989	1.6997	1.7005	1.7013
1.7021	1.7029	1.7037	1.7045	1.7053	1.7061	1.7069
1.7077	1.7085	1.7093	1.7101	1.7108	1.7116	1.7124
1.7132	1.7140	1.7147	1.7155	1.7163	1.7171	1.7178
1.7186	1.7194	1.7202	1.7209	1.7217	1.7224	1.7232
1.7240	1.7247	1.7255	1.7263	1.7270	1.7278	1.7285
1.7293	1.7300	1.7308	1.7315	1.7323	1.7330	1.7338
1.7345	1.7352	1.7360	1.7367	1.7375	1.7382	1.7389
1.7397	1.7404	1.7411	1.7419	1.7426	1.7433	1.7441
1.7448	1.7455	1.7462	1.7470	1.7477	1.7484	1.7491
1.7498	1.7506	1.7513	1.7520	1.7527	1.7534	1.7541
1.7548	1.7555	1.7562	1.7570	1.7577	1.7584	1.7591
1.7598	1.7605	1.7612	1.7619	1.7626	1.7633	1.7640
1.7647	1.7653	1.7660	1.7667	1.7674	1.7681	1.7688
1.7695	1.7702	1.7709	1.7715	1.7722	1.7729	1.7736
1.7743	1.7749	1.7756	1.7763	1.7770	1.7776	1.7783
1.7790	1.7797	1.7803	1.7810	1.7817	1.7823	1.7830
1.7837	1.7843	1.7850	1.7857	1.7863	1.7870	1.7876
1.7883	1.7890	1.7896	1.7903	1.7909	1.7916	1.7922
1.7929	1.7935	1.7942	1.7948	1.7955	1.7961	1.7968
1.7974	1.7981	1.7987	1.7994	1.8000		

```
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 109                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=109         DA=.234    SQ MI
                        PER A=95        B=0     C=0     D=5
                        TP=.19  HRS     RAIN=-1

K =   .118598HR    TP =   .190000HR    K/TP RATIO =   .624199     SHAPE CONSTANT, N =  5.993286
UNIT PEAK =   29.029    CFS   UNIT VOLUME =    .9995       B =   471.42      P60 = 1.2300
AREA =       .011700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .244674HR    TP =   .190000HR    K/TP RATIO =  1.287756     SHAPE CONSTANT, N =  2.779213
UNIT PEAK =   308.06    CFS   UNIT VOLUME =    .9992       B =   263.30      P60 = 1.2300
AREA =       .222300 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
```

```
* PRINT HYDROGRAPH FOR BASIN 109
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   109.00


   RUNOFF VOLUME =      .15557 INCHES     =       1.9416 ACRE-FEET
   PEAK DISCHARGE RATE =      40.97 CFS  AT   1.600 HOURS   BASIN AREA =   .2340 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=109
                                                 II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 109 (WITH BULKING)
   PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   109.00


   RUNOFF VOLUME =      .18202 INCHES     =       2.2716 ACRE-FEET
   PEAK DISCHARGE RATE =      47.93 CFS  AT   1.600 HOURS   BASIN AREA =   .2340 SQ. MI.


   * ANY RUNOFF GREATER THAN 342 cfs WILL CROSS 98th ST. INTO BASIN 112
   * SPLIT HYDROGRAPH 109 TO ACCOUNT FOR RUNOFF CROSSING 98th STREET.
   DIVIDE HYD               ID=1    Q=342           ID   I=11    HYD   I=109.91
                                                    ID  II=12    HYD  II=109.92
   ************************************************************************
   * COMPUTE HYDROGRAPH FOR BASIN 103                                     *
   ************************************************************************
   COMPUTE NM HYD           ID=1    HYD=103         DA=.118    SQ MI
                            PER A=100       B=0     C=0     D=0
                            TP=.133    HRS          RAIN=-1

   K =   .176779HR    TP =   .133000HR    K/TP RATIO =  1.329162     SHAPE CONSTANT, N =  2.703568
   UNIT PEAK =   227.74    CFS   UNIT VOLUME =    .9972       B =   256.69      P60 = 1.2300
   AREA =      .118000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   103.00


   RUNOFF VOLUME =      .08117 INCHES     =        .5108 ACRE-FEET
   PEAK DISCHARGE RATE =      18.22 CFS  AT   1.550 HOURS   BASIN AREA =   .1180 SQ. MI.


   * ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD               ID=1    PER=-117        ID    I=1      HYD    I=103
                                                    ID   II=16     HYD   II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
   PRINT HYD                ID=1    CODE=1
```

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = .09497 INCHES = .5977 ACRE-FEET
PEAK DISCHARGE RATE = 21.31 CFS AT 1.550 HOURS BASIN AREA = .1180 SQ. MI.

* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H BOT.WIDTH=30' DEPTH=20'
COMPUTE RATING CURVE RC=1 VS NO=32 NSEGS=3
ELMIN=0 ELMAX=20 CH SLP=.059 ft/ft FP SLP=.059 ft/ft
N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	20	300	0	330	0	630	20

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	48.20	504.73	61.58
2.11	129.64	1956.63	93.16
3.16	244.32	4542.10	124.74
4.21	392.24	8461.04	156.32
5.26	573.41	13903.86	187.89
6.32	787.81	21051.38	219.47
7.37	1035.46	30076.03	251.05
8.42	1316.34	41143.06	282.63
9.47	1630.47	54411.52	314.21
10.53	1977.84	70035.09	345.79
11.58	2358.45	88162.69	377.37
12.63	2772.30	108939.00	408.95
13.68	3219.39	132504.90	440.53
14.74	3699.72	158997.90	472.11
15.79	4213.30	188552.30	503.68
16.84	4760.11	221299.50	535.26
17.89	5340.17	257368.50	566.84
18.95	5953.46	296885.60	598.42
20.00	6600.00	339975.00	630.00

*
COMPUTE TRAVEL TIME ID=2 REACH=1 NO VS=1
L=4560 ft SLP=.059 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	48.199	504.73	.1210
2.105	129.640	1956.63	.0839
3.158	244.321	4542.10	.0681
4.211	392.244	8461.04	.0587
5.263	573.407	13903.86	.0522
6.316	787.812	21051.38	.0474
7.368	1035.457	30076.03	.0436
8.421	1316.343	41143.06	.0405
9.474	1630.471	54411.52	.0380

```
                    10.526    1977.839    70035.09        .0358
                    11.579    2358.448    88162.69        .0339
                    12.632    2772.299   108939.00        .0322
                    13.684    3219.390   132504.90        .0308
                    14.737    3699.722   158997.90        .0295
                    15.789    4213.295   188552.30        .0283
                    16.842    4760.110   221299.50        .0272
                    17.895    5340.165   257368.50        .0263
                    18.947    5953.462   296885.60        .0254
                    20.000    6599.999   339975.00        .0246
*
ROUTE                    ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD                ID=2    CODE=1

                              PARTIAL HYDROGRAPH   103.80


   RUNOFF VOLUME =      .09497 INCHES     =        .5977 ACRE-FEET
   PEAK DISCHARGE RATE =      15.09 CFS  AT   1.650 HOURS   BASIN AREA =   .1180 SQ. MI.


*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD           ID=3    HYD=110         DA=0.015        SQ MI
                         PER A=100       B=0     C=0     D=0
                         TP=.133 HRS     RAIN=-1

   K =   .179413HR    TP =   .133000HR    K/TP RATIO =  1.348972     SHAPE CONSTANT, N =  2.669397
   UNIT PEAK =   28.608    CFS   UNIT VOLUME =    .9964       B =   253.66      P60 = 1.2300
   AREA =      .015000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD                ID=3    CODE=1

                              PARTIAL HYDROGRAPH   110.00


   RUNOFF VOLUME =      .08117 INCHES     =        .0649 ACRE-FEET
   PEAK DISCHARGE RATE =       2.29 CFS  AT   1.550 HOURS   BASIN AREA =   .0150 SQ. MI.


   * ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD               ID=3    PER=-117        ID   I=3     HYD   I=110
                                                    ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
   PRINT HYD                ID=3    CODE=1

                              PARTIAL HYDROGRAPH   110.00


      RUNOFF VOLUME =      .09495 INCHES     =        .0760 ACRE-FEET
      PEAK DISCHARGE RATE =       2.68 CFS  AT   1.550 HOURS   BASIN AREA =   .0150 SQ. MI.
```

```
*#################################################################
* COMBINE HYDROGRAPH 103.8 AND 110 AT 110.9                      #
*#################################################################
ADD HYD                ID=5    HYD=110.9      ID   I=2     ID   II=3
PRINT HYD              ID=5    CODE=1
```

PARTIAL HYDROGRAPH 110.90

RUNOFF VOLUME = .09497 INCHES = .6736 ACRE-FEET
PEAK DISCHARGE RATE = 16.88 CFS AT 1.650 HOURS BASIN AREA = .1330 SQ. MI.

```
*#################################################################
* COMBINE HYDROGRAPH 110.9 AND 109.92 AT 110.99                  #
*#################################################################
ADD HYD                ID=7    HYD=110.99     ID   I=12    ID   II=5
PRINT HYD              ID=7    CODE=1
```

PARTIAL HYDROGRAPH 110.99

RUNOFF VOLUME = .09497 INCHES = .6736 ACRE-FEET
PEAK DISCHARGE RATE = 16.88 CFS AT 1.650 HOURS BASIN AREA = .1330 SQ. MI.

```
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=40        NSEGS=3
                  ELMIN=0  ELMAX=20  CH SLP=.024  ft/ft  FP SLP=.024  ft/ft
                  N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                  DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                    0    20    300    0    700    0   1000   20
```

RATING CURVE VALLEY SECTION 40.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	437.67	2569.83	431.58
2.11	908.59	8356.38	463.16
3.16	1412.74	16813.49	494.74
4.21	1950.14	27785.06	526.32
5.26	2520.78	41212.46	557.89
6.32	3124.65	57080.23	589.47
7.37	3761.77	75396.17	621.05
8.42	4432.13	96181.98	652.63
9.47	5135.73	119468.30	684.21
10.53	5872.58	145291.80	715.79
11.58	6642.66	173693.20	747.37
12.63	7445.98	204716.30	778.95
13.68	8282.55	238407.00	810.53
14.74	9152.35	274812.70	842.11
15.79	10055.40	313981.90	873.68
16.84	10991.69	355964.10	905.26

17.89	11961.22	400809.20	936.84
18.95	12963.99	448567.40	968.42
20.00	14000.00	499289.40	1000.00

```
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft
```

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	437.673	2569.83	.1041
2.105	908.587	8356.38	.0664
3.158	1412.742	16813.49	.0513
4.211	1950.139	27785.06	.0429
5.263	2520.776	41212.46	.0374
6.316	3124.654	57080.23	.0335
7.368	3761.772	75396.17	.0305
8.421	4432.133	96181.98	.0282
9.474	5135.733	119468.30	.0263
10.526	5872.576	145291.80	.0247
11.579	6642.659	173693.20	.0234
12.632	7445.982	204716.30	.0222
13.684	8282.547	238407.00	.0212
14.737	9152.354	274812.70	.0204
15.789	10055.400	313981.90	.0196
16.842	10991.690	355964.10	.0189
17.895	11961.220	400809.20	.0182
18.947	12963.990	448567.40	.0177
20.000	14000.000	499289.40	.0171

```
*
ROUTE                   ID=2    HYD=110.8       INFLOW HYD=7    DT=.05
PRINT HYD               ID=2    CODE=1
```

PARTIAL HYDROGRAPH 110.80

RUNOFF VOLUME = .09497 INCHES = .6737 ACRE-FEET
PEAK DISCHARGE RATE = 14.23 CFS AT 1.750 HOURS BASIN AREA = .1330 SQ. MI.

```
**********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                  *
**********************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
```

K = .103550HR TP = .190000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.633 CFS UNIT VOLUME = .9994 B = 526.28 P60 = 1.2300
AREA = .004200 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .227955HR TP = .190000HR K/TP RATIO = 1.199763 SHAPE CONSTANT, N = 2.961744
UNIT PEAK = 55.444 CFS UNIT VOLUME = .9995 B = 278.69 P60 = 1.2300
AREA = .037800 SQ MI IA = .56667 INCHES INF = 1.43667 INCHES PER HOUR

```
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


    RUNOFF VOLUME =      .29071 INCHES     =        .6512 ACRE-FEET
    PEAK DISCHARGE RATE =      14.43 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=112
                                                     ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
    PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


        RUNOFF VOLUME =      .34012 INCHES     =        .7619 ACRE-FEET
        PEAK DISCHARGE RATE =      16.88 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


    *#################################################################
    * COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9                     #
    *#################################################################
    ADD HYD                  ID=5    HYD=112.9       ID   I=1     ID  II=2
    PRINT HYD                ID=5    CODE=1

                                PARTIAL HYDROGRAPH   112.90


        RUNOFF VOLUME =      .15380 INCHES     =       1.4355 ACRE-FEET
        PEAK DISCHARGE RATE =      27.05 CFS  AT   1.650 HOURS   BASIN AREA =   .1750 SQ. MI.


    *
    COMPUTE TRAVEL TIME      ID=9    REACH=1         NO VS=1
                             L=1700  ft      SLP=.024        ft/ft

                             TRAVEL TIME TABLE
                                        REACH=  1.0

                             WATER      AVERAGE     FLOW        TRAVEL
                             DEPTH      AREA        RATE        TIME
                             FEET       SQ.FT.      CFS         HRS
                               1.053     437.673     2569.83      .0804
                               2.105     908.587     8356.38      .0513
                               3.158    1412.742    16813.49      .0397
                               4.211    1950.139    27785.06      .0331
                               5.263    2520.776    41212.46      .0289
                               6.316    3124.654    57080.23      .0259
                               7.368    3761.772    75396.17      .0236
                               8.421    4432.133    96181.98      .0218
```

```
                    9.474    5135.733   119468.30       .0203
                   10.526    5872.576   145291.80       .0191
                   11.579    6642.659   173693.20       .0181
                   12.632    7445.982   204716.30       .0172
                   13.684    8282.547   238407.00       .0164
                   14.737    9152.354   274812.70       .0157
                   15.789   10055.400   313981.90       .0151
                   16.842   10991.690   355964.10       .0146
                   17.895   11961.220   400809.20       .0141
                   18.947   12963.990   448567.40       .0136
                   20.000   14000.000   499289.40       .0132
*
ROUTE                    ID=9    HYD=112.8       INFLOW HYD=5    DT=.05
PRINT HYD                ID=9    CODE=1

                                PARTIAL HYDROGRAPH   112.80


    RUNOFF VOLUME =      .15381 INCHES     =       1.4355 ACRE-FEET
    PEAK DISCHARGE RATE =      24.82 CFS  AT   1.750 HOURS   BASIN AREA =   .1750 SQ. MI.



**********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                  *
**********************************************************************
COMPUTE NM HYD           ID=10    HYD=112.1         DA=.057     SQ MI
                         PER A=65        B=0     C=25    D=10
                         TP=.19  HRS     RAIN=-1

    K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   15.788    CFS   UNIT VOLUME =    .9996       B =   526.28      P60 = 1.2300
    AREA =      .005700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


    K =   .227955HR    TP =   .190000HR    K/TP RATIO =  1.199763     SHAPE CONSTANT, N =  2.961744
    UNIT PEAK =   75.246    CFS   UNIT VOLUME =    .9995       B =   278.69      P60 = 1.2300
    AREA =      .051300 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=10    CODE=1

                                PARTIAL HYDROGRAPH   112.10


    RUNOFF VOLUME =      .29071 INCHES     =        .8838 ACRE-FEET
    PEAK DISCHARGE RATE =      19.58 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=10    PER=-117     ID   I=10    HYD   I=112.1
                                                   ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
    PRINT HYD                ID=10    CODE=1
```

PARTIAL HYDROGRAPH 112.10

RUNOFF VOLUME = .34012 INCHES = 1.0340 ACRE-FEET
PEAK DISCHARGE RATE = 22.91 CFS AT 1.550 HOURS BASIN AREA = .0570 SQ. MI.

*
COMPUTE TRAVEL TIME ID=13 REACH=1 NO VS=1
L=1300 ft SLP=.024 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	437.673	2569.83	.0615
2.105	908.587	8356.38	.0393
3.158	1412.742	16813.49	.0303
4.211	1950.139	27785.06	.0253
5.263	2520.776	41212.46	.0221
6.316	3124.654	57080.23	.0198
7.368	3761.772	75396.17	.0180
8.421	4432.133	96181.98	.0166
9.474	5135.733	119468.30	.0155
10.526	5872.576	145291.80	.0146
11.579	6642.659	173693.20	.0138
12.632	7445.982	204716.30	.0131
13.684	8282.547	238407.00	.0125
14.737	9152.354	274812.70	.0120
15.789	10055.400	313981.90	.0116
16.842	10991.690	355964.10	.0112
17.895	11961.220	400809.20	.0108
18.947	12963.990	448567.40	.0104
20.000	14000.000	499289.40	.0101

*
ROUTE ID=13 HYD=112.7 INFLOW HYD=10 DT=.05
PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 112.70

RUNOFF VOLUME = .34014 INCHES = 1.0340 ACRE-FEET
PEAK DISCHARGE RATE = 20.69 CFS AT 1.650 HOURS BASIN AREA = .0570 SQ. MI.

****
* COMPUTE HYDROGRAPH FOR BASIN 112c *
****
COMPUTE NM HYD ID=11 HYD=112.2 DA=.053 SQ MI
PER A=65 B=0 C=25 D=10
TP=.19 HRS RAIN=-1

K = .103550HR TP = .190000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.680 CFS UNIT VOLUME = .9995 B = 526.28 P60 = 1.2300
AREA = .005300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

```
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


    K =   .227955HR    TP =   .190000HR    K/TP RATIO =  1.199763     SHAPE CONSTANT, N =  2.961744
    UNIT PEAK =   69.965    CFS   UNIT VOLUME =    .9995       B =   278.69      P60 = 1.2300
    AREA =      .047700 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD                ID=11    CODE=1

                                 PARTIAL HYDROGRAPH   112.20


        RUNOFF VOLUME =      .29071 INCHES     =        .8217 ACRE-FEET
        PEAK DISCHARGE RATE =      18.21 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=11    PER=-117     ID   I=11    HYD   I=112.2
                                                   ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
    PRINT HYD                ID=11    CODE=1

                                 PARTIAL HYDROGRAPH   112.20


        RUNOFF VOLUME =      .34012 INCHES     =        .9614 ACRE-FEET
        PEAK DISCHARGE RATE =      21.30 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


    *
    * COMPUTE AND PRINT TOTAL RUNOFF THROUGH SITE
    *
    ADD HYD                  ID=14    HYD=112.5    ID I=11      ID II=13
    ADD HYD                  ID=15    HYD=112.5    ID I=9       ID II=14
    PRINT HYD                ID=15    CODE=1

                                 PARTIAL HYDROGRAPH   112.50


        RUNOFF VOLUME =      .22572 INCHES     =       3.4309 ACRE-FEET
        PEAK DISCHARGE RATE =      61.69 CFS  AT   1.650 HOURS   BASIN AREA =   .2850 SQ. MI.


    FINISH

        NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:50:22
```

EXISTING CONDITIONS

100-YEAR, 24 HOUR EVENT

INPUT DATA

```
START                    0.0 HRS
*************************************************************************
*       DATE:   08/18/94                                                *
*       BY:     JEFF MORTENSEN & ASSOC., INC.                           *
*               6010B MIDWAY PARK BLVD. N.E.                            *
*               ALBUQUERQUE, NM  87109                                  *
*               (505) 345-4250                                          *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 100-YEAR, 24-HOUR EVENT           *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.85IN
                    RAIN SIX=2.2IN  RAIN DAY=2.7IN  DT=.05
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 109                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=109         DA=.234    SQ MI
                        PER A=95        B=0     C=0     D=5
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 109
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=109
                                                   II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 109 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ANY RUNOFF GREATER THAN 342 cfs WILL CROSS 98th ST. INTO BASIN 112
* SPLIT HYDROGRAPH 109 TO ACCOUNT FOR RUNOFF CROSSING 98th STREET.
DIVIDE HYD              ID=1    Q=342           ID   I=11    HYD   I=109.91
                                                ID  II=12    HYD  II=109.92
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=103         DA=.118    SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133    HRS          RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID    I=1     HYD    I=103
                                                ID   II=16    HYD   II=000
* PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'   DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=32        NSEGS=3
                    ELMIN=0   ELMAX=20   CH SLP=.059 ft/ft  FP SLP=.059 ft/ft
                    N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630
                    DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
```

```
                    0    20    300    0    330    0    630   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1          NO VS=1
                        L=4560  ft               SLP=.059  ft/ft
*
ROUTE                   ID=2    HYD=103.8        INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD          ID=3    HYD=110          DA=0.015        SQ MI
                        PER A=100       B=0      C=0     D=0
                        TP=.133 HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD               ID=3    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=3    PER=-117         ID   I=3     HYD   I=110
                                                 ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
PRINT HYD               ID=3    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 103.8 AND 110 AT 110.9                             #
*#######################################################################
ADD HYD                 ID=5    HYD=110.9        ID   I=2     ID   II=3
PRINT HYD               ID=5    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 110.9 AND 109.92 AT 110.99                         #
*#######################################################################
ADD HYD                 ID=7    HYD=110.99       ID   I=12    ID   II=5
PRINT HYD               ID=7    CODE=1
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=40         NSEGS=3
                   ELMIN=0  ELMAX=20  CH SLP=.024  ft/ft  FP SLP=.024  ft/ft
                   N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                   DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                     0    20    300    0    700    0   1000   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1          NO VS=1
                        L=2200  ft      SLP=.024         ft/ft
*
ROUTE                   ID=2    HYD=110.8        INFLOW HYD=7    DT=.05
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                     *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=112          DA=.042     SQ MI
                        PER A=65        B=0      C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117         ID   I=1     HYD   I=112
                                                 ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=1    CODE=1
*#######################################################################
```

```
* COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9                          #
*#######################################################################
ADD HYD                 ID=5    HYD=112.9       ID   I=1     ID  II=2
PRINT HYD               ID=5    CODE=1
*
COMPUTE TRAVEL TIME     ID=9    REACH=1         NO VS=1
                        L=1700  ft      SLP=.024        ft/ft
*
ROUTE                   ID=9    HYD=112.8       INFLOW HYD=5    DT=.05
PRINT HYD               ID=9    CODE=1

************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                    *
************************************************************************
COMPUTE NM HYD          ID=10   HYD=112.1         DA=.057     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=10   CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=10   PER=-117     ID   I=10    HYD   I=112.1
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=10   CODE=1
*
COMPUTE TRAVEL TIME     ID=13   REACH=1         NO VS=1
                        L=1300  ft      SLP=.024        ft/ft
*
ROUTE                   ID=13   HYD=112.7       INFLOW HYD=10   DT=.05
PRINT HYD               ID=13   CODE=1

************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112c                                    *
************************************************************************
COMPUTE NM HYD          ID=11   HYD=112.2         DA=.053     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD               ID=11   CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=11   PER=-117     ID   I=11    HYD   I=112.2
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
PRINT HYD               ID=11   CODE=1
*
* COMPUTE AND PRINT TOTAL RUNOFF THROUGH SITE
*
ADD HYD                 ID=14   HYD=112.5   ID I=11     ID II=13
ADD HYD                 ID=15   HYD=112.5   ID I=9      ID II=14
PRINT HYD               ID=15   CODE=1
FINISH
```

EXISTING CONDITIONS

100-YEAR, 24 HOUR EVENT

OUTPUT DATA

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 12/01/1994
         START TIME (HR:MIN:SEC) = 10:33:22     USER NO.= J_MORTEN.I01
         INPUT FILE = VDVEXIST.INP

START                    0.0 HRS
*************************************************************************
*       DATE:   08/18/94                                                *
*       BY:     JEFF MORTENSEN & ASSOC., INC.                           *
*               6010B MIDWAY PARK BLVD. N.E.                            *
*               ALBUQUERQUE, NM  87109                                  *
*               (505) 345-4250                                          *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 100-YEAR, 24-HOUR EVENT           *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.85IN
                    RAIN SIX=2.2IN  RAIN DAY=2.7IN  DT=.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =     .050000 HOURS        END TIME =    24.000000 HOURS
   .0000   .0028   .0056   .0086   .0117   .0148   .0181
   .0216   .0251   .0288   .0327   .0367   .0409   .0454
   .0501   .0551   .0604   .0660   .0720   .0786   .0856
   .0934   .1021   .1270   .1860   .2875   .4444   .6703
   .9792  1.2229  1.3329  1.4249  1.5054  1.5773  1.6425
  1.7020  1.7566  1.8068  1.8532  1.8960  1.9356  1.9448
  1.9532  1.9611  1.9685  1.9754  1.9820  1.9883  1.9942
  1.9999  2.0054  2.0107  2.0157  2.0206  2.0254  2.0299
  2.0344  2.0387  2.0429  2.0469  2.0509  2.0548  2.0586
  2.0623  2.0659  2.0694  2.0728  2.0762  2.0795  2.0828
  2.0860  2.0891  2.0922  2.0952  2.0981  2.1011  2.1039
  2.1067  2.1095  2.1123  2.1150  2.1176  2.1202  2.1228
  2.1253  2.1279  2.1303  2.1328  2.1352  2.1376  2.1399
  2.1422  2.1445  2.1468  2.1490  2.1513  2.1535  2.1556
  2.1578  2.1599  2.1620  2.1641  2.1661  2.1682  2.1702
  2.1722  2.1741  2.1761  2.1780  2.1800  2.1819  2.1837
  2.1856  2.1875  2.1893  2.1911  2.1929  2.1947  2.1965
  2.1983  2.2000  2.2021  2.2042  2.2063  2.2084  2.2105
  2.2126  2.2147  2.2167  2.2188  2.2209  2.2229  2.2250
  2.2270  2.2290  2.2310  2.2330  2.2351  2.2371  2.2390
  2.2410  2.2430  2.2450  2.2470  2.2489  2.2509  2.2528
  2.2548  2.2567  2.2586  2.2605  2.2625  2.2644  2.2663
  2.2682  2.2701  2.2720  2.2738  2.2757  2.2776  2.2795
  2.2813  2.2832  2.2850  2.2869  2.2887  2.2905  2.2923
  2.2942  2.2960  2.2978  2.2996  2.3014  2.3032  2.3050
  2.3068  2.3085  2.3103  2.3121  2.3138  2.3156  2.3174
  2.3191  2.3208  2.3226  2.3243  2.3260  2.3278  2.3295
  2.3312  2.3329  2.3346  2.3363  2.3380  2.3397  2.3414
```

2.3431	2.3448	2.3464	2.3481	2.3498	2.3514	2.3531
2.3547	2.3564	2.3580	2.3596	2.3613	2.3629	2.3645
2.3662	2.3678	2.3694	2.3710	2.3726	2.3742	2.3758
2.3774	2.3790	2.3806	2.3821	2.3837	2.3853	2.3869
2.3884	2.3900	2.3915	2.3931	2.3946	2.3962	2.3977
2.3993	2.4008	2.4023	2.4038	2.4054	2.4069	2.4084
2.4099	2.4114	2.4129	2.4144	2.4159	2.4174	2.4189
2.4204	2.4219	2.4234	2.4248	2.4263	2.4278	2.4293
2.4307	2.4322	2.4336	2.4351	2.4365	2.4380	2.4394
2.4409	2.4423	2.4437	2.4452	2.4466	2.4480	2.4494
2.4509	2.4523	2.4537	2.4551	2.4565	2.4579	2.4593
2.4607	2.4621	2.4635	2.4649	2.4662	2.4676	2.4690
2.4704	2.4718	2.4731	2.4745	2.4759	2.4772	2.4786
2.4799	2.4813	2.4826	2.4840	2.4853	2.4867	2.4880
2.4893	2.4907	2.4920	2.4933	2.4946	2.4960	2.4973
2.4986	2.4999	2.5012	2.5025	2.5038	2.5051	2.5064
2.5077	2.5090	2.5103	2.5116	2.5129	2.5142	2.5155
2.5168	2.5180	2.5193	2.5206	2.5219	2.5231	2.5244
2.5257	2.5269	2.5282	2.5294	2.5307	2.5319	2.5332
2.5344	2.5357	2.5369	2.5382	2.5394	2.5406	2.5419
2.5431	2.5443	2.5455	2.5468	2.5480	2.5492	2.5504
2.5516	2.5528	2.5541	2.5553	2.5565	2.5577	2.5589
2.5601	2.5613	2.5625	2.5636	2.5648	2.5660	2.5672
2.5684	2.5696	2.5708	2.5719	2.5731	2.5743	2.5754
2.5766	2.5778	2.5790	2.5801	2.5813	2.5824	2.5836
2.5847	2.5859	2.5870	2.5882	2.5893	2.5905	2.5916
2.5928	2.5939	2.5950	2.5962	2.5973	2.5984	2.5996
2.6007	2.6018	2.6029	2.6041	2.6052	2.6063	2.6074
2.6085	2.6097	2.6108	2.6119	2.6130	2.6141	2.6152
2.6163	2.6174	2.6185	2.6196	2.6207	2.6218	2.6229
2.6239	2.6250	2.6261	2.6272	2.6283	2.6294	2.6304
2.6315	2.6326	2.6337	2.6347	2.6358	2.6369	2.6379
2.6390	2.6401	2.6411	2.6422	2.6432	2.6443	2.6454
2.6464	2.6475	2.6485	2.6496	2.6506	2.6516	2.6527
2.6537	2.6548	2.6558	2.6569	2.6579	2.6589	2.6600
2.6610	2.6620	2.6630	2.6641	2.6651	2.6661	2.6671
2.6682	2.6692	2.6702	2.6712	2.6722	2.6732	2.6742
2.6752	2.6763	2.6773	2.6783	2.6793	2.6803	2.6813
2.6823	2.6833	2.6843	2.6853	2.6862	2.6872	2.6882
2.6892	2.6902	2.6912	2.6922	2.6932	2.6941	2.6951
2.6961	2.6971	2.6981	2.6990	2.7000		

```
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 109                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=109         DA=.234    SQ MI
                        PER A=95        B=0     C=0     D=5
                        TP=.19  HRS     RAIN=-1

K =   .107899HR    TP =   .190000HR    K/TP RATIO =   .567888     SHAPE CONSTANT, N =  6.743677
UNIT PEAK =   31.342    CFS   UNIT VOLUME =    .9998       B =   508.98      P60 = 1.8500
AREA =      .011700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .204903HR    TP =   .190000HR    K/TP RATIO =  1.078439     SHAPE CONSTANT, N =  3.275621
UNIT PEAK =   355.18    CFS   UNIT VOLUME =    1.000       B =   303.57      P60 = 1.8500
AREA =      .222300 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
```

```
* PRINT HYDROGRAPH FOR BASIN 109
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   109.00


   RUNOFF VOLUME =      .53503 INCHES     =       6.6772 ACRE-FEET
   PEAK DISCHARGE RATE =     171.67 CFS  AT   1.550 HOURS   BASIN AREA =   .2340 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=109
                                                 II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 109 (WITH BULKING)
   PRINT HYD             ID=1    CODE=1

                                PARTIAL HYDROGRAPH   109.00


      RUNOFF VOLUME =      .62599 INCHES     =       7.8123 ACRE-FEET
      PEAK DISCHARGE RATE =     200.85 CFS  AT   1.550 HOURS   BASIN AREA =   .2340 SQ. MI.


   * ANY RUNOFF GREATER THAN 342 cfs WILL CROSS 98th ST. INTO BASIN 112
   * SPLIT HYDROGRAPH 109 TO ACCOUNT FOR RUNOFF CROSSING 98th STREET.
   DIVIDE HYD            ID=1    Q=342           ID   I=11    HYD   I=109.91
                                                 ID  II=12    HYD  II=109.92
*********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                  *
*********************************************************************
COMPUTE NM HYD           ID=1    HYD=103         DA=.118    SQ MI
                         PER A=100       B=0     C=0     D=0
                         TP=.133    HRS          RAIN=-1

   K =   .157221HR    TP =   .133000HR    K/TP RATIO =  1.182114     SHAPE CONSTANT, N =  3.002447
   UNIT PEAK =   250.21    CFS   UNIT VOLUME =    .9989       B =   282.02      P60 = 1.8500
   AREA =      .118000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   103.00


      RUNOFF VOLUME =      .43340 INCHES     =       2.7275 ACRE-FEET
      PEAK DISCHARGE RATE =      98.79 CFS  AT   1.500 HOURS   BASIN AREA =   .1180 SQ. MI.


   * ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD            ID=1    PER=-117        ID    I=1      HYD    I=103
                                                 ID   II=16     HYD   II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
   PRINT HYD             ID=1    CODE=1
```

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = .50707 INCHES = 3.1912 ACRE-FEET
PEAK DISCHARGE RATE = 115.58 CFS AT 1.500 HOURS BASIN AREA = .1180 SQ. MI.

* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H BOT.WIDTH=30' DEPTH=20'
COMPUTE RATING CURVE RC=1 VS NO=32 NSEGS=3
ELMIN=0 ELMAX=20 CH SLP=.059 ft/ft FP SLP=.059 ft/ft
N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630

DIST	ELEV	DIST	ELEV	DIST	ELEV	DIST	ELEV
0	20	300	0	330	0	630	20

RATING CURVE VALLEY SECTION 32.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	48.20	504.73	61.58
2.11	129.64	1956.63	93.16
3.16	244.32	4542.10	124.74
4.21	392.24	8461.04	156.32
5.26	573.41	13903.86	187.89
6.32	787.81	21051.38	219.47
7.37	1035.46	30076.03	251.05
8.42	1316.34	41143.06	282.63
9.47	1630.47	54411.52	314.21
10.53	1977.84	70035.09	345.79
11.58	2358.45	88162.69	377.37
12.63	2772.30	108939.00	408.95
13.68	3219.39	132504.90	440.53
14.74	3699.72	158997.90	472.11
15.79	4213.30	188552.30	503.68
16.84	4760.11	221299.50	535.26
17.89	5340.17	257368.50	566.84
18.95	5953.46	296885.60	598.42
20.00	6600.00	339975.00	630.00

*
COMPUTE TRAVEL TIME ID=2 REACH=1 NO VS=1
L=4560 ft SLP=.059 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	48.199	504.73	.1210
2.105	129.640	1956.63	.0839
3.158	244.321	4542.10	.0681
4.211	392.244	8461.04	.0587
5.263	573.407	13903.86	.0522
6.316	787.812	21051.38	.0474
7.368	1035.457	30076.03	.0436
8.421	1316.343	41143.06	.0405
9.474	1630.471	54411.52	.0380

```
                    10.526    1977.839    70035.09      .0358
                    11.579    2358.448    88162.69      .0339
                    12.632    2772.299   108939.00      .0322
                    13.684    3219.390   132504.90      .0308
                    14.737    3699.722   158997.90      .0295
                    15.789    4213.295   188552.30      .0283
                    16.842    4760.110   221299.50      .0272
                    17.895    5340.165   257368.50      .0263
                    18.947    5953.462   296885.60      .0254
                    20.000    6599.999   339975.00      .0246
*
ROUTE                    ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD                ID=2    CODE=1

                              PARTIAL HYDROGRAPH   103.80


    RUNOFF VOLUME =      .50709 INCHES     =       3.1912 ACRE-FEET
    PEAK DISCHARGE RATE =      82.60 CFS  AT   1.600 HOURS   BASIN AREA =   .1180 SQ. MI.


*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD           ID=3    HYD=110         DA=0.015        SQ MI
                         PER A=100       B=0     C=0     D=0
                         TP=.133 HRS     RAIN=-1

    K =   .163818HR    TP =   .133000HR    K/TP RATIO =  1.231718     SHAPE CONSTANT, N =  2.891709
    UNIT PEAK =   30.775    CFS   UNIT VOLUME =    .9979       B =   272.87      P60 = 1.8500
    AREA =      .015000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD                ID=3    CODE=1

                              PARTIAL HYDROGRAPH   110.00


    RUNOFF VOLUME =      .43340 INCHES     =        .3467 ACRE-FEET
    PEAK DISCHARGE RATE =      12.21 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=3    PER=-117        ID   I=3     HYD   I=110
                                                     ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
    PRINT HYD                ID=3    CODE=1

                              PARTIAL HYDROGRAPH   110.00


        RUNOFF VOLUME =      .50707 INCHES     =        .4057 ACRE-FEET
        PEAK DISCHARGE RATE =      14.28 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.
```

```
*#################################################################
* COMBINE HYDROGRAPH 103.8 AND 110 AT 110.9                      #
*#################################################################
ADD HYD                ID=5    HYD=110.9      ID   I=2     ID   II=3
PRINT HYD              ID=5    CODE=1
```

PARTIAL HYDROGRAPH 110.90

RUNOFF VOLUME = .50708 INCHES = 3.5969 ACRE-FEET
PEAK DISCHARGE RATE = 93.97 CFS AT 1.600 HOURS BASIN AREA = .1330 SQ. MI.

```
*#################################################################
* COMBINE HYDROGRAPH 110.9 AND 109.92 AT 110.99                  #
*#################################################################
ADD HYD                ID=7    HYD=110.99     ID   I=12    ID   II=5
PRINT HYD              ID=7    CODE=1
```

PARTIAL HYDROGRAPH 110.99

RUNOFF VOLUME = .50708 INCHES = 3.5969 ACRE-FEET
PEAK DISCHARGE RATE = 93.97 CFS AT 1.600 HOURS BASIN AREA = .1330 SQ. MI.

```
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=40        NSEGS=3
                  ELMIN=0  ELMAX=20  CH SLP=.024  ft/ft  FP SLP=.024  ft/ft
                  N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                  DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                    0    20    300    0    700    0   1000   20
```

RATING CURVE VALLEY SECTION 40.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	437.67	2569.83	431.58
2.11	908.59	8356.38	463.16
3.16	1412.74	16813.49	494.74
4.21	1950.14	27785.06	526.32
5.26	2520.78	41212.46	557.89
6.32	3124.65	57080.23	589.47
7.37	3761.77	75396.17	621.05
8.42	4432.13	96181.98	652.63
9.47	5135.73	119468.30	684.21
10.53	5872.58	145291.80	715.79
11.58	6642.66	173693.20	747.37
12.63	7445.98	204716.30	778.95
13.68	8282.55	238407.00	810.53
14.74	9152.35	274812.70	842.11
15.79	10055.40	313981.90	873.68
16.84	10991.69	355964.10	905.26

```
                                17.89    11961.22   400809.20      936.84
                                18.95    12963.99   448567.40      968.42
                                20.00    14000.00   499289.40     1000.00
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft

                     TRAVEL TIME TABLE
                                     REACH=  1.0

                     WATER       AVERAGE     FLOW        TRAVEL
                     DEPTH       AREA        RATE        TIME
                     FEET        SQ.FT.      CFS         HRS
                      1.053       437.673     2569.83     .1041
                      2.105       908.587     8356.38     .0664
                      3.158      1412.742    16813.49     .0513
                      4.211      1950.139    27785.06     .0429
                      5.263      2520.776    41212.46     .0374
                      6.316      3124.654    57080.23     .0335
                      7.368      3761.772    75396.17     .0305
                      8.421      4432.133    96181.98     .0282
                      9.474      5135.733   119468.30     .0263
                     10.526      5872.576   145291.80     .0247
                     11.579      6642.659   173693.20     .0234
                     12.632      7445.982   204716.30     .0222
                     13.684      8282.547   238407.00     .0212
                     14.737      9152.354   274812.70     .0204
                     15.789     10055.400   313981.90     .0196
                     16.842     10991.690   355964.10     .0189
                     17.895     11961.220   400809.20     .0182
                     18.947     12963.990   448567.40     .0177
                     20.000     14000.000   499289.40     .0171
*
ROUTE                   ID=2    HYD=110.8       INFLOW HYD=7    DT=.05
PRINT HYD               ID=2    CODE=1

                                PARTIAL HYDROGRAPH   110.80


   RUNOFF VOLUME =      .50708 INCHES     =       3.5969 ACRE-FEET
   PEAK DISCHARGE RATE =      78.53 CFS  AT   1.700 HOURS   BASIN AREA =   .1330 SQ. MI.


*********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                 *
*********************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1

   K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   11.633    CFS   UNIT VOLUME =    .9994       B =   526.28      P60 = 1.8500
   AREA =      .004200 SQ MI    IA =    .10000 INCHES    INF =   .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


   K =   .210846HR    TP =   .190000HR    K/TP RATIO =  1.109715     SHAPE CONSTANT, N =  3.186486
   UNIT PEAK =   59.026    CFS   UNIT VOLUME =    .9998       B =   296.69      P60 = 1.8500
   AREA =      .037800 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
```

```
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .05000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


    RUNOFF VOLUME =      .73863 INCHES     =       1.6545 ACRE-FEET
    PEAK DISCHARGE RATE =      39.07 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=112
                                                     ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
    PRINT HYD                ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


        RUNOFF VOLUME =      .86418 INCHES     =       1.9358 ACRE-FEET
        PEAK DISCHARGE RATE =      45.71 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


    *#################################################################
    * COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9                     #
    *#################################################################
    ADD HYD                  ID=5    HYD=112.9       ID   I=1     ID  II=2
    PRINT HYD                ID=5    CODE=1

                                PARTIAL HYDROGRAPH   112.90


        RUNOFF VOLUME =      .59278 INCHES     =       5.5326 ACRE-FEET
        PEAK DISCHARGE RATE =     114.08 CFS  AT   1.650 HOURS   BASIN AREA =   .1750 SQ. MI.


    *
    COMPUTE TRAVEL TIME      ID=9    REACH=1         NO VS=1
                             L=1700  ft      SLP=.024        ft/ft

                             TRAVEL TIME TABLE
                                        REACH=  1.0

                             WATER       AVERAGE     FLOW        TRAVEL
                             DEPTH       AREA        RATE        TIME
                             FEET        SQ.FT.      CFS         HRS
                               1.053     437.673     2569.83       .0804
                               2.105     908.587     8356.38       .0513
                               3.158    1412.742    16813.49       .0397
                               4.211    1950.139    27785.06       .0331
                               5.263    2520.776    41212.46       .0289
                               6.316    3124.654    57080.23       .0259
                               7.368    3761.772    75396.17       .0236
                               8.421    4432.133    96181.98       .0218
```

```
                    9.474    5135.733   119468.30       .0203
                   10.526    5872.576   145291.80       .0191
                   11.579    6642.659   173693.20       .0181
                   12.632    7445.982   204716.30       .0172
                   13.684    8282.547   238407.00       .0164
                   14.737    9152.354   274812.70       .0157
                   15.789   10055.400   313981.90       .0151
                   16.842   10991.690   355964.10       .0146
                   17.895   11961.220   400809.20       .0141
                   18.947   12963.990   448567.40       .0136
                   20.000   14000.000   499289.40       .0132
*
ROUTE                    ID=9    HYD=112.8       INFLOW HYD=5    DT=.05
PRINT HYD                ID=9    CODE=1

                                PARTIAL HYDROGRAPH   112.80


    RUNOFF VOLUME =      .59279 INCHES     =       5.5327 ACRE-FEET
    PEAK DISCHARGE RATE =     104.91 CFS  AT   1.750 HOURS   BASIN AREA =   .1750 SQ. MI.



*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                     *
*************************************************************************
COMPUTE NM HYD           ID=10    HYD=112.1         DA=.057     SQ MI
                         PER A=65        B=0     C=25    D=10
                         TP=.19  HRS     RAIN=-1

    K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   15.788    CFS   UNIT VOLUME =    .9996       B =   526.28      P60 = 1.8500
    AREA =      .005700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


    K =   .210846HR    TP =   .190000HR    K/TP RATIO =  1.109715     SHAPE CONSTANT, N =  3.186486
    UNIT PEAK =   80.106    CFS   UNIT VOLUME =    .9999       B =   296.69      P60 = 1.8500
    AREA =      .051300 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=10   CODE=1

                                PARTIAL HYDROGRAPH   112.10


        RUNOFF VOLUME =      .73863 INCHES     =       2.2454 ACRE-FEET
        PEAK DISCHARGE RATE =      53.02 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=10    PER=-117     ID   I=10    HYD   I=112.1
                                                   ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
    PRINT HYD                ID=10    CODE=1
```

PARTIAL HYDROGRAPH 112.10

RUNOFF VOLUME = .86419 INCHES = 2.6271 ACRE-FEET
PEAK DISCHARGE RATE = 62.03 CFS AT 1.550 HOURS BASIN AREA = .0570 SQ. MI.

*
COMPUTE TRAVEL TIME ID=13 REACH=1 NO VS=1
L=1300 ft SLP=.024 ft/ft

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	437.673	2569.83	.0615
2.105	908.587	8356.38	.0393
3.158	1412.742	16813.49	.0303
4.211	1950.139	27785.06	.0253
5.263	2520.776	41212.46	.0221
6.316	3124.654	57080.23	.0198
7.368	3761.772	75396.17	.0180
8.421	4432.133	96181.98	.0166
9.474	5135.733	119468.30	.0155
10.526	5872.576	145291.80	.0146
11.579	6642.659	173693.20	.0138
12.632	7445.982	204716.30	.0131
13.684	8282.547	238407.00	.0125
14.737	9152.354	274812.70	.0120
15.789	10055.400	313981.90	.0116
16.842	10991.690	355964.10	.0112
17.895	11961.220	400809.20	.0108
18.947	12963.990	448567.40	.0104
20.000	14000.000	499289.40	.0101

*
ROUTE ID=13 HYD=112.7 INFLOW HYD=10 DT=.05
PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 112.70

RUNOFF VOLUME = .86420 INCHES = 2.6272 ACRE-FEET
PEAK DISCHARGE RATE = 56.72 CFS AT 1.650 HOURS BASIN AREA = .0570 SQ. MI.

****
* COMPUTE HYDROGRAPH FOR BASIN 112c *
****
COMPUTE NM HYD ID=11 HYD=112.2 DA=.053 SQ MI
PER A=65 B=0 C=25 D=10
TP=.19 HRS RAIN=-1

K = .103550HR TP = .190000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.680 CFS UNIT VOLUME = .9995 B = 526.28 P60 = 1.8500
AREA = .005300 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

```
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


    K =   .210846HR    TP =   .190000HR    K/TP RATIO =  1.109715     SHAPE CONSTANT, N =  3.186486
    UNIT PEAK =   74.485    CFS   UNIT VOLUME =    .9998       B =   296.69      P60 = 1.8500
    AREA =       .047700 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD                ID=11    CODE=1

                                  PARTIAL HYDROGRAPH   112.20


    RUNOFF VOLUME =      .73863 INCHES     =       2.0878 ACRE-FEET
    PEAK DISCHARGE RATE =      49.30 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.



    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=11    PER=-117     ID   I=11    HYD   I=112.2
                                                   ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
    PRINT HYD                ID=11    CODE=1

                                  PARTIAL HYDROGRAPH   112.20


    RUNOFF VOLUME =      .86419 INCHES     =       2.4427 ACRE-FEET
    PEAK DISCHARGE RATE =      57.68 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.



*
* COMPUTE AND PRINT TOTAL RUNOFF THROUGH SITE
*
ADD HYD                  ID=14    HYD=112.5    ID I=11      ID II=13
ADD HYD                  ID=15    HYD=112.5    ID I=9       ID II=14
PRINT HYD                ID=15    CODE=1

                                  PARTIAL HYDROGRAPH   112.50


    RUNOFF VOLUME =      .69754 INCHES     =      10.6025 ACRE-FEET
    PEAK DISCHARGE RATE =     199.53 CFS  AT   1.650 HOURS   BASIN AREA =   .2850 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 10:33:33
```

SUBDIVISION DEVELOPED CONDITION

100-YEAR, 24 HOUR EVENT

INPUT DATA

```
START                    0.0 HRS
*************************************************************************
*       DATE:   08/18/94                                                *
*       BY:     JEFF MORTENSEN & ASSOC., INC.                           *
*               6010B MIDWAY PARK BLVD. N.E.                            *
*               ALBUQUERQUE, NM  87109                                  *
*               (505) 345-4250                                          *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,* 
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 100-YEAR, 24-HOUR EVENT           *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.85IN
                    RAIN SIX=2.2IN  RAIN DAY=2.7IN  DT=.05
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=103         DA=.118    SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133    HRS          RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID    I=1      HYD    I=103
                                                ID   II=16     HYD   II=000
* PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
PRINT HYD               ID=1    CODE=1
* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'   DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=32        NSEGS=3
                    ELMIN=0   ELMAX=20   CH SLP=.059 ft/ft  FP SLP=.059 ft/ft
                    N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630
                    DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0    20    300    0    330    0    630   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=4560  ft              SLP=.059  ft/ft
*
ROUTE                   ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD          ID=3    HYD=110         DA=0.015        SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133 HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD               ID=3    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
```

```
DIVIDE HYD              ID=3    PER=-117        ID   I=3     HYD   I=110
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
PRINT HYD               ID=3    CODE=1
* ADD BASIN 103 TO BASIN 110 (BASIN 110.99)
ADD HYD                 ID=4    HYD=110.99      ID I=2  ID II=3
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE  RC=1    VS NO=40    NSEGS=3
                      ELMIN=0 ELMAX=20  CHSLP=.024 ft/ft  FPSLP=.024 ft/ft
                      N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                      DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                        0    20    300    0    700    0   1000   20
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft
*
ROUTE                   ID=2    HYD=110.8   INFLOW HYD=4    DT=.05
PRINT HYD               ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                     *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD               ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=112
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=1    CODE=1
*#######################################################################
* COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9 (UPPER POND INFLOW)       #
*#######################################################################
ADD HYD                 ID=5    HYD=112.9       ID   I=1     ID  II=2
PRINT HYD               ID=5    CODE=1
*
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                     *
*************************************************************************
COMPUTE NM HYD          ID=6    HYD=112.1         DA=.057     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112b
PRINT HYD               ID=6    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=6    PER=-117     ID   I=10    HYD   I=112.1
                                             ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112b (WITH BULKING)
PRINT HYD               ID=6    CODE=1
*
* ROUTE HYDROGRAPH TO LOWER POND VIA A 32' ROADWAY
*
COMPUTE RATING CURVE    RC=1    VSNO=16 NSEGS=3
                        ELMIN=0 ELMAX=2 CHSLP=0.016 ft/ft FPSLP=0.016 ft/ft
                        N=0.017 DIST=1  N=-0.017 DIST=33 N=0.017 DIST=34
                        DIST ELEV DIST ELEV DIST ELEV DIST ELEV
```

```
                        0  2    1    0   33   0    34    2
*
COMPUTE TRAVEL TIME     ID=7    REACH=1         NO VS=1
                        L=2000  ft      SLP=.012        ft/ft
*
ROUTE                   ID=7    HYD=112.92      INFLOW HYD=10    DT=.05
PRINT HYD               ID=7    CODE=1
*
**********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112c                                  *
**********************************************************************
COMPUTE NM HYD          ID=8    HYD=112.2       DA=.053     SQ MI
                        PER A=0         B=16     C=16    D=68
                        TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD               ID=8    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=8    PER=-117     ID   I=11    HYD   I=112.2
                                              ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
PRINT HYD               ID=8    CODE=1
*
* COMPUTE INFLOW HYDROGRAPH TO LOWER POND (BASINS 112b & 112c)
*
ADD HYD                 ID=9    HYD=112.5    ID I=8      ID II=7
PRINT HYD               ID=9    CODE=1
*
* ROUTE INFLOW THROUGH LOWER DETENTION POND
*
ROUTE RESERVOIR         ID=10   HYD=112.99      INFLOW=9    CODE=5
                        OUT(CFS)        STORAGE(AC*FT)  ELEV(FT)
                        0.0             0.0             0
                        15.1            0.46            1
                        21.4            0.95            2
                        26.2            1.49            3
                        30.3            2.07            4
                        33.8            2.70            5
                        37.1            3.37            6
                        40.0            4.10            7
                        42.8            4.87            8
                        45.4            5.70            9
                        168.5           6.12            9.5
*
* PRINT LIMITED DISCHARGE HYDROGRAPH FOR LOWER DETENTION POND
*
PRINT HYD               ID=10   CODE=1
FINISH
```

SUBDIVISION DEVELOPED CONDITION

100-YEAR, 24 HOUR EVENT

OUTPUT DATA

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 12/16/1994
         START TIME (HR:MIN:SEC) = 08:54:57     USER NO.= J_MORTEN.I01
         INPUT FILE = option2.inp

START                  0.0 HRS
*************************************************************************
*       DATE:   08/18/94                                                *
*       BY:     JEFF MORTENSEN & ASSOC., INC.                           *
*               6010B MIDWAY PARK BLVD. N.E.                            *
*               ALBUQUERQUE, NM  87109                                  *
*               (505) 345-4250                                          *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE  *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 100-YEAR, 24-HOUR EVENT           *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.85IN
                    RAIN SIX=2.2IN  RAIN DAY=2.7IN  DT=.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =     .050000 HOURS        END TIME =    24.000000 HOURS
   .0000   .0028   .0056   .0086   .0117   .0148   .0181
   .0216   .0251   .0288   .0327   .0367   .0409   .0454
   .0501   .0551   .0604   .0660   .0720   .0786   .0856
   .0934   .1021   .1270   .1860   .2875   .4444   .6703
   .9792  1.2229  1.3329  1.4249  1.5054  1.5773  1.6425
  1.7020  1.7566  1.8068  1.8532  1.8960  1.9356  1.9448
  1.9532  1.9611  1.9685  1.9754  1.9820  1.9883  1.9942
  1.9999  2.0054  2.0107  2.0157  2.0206  2.0254  2.0299
  2.0344  2.0387  2.0429  2.0469  2.0509  2.0548  2.0586
  2.0623  2.0659  2.0694  2.0728  2.0762  2.0795  2.0828
  2.0860  2.0891  2.0922  2.0952  2.0981  2.1011  2.1039
  2.1067  2.1095  2.1123  2.1150  2.1176  2.1202  2.1228
  2.1253  2.1279  2.1303  2.1328  2.1352  2.1376  2.1399
  2.1422  2.1445  2.1468  2.1490  2.1513  2.1535  2.1556
  2.1578  2.1599  2.1620  2.1641  2.1661  2.1682  2.1702
  2.1722  2.1741  2.1761  2.1780  2.1800  2.1819  2.1837
  2.1856  2.1875  2.1893  2.1911  2.1929  2.1947  2.1965
  2.1983  2.2000  2.2021  2.2042  2.2063  2.2084  2.2105
  2.2126  2.2147  2.2167  2.2188  2.2209  2.2229  2.2250
  2.2270  2.2290  2.2310  2.2330  2.2351  2.2371  2.2390
  2.2410  2.2430  2.2450  2.2470  2.2489  2.2509  2.2528
  2.2548  2.2567  2.2586  2.2605  2.2625  2.2644  2.2663
  2.2682  2.2701  2.2720  2.2738  2.2757  2.2776  2.2795
  2.2813  2.2832  2.2850  2.2869  2.2887  2.2905  2.2923
  2.2942  2.2960  2.2978  2.2996  2.3014  2.3032  2.3050
  2.3068  2.3085  2.3103  2.3121  2.3138  2.3156  2.3174
  2.3191  2.3208  2.3226  2.3243  2.3260  2.3278  2.3295
  2.3312  2.3329  2.3346  2.3363  2.3380  2.3397  2.3414
```

2.3431	2.3448	2.3464	2.3481	2.3498	2.3514	2.3531
2.3547	2.3564	2.3580	2.3596	2.3613	2.3629	2.3645
2.3662	2.3678	2.3694	2.3710	2.3726	2.3742	2.3758
2.3774	2.3790	2.3806	2.3821	2.3837	2.3853	2.3869
2.3884	2.3900	2.3915	2.3931	2.3946	2.3962	2.3977
2.3993	2.4008	2.4023	2.4038	2.4054	2.4069	2.4084
2.4099	2.4114	2.4129	2.4144	2.4159	2.4174	2.4189
2.4204	2.4219	2.4234	2.4248	2.4263	2.4278	2.4293
2.4307	2.4322	2.4336	2.4351	2.4365	2.4380	2.4394
2.4409	2.4423	2.4437	2.4452	2.4466	2.4480	2.4494
2.4509	2.4523	2.4537	2.4551	2.4565	2.4579	2.4593
2.4607	2.4621	2.4635	2.4649	2.4662	2.4676	2.4690
2.4704	2.4718	2.4731	2.4745	2.4759	2.4772	2.4786
2.4799	2.4813	2.4826	2.4840	2.4853	2.4867	2.4880
2.4893	2.4907	2.4920	2.4933	2.4946	2.4960	2.4973
2.4986	2.4999	2.5012	2.5025	2.5038	2.5051	2.5064
2.5077	2.5090	2.5103	2.5116	2.5129	2.5142	2.5155
2.5168	2.5180	2.5193	2.5206	2.5219	2.5231	2.5244
2.5257	2.5269	2.5282	2.5294	2.5307	2.5319	2.5332
2.5344	2.5357	2.5369	2.5382	2.5394	2.5406	2.5419
2.5431	2.5443	2.5455	2.5468	2.5480	2.5492	2.5504
2.5516	2.5528	2.5541	2.5553	2.5565	2.5577	2.5589
2.5601	2.5613	2.5625	2.5636	2.5648	2.5660	2.5672
2.5684	2.5696	2.5708	2.5719	2.5731	2.5743	2.5754
2.5766	2.5778	2.5790	2.5801	2.5813	2.5824	2.5836
2.5847	2.5859	2.5870	2.5882	2.5893	2.5905	2.5916
2.5928	2.5939	2.5950	2.5962	2.5973	2.5984	2.5996
2.6007	2.6018	2.6029	2.6041	2.6052	2.6063	2.6074
2.6085	2.6097	2.6108	2.6119	2.6130	2.6141	2.6152
2.6163	2.6174	2.6185	2.6196	2.6207	2.6218	2.6229
2.6239	2.6250	2.6261	2.6272	2.6283	2.6294	2.6304
2.6315	2.6326	2.6337	2.6347	2.6358	2.6369	2.6379
2.6390	2.6401	2.6411	2.6422	2.6432	2.6443	2.6454
2.6464	2.6475	2.6485	2.6496	2.6506	2.6516	2.6527
2.6537	2.6548	2.6558	2.6569	2.6579	2.6589	2.6600
2.6610	2.6620	2.6630	2.6641	2.6651	2.6661	2.6671
2.6682	2.6692	2.6702	2.6712	2.6722	2.6732	2.6742
2.6752	2.6763	2.6773	2.6783	2.6793	2.6803	2.6813
2.6823	2.6833	2.6843	2.6853	2.6862	2.6872	2.6882
2.6892	2.6902	2.6912	2.6922	2.6932	2.6941	2.6951
2.6961	2.6971	2.6981	2.6990	2.7000		

```
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 103                                      *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=103         DA=.118    SQ MI
                        PER A=100       B=0     C=0     D=0
                        TP=.133    HRS          RAIN=-1

   K =   .157221HR    TP =   .133000HR    K/TP RATIO =  1.182114     SHAPE CONSTANT, N =  3.002447
   UNIT PEAK =   250.21    CFS   UNIT VOLUME =    .9989       B =   282.02      P60 = 1.8500
   AREA =      .118000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 103
PRINT HYD               ID=1    CODE=1

                                PARTIAL HYDROGRAPH   103.00
```

```
RUNOFF VOLUME =      .43340 INCHES     =       2.7275 ACRE-FEET
PEAK DISCHARGE RATE =     98.79 CFS  AT   1.500 HOURS   BASIN AREA =   .1180 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=1    PER=-117        ID    I=1      HYD    I=103
                                                ID   II=16     HYD   II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
* PRINT HYDROGRAPH FOR BASIN 103 (WITH BULKING)
PRINT HYD               ID=1    CODE=1

                                PARTIAL HYDROGRAPH   103.00


RUNOFF VOLUME =      .50707 INCHES     =       3.1912 ACRE-FEET
PEAK DISCHARGE RATE =    115.58 CFS  AT   1.500 HOURS   BASIN AREA =   .1180 SQ. MI.


* ROUTE HYDROGRAPH FOR BASIN 103 THROUGH CHANNEL
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'   DEPTH=20'
COMPUTE RATING CURVE    RC=1    VS NO=32        NSEGS=3
                  ELMIN=0   ELMAX=20   CH SLP=.059 ft/ft  FP SLP=.059 ft/ft
                  N=.035 DIST=300 N=-.030 DIST=330 N=.035 DIST=630
                  DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                    0    20    300    0    330    0    630   20

                                RATING CURVE VALLEY SECTION 32.0
                   WATER       FLOW        FLOW        TOP
                  SURFACE      AREA        RATE       WIDTH
                   ELEV        SQ FT       CFS        FT
                    .00         .00         .00        .00
                   1.05       48.20      504.73      61.58
                   2.11      129.64     1956.63      93.16
                   3.16      244.32     4542.10     124.74
                   4.21      392.24     8461.04     156.32
                   5.26      573.41    13903.86     187.89
                   6.32      787.81    21051.38     219.47
                   7.37     1035.46    30076.03     251.05
                   8.42     1316.34    41143.06     282.63
                   9.47     1630.47    54411.52     314.21
                  10.53     1977.84    70035.09     345.79
                  11.58     2358.45    88162.69     377.37
                  12.63     2772.30   108939.00     408.95
                  13.68     3219.39   132504.90     440.53
                  14.74     3699.72   158997.90     472.11
                  15.79     4213.30   188552.30     503.68
                  16.84     4760.11   221299.50     535.26
                  17.89     5340.17   257368.50     566.84
                  18.95     5953.46   296885.60     598.42
                  20.00     6600.00   339975.00     630.00
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=4560  ft              SLP=.059  ft/ft

                     TRAVEL TIME TABLE
                                                REACH=  1.0
```

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	48.199	504.73	.1210
2.105	129.640	1956.63	.0839
3.158	244.321	4542.10	.0681
4.211	392.244	8461.04	.0587
5.263	573.407	13903.86	.0522
6.316	787.812	21051.38	.0474
7.368	1035.457	30076.03	.0436
8.421	1316.343	41143.06	.0405
9.474	1630.471	54411.52	.0380
10.526	1977.839	70035.09	.0358
11.579	2358.448	88162.69	.0339
12.632	2772.299	108939.00	.0322
13.684	3219.390	132504.90	.0308
14.737	3699.722	158997.90	.0295
15.789	4213.295	188552.30	.0283
16.842	4760.110	221299.50	.0272
17.895	5340.165	257368.50	.0263
18.947	5953.462	296885.60	.0254
20.000	6599.999	339975.00	.0246

```
*
ROUTE                    ID=2    HYD=103.8       INFLOW HYD  ID=1     DT=.05
* PRINT ROUTED HYDROGRAPH
PRINT HYD                ID=2    CODE=1

                                PARTIAL HYDROGRAPH   103.80


   RUNOFF VOLUME =      .50709 INCHES     =       3.1912 ACRE-FEET
   PEAK DISCHARGE RATE =      82.60 CFS  AT   1.600 HOURS   BASIN AREA =   .1180 SQ. MI.


*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD           ID=3    HYD=110         DA=0.015        SQ MI
                         PER A=100       B=0     C=0     D=0
                         TP=.133 HRS     RAIN=-1

   K =   .163818HR    TP =   .133000HR    K/TP RATIO = 1.231718     SHAPE CONSTANT, N =  2.891709
   UNIT PEAK =   30.775    CFS   UNIT VOLUME =    .9979       B =   272.87      P60 = 1.8500
   AREA =      .015000 SQ MI    IA =    .65000 INCHES    INF =   1.67000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD                ID=3    CODE=1

                                PARTIAL HYDROGRAPH   110.00


   RUNOFF VOLUME =      .43340 INCHES     =        .3467 ACRE-FEET
   PEAK DISCHARGE RATE =      12.21 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=3    PER=-117        ID   I=3     HYD   I=110
```

```
                                                ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
    PRINT HYD                ID=3    CODE=1

                                   PARTIAL HYDROGRAPH   110.00


        RUNOFF VOLUME =       .50707 INCHES     =        .4057 ACRE-FEET
        PEAK DISCHARGE RATE =      14.28 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


    * ADD BASIN 103 TO BASIN 110 (BASIN 110.99)
    ADD HYD                  ID=4    HYD=110.99      ID I=2  ID II=3
    *
    * ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
    * ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
    * TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
    COMPUTE RATING CURVE  RC=1    VS NO=40    NSEGS=3
                          ELMIN=0 ELMAX=20  CHSLP=.024 ft/ft  FPSLP=.024 ft/ft
                          N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                          DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                            0    20    300    0    700    0   1000   20
```

RATING CURVE VALLEY SECTION 40.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	437.67	2569.83	431.58
2.11	908.59	8356.38	463.16
3.16	1412.74	16813.49	494.74
4.21	1950.14	27785.06	526.32
5.26	2520.78	41212.46	557.89
6.32	3124.65	57080.23	589.47
7.37	3761.77	75396.17	621.05
8.42	4432.13	96181.98	652.63
9.47	5135.73	119468.30	684.21
10.53	5872.58	145291.80	715.79
11.58	6642.66	173693.20	747.37
12.63	7445.98	204716.30	778.95
13.68	8282.55	238407.00	810.53
14.74	9152.35	274812.70	842.11
15.79	10055.40	313981.90	873.68
16.84	10991.69	355964.10	905.26
17.89	11961.22	400809.20	936.84
18.95	12963.99	448567.40	968.42
20.00	14000.00	499289.40	1000.00

```
    *
    COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                            L=2200  ft      SLP=.024        ft/ft
```

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
1.053	437.673	2569.83	.1041

2.105	908.587	8356.38	.0664
3.158	1412.742	16813.49	.0513
4.211	1950.139	27785.06	.0429
5.263	2520.776	41212.46	.0374
6.316	3124.654	57080.23	.0335
7.368	3761.772	75396.17	.0305
8.421	4432.133	96181.98	.0282
9.474	5135.733	119468.30	.0263
10.526	5872.576	145291.80	.0247
11.579	6642.659	173693.20	.0234
12.632	7445.982	204716.30	.0222
13.684	8282.547	238407.00	.0212
14.737	9152.354	274812.70	.0204
15.789	10055.400	313981.90	.0196
16.842	10991.690	355964.10	.0189
17.895	11961.220	400809.20	.0182
18.947	12963.990	448567.40	.0177
20.000	14000.000	499289.40	.0171

```
*
ROUTE                    ID=2    HYD=110.8   INFLOW HYD=4    DT=.05
PRINT HYD                ID=2    CODE=1

                              PARTIAL HYDROGRAPH   110.80


   RUNOFF VOLUME =      .50708 INCHES     =       3.5969 ACRE-FEET
   PEAK DISCHARGE RATE =     78.53 CFS  AT   1.700 HOURS   BASIN AREA =   .1330 SQ. MI.


**********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                  *
**********************************************************************
COMPUTE NM HYD           ID=1    HYD=112         DA=.042     SQ MI
                         PER A=65        B=0     C=25    D=10
                         TP=.19  HRS     RAIN=-1

   K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   11.633    CFS   UNIT VOLUME =    .9994       B =   526.28      P60 = 1.8500
   AREA =      .004200 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


   K =   .210846HR    TP =   .190000HR    K/TP RATIO =  1.109715     SHAPE CONSTANT, N =  3.186486
   UNIT PEAK =   59.026    CFS   UNIT VOLUME =    .9998       B =   296.69      P60 = 1.8500
   AREA =      .037800 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD                ID=1    CODE=1

                              PARTIAL HYDROGRAPH   112.00


   RUNOFF VOLUME =      .73863 INCHES     =       1.6545 ACRE-FEET
   PEAK DISCHARGE RATE =     39.07 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
```

```
DIVIDE HYD              ID=1    PER=-117        ID   I=1     HYD   I=112
                                                ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD               ID=1    CODE=1

                                PARTIAL HYDROGRAPH   112.00


   RUNOFF VOLUME =      .86418 INCHES     =       1.9358 ACRE-FEET
   PEAK DISCHARGE RATE =     45.71 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


*#################################################################
* COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9 (UPPER POND INFLOW)      #
*#################################################################
ADD HYD                 ID=5    HYD=112.9       ID   I=1     ID  II=2
PRINT HYD               ID=5    CODE=1

                                PARTIAL HYDROGRAPH   112.90


   RUNOFF VOLUME =      .59278 INCHES     =       5.5326 ACRE-FEET
   PEAK DISCHARGE RATE =    114.08 CFS  AT   1.650 HOURS   BASIN AREA =   .1750 SQ. MI.


*
***********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                   *
***********************************************************************
COMPUTE NM HYD          ID=6    HYD=112.1       DA=.057     SQ MI
                        PER A=65        B=0     C=25    D=10
                        TP=.19  HRS     RAIN=-1

   K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   15.788    CFS   UNIT VOLUME =    .9996       B =   526.28      P60 = 1.8500
   AREA =      .005700 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


   K =   .210846HR    TP =   .190000HR    K/TP RATIO =  1.109715     SHAPE CONSTANT, N =  3.186486
   UNIT PEAK =   80.106    CFS   UNIT VOLUME =    .9999       B =   296.69      P60 = 1.8500
   AREA =      .051300 SQ MI    IA =    .56667 INCHES    INF =   1.43667 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112b
PRINT HYD               ID=6    CODE=1

                                PARTIAL HYDROGRAPH   112.10


   RUNOFF VOLUME =      .73863 INCHES     =       2.2454 ACRE-FEET
   PEAK DISCHARGE RATE =     53.02 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=6    PER=-117     ID   I=10    HYD   I=112.1
```

```
                                        ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112b (WITH BULKING)
    PRINT HYD              ID=6    CODE=1

                                PARTIAL HYDROGRAPH   112.10


        RUNOFF VOLUME =      .73863 INCHES     =       2.2454 ACRE-FEET
        PEAK DISCHARGE RATE =     53.02 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


        *
        * ROUTE HYDROGRAPH TO LOWER POND VIA A 32' ROADWAY
        *
        COMPUTE RATING CURVE    RC=1    VSNO=16 NSEGS=3
                                ELMIN=0 ELMAX=2 CHSLP=0.016 ft/ft FPSLP=0.016 ft/ft
                                N=0.017 DIST=1  N=-0.017 DIST=33 N=0.017 DIST=34
                                DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                                  0   2     1    0   33   0    34    2
```

RATING CURVE VALLEY SECTION 16.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
.11	3.37	8.31	32.11
.21	6.76	26.39	32.21
.32	10.16	51.91	32.32
.42	13.56	83.89	32.42
.53	16.98	121.76	32.53
.63	20.41	165.10	32.63
.74	23.85	213.59	32.74
.84	27.30	266.99	32.84
.95	30.76	325.09	32.95
1.05	34.24	387.73	33.05
1.16	37.72	454.76	33.16
1.26	41.22	526.04	33.26
1.37	44.73	601.48	33.37
1.47	48.24	680.96	33.47
1.58	51.77	764.40	33.58
1.68	55.31	851.72	33.68
1.79	58.86	942.84	33.79
1.89	62.43	1037.70	33.89
2.00	66.00	1136.24	34.00

```
        *
        COMPUTE TRAVEL TIME     ID=7    REACH=1         NO VS=1
                                L=2000  ft      SLP=.012        ft/ft
```

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.105	3.374	8.31	.2256
.211	6.759	26.39	.1423
.316	10.155	51.91	.1087
.421	13.562	83.89	.0898

```
.526      16.981      121.76      .0775
.632      20.410      165.10      .0687
.737      23.850      213.59      .0620
.842      27.302      266.99      .0568
.947      30.765      325.09      .0526
1.053     34.238      387.73      .0491
1.158     37.723      454.76      .0461
1.263     41.219      526.04      .0435
1.368     44.726      601.48      .0413
1.474     48.244      680.96      .0394
1.579     51.773      764.40      .0376
1.684     55.313      851.72      .0361
1.789     58.864      942.84      .0347
1.895     62.427      1037.70     .0334
2.000     66.000      1136.24     .0323
*
ROUTE                ID=7    HYD=112.92      INFLOW HYD=10    DT=.05
PRINT HYD            ID=7    CODE=1

                          PARTIAL HYDROGRAPH   112.92

   RUNOFF VOLUME =      .86420 INCHES     =      2.6272 ACRE-FEET
   PEAK DISCHARGE RATE =     54.48 CFS  AT   1.650 HOURS   BASIN AREA =   .0570 SQ. MI.


*
*********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112c                                 *
*********************************************************************
COMPUTE NM HYD       ID=8    HYD=112.2       DA=.053     SQ MI
                     PER A=0        B=16     C=16    D=68
                     TP=.19  HRS     RAIN=-1

   K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =   99.826    CFS   UNIT VOLUME =    1.000       B =   526.28      P60 = 1.8500
   AREA =      .036040 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


   K =   .168894HR    TP =   .190000HR    K/TP RATIO =   .888916     SHAPE CONSTANT, N =  3.990201
   UNIT PEAK =   31.645    CFS   UNIT VOLUME =    1.000       B =   354.52      P60 = 1.8500
   AREA =      .016960 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD            ID=8    CODE=1

                          PARTIAL HYDROGRAPH   112.20


   RUNOFF VOLUME =     1.93464 INCHES     =      5.4685 ACRE-FEET
   PEAK DISCHARGE RATE =    104.50 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD           ID=8    PER=-117     ID   I=11    HYD   I=112.2
                                           ID  II=16    HYD  II=000
```

```
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
   PRINT HYD                ID=8    CODE=1

                                PARTIAL HYDROGRAPH   112.20


      RUNOFF VOLUME =     1.93464 INCHES     =       5.4685 ACRE-FEET
      PEAK DISCHARGE RATE =     104.50 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


   *
   * COMPUTE INFLOW HYDROGRAPH TO LOWER POND (BASINS 112b & 112c)
   *
   ADD HYD                  ID=9    HYD=112.5    ID I=8      ID II=7
   PRINT HYD                ID=9    CODE=1

                                PARTIAL HYDROGRAPH   112.50


      RUNOFF VOLUME =     1.37995 INCHES     =       8.0956 ACRE-FEET
      PEAK DISCHARGE RATE =     148.81 CFS  AT   1.600 HOURS   BASIN AREA =   .1100 SQ. MI.


   *
   * ROUTE INFLOW THROUGH LOWER DETENTION POND
   *
   ROUTE RESERVOIR          ID=10   HYD=112.99      INFLOW=9    CODE=5
                            OUT(CFS)        STORAGE(AC*FT)  ELEV(FT)
                            0.0             0.0             0
                            15.1            0.46            1
                            21.4            0.95            2
                            26.2            1.49            3
                            30.3            2.07            4
                            33.8            2.70            5
                            37.1            3.37            6
                            40.0            4.10            7
                            42.8            4.87            8
                            45.4            5.70            9
                            168.5           6.12            9.5

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

      TIME      INFLOW    ELEV      VOLUME    OUTFLOW
      (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

       .00        .00       .00       .000       .00
       .25        .00       .00       .000       .00
       .50        .00       .00       .000       .00
       .75        .00       .00       .000       .00
      1.00        .00       .00       .000       .00
      1.25       4.53       .03       .013       .43
      1.50     114.56      1.63       .768     19.06
      1.75     103.32      5.30      2.904     34.81
      2.00      50.44      6.38      3.646     38.20
      2.25      23.22      6.33      3.610     38.05
      2.50      12.28      5.73      3.186     36.19
      2.75       7.45      4.94      2.664     33.60
```

3.00	4.70	4.09	2.124	30.60
3.25	3.13	3.20	1.607	27.03
3.50	2.19	2.36	1.143	23.11
3.75	1.64	1.59	.747	18.79
4.00	1.29	.94	.433	14.22
4.25	1.08	.52	.237	7.79
4.50	.97	.29	.135	4.45
4.75	.90	.18	.083	2.71
5.00	.87	.12	.055	1.81
5.25	.86	.09	.041	1.34
5.50	.88	.07	.034	1.11
5.75	.91	.07	.031	1.00
6.00	.95	.06	.029	.96
6.25	1.07	.07	.030	.98
6.50	1.12	.07	.032	1.05
6.75	1.12	.07	.033	1.08
7.00	1.11	.07	.033	1.10
7.25	1.10	.07	.033	1.10
7.50	1.08	.07	.033	1.09
7.75	1.06	.07	.033	1.08
8.00	1.04	.07	.032	1.07
8.25	1.03	.07	.032	1.05
8.50	1.01	.07	.032	1.04
8.75	1.00	.07	.031	1.02
9.00	.98	.07	.031	1.01
9.25	.97	.07	.030	.99
9.50	.96	.06	.030	.98
9.75	.94	.06	.029	.96
10.00	.93	.06	.029	.95
10.25	.92	.06	.029	.94
10.50	.91	.06	.028	.92
10.75	.89	.06	.028	.91
11.00	.89	.06	.027	.90
11.25	.87	.06	.027	.89
11.50	.86	.06	.027	.88
11.75	.85	.06	.026	.87
12.00	.84	.06	.026	.86
12.25	.83	.06	.026	.84
12.50	.82	.06	.025	.84
12.75	.81	.05	.025	.83
13.00	.80	.05	.025	.82
13.25	.79	.05	.025	.81
13.50	.79	.05	.024	.80
13.75	.78	.05	.024	.79

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
14.00	.76	.05	.024	.78
14.25	.76	.05	.023	.77
14.50	.75	.05	.023	.76
14.75	.74	.05	.023	.75
15.00	.73	.05	.023	.75
15.25	.72	.05	.022	.74
15.50	.72	.05	.022	.73
15.75	.72	.05	.022	.72
16.00	.71	.05	.022	.72
16.25	.70	.05	.022	.71
16.50	.69	.05	.021	.70
16.75	.69	.05	.021	.70

17.00	.68	.05	.021	.69
17.25	.67	.05	.021	.68
17.50	.67	.04	.021	.68
17.75	.65	.04	.020	.67
18.00	.66	.04	.020	.66
18.25	.65	.04	.020	.66
18.50	.64	.04	.020	.65
18.75	.64	.04	.020	.65
19.00	.63	.04	.020	.64
19.25	.63	.04	.019	.63
19.50	.62	.04	.019	.63
19.75	.62	.04	.019	.62
20.00	.61	.04	.019	.62
20.25	.61	.04	.019	.61
20.50	.60	.04	.019	.61
20.75	.59	.04	.018	.60
21.00	.59	.04	.018	.60
21.25	.59	.04	.018	.59
21.50	.58	.04	.018	.59
21.75	.57	.04	.018	.58
22.00	.57	.04	.018	.58
22.25	.57	.04	.018	.58
22.50	.57	.04	.017	.57
22.75	.56	.04	.017	.57
23.00	.56	.04	.017	.56
23.25	.55	.04	.017	.56
23.50	.54	.04	.017	.55
23.75	.55	.04	.017	.55
24.00	.54	.04	.017	.55
24.25	.23	.03	.015	.48
24.50	.08	.02	.009	.30
24.75	.03	.01	.005	.18
25.00	.02	.01	.003	.10
25.25	.01	.00	.002	.06
25.50	.00	.00	.001	.03
25.75	.00	.00	.001	.02
26.00	.00	.00	.000	.01
26.25	.00	.00	.000	.00

```
PEAK DISCHARGE =       38.415 CFS - PEAK OCCURS AT HOUR    2.10
MAXIMUM WATER SURFACE ELEVATION =       6.453
MAXIMUM STORAGE =       3.7010 AC-FT      INCREMENTAL TIME=     .050000HRS

*
* PRINT LIMITED DISCHARGE HYDROGRAPH FOR LOWER DETENTION POND
*
PRINT HYD               ID=10   CODE=1

                        PARTIAL HYDROGRAPH   112.99


    RUNOFF VOLUME =     1.37995 INCHES     =       8.0956 ACRE-FEET
    PEAK DISCHARGE RATE =      38.41 CFS  AT   2.100 HOURS   BASIN AREA =   .1100 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:55:08
```

FULLY DEVELOPED BASIN CONDITION

100-YEAR, 24 HOUR EVENT

INPUT DATA

```
START                    0.0 HRS
*************************************************************************
*      DATE:   08/18/94                                                 *
*      BY:     JEFF MORTENSEN & ASSOC., INC.                            *
*              6010B MIDWAY PARK BLVD. N.E.                             *
*              ALBUQUERQUE, NM  87109                                   *
*              (505) 345-4250                                           *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 100-YEAR, 24-HOUR EVENT           *
*************************************************************************
*2345678901234567890
RAINFALL            TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.85IN
                    RAIN SIX=2.2IN  RAIN DAY=2.7IN  DT=.05
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD          ID=3    HYD=110         DA=0.015        SQ MI
                        PER A=0       B=5     C=5     D=90
                        TP=.133 HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD               ID=3    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD              ID=3    PER=-117        ID   I=3     HYD   I=110
                                                ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
PRINT HYD               ID=3    CODE=1
* ADD BASIN 103 TO BASIN 110 (BASIN 110.99)
* ADD HYD                 ID=4    HYD=110.99      ID I=2  ID II=3
*
* ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
* ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
* TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
COMPUTE RATING CURVE  RC=1    VS NO=40    NSEGS=3
                      ELMIN=0 ELMAX=20  CHSLP=.024 ft/ft  FPSLP=.024 ft/ft
                      N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                      DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                      0    20    300    0    700    0   1000   20
*
COMPUTE TRAVEL TIME   ID=2    REACH=1         NO VS=1
                      L=2200  ft      SLP=.024        ft/ft
*
ROUTE                 ID=2    HYD=110.8   INFLOW HYD=3    DT=.05
PRINT HYD             ID=2    CODE=1
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                     *
*************************************************************************
COMPUTE NM HYD        ID=1    HYD=112         DA=.042     SQ MI
                      PER A=0       B=16    C=16    D=68
                      TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112a
```

```
PRINT HYD                ID=1    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=1    PER=-117        ID   I=1     HYD   I=112
                                                 ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
PRINT HYD                ID=1    CODE=1
*#################################################################
* COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9 (UPPER POND INFLOW)      #
*#################################################################
ADD HYD                  ID=5    HYD=112.9       ID   I=1     ID  II=2
PRINT HYD                ID=5    CODE=1
*
*********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                 *
*********************************************************************
COMPUTE NM HYD           ID=6    HYD=112.1         DA=.057     SQ MI
                         PER A=0        B=16     C=16    D=68
                         TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112b
PRINT HYD                ID=6    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=6    PER=-117     ID   I=10    HYD   I=112.1
                                              ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112b (WITH BULKING)
PRINT HYD                ID=10   CODE=1
*
*********************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112c                                 *
*********************************************************************
COMPUTE NM HYD           ID=8    HYD=112.2       DA=.053     SQ MI
                         PER A=0        B=16     C=16    D=68
                         TP=.19  HRS     RAIN=-1
* PRINT HYDROGRAPH FOR BASIN 112c
PRINT HYD                ID=8    CODE=1
* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=8    PER=-117     ID   I=11    HYD   I=112.2
                                               ID  II=16    HYD  II=000
* PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
PRINT HYD                ID=8    CODE=1
*
FINISH
```

FULLY DEVELOPED BASIN CONDITION

100-YEAR, 24 HOUR EVENT

OUTPUT DATA

```
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
     RUN DATE (MON/DAY/YR) = 12/20/1994
     START TIME (HR:MIN:SEC) = 08:15:14     USER NO.= J_MORTEN.I01
     INPUT FILE = option3.inp

START                    0.0 HRS
*************************************************************************
*      DATE:   08/18/94                                                 *
*      BY:     JEFF MORTENSEN & ASSOC., INC.                            *
*              6010B MIDWAY PARK BLVD. N.E.                             *
*              ALBUQUERQUE, NM  87109                                   *
*              (505) 345-4250                                           *
*                                                                       *
* HYDROLOGY OF UPSTREAM BASINS OF THE AMOLE ARROYO.  BASINS 103, 109, 110, *
* & 112 PER RESOURCE TECHNOLOGY, INC. F.E.M.A. RESTUDY DATED 12/31/93.  *
* THE EXISTING CONDITION ANALYSIS IS PRELIMINARY HAS NOT BEEN ACCEPTED BY *
* F.E.M.A. AT THIS TIME.  THE ANALYSIS PROGRAM WAS PROVIDED BY RESOURCE *
* TECHNOLOGY, INC. FOR THE PURPOSE OF THIS ANALYSIS.                    *
* THE PURPOSE OF THIS ANALYSIS IS TO DETERMINE AND QUANTIFY THE AMOUNT OF *
* STORM RUNOFF PASSING THROUGH A SITE WITHIN BASIN 112.  THE EXISTING   *
* RUNOFF PASSING THROUGH THE SITE INCLUDES FLOWS FROM BASINS 103, 109, 110,*
* & 112.                                                                *
*************************************************************************
* COMPUTE RAINFALL CONDITIONS FOR THE 100-YEAR, 24-HOUR EVENT           *
*************************************************************************
*2345678901234567890
RAINFALL          TYPE=2  RAIN QUARTER=0.0  RAIN ONE=1.85IN
                  RAIN SIX=2.2IN  RAIN DAY=2.7IN  DT=.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT =    .050000 HOURS       END TIME =    24.000000 HOURS
   .0000   .0028   .0056   .0086   .0117   .0148   .0181
   .0216   .0251   .0288   .0327   .0367   .0409   .0454
   .0501   .0551   .0604   .0660   .0720   .0786   .0856
   .0934   .1021   .1270   .1860   .2875   .4444   .6703
   .9792  1.2229  1.3329  1.4249  1.5054  1.5773  1.6425
  1.7020  1.7566  1.8068  1.8532  1.8960  1.9356  1.9448
  1.9532  1.9611  1.9685  1.9754  1.9820  1.9883  1.9942
  1.9999  2.0054  2.0107  2.0157  2.0206  2.0254  2.0299
  2.0344  2.0387  2.0429  2.0469  2.0509  2.0548  2.0586
  2.0623  2.0659  2.0694  2.0728  2.0762  2.0795  2.0828
  2.0860  2.0891  2.0922  2.0952  2.0981  2.1011  2.1039
  2.1067  2.1095  2.1123  2.1150  2.1176  2.1202  2.1228
  2.1253  2.1279  2.1303  2.1328  2.1352  2.1376  2.1399
  2.1422  2.1445  2.1468  2.1490  2.1513  2.1535  2.1556
  2.1578  2.1599  2.1620  2.1641  2.1661  2.1682  2.1702
  2.1722  2.1741  2.1761  2.1780  2.1800  2.1819  2.1837
  2.1856  2.1875  2.1893  2.1911  2.1929  2.1947  2.1965
  2.1983  2.2000  2.2021  2.2042  2.2063  2.2084  2.2105
  2.2126  2.2147  2.2167  2.2188  2.2209  2.2229  2.2250
  2.2270  2.2290  2.2310  2.2330  2.2351  2.2371  2.2390
  2.2410  2.2430  2.2450  2.2470  2.2489  2.2509  2.2528
  2.2548  2.2567  2.2586  2.2605  2.2625  2.2644  2.2663
  2.2682  2.2701  2.2720  2.2738  2.2757  2.2776  2.2795
  2.2813  2.2832  2.2850  2.2869  2.2887  2.2905  2.2923
  2.2942  2.2960  2.2978  2.2996  2.3014  2.3032  2.3050
  2.3068  2.3085  2.3103  2.3121  2.3138  2.3156  2.3174
  2.3191  2.3208  2.3226  2.3243  2.3260  2.3278  2.3295
  2.3312  2.3329  2.3346  2.3363  2.3380  2.3397  2.3414
```

2.3431	2.3448	2.3464	2.3481	2.3498	2.3514	2.3531
2.3547	2.3564	2.3580	2.3596	2.3613	2.3629	2.3645
2.3662	2.3678	2.3694	2.3710	2.3726	2.3742	2.3758
2.3774	2.3790	2.3806	2.3821	2.3837	2.3853	2.3869
2.3884	2.3900	2.3915	2.3931	2.3946	2.3962	2.3977
2.3993	2.4008	2.4023	2.4038	2.4054	2.4069	2.4084
2.4099	2.4114	2.4129	2.4144	2.4159	2.4174	2.4189
2.4204	2.4219	2.4234	2.4248	2.4263	2.4278	2.4293
2.4307	2.4322	2.4336	2.4351	2.4365	2.4380	2.4394
2.4409	2.4423	2.4437	2.4452	2.4466	2.4480	2.4494
2.4509	2.4523	2.4537	2.4551	2.4565	2.4579	2.4593
2.4607	2.4621	2.4635	2.4649	2.4662	2.4676	2.4690
2.4704	2.4718	2.4731	2.4745	2.4759	2.4772	2.4786
2.4799	2.4813	2.4826	2.4840	2.4853	2.4867	2.4880
2.4893	2.4907	2.4920	2.4933	2.4946	2.4960	2.4973
2.4986	2.4999	2.5012	2.5025	2.5038	2.5051	2.5064
2.5077	2.5090	2.5103	2.5116	2.5129	2.5142	2.5155
2.5168	2.5180	2.5193	2.5206	2.5219	2.5231	2.5244
2.5257	2.5269	2.5282	2.5294	2.5307	2.5319	2.5332
2.5344	2.5357	2.5369	2.5382	2.5394	2.5406	2.5419
2.5431	2.5443	2.5455	2.5468	2.5480	2.5492	2.5504
2.5516	2.5528	2.5541	2.5553	2.5565	2.5577	2.5589
2.5601	2.5613	2.5625	2.5636	2.5648	2.5660	2.5672
2.5684	2.5696	2.5708	2.5719	2.5731	2.5743	2.5754
2.5766	2.5778	2.5790	2.5801	2.5813	2.5824	2.5836
2.5847	2.5859	2.5870	2.5882	2.5893	2.5905	2.5916
2.5928	2.5939	2.5950	2.5962	2.5973	2.5984	2.5996
2.6007	2.6018	2.6029	2.6041	2.6052	2.6063	2.6074
2.6085	2.6097	2.6108	2.6119	2.6130	2.6141	2.6152
2.6163	2.6174	2.6185	2.6196	2.6207	2.6218	2.6229
2.6239	2.6250	2.6261	2.6272	2.6283	2.6294	2.6304
2.6315	2.6326	2.6337	2.6347	2.6358	2.6369	2.6379
2.6390	2.6401	2.6411	2.6422	2.6432	2.6443	2.6454
2.6464	2.6475	2.6485	2.6496	2.6506	2.6516	2.6527
2.6537	2.6548	2.6558	2.6569	2.6579	2.6589	2.6600
2.6610	2.6620	2.6630	2.6641	2.6651	2.6661	2.6671
2.6682	2.6692	2.6702	2.6712	2.6722	2.6732	2.6742
2.6752	2.6763	2.6773	2.6783	2.6793	2.6803	2.6813
2.6823	2.6833	2.6843	2.6853	2.6862	2.6872	2.6882
2.6892	2.6902	2.6912	2.6922	2.6932	2.6941	2.6951
2.6961	2.6971	2.6981	2.6990	2.7000		

```
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 110                                      *
*************************************************************************
COMPUTE NM HYD          ID=3    HYD=110         DA=0.015        SQ MI
                        PER A=0       B=5     C=5     D=90
                        TP=.133 HRS     RAIN=-1

K =   .072485HR    TP =   .133000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   53.419    CFS   UNIT VOLUME =    .9989       B =   526.28      P60 = 1.8500
AREA =       .013500 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .118226HR    TP =   .133000HR    K/TP RATIO =   .888916     SHAPE CONSTANT, N =  3.990201
UNIT PEAK =   3.9983    CFS   UNIT VOLUME =    .9980       B =   354.52      P60 = 1.8500
AREA =       .001500 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
```

```
* PRINT HYDROGRAPH FOR BASIN 110
PRINT HYD                ID=3    CODE=1

                                PARTIAL HYDROGRAPH   110.00


    RUNOFF VOLUME =     2.30006 INCHES     =       1.8400 ACRE-FEET
    PEAK DISCHARGE RATE =      39.11 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=3    PER=-117        ID   I=3     HYD   I=110
                                                 ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 110 (WITH BULKING)
    PRINT HYD                ID=3    CODE=1

                                PARTIAL HYDROGRAPH   110.00


        RUNOFF VOLUME =     2.69105 INCHES     =       2.1528 ACRE-FEET
        PEAK DISCHARGE RATE =      45.76 CFS  AT   1.500 HOURS   BASIN AREA =   .0150 SQ. MI.


    * ADD BASIN 103 TO BASIN 110 (BASIN 110.99)
    * ADD HYD                 ID=4    HYD=110.99      ID I=2  ID II=3
    *
    * ROUTE HYDROGRAPH 110.99 THROUGH CHANNEL TO 110.8
    * ASSUME STANDARD CROSS SECTION HAVING THE FOLLOWING DIMENSIONS
    * TRAP. 1V:15H  BOT.WIDTH=30'  DEPTH=20'
    COMPUTE RATING CURVE  RC=1    VS NO=40    NSEGS=3
                          ELMIN=0 ELMAX=20  CHSLP=.024 ft/ft  FPSLP=.024 ft/ft
                          N=.040 DIST=300 N=-.040 DIST=700 N=.040 DIST=1000
                          DIST  ELEV  DIST  ELEV  DIST  ELEV  DIST  ELEV
                            0    20    300    0    700    0   1000   20
```

RATING CURVE VALLEY SECTION 40.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
1.05	437.67	2569.83	431.58
2.11	908.59	8356.38	463.16
3.16	1412.74	16813.49	494.74
4.21	1950.14	27785.06	526.32
5.26	2520.78	41212.46	557.89
6.32	3124.65	57080.23	589.47
7.37	3761.77	75396.17	621.05
8.42	4432.13	96181.98	652.63
9.47	5135.73	119468.30	684.21
10.53	5872.58	145291.80	715.79
11.58	6642.66	173693.20	747.37
12.63	7445.98	204716.30	778.95
13.68	8282.55	238407.00	810.53
14.74	9152.35	274812.70	842.11
15.79	10055.40	313981.90	873.68
16.84	10991.69	355964.10	905.26
17.89	11961.22	400809.20	936.84

```
                                18.95    12963.99   448567.40      968.42
                                20.00    14000.00   499289.40     1000.00
*
COMPUTE TRAVEL TIME     ID=2    REACH=1         NO VS=1
                        L=2200  ft      SLP=.024        ft/ft

                      TRAVEL TIME TABLE
                                      REACH=  1.0

                      WATER       AVERAGE     FLOW        TRAVEL
                      DEPTH       AREA        RATE        TIME
                      FEET        SQ.FT.      CFS         HRS
                        1.053     437.673     2569.83       .1041
                        2.105     908.587     8356.38       .0664
                        3.158    1412.742    16813.49       .0513
                        4.211    1950.139    27785.06       .0429
                        5.263    2520.776    41212.46       .0374
                        6.316    3124.654    57080.23       .0335
                        7.368    3761.772    75396.17       .0305
                        8.421    4432.133    96181.98       .0282
                        9.474    5135.733   119468.30       .0263
                       10.526    5872.576   145291.80       .0247
                       11.579    6642.659   173693.20       .0234
                       12.632    7445.982   204716.30       .0222
                       13.684    8282.547   238407.00       .0212
                       14.737    9152.354   274812.70       .0204
                       15.789   10055.400   313981.90       .0196
                       16.842   10991.690   355964.10       .0189
                       17.895   11961.220   400809.20       .0182
                       18.947   12963.990   448567.40       .0177
                       20.000   14000.000   499289.40       .0171
*
ROUTE                   ID=2    HYD=110.8   INFLOW HYD=3    DT=.05
PRINT HYD               ID=2    CODE=1

                                PARTIAL HYDROGRAPH   110.80


    RUNOFF VOLUME =     2.69110 INCHES     =       2.1529 ACRE-FEET
    PEAK DISCHARGE RATE =     35.17 CFS  AT   1.600 HOURS   BASIN AREA =   .0150 SQ. MI.


*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112a                                     *
*************************************************************************
COMPUTE NM HYD          ID=1    HYD=112         DA=.042     SQ MI
                        PER A=0         B=16    C=16    D=68
                        TP=.19  HRS     RAIN=-1

    K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   79.108    CFS   UNIT VOLUME =    1.000       B =   526.28      P60 = 1.8500
    AREA =       .028560 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


    K =   .168894HR    TP =   .190000HR    K/TP RATIO =   .888916     SHAPE CONSTANT, N =  3.990201
    UNIT PEAK =   25.077    CFS   UNIT VOLUME =    1.000       B =   354.52      P60 = 1.8500
    AREA =       .013440 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
```

```
* PRINT HYDROGRAPH FOR BASIN 112a
PRINT HYD              ID=1    CODE=1

                          PARTIAL HYDROGRAPH   112.00


   RUNOFF VOLUME =     1.93464 INCHES     =       4.3336 ACRE-FEET
   PEAK DISCHARGE RATE =      82.81 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
   DIVIDE HYD             ID=1    PER=-117        ID   I=1     HYD   I=112
                                                  ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
   * PRINT HYDROGRAPH FOR BASIN 112a (WITH BULKING)
   PRINT HYD              ID=1    CODE=1

                          PARTIAL HYDROGRAPH   112.00


   RUNOFF VOLUME =     2.26352 INCHES     =       5.0703 ACRE-FEET
   PEAK DISCHARGE RATE =      96.89 CFS  AT   1.550 HOURS   BASIN AREA =   .0420 SQ. MI.


   *#################################################################
   * COMBINE HYDROGRAPH 110.8 AND 112a AT 112.9 (UPPER POND INFLOW)      #
   *#################################################################
   ADD HYD                ID=5    HYD=112.9       ID   I=1     ID  II=2
   PRINT HYD              ID=5    CODE=1

                          PARTIAL HYDROGRAPH   112.90


   RUNOFF VOLUME =     2.37603 INCHES     =       7.2231 ACRE-FEET
   PEAK DISCHARGE RATE =     131.92 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


*
*************************************************************************
* COMPUTE HYDROGRAPH FOR BASIN 112b                                     *
*************************************************************************
COMPUTE NM HYD            ID=6    HYD=112.1         DA=.057     SQ MI
                          PER A=0        B=16     C=16    D=68
                          TP=.19  HRS     RAIN=-1

K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
UNIT PEAK =   107.36    CFS   UNIT VOLUME =    1.000       B =   526.28      P60 = 1.8500
AREA =       .038760 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


K =   .168894HR    TP =   .190000HR    K/TP RATIO =   .888916     SHAPE CONSTANT, N =  3.990201
UNIT PEAK =   34.034    CFS   UNIT VOLUME =    1.000       B =   354.52      P60 = 1.8500
AREA =       .018240 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000
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```
* PRINT HYDROGRAPH FOR BASIN 112b
PRINT HYD                ID=6    CODE=1

                                PARTIAL HYDROGRAPH   112.10


    RUNOFF VOLUME =     1.93464 INCHES     =       5.8813 ACRE-FEET
    PEAK DISCHARGE RATE =     112.38 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


* ADD 17% BULKING FACTOR TO HYDROGRAPH
DIVIDE HYD               ID=6    PER=-117     ID   I=10    HYD   I=112.1
                                              ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
    * PRINT HYDROGRAPH FOR BASIN 112b (WITH BULKING)
    PRINT HYD                ID=10   CODE=1

                                PARTIAL HYDROGRAPH   112.10


    RUNOFF VOLUME =     2.26352 INCHES     =       6.8811 ACRE-FEET
    PEAK DISCHARGE RATE =     131.49 CFS  AT   1.550 HOURS   BASIN AREA =   .0570 SQ. MI.


    *
    ************************************************************************
    * COMPUTE HYDROGRAPH FOR BASIN 112c                                    *
    ************************************************************************
    COMPUTE NM HYD           ID=8    HYD=112.2        DA=.053     SQ MI
                             PER A=0        B=16     C=16    D=68
                             TP=.19  HRS     RAIN=-1

    K =   .103550HR    TP =   .190000HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   99.826    CFS   UNIT VOLUME =    1.000       B =   526.28      P60 = 1.8500
    AREA =       .036040 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000


    K =   .168894HR    TP =   .190000HR    K/TP RATIO =   .888916     SHAPE CONSTANT, N =  3.990201
    UNIT PEAK =   31.645    CFS   UNIT VOLUME =    1.000       B =   354.52      P60 = 1.8500
    AREA =       .016960 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .050000

* PRINT HYDROGRAPH FOR BASIN 112c
    PRINT HYD                ID=8    CODE=1

                                PARTIAL HYDROGRAPH   112.20


    RUNOFF VOLUME =     1.93464 INCHES     =       5.4685 ACRE-FEET
    PEAK DISCHARGE RATE =     104.50 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.


    * ADD 17% BULKING FACTOR TO HYDROGRAPH
    DIVIDE HYD               ID=8    PER=-117     ID   I=11    HYD   I=112.2
                                                   ID  II=16    HYD  II=000
*** WARNING *** - PERCENTAGE OF     -117.0 FOUND - A HYDROGRAPH BULKING FACTOR IS ASSUMED
```

```
* PRINT HYDROGRAPH FOR BASIN 112c (WITH BULKING)
PRINT HYD                ID=8    CODE=1

                                PARTIAL HYDROGRAPH   112.20


   RUNOFF VOLUME =     1.93464 INCHES     =       5.4685 ACRE-FEET
   PEAK DISCHARGE RATE =     104.50 CFS  AT   1.550 HOURS   BASIN AREA =   .0530 SQ. MI.



*
FINISH

   NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:15:24
```