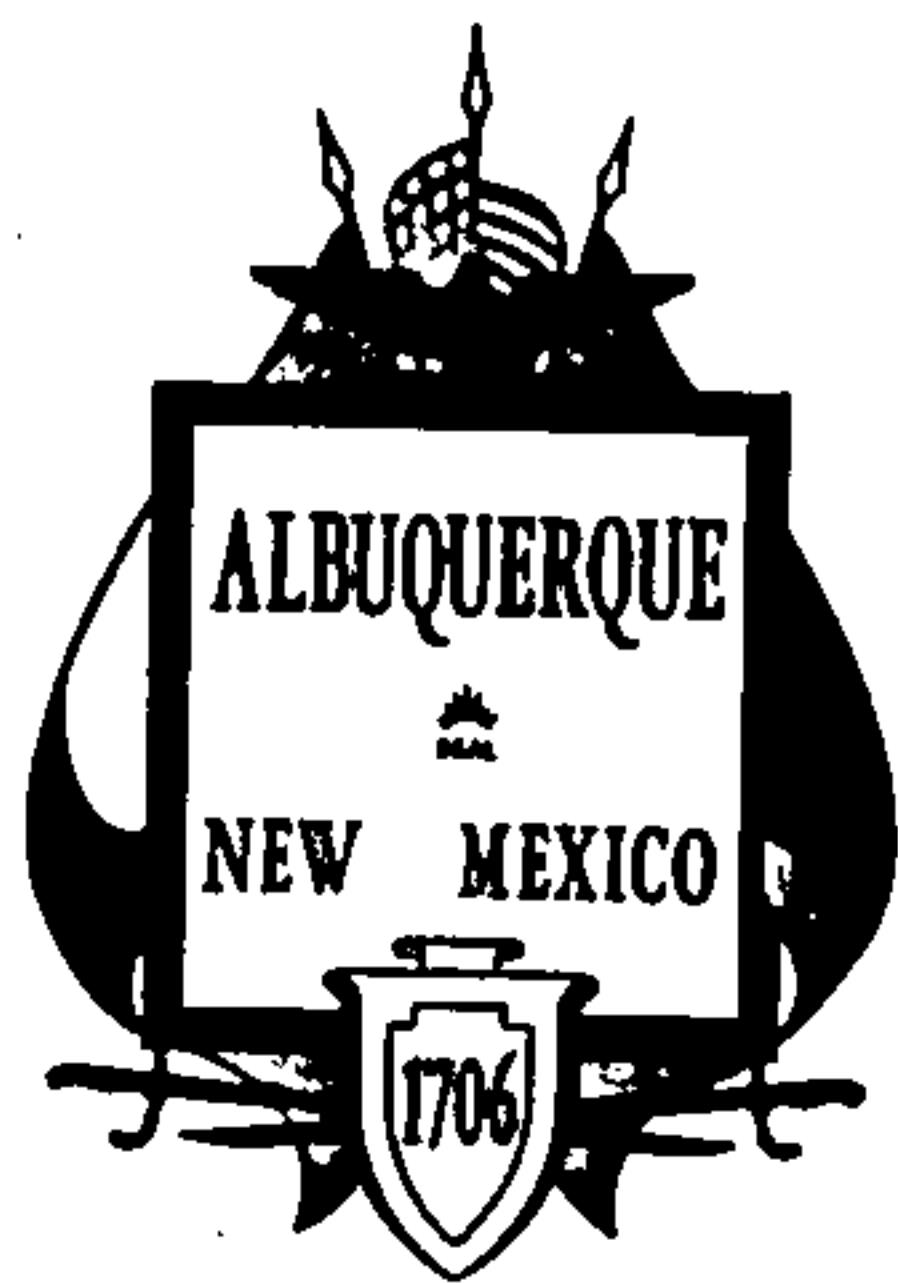




City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 22, 2002

Ron Bohannon, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: West Ridge MHP Phase II Drainage Report
Engineer Stamp date 5-7-02 (K9/D6A)

Dear Mr. Bohannon,

Based on information provided in your submittal dated 5-7-02, the above referenced report is approved for Site Plan for Building Permit, Site Plan for Subdivision, Preliminary and Final Plat action by the DRB. All retaining walls should be far enough outside the R/W so the wall is not supporting the road or sidewalk (in this case, 5 feet minimum).

Please provide this office with mylars of the grading plan for my signature in order to obtain a Rough Grading Permit.

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

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, PWD
Development and Building Services

C: file

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/11/2002)

PROJECT TITLE: West Ridge MHP Unit 2 ZONE MAP/DRG. FILE #: K9/D6A
DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION Tracts 1, 2, and 3 Town of Atrisco Grant, Unit 5
CITY ADDRESS: South of Bluewater and west of 94th Street

ENGINEERING FIRM: Tierra West, LLC CONTACT: RONALD R. BOHANNAN OR SARA LAVY
ADDRESS: 8509 Jefferson NE PHONE: (505) 858-3100
CITY, STATE: Albuquerque, NM ZIP CODE: 87113

OWNER: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

SURVEYOR: Precision Surveys CONTACT: Larry Medrano
ADDRESS: 8414-D Jefferson Street, NE PHONE: (505) 856-5700
CITY, STATE: Albuquerque, NM ZIP CODE: 87113

CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

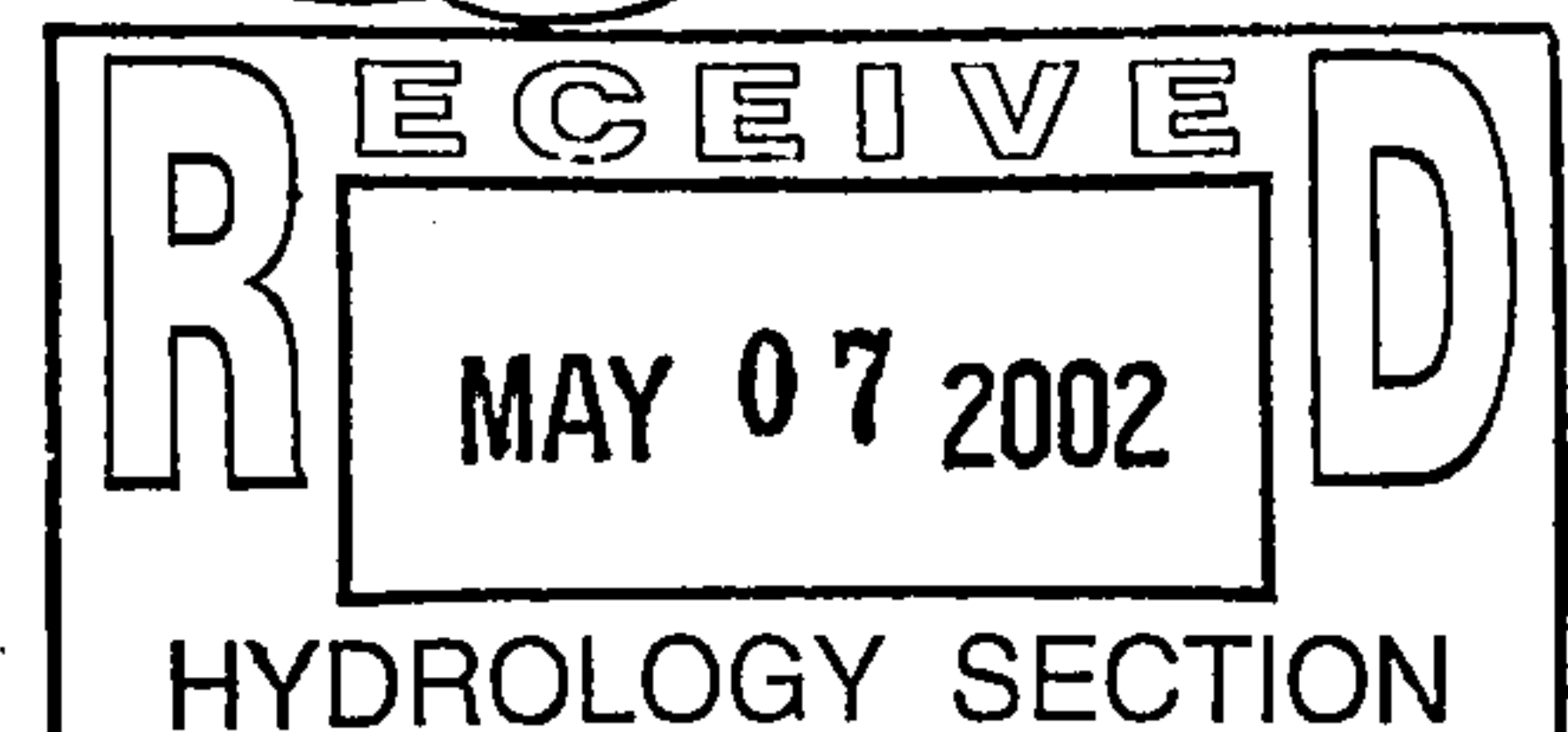
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

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.)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☒ OTHER (SPECIFY 3019)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED



DATE SUBMITTED: 5/7/02 BY: Sara Lavy

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 submittal 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
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.

K09/D022

DRAINAGE REPORT

for

West Ridge Mobile Home Park Unit II

Prepared by

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for

Fred Seeley
Western Security Real Estate Inc.
3511 Carlisle, NE
Albuquerque, New Mexico 87110

February 2002

Ronald R. Bohannon P.E. No. 7868

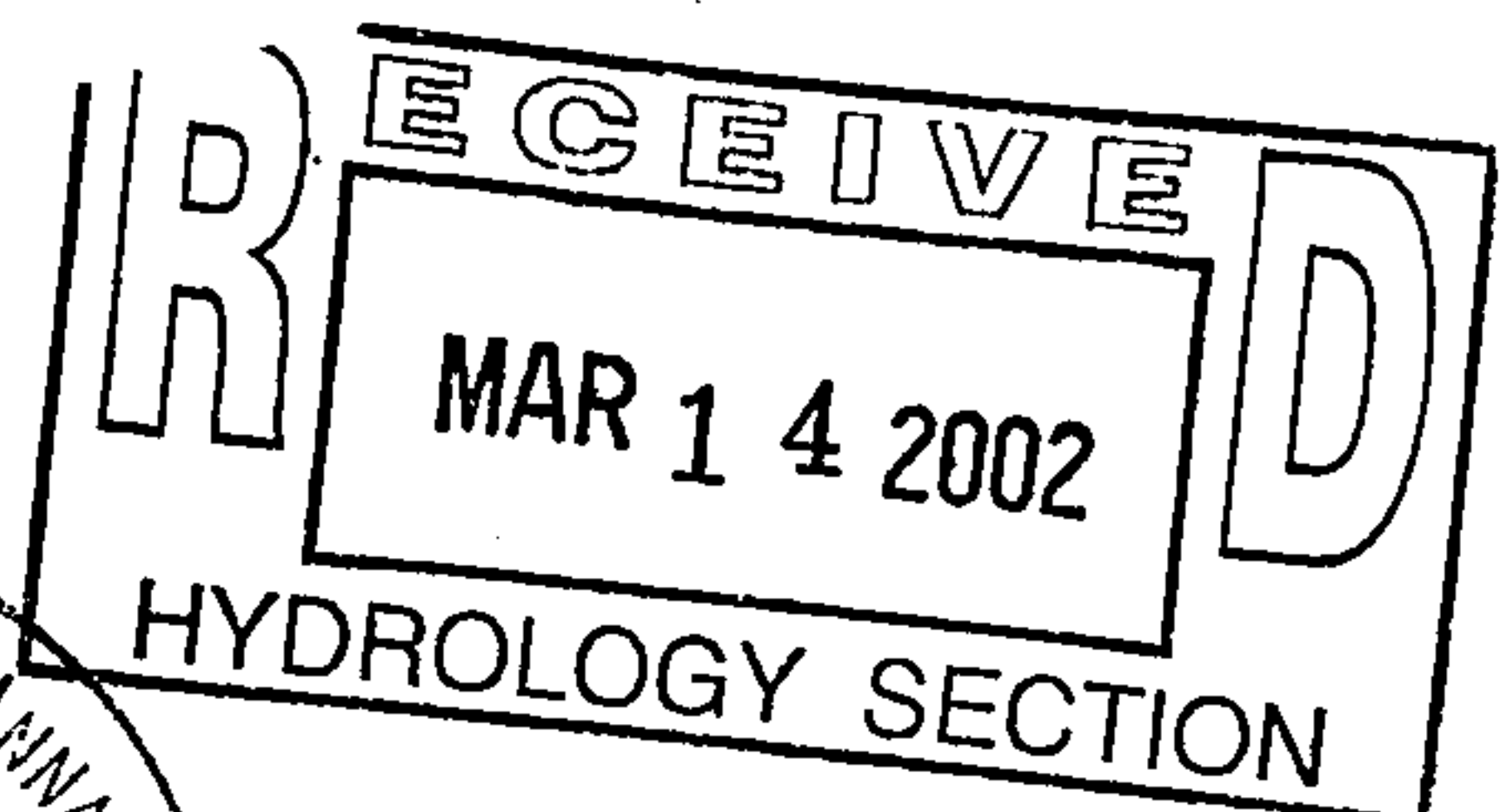
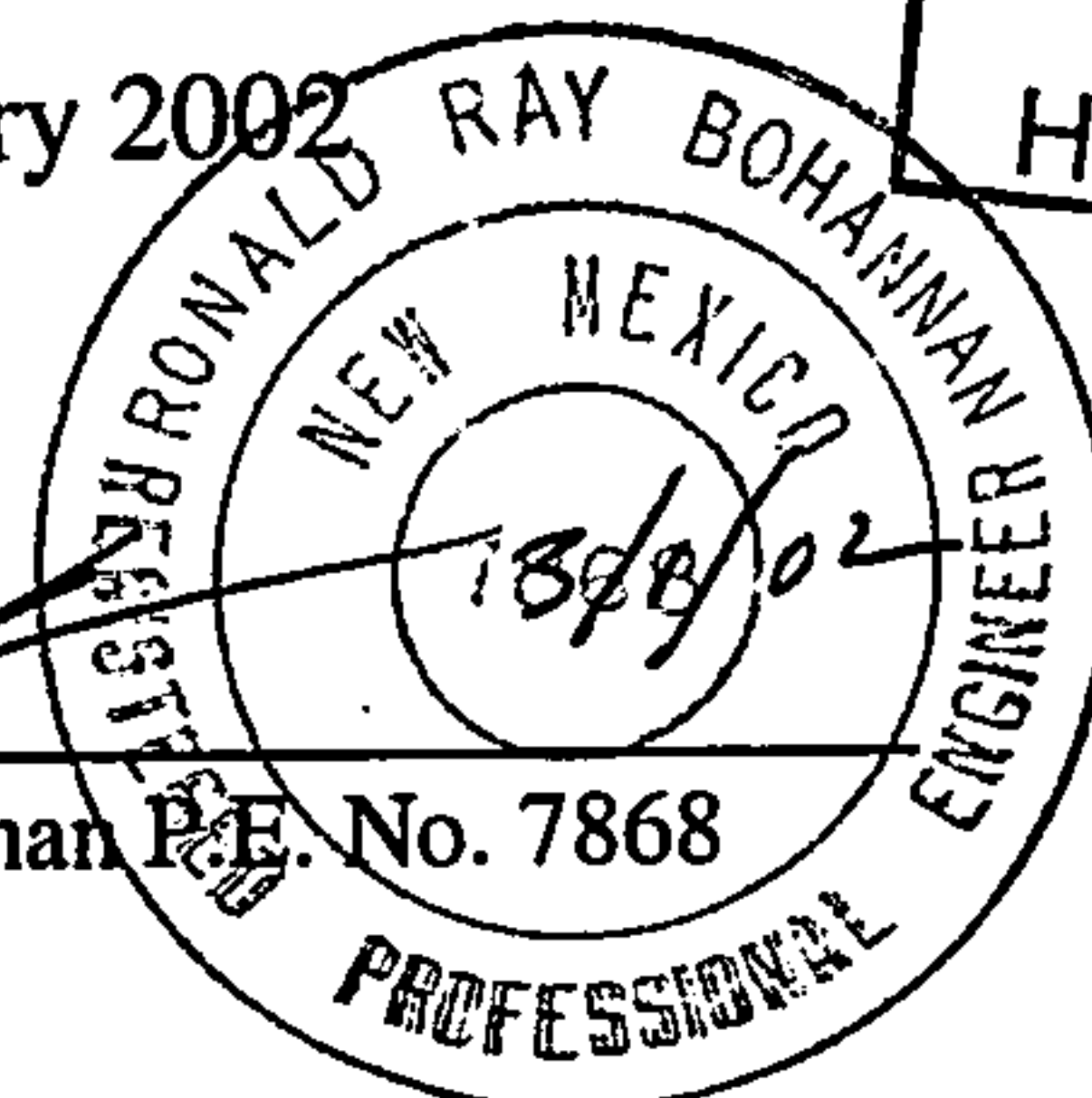


TABLE OF CONTENTS

Zone Atlas Map K-9.....	1
Location	2
Existing Drainage Conditions.....	2
FIRM Map and Soil Conditions	2
On-Site Drainage Management Plan.....	2
FIRM Map 35001C0328 D	3
Summary	4
Proposed Basin Layout.....	5
Runoff Calculations	6
Drainage Calculations	11
LOMR Approval.....	14

Location

West Ridge Mobile Home Park Unit 2 is located south of Bluewater Road and east of 94th Street. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 7.12 acres. The site is identified as Tracts 1, 2, 3 Town of Atrisco Grant, Unit 5. The purpose of this report is to provide the drainage analysis and management plan for the mobile home park.

Existing Drainage Conditions

The site is currently undeveloped and has a runoff rate of 9.17 cfs. There are no offsite flows entering the site from the south, north or east. The south and east sides of the site are developed and the flows contained on-site. A large retention pond is located north of the site and captures all flows from the north. The west is undeveloped and the natural topography drains south and does not impact the site.

FIRM 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) was issued removing the 100 year flood plain. A copy of the LOMR approval is included with this report.

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.

On-Site Drainage Management Plan

The proposed drainage solution is to route a portion of the onsite runoff to Avalon Subdivision and a portion to West Ridge Mobile Home Park Unit 1. The site was divided into

three developed drainage basins. Basins 1 and 2 will drain to Avalon Subdivision with a combined flow of 9.77 cfs. Basin 3 with a developed flow of 8.77 cfs will drain to West Ridge

Unit 1.

The original Master Plan Drainage Plan developed with West Ridge Unit 1 (K9/D6) called for all the flows from Unit 2 to drain to a storm drain in 94th Street. The adjacent Avalon Subdivision vacated 94th Street and modified the Master Plan. That Master Plan provided for 12.81 cfs draining south through West Ridge Unit 1 and 8.50 cfs draining to Avalon Subdivision.

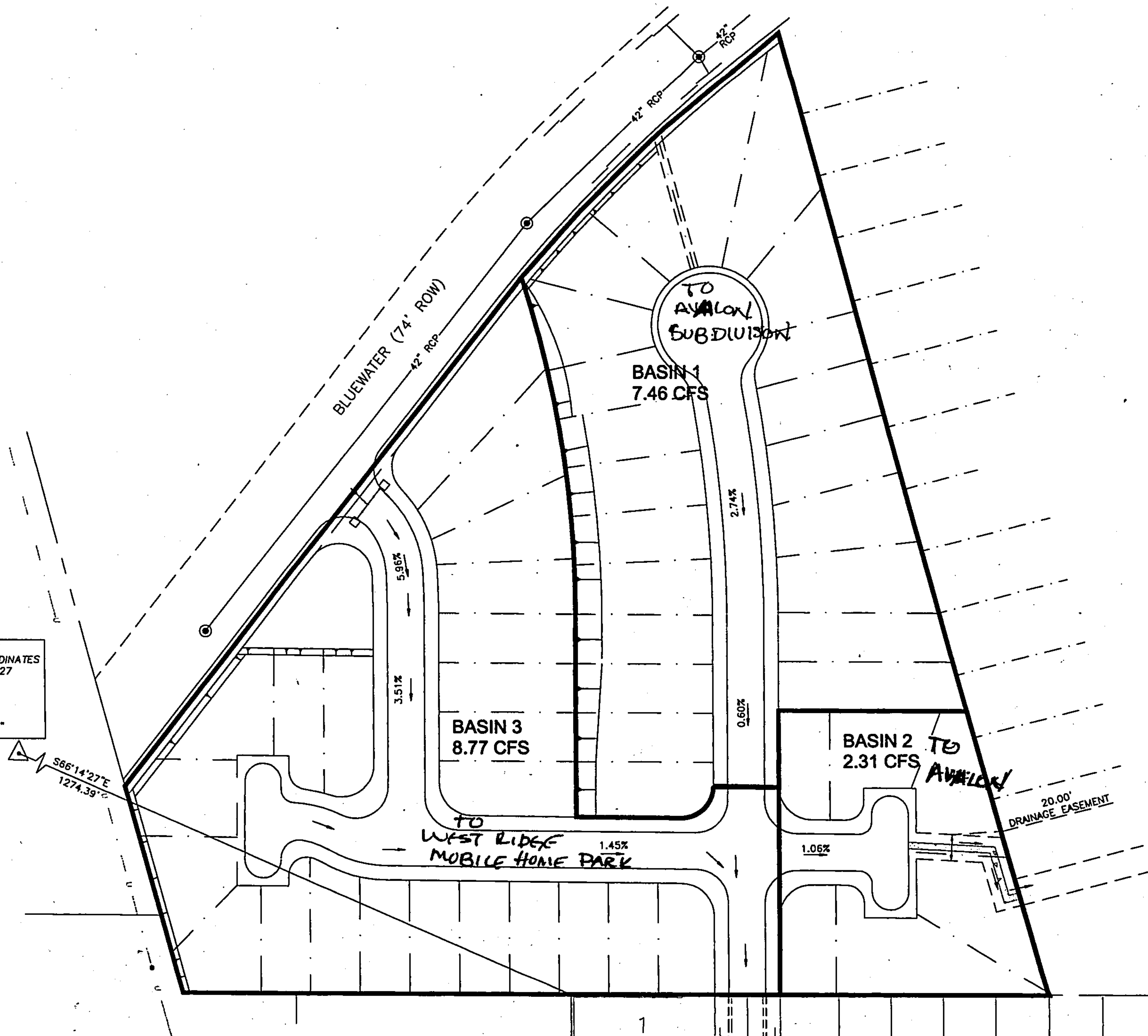
The 9.77 cfs will drain to a new 3' wide channel and connect to an existing 10' wide channel that was built with Avalon Subdivision to collect the flows from West Ridge. However, only one 24" wide sidewalk culvert was constructed from the existing channel to Jetty Court. An additional three 24" wide sidewalk culverts for a total of four culverts are required to carry 9.77 cfs to Jetty Court.

There is an additional 1.27 cfs (9.77 cfs – 8.45 cfs) entering Avalon Subdivision than was originally agreed. The channel entering Jetty Court has capacity for the additional flow as does the existing storm drain and pond within Avalon Subdivision.

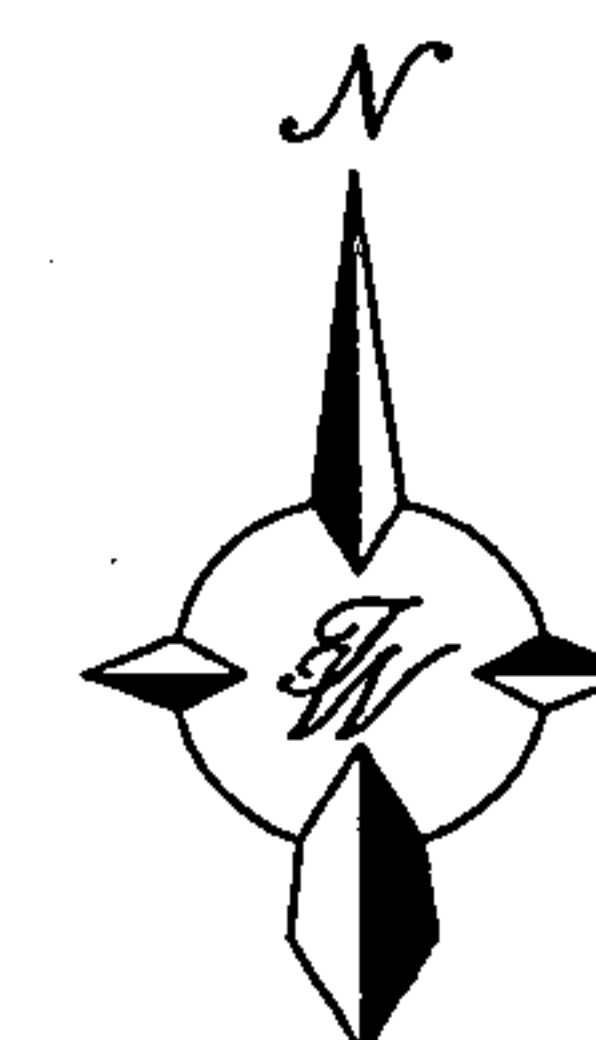
Summary

There are three developed basins on-site. Basin 1 and 2 will drain to Avalon Subdivision per an agreement. The flows will be conveyed via a 3' channel to an existing 10' channel within Avalon Subdivision. Basin 3 will drain to West Ridge Mobile Home Park Unit 1 per the same agreement. The streets will convey the flow to the temporary retention ponds located with West Ridge Unit 1 and Avalon Subdivision. When the offsite storm drain improvements are complete, the retention ponds will be removed.

CS MONUMENT "8-K9"
STATE PLANE COORDINATES
CENTRAL ZONE-NAD 1927
=352,217.80
=1,484,931.98
=5247.434
=0.99967415
ELTA ALPHA=-0°17'02"



AVALON
SUBDIVISION



DEVELOPED BASIN LAYOUT

Runoff Calculations

Drainage Basins

Existing and Developed Basins

BASIN	AREA (SF)	AREA (AC)	AREA (MI ²)
1	124895	2.8672	0.00448
2	39472	0.9062	0.00142
3	146919	3.3728	0.00527
Total	311286	7.1461	0.01117

Runoff Calculation Results

Existing

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	3.69	1.27	0.159	0.054
2	1.14	0.39	0.049	0.016
3	4.34	1.49	0.187	0.063
Total	9.17	3.15	0.395	0.133

Developed

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	7.46	4.48	0.360	0.208
2	2.31	1.38	0.111	0.064
3	8.77	5.26	0.423	0.244
Total	18.54	11.12	0.894	0.516

RUN DATE (MON/DAY/YR) =02/18/2002
USER NO.= AHYMO-I-9702a0100011K-SH

[illegible]

```

*****
*                               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=0.03333 HR
COMPUTE NM HYD        ID=1 HYD NO=100.1 AREA=0.004480 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
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* BASIN 2
*
COMPUTE NM HYD        ID=1 HYD NO=100.2 AREA=0.001377 SQ MI
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*
*****
*       10-YEAR, 6-HR STORM   (UNDER PROPOSED CONDITIONS)       *
*****
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*
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*
*****
*       100-YEAR, 6-HR STORM   (UNDER EXISTING CONDITIONS)       *
*****
*

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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=0.03333 HR
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*
* BASIN 2
*
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*
* BASIN 3
*
COMPUTE NM HYD       ID=1 HYD NO=100.3 AREA=0.005265 SQ MI
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                     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=0.0333 HR
COMPUTE NM HYD       ID=1 HYD NO=110.1 AREA=0.004480 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=0.001377 SQ MI
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PRINT HYD            ID=1 CODE=1
*
* BASIN 3
*
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                     TP=-0.24 HR MASS RAINFALL=-1
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*
*
*
FINISH

```

Drainage Calculations

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	3	3	0.67	2.01	4.34	0.4631336	1	13.79	9.77	4.86

Q req'd = 7.46 + 2.31 = 9.77 cfs

Manning's Equation:

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

A = Area

R = D/4

S = Slope

n = 0.013

SIDEWALK CULVERTS

Orifice Equation:

$$Q = CA\sqrt{2gH}$$

Where:

$$C = 0.6$$

$$A = 0.5833 \times 2 = 1.167 \text{ ft}^2$$

$$g = 32.2$$

H = Height of water measured from center of orifice

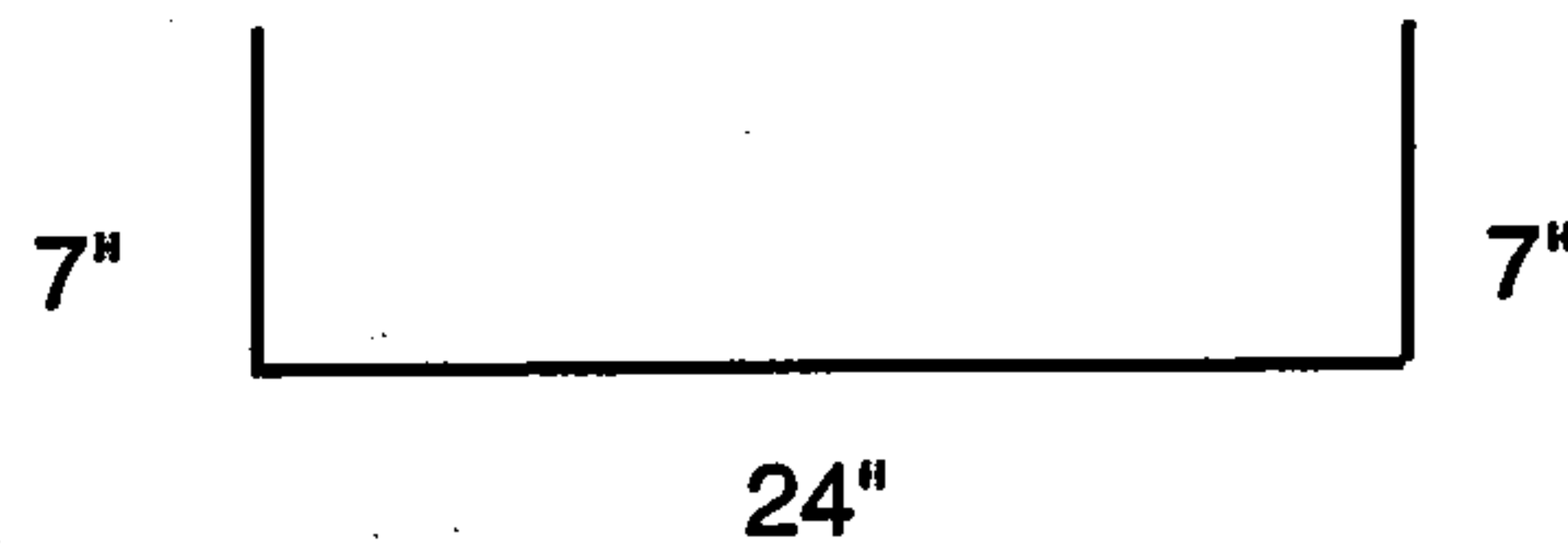
$$Q = 0.6 \times 1.167 \times \sqrt{2 \times 32.2 \times 0.2917}$$

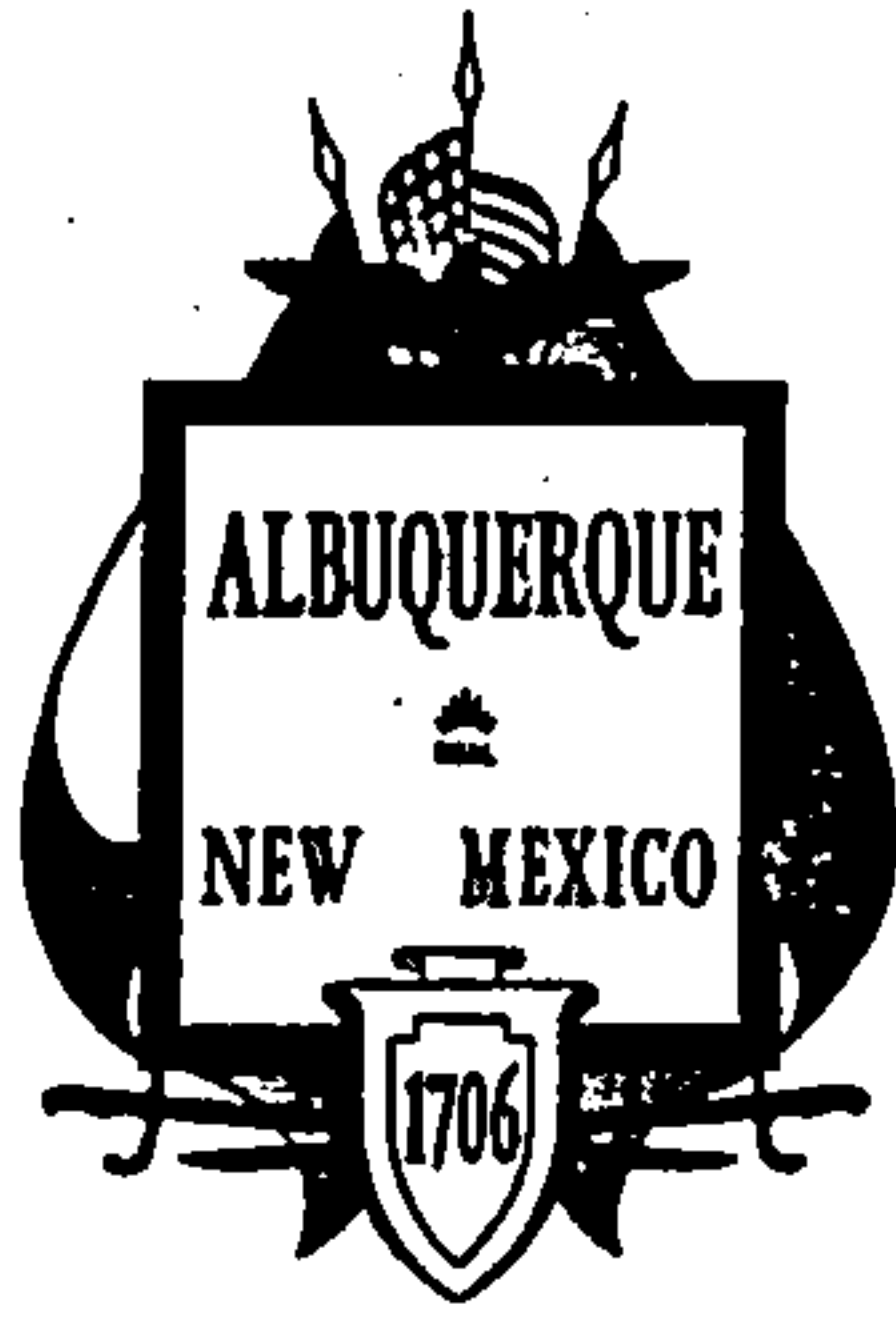
$$Q = 3.035 \text{ cfs}$$

Basin 1 and 2

$$12.14 \text{ cfs} > 9.77 \text{ cfs}$$

Use four 24" sidewalk culverts





City of Albuquerque

October 14, 1999

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Bldg. 1, Suite 210
Albuquerque, New Mexico 87110

RE: *Amendment No. 1 to the Drainage Masterplan for Avalon Subdivision, (K9/D12)*
Submitted for Revised Infrastructure List and Work Order Approval, Engineer's Stamp
Dated 9/29/99.

Dear Mr. Lorenz:

Based on the information provided, the above referenced Amendment to the Drainage Masterplan is adequate to justify revising the Infrastructure List and Work Order drawings for Avalon Subdivision. Please let me know what I can do to help make the changes to the Work Order plans.

The analysis indicates that the Avalon Subdivision will accept 8.5 cfs from Basin 1 of the West Ridge Mobile Home Park when that portion is developed in the future. The remaining runoff from Basin 1 must be diverted east onto North Ridge Avenue so that the downstream street capacities are not exceeded. Attached is a copy of a letter from Ron Bohannon indicating that a speed hump will be placed in West Ridge Street to turn the runoff to the east when Basin 1 is developed.

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

Attachment

c: Bo K. Johnson, P.E., Curb Inc.
Ron Bohannon, P.E., Tierra West
File

LOMR Approval



Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 00-06-089P

The Honorable Jim Baca
Mayor
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Community: City of Albuquerque, New Mexico
Community No.: 350002
Panel Affected: 35001C0328 D
Effective Date of **JAN 24 2000**
This Revision:

102-I-C

Dear Mayor Baca:

This responds to a request that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) for Bernalillo County, New Mexico and Incorporated Areas (the effective FIRM for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 14, 1999, Ms. Susan M. Calongne, P.E., City/County Floodplain Administrator, City of Albuquerque/Bernalillo County, requested that FEMA revise the FIRM to show the effects of a retention pond project associated with the West Ridge Mobile Home Park development along an unnamed arroyo from approximately 1,000 feet upstream of Bluewater Road to just upstream of Volcano Road. The retention pond project consists of one large retention pond with a capacity of 13.99 acre-feet approximately 500 feet downstream of Bluewater Road and two temporary ponds just upstream of Avalon Road and just upstream of Volcano Road.

All data required to complete our review of this request were submitted with letters from Mr. Ronald R. Bohannon, P.E., President, Tierra West, LLC, and Ms. Calongne.

We have completed our review of the submitted data and the flood data shown on the effective FIRM. We have revised the FIRM to modify the floodplain boundary delineations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) along the unnamed arroyo from approximately 1,000 feet upstream of Bluewater Road to just upstream of Volcano Road. As a result of the modifications, the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, for the unnamed arroyo increased in some areas and decreased in other areas. All increases in SFHA width are contained in the ponds. No insurable structures are affected by the increases in SFHA width. The modifications are shown on the enclosed annotated copy of FIRM Panel(s) 35001C0328 D. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel(s) of the effective FIRM dated September 20, 1996.

The modifications are effective as of the date shown above. The map panel(s) as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

A review of the determination made by this LOMR and any requests to alter this determination should be made within 30 days. Any request to alter the determination must be based on scientific or technical data.

We will not physically revise and republish the FIRM and Flood Insurance Study (FIS) report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

The basis of this LOMR is, in whole or in part, a retention pond project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities 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 regulations. Consequently, the ultimate responsibility for maintenance of the retention ponds rests with your community.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications made by this LOMR. Our records show that your community has met this requirement.

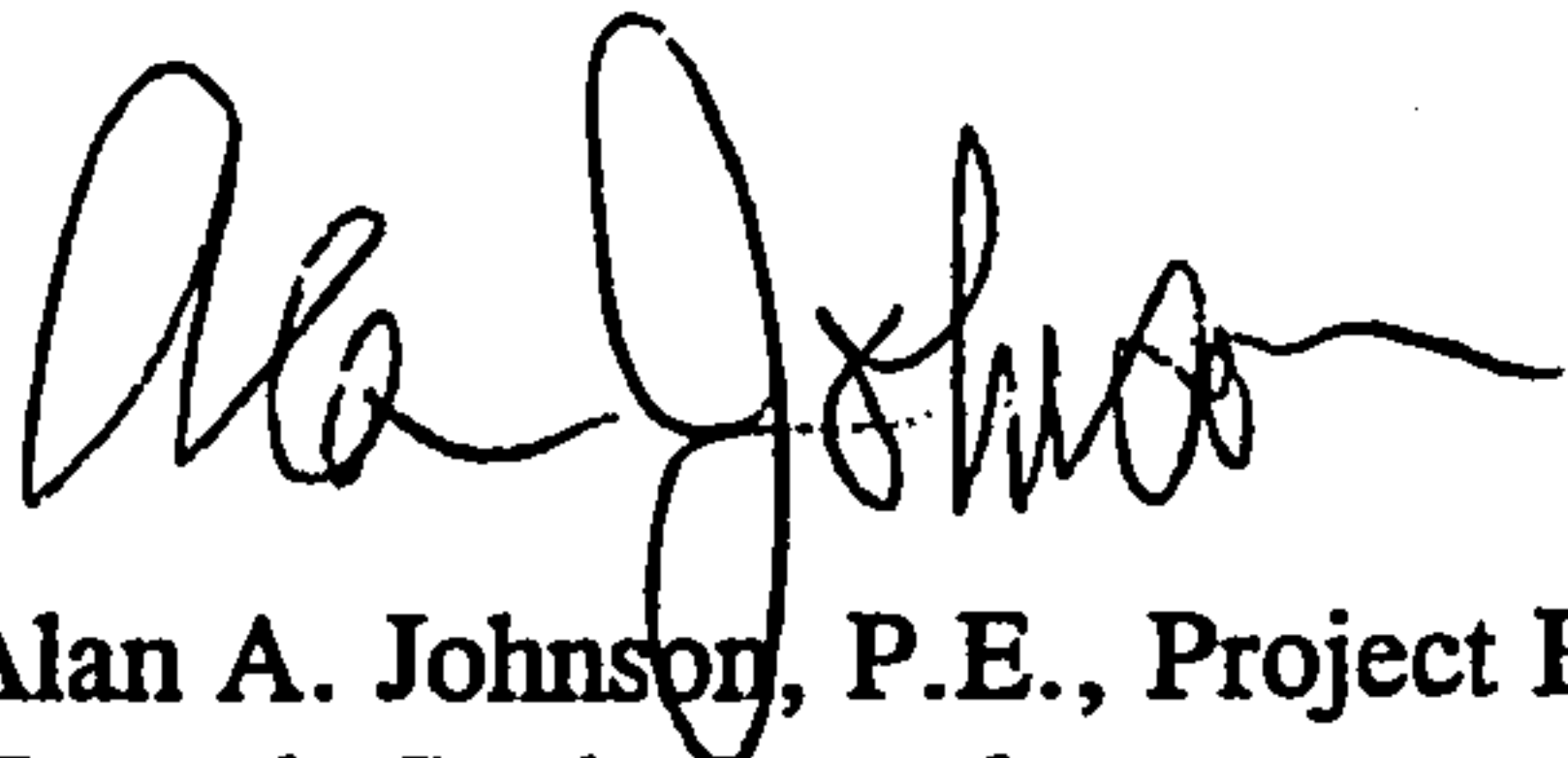
A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Frank Pagano
Director, Mitigation Division
Federal Emergency Management Agency, Region VI
Federal Regional Center, Room 206
800 North Loop 288
Denton, Texas 76201-3698
(940) 898-5127

FEMA makes flood insurance available in participating communities; in addition, we encourage communities to develop their own loss reduction and prevention programs. Our Project Impact initiative, developed by FEMA Director James Lee Witt, seeks to focus the energy of businesses, citizens, and communities in the United States on the importance of reducing their susceptibility to the impact of all natural disasters, including floods, hurricanes, severe storms, earthquakes, and wildfires. Natural hazard mitigation is most effective when it is planned for and implemented at the local level, by the entities who are most knowledgeable of local conditions and whose economic stability and safety are at stake. For your information, we are enclosing a Project Impact Fact Sheet. For additional information on Project Impact, please visit our Web site at www.fema.gov.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. Alan Johnson of our staff in Washington, DC, either by telephone at (202) 646-3403 or by facsimile at (202) 646-4596.

Sincerely,



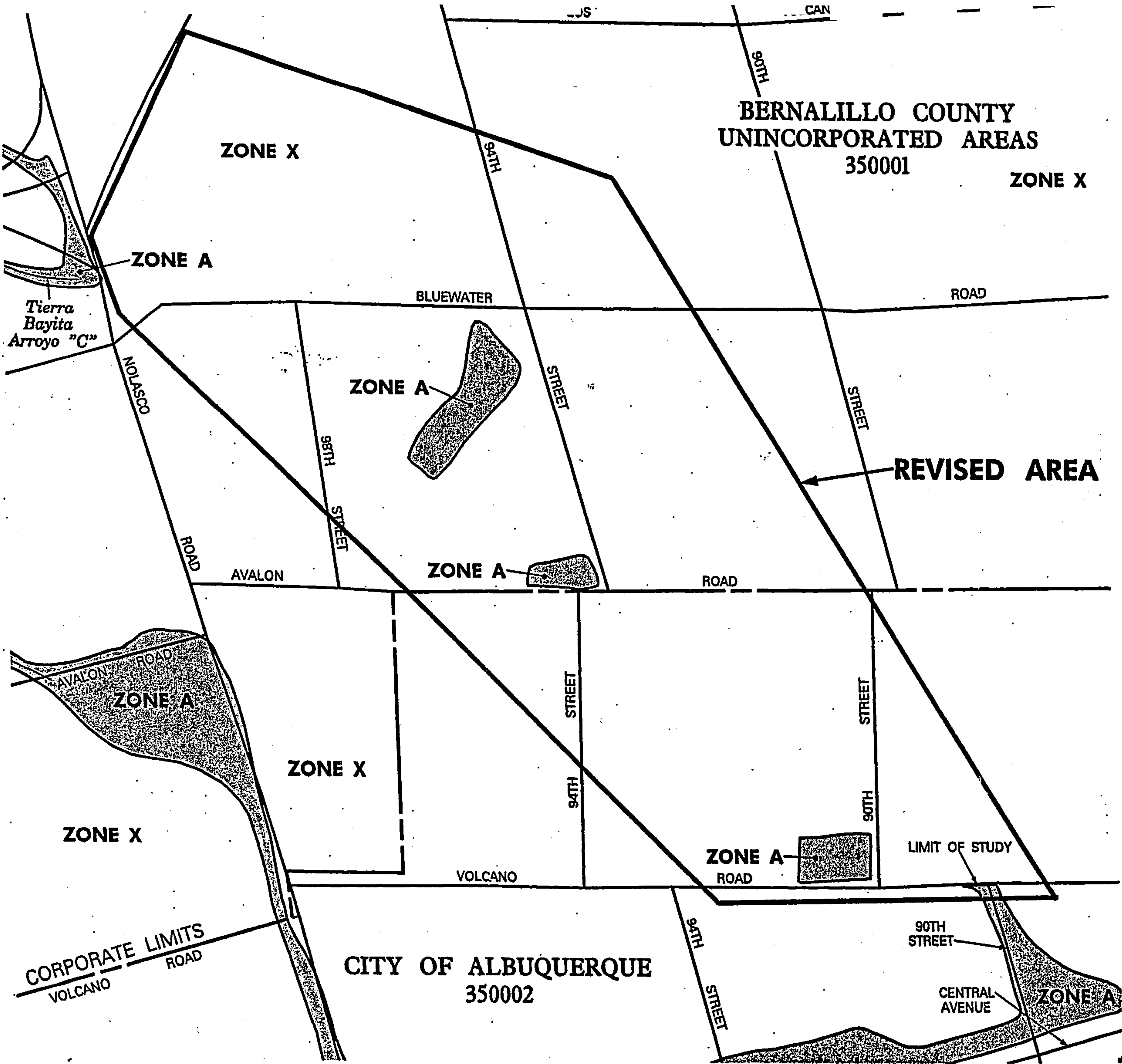
Alan A. Johnson, P.E., Project Engineer
Hazards Study Branch
Mitigation Directorate

For: Matthew B. Miller, P.E., Chief
Hazards Study Branch
Mitigation Directorate

Enclosure(s)

cc: Ms. Susan M. Calongne, P.E.
City/County Floodplain Administrator
City of Albuquerque/Bernalillo County

Mr. Ronald R. Bohannon, P.E.
President
Tierra West, LLC

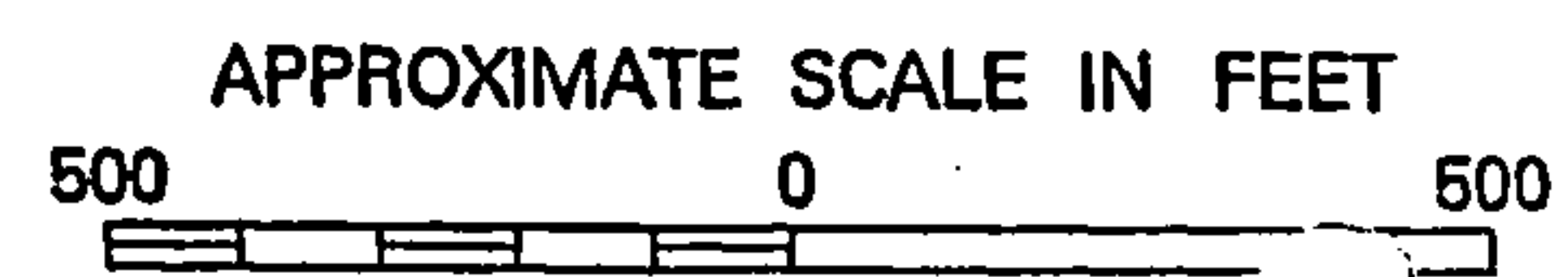


BERNALILLO COUNTY
CITY OF ALBUQUERQUE

CITY OF ALBUQUERQUE
350002

BERNALILLO COUNTY
UNINCORPORATED AREAS
350001

ZONE X



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS

PANEL 328 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:	NUMBER	PANEL	FX
COMMUNITY			
ALBUQUERQUE/CITY OF ALBUQUERQUE	328	0328	D
BERNALILLO COUNTY UNINCORPORATED AREAS	328	0328	D

REVISED TO REFLECT LOMR
DATED JAN 24 2000

MAP NUMBER
35001C0328 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996



Federal Emergency Management Agency



**Need Information on
FEMA FLOOD HAZARD MAPS?
CONTACT 1-877-FEMA MAP
(Toll Free 1-877-336-2627)**



This release is intended to acquaint the public with the Federal Emergency Management Agency's new toll-free number established to respond to questions regarding National Flood Insurance Program (NFIP) Flood Hazard maps, including:

- How do I go about getting a Letter of Map Amendment (LOMA)? A Letter of Map Revision Based on Fill (LOMR-F)? A Letter of Map Revision (LOMR)?
- What is the status of my request for a LOMA? LOMR-F? Study?
- How long does it take to get the map revised?
- Did FEMA receive my request for a Letter of Map Amendment?
- I was just told by my lender that my house is in a floodplain and I need flood insurance, what are my options?
- Was a LOMA ever issued for my property?
- Has the National Flood Insurance Program Flood Hazard map for my community been revised?

The following procedures have been established by FEMA for changing and correcting the NFIP Flood Hazard maps. They are: Letters of Map Amendment (LOMAs), Letters of Map Revision (LOMRs), Letters of Map Revision Based on Fill (LOMR-Fs), and Physical Map Revisions.

As a result of numerous requests for revisions or corrections to the NFIP Flood Hazard maps, FEMA has assigned a dedicated staff of trained professionals to respond to the public's requests for information on the procedures to revise or correct the NFIP Flood Hazard maps.

If you have any questions regarding the NFIP Flood Hazard maps or need current information and facts on FEMA Mapping Procedures, call 1-877-FEMA-MAP.

Below are additional Toll-Free numbers that can be used to obtain other information regarding the NFIP and its products.

- For information about the NFIP's Preferred Risk Policy, ask your insurance agent or company, or call the NFIP's toll-free number at 1-800-427-9662.
- For any current FEMA publications, call FEMA's Publication Center at 1-800-480-2520.
- For answers to flood insurance related questions, call the National Flood Insurance Telephone Response Center at 1-800-427-4661.
- For ordering printed copies of effective NFIP Flood Hazard maps and related documents, call the FEMA Map Service Center at 1-800-358-9616.

Additional information on flood insurance and other FEMA programs and activities is available on the FEMA World Wide Web Site (<http://www.FEMA.gov>) and from FEMA's 24-hour-FAX-on-Demand system at (202) 646-FEMA. TDD# 1-800-427-5593.



PROJECT IMPACT Building a Disaster Resistant Community

BACKGROUND

PROJECT IMPACT is an initiative developed by FEMA Director James Lee Witt to challenge the country to undertake actions that protect families, businesses and communities by reducing the effects of natural disasters. This initiative includes a national awareness campaign, the selection of pilot communities that demonstrate the benefits of hazard mitigation through a partnership approach, and an outreach effort to businesses and communities using a new guidebook that offers a formula for a community or business to follow to become disaster resistant.

RATIONALE

The increasing number and severity of natural disasters the past decade demands that action be taken to reduce the threat that hurricanes, severe storms, earthquakes, floods and wildfires impose upon the economic stability, economic future and safety of the citizens of the U.S. As the federal agency responsible for emergency management, FEMA is committed to reducing disaster losses by focusing the energy of businesses, citizens, and communities in the U.S. on the importance of reducing their susceptibility to the impact of natural disasters.

There are three primary tenets of the PROJECT IMPACT initiative:

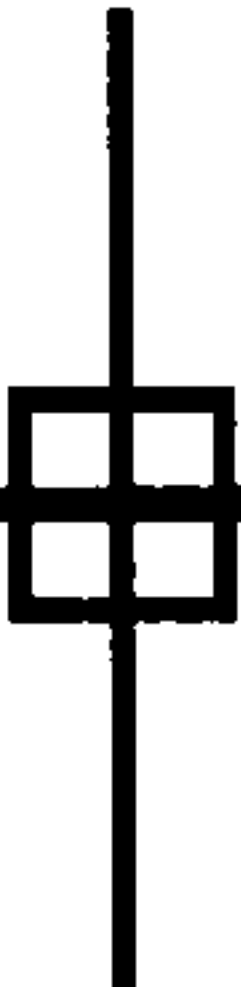
- *Mitigation is a local issue.* It is best addressed by a local partnership that involves government, businesses and private citizens.
- *Private sector participation is essential.* Disasters threaten the economic and commercial growth of our cities, towns, villages and counties. Without the participation of the private sector, comprehensive solutions will not be developed.
- *Mitigation is a long-term effort that requires long-term investment.* Disaster losses will not be eliminated overnight.

PILOT COMMUNITIES

Director Witt and FEMA have worked closely with seven communities throughout the U.S. to develop a PROJECT IMPACT plan that localities, businesses and citizens can follow to build disaster resistant communities where they live and work. Director Witt will participate in events in each of these communities to congratulate them on their foresight, commitment, and contribution to a disaster resistant nation.

PROJECT IMPACT GUIDEBOOK

The guidebook presents the steps a community can take to become disaster resistant. It also provides examples of the actions and resources available to accomplish this goal.



TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

May 6, 2002

Mr. Bradley L. Bingham, PE
Sr. Engineer, PWD
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: West Ridge Mobile Home Park Unit II (K9/D6A)

Dear Mr. Bingham:

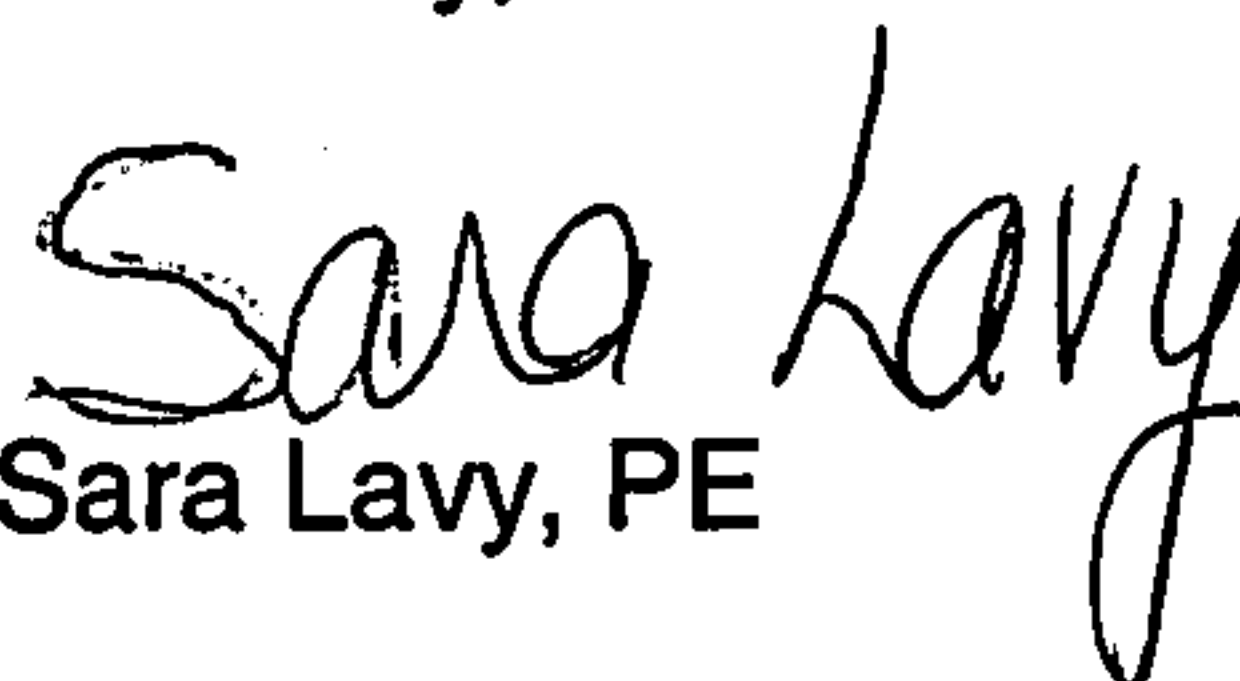
I have addressed your comments regarding the Drainage Report and Grading Plan in the following manner:

1. A Work Order will be required for all street improvements.
We have removed the SO #19 note and will do all improvements under the work order.
2. For each mobile home pad, please provide a typical pad grading detail.
We have provided a typical pad grading detail on the Grading Plan.
3. Please provide hydraulic calculations of the road intersection to show what the capacity of the intersection is. This may require adding more spot elevations to your grade break detail.
We have provided more spot elevations and changed the street sections to be super-elevated. This will keep the drainage on the proper side of the street and only nuisance flows will need to cross the intersection.
4. Please provide grades outside the wall (along the west and south side), where the 18" max. retainage is proposed.
Additional grades have been shown on the west and south side of the site.
5. The retaining wall on the west side appears too close to the street. City policy dictates that the wall should not be retaining the street. If this has to be your design, we need guardrail and wall easement.
The street is at the minimum grade of 0.6 % and must drain east, so the design cannot be changed. As the street is higher than the subdivision, we have moved the wall to be within the ROW at your request.
6. Please provide slope of road and note adjusting manhole rims accordingly. Also include design information of storm drain completed by your office.
We have added the slope of the road and a manhole rim note. The storm drain design has been shown on the Grading and Drainage Plan.

Mr. Brad Bingham
May 6, 2002
Page 2

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

Sincerely,


Sara Lavy, PE

cc: Fred Seeley

JN: 21061
scl

21061: 21061 hydrology resubmittal ltr.doc

DRAINAGE INFORMATION SHEET

(REV. 11/01/2002)

K-9/D6A

PROJECT TITLE: West Ridge MHP Unti 2
DRB #: _____ EPC #: _____

ZONE ATLAS/DRG. FILE #: K9
WORK ORDER #: _____

LEGAL DESCRIPTION Tracts 1, 2, 3 Town of Atrisco Grant, Unit 5
CITY ADDRESS: South of Bluewater and west of 94th Street

ENGINEERING FIRM: TIERRA WEST, LLC
ADDRESS: 8509 JEFFERSON NE
CITY, STATE: ALBUQUERQUE, NM

CONTACT: RONALD R. BOHANNAN OR SARA LAVY
PHONE: (505) 858-3100
ZIP CODE: 87113

OWNER: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: Ed Avila
PHONE: 842-1113
ZIP CODE: 87104

SURVEYOR: Precision Surveys
ADDRESS: 8414-D Jefferson Street, NE
CITY, STATE: ALBUQUERQUE, NM

CONTACT: Larry Medrano
PHONE: (505) 856-5700
ZIP CODE: 87113

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

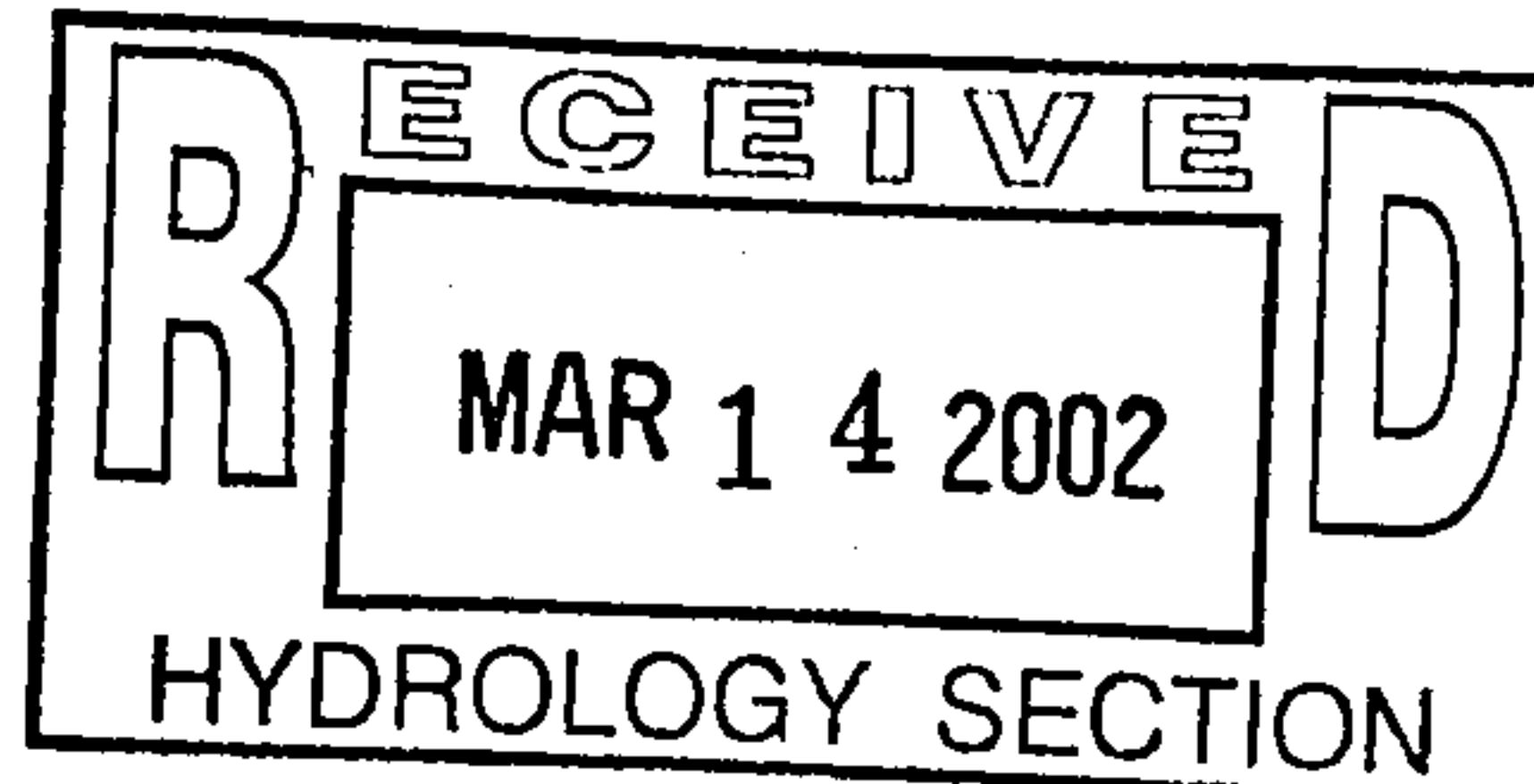
- ☒ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

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.)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☒ OTHER (SPECIFY) - SO # 19 Permit

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☒ YES
☒ NO
☐ COPY PROVIDED



DATE SUBMITTED: 3/5/02 BY: Sara Lavy

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 submittal 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
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.



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 25, 2002

Ronald R. Bohannon, PE
Tierra West, LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: **WEST RIDGE MHP-PH2**
Town of Atrisco Grant Grading and Drainage Plan
Engineer's Stamp Dated 3-08-02, (K9/D6A)

Dear Mr. Bohannon,

Based on the information contained in your submittal dated 3-14-02, the above referenced plan is not approved for Preliminary Plat, Final Plat, Site Plan for Subdivision, Site Plan for Building Permit, or SO-19 Permit until the following comments are addressed:

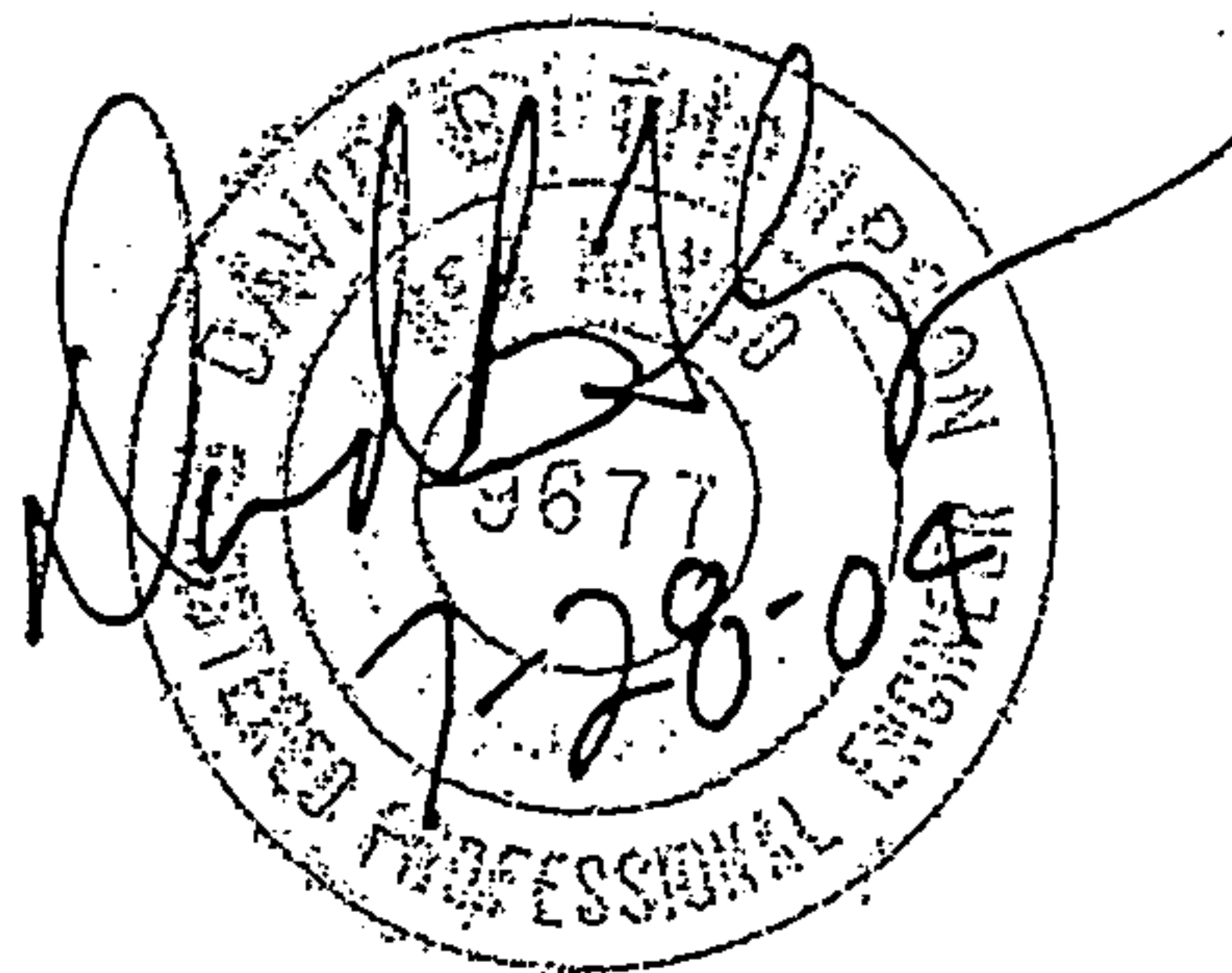
- A Work Order will be required for all street improvements.
- For each mobile home pad, please provide a typical pad grading detail.
- Please provide hydraulic calculations of the road intersection to show what the capacity of the intersection is. This may require adding more spot elevations to your grade break detail.
- Please provide grades outside the wall (along the west and south side), where the 18" max. retainage is proposed.
- The retaining wall on the west side appears too close to the street. City policy dictates that the wall should not be retaining the street. If this has to be your design, we need guardrail and wall easement.
- Please provide slope of road and note adjusting manhole rims accordingly. Also include design information of storm drain completed by your office.

I suggest that we meet to discuss my comments in order to facilitate approval. I can be reached at 924-3986.

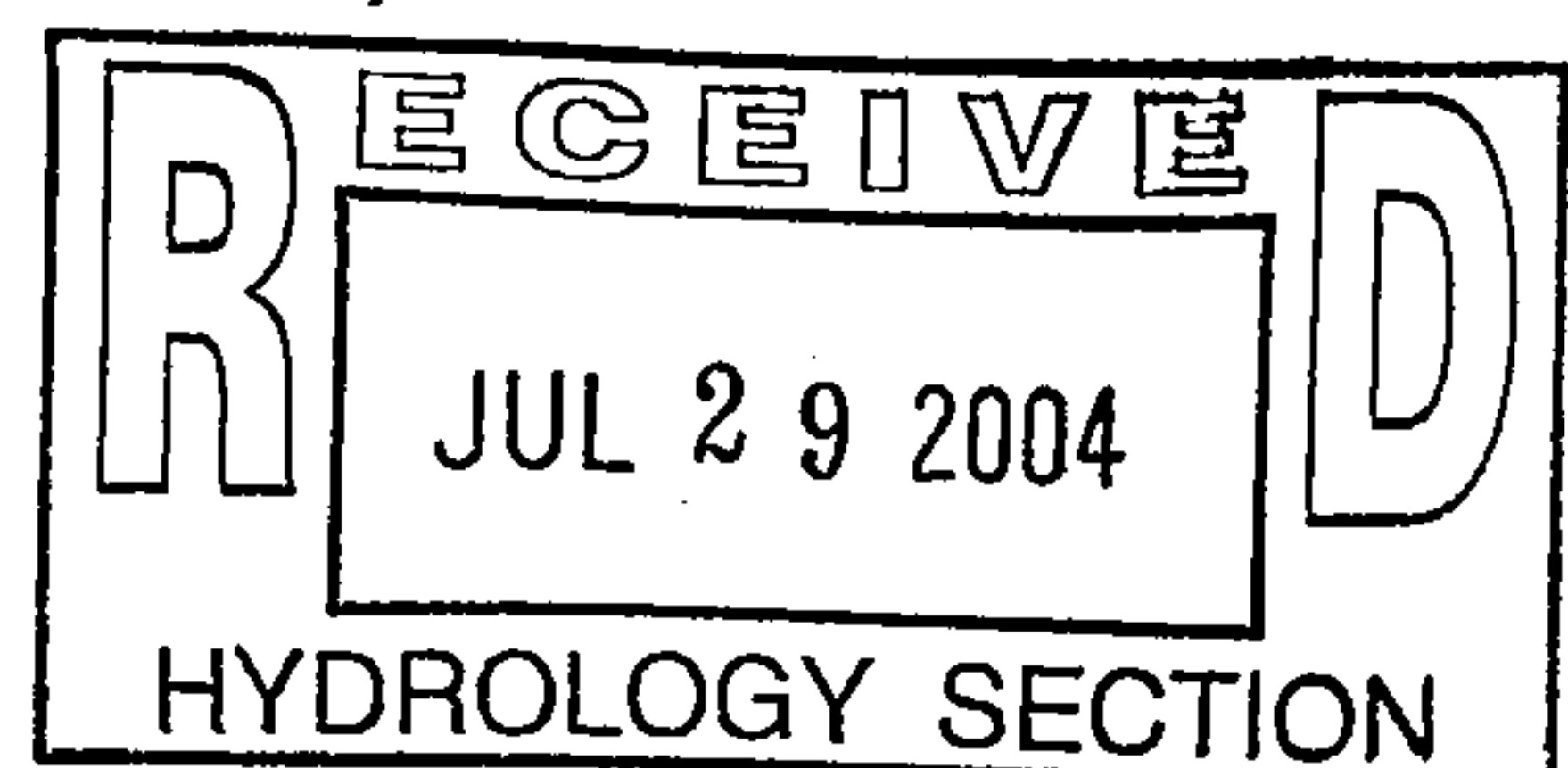
Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, PWD
Building and Development Services

DRAINAGE REPORT
FOR
BLUEWATER POINTE
SUBDIVISION



July 2004



DRAINAGE REPORT
FOR
BLUEWATER POINTE
SUBDIVISION

Prepared by:
Thompson Engineering Consultants, Inc.
4800 Juan Tabo N.E., Suite C
Albuquerque, NM 87111

July 2004

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION AND SITE LOCATION	1
METHODOLOGY	1
EXISTING DRAINAGE CONDITIONS.....	1
INTRODUCTION.....	1
OFFSITE FLOWS	4
ON-SITE FLOWS AND DRAINAGE BASIN DELINEATION.....	4
DEVELOPED DRAINAGE CONDITIONS	4
HYDROLOGIC ANALYSIS	4
HYDRAULICS ANALYSIS	6
<i>Street Hydraulic Analysis</i>	6

APPENDIX A -- HYDROLOGIC CALCULATIONS

APPENDIX B -- HYDRAULIC CALCULATIONS

APPENDIX C -- AMENDMENT NO. 1 TO THE DRAINAGE MASTERPLAN FOR THE AVALON
SUBDIVISION AND THE APPROVED WEST RIDGE MOBILE HOME PARK, UNIT II
DRAINAGE REPORT

LIST OF PLATES

	<u>PAGE</u>
PLATE 1 -- GRADING AND DRAINAGE PLAN	POCKET

LIST OF FIGURES

	<u>PAGE</u>
FIGURE 1 - ZONE ATLAS MAP K-9	2
FIGURE 2 FEMA FLOOD INSURANCE RATE MAP	3

LIST OF TABLES

	<u>PAGE</u>
TABLE 1 EXISTING DRAINAGE CONDITIONS	4
TABLE 2 DEVELOPED DRAINAGE CONDITIONS	5
TABLE 3 STREET HYDRAULIC ANALYSIS.....	6
TABLE 4 CHANNEL HYDRAULIC ANALYSIS	6

INTRODUCTION AND SITE LOCATION

Bluewater Pointe subdivision is located south of Bluewater Road and east of 94th Street. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 7.13 acres. The site is identified as Tracts 1, 2, and 3 Town of Atrisco Grant, Unit 5. The purpose of this report is to provide the drainage analysis and management plan for Bluewater Pointe Subdivision. The Bluewater Pointe Subdivision consists of 53 single family residential lots.

A previous site development, grading and drainage plan was approved for this site known as West Ridge Mobile Home Park, Unit II. The drainage concept that was approved for the West Ridge Mobile Home Part, Unit II was utilized for the development of this report.

METHODOLOGY

The hydrologic and hydraulic criteria in Section 22 of the City of Albuquerque Development Process Manual (DPM), entitled "Drainage, Flood Control, and Erosion Control," was followed to perform the analyses given in this report. The design storm used for both the existing undeveloped and developed conditions of the Bluewater Pointe Subdivision is the 100-year, 6-hour storm event for peak flow computations. The property is located in Zone 1, which has a 100-year 6-hour storm event of 2.2 inches.

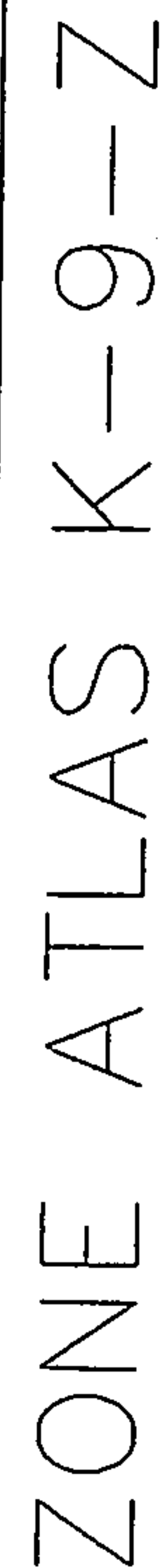
Street capacities were modeled using Haested Methods Flowmaster program to determine normal depths and conjugate depths.

EXISTING DRAINAGE CONDITIONS

INTRODUCTION

The site is currently undeveloped. The site drains from northwest to southeast into a temporary retention pond that was constructed with West Ridge Mobile Home Park, Unit I. The existing site generates a 100-year undeveloped runoff rate of 9.26 cfs and a 100-year volume of 0.260 acre-feet. The site contains two different soils as identified 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 have rapid permeability. Runoff is slow and the hazard of soil blowing is severe for both soils.

The site is located on FEMA Flood Insurance Rate Map Number 35001C0328 D as shown on Page 3 of this report. The site is encumbered with a Flood Hazard Zone A at the location of the temporary retention pond at the southeast corner of the property. A letter of Map revision (LOMR) will need to be completed to remove the flood hazard zone.



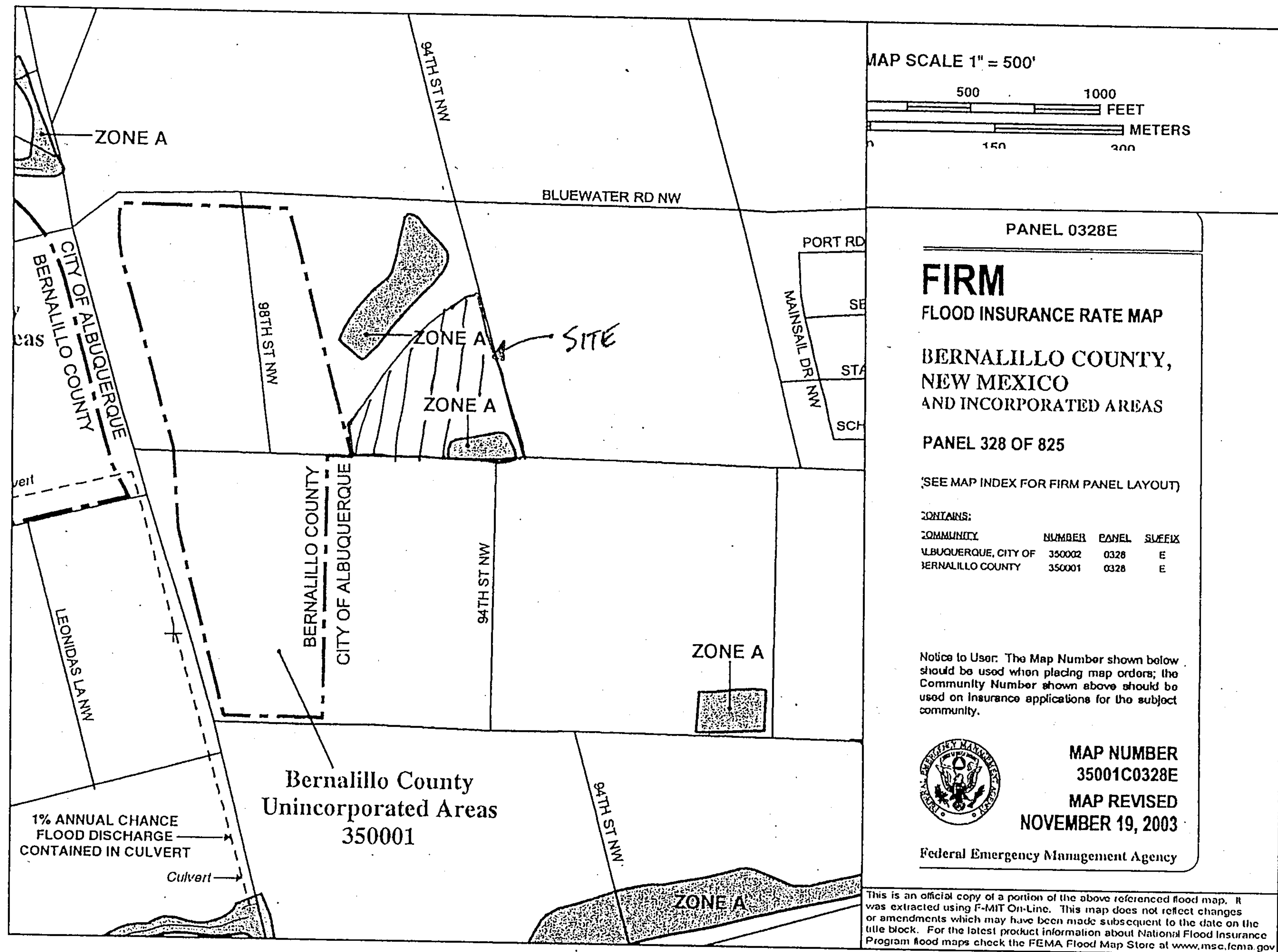


Figure 2 FEMA Flood Insurance Rate Map

OFFSITE FLOWS

There are no offsite flows entering the site from the north, south or east. The south and east sides of the subdivision are developed with the flows contained on-site. A large existing retention pond, located north of the site, captures all flows from the north. The west is undeveloped with the natural topography draining to the south and therefore does not affect this site.

ON-SITE FLOWS AND DRAINAGE BASIN DELINEATION

For the existing conditions hydrologic analysis, Land Treatment A was used to determine peak flows. The site was divided into two drainage basins. Basin 100 includes approximately the western half of the subdivision. Basin 200 includes approximately the eastern half of the subdivision. Basin 300 includes the eastern half ROW of Bluewater Road and Basin 400 includes the western half ROW of Bluewater Road.

Table 1 Existing Drainage Conditions

BASINS	Area (acres)	100yr-6hr Peak Flow (cfs)	100yr- 6hr Runoff Volume (acre-ft)	Land Treatment
100	3.65	4.74	0.134	100%A
200	3.48	4.52	0.127	100%A
300	0.34	0.45	0.012	100%A
400	0.25	0.33	0.009	100%A
TOTAL SUBD.	7.13	9.26	0.260	

DEVELOPED DRAINAGE CONDITIONS

HYDROLOGIC ANALYSIS

The original Master Drainage Plan developed with the West Ridge Unit 1 (Zone Atlas Maps K9/D6) called for all the flows from Unit 2 to drain to a storm drain in 94th Street. The adjacent Avalon Subdivision, however, vacated 94th Street and modified the Master Plan. That Master Plan provided for 8.5 CFS from Bluewater Pointe Subdivision draining to Avalon Subdivision and 12.81 CFS draining south through West Ridge Unit 1. The developer of this site has agreements to allow for draining this site into the existing Avalon subdivision.

Basin 100 includes Adonai Road and Elohim Court and all lots that drain into these streets. Basin 100 will drain east in Adonai Road to El Shaddai Street. Basin 200 includes El Shaddai Street along the east side of the subdivision and all of the lots that

drain to the street. Runoff from Basin 100 and Basin 200 will drain into the existing 10-foot wide concrete channel that drains to Jetty Court and ultimately into the existing drainage pond developed for the Avalon Subdivision. The revised Master Drainage Plan for this site allowed for 9.77 CFS from Basins 100 & 200 to drain into the existing concrete channel.

Basin 300 is the southern half of Bluewater Road ROW from the high point to the west property line of the subdivision. The runoff from Basin 300 will be collected by a storm inlet in Bluewater Road at a low point just east of Adonai Road and conveyed in a new 42" storm drain that connects to the existing storm drain to the east. Basin 400 is the southern half of Bluewater Road ROW from the high point to the east subdivision boundary. Runoff from Basin 400 will drain east to an existing storm inlet just east of the subdivision.

The site was assigned land treatment values in accordance with Tables A-4 and A-5 of the DPM's section 22.2. Table 1 shows the Land Treatments and peak flows for each basin. The total peak flows from Basins 100 & 200 was computed to be 24.13 CFS, which is higher than the 9.77 CFS allowed in the revised Master Drainage Report, but the Avalon pond has the capacity to accept the flows. The existing concrete channel, with 2 courses of CMU's for the sidewalls, draining into Jetty Court as well as the existing storm drain and pond in Avalon Subdivision has the capacity to accept the additional flow. The depth of flow in the existing channel is 0.40 feet. Based on the weir equation, the opening of the proposed concrete channel that will drain to the existing channel will need to be 15 feet-wide at El Shaddai Street. The channel draining into Jetty Court has only one 24" sidewalk culvert. A total of 4-24" sidewalk culverts with concrete splitter walls to divide the flow in the channel or a special design sidewalk culvert with minimal flow obstruction will be required to convey the 24.13 CFS into Jetty Court. The hydrologic calculations are provided in Appendix A.

Table 2 Developed Drainage Conditions

BASINS	Area (acres)	100yr-6hr Peak Flow (cfs)	100yr- 6hr Runoff Volume (acre-ft)	Land Treatment
100	3.65	12.34	0.419	26%B, 25%C, 49%D
200	3.48	11.92	0.406	25%B, 24%C, 51%D
300	0.34	1.40	0.051	12%B, 88%D
400	0.25	1.04	0.038	12%B, 88%D
TOTAL SUBD.	7.13	24.13 26.7		

3.38/ac
3.42/ac
4.2 ac
4.12/ac

24.26 cfs

HYDRAULICS ANALYSIS

Street Hydraulic Analysis

A hydraulic analysis of the street flows was completed to determine normal depth and sequent depth of the flow (see Appendix B). The sequent depth must remain within the street right-of-way. Therefore, the sequent depth must be equal to or less than 0.53 feet, since the majority of the streets will have mountable curb and gutter. El Shaddai Street from Adonai Road to the 10 foot concrete channel adjacent to the southern boundary will have standard curb and gutter and therefore the sequent depth must be equal to or less than 0.85 feet. Table 3 presents the results of the analysis including the energy grade depth.

Table 3 Street Hydraulic Analysis

Street	Width (ft)	Slope (%)	Contributing Basins	Flow (cfs)	Normal Depth (ft)	Energy Grade Depth (ft)
Adonai Road	28	1.50	100	12.39	0.27	0.44
El Shaddai Street	24	1.13	100 & 200	24.13	0.37	0.62

Channel Hydraulic Analysis

A hydraulic analysis was performed to determine the design characteristics of the new channel carrying flow to the existing Avalon channel. In addition, a hydraulic analysis of the flows leaving the site was completed to determine channel capacities, normal depth and velocity of the existing channel. The channel has a 10-foot bottom width with 16" vertical CMU side walls.

Only one 24-inch wide sidewalk culvert was constructed from the existing channel that drains to Jetty Court in the Avalon Subdivision. A total of 4-24" sidewalk culverts with concrete splitter walls to divide the flow in the channel or a special design sidewalk culvert with minimal flow obstruction will be required to convey the 24.13 CFS into Jetty Court. The 16" high CMU splitter walls split the flow from the 10 foot channel to 4-2 foot wide channels (see sketch). The depth of flow in the 2 foot wide channels would be 0.52 feet. If the water should flow over the sidewalk culverts at Jetty Court, it will still flow into the street without impacting any properties because 16" CMU sidewalls will keep the flow contained in the channel. See Appendix B for channel and sidewalk calculations and sketches.

Table 4 Channel Hydraulic Analysis

Channel	Width (ft)	Slope (%)	Contributing Basins	Flow (cfs)	Normal Depth (ft)	Energy Grade Depth (ft)
10' wide	10	1.07	100 & 200	24.13	0.40	0.97
2' wide	2	1.07	100 & 200	6.07	0.52	1.05

APPENDIX A
HYDROLOGIC CALCULATIONS

RUN DATE (MON/DAY/YR) =07/28/2004
USER NO.= AHYMO-I-9702a01000K21-AH

[illegible]

RUN DATE (MON/DAY/YR) =07/28/2004
USER NO.= AHYMO-I-9702a01000K21-AH

[illegible]

AHYMO PROGRAM (AHYMO_97) -
RUN DATE (MON/DAY/YR) = 07/28/2004
START TIME (HR:MIN:SEC) = 15:50:43
INPUT FILE = C:\Projects\BLUEWA~2\BLUEPT~3.TXT

- Version: 1997.02c

BLUEWATER POINTE
HYDROLOGIC MODEL--DEVELOPED CONDITIONS
28 JULY 2004

HYDROLOGIC MODEL FOR OFFSITE AND ONSITE BASINS
100-YEAR, 6-HOUR STORM:

PRECIPITATION:

P60 = 1.87"
P360 = 2.20"
P1440 = 2.66"

START TIME=0.0 HR PUNCH CODE=0

24-Hour rainfall distribution based on NOAA ATLAS

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.20 IN
RAIN DAY=2.66 IN DT=0.033333 HRS

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033333 HOURS END TIME = 5.999940 HOURS

.0000	.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	.0810	.0865	.0924	.1051
.1335	.1773	.2400	.3257	.4384	.5820	.7607
.9789	1.1808	1.2652	1.3365	1.4000	1.4577	1.5108
1.5602	1.6063	1.6495	1.6902	1.7285	1.7648	1.7991
1.8316	1.8624	1.8917	1.9194	1.9458	1.9519	1.9576
1.9631	1.9683	1.9732	1.9780	1.9826	1.9870	1.9912
1.9953	1.9993	2.0031	2.0068	2.0105	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0476	2.0502	2.0529	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0701	2.0724	2.0746
2.0769	2.0791	2.0812	2.0834	2.0855	2.0876	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1052	2.1070	2.1088	2.1106	2.1124	2.1142	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	2.1461	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1601	2.1614	2.1627	2.1641	2.1654	2.1667	2.1680
2.1693	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1793	2.1805	2.1817	2.1829	2.1841	2.1852
2.1864	2.1876	2.1887	2.1899	2.1911	2.1922	2.1933

2.1945 2.1956 2.1967 2.1978 2.1989 2.2000

*
*

*SEDIMENT BULK CODE=1 BULK FACTOR=1.10
*

*S*****
*

*S*****

*S BASIN 400 - BLUEWATER ROAD EAST
*S*****

*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME
*

COMPUTE LT TP LCODE=1 NK=1 ISLOPE=0
LENGTH=180 FT SLOPE=0.03 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	.0	.000000	.0000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	180.0	.030000	3.0000
TOTAL BASIN	180.0	.030000	3.0000

TIME OF CONCENTRATION (HRS)= .0096 TIME TO PEAK (HRS)= .0064 LAG TIME (HRS)= .0072

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

TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

*

COMPUTE NM HYD ID=10 HYD NO=400 DA=.00039 SQ MI
%A=0 %B=12 %C=0 %D=88
TP=0.0 HR
MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.3546 CFS UNIT VOLUME = .9910 B = 526.28 P60 = 1.8700
AREA = .000343 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .131024HR TP = .133333HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .11481 CFS UNIT VOLUME = .8826 B = 327.09 P60 = 1.8700
AREA = .000047 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=10 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.80969 INCHES = .0376 ACRE-FEET
PEAK DISCHARGE RATE = 1.04 CFS AT 1.500 HOURS BASIN AREA = .0004 SQ. MI.

*
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*S*****
*S BASIN 300 - BLUEWATER ROAD WEST
*S*****

*
*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME
*

COMPUTE LT TP LCODE=1 NK=1 ISLOPE=0
LENGTH=600 FT SLOPE=0.006 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	.0	.000000	.0000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	600.0	.006000	3.0000
TOTAL BASIN	600.0	.006000	3.0000

TIME OF CONCENTRATION (HRS)= .0717 TIME TO PEAK (HRS)= .0478 LAG TIME (HRS)= .0538

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

TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

*
COMPUTE NM HYD ID=12 HYD NO=300 DA=.00053 SQ MI
%A=0 %B=12 %C=0 %D=88
TP=0.0 HR
MASS RAINFALL=-1
TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.8409 CFS UNIT VOLUME = .9932 B = 526.28 P60 = 1.8700
AREA = .000466 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .131024HR TP = .133333HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .15602 CFS UNIT VOLUME = .9090 B = 327.09 P60 = 1.8700
AREA = .000064 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=12 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.80969 INCHES = .0512 ACRE-FEET
PEAK DISCHARGE RATE = 1.40 CFS AT 1.500 HOURS BASIN AREA = .0005 SQ. MI.

*
*S*****
*S BASIN 100 - WEST HALF OF SUBDIVISION
*S*****
*

*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME

COMPUTE LT TP

LCODE=1 NK=3 ISLOPE=0

LENGTH=100 FT SLOPE=0.01 K=0.7
LENGTH=200 FT SLOPE=0.0426 K=2
LENGTH=265 FT SLOPE=0.01 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	ADJUSTED SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	100.0	.010000	.7000
SHALLOW FLOW PORTION	200.0	.042413	2.0000
CHANNEL FLOW PORTION	265.0	.010000	3.0000
TOTAL BASIN	565.0	.021474	1.3783

TIME OF CONCENTRATION (HRS)= .0777 TIME TO PEAK (HRS)= .0518 LAG TIME (HRS)= .0583

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

TIME TO PEAK (HRS)= .1333 LAG TIME (HRS)= .1500

*
COMPUTE NM HYD

ID=13

HYD NO=100

DA=.00570 SQ MI

%A=0

%B=26

%C=25

%D=49

TP=0.0 HR

MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.024 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.8700
AREA = 002793 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118705HR TP = .133333HR K/TP RATIO = .890290 SHAPE CONSTANT, N = 3.983628
UNIT PEAK = 7.7198 CFS UNIT VOLUME = .9988 B = 354.08 P60 = 1.8700
AREA = .002907 SQ MI IA = .42647 INCHES INF = 1.04412 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD

ID=13 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.37750 INCHES = .4188 ACRE-FEET
PEAK DISCHARGE RATE = 12.34 CFS AT 1.500 HOURS BASIN AREA = .0057 SQ. MI.

*
*

*S ROUTE FLOWS DOWN EL SHADDAI TO CONCRETE RUNDOWN
*S ASSUME 40' ROW AND 24' F-F
*

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=0.00 MAX ELEV=0.85
CH SLOPE=0.0113 FP SLOPE=0.0113
N=0.017 DIST=48.0
DIST ELEV DIST ELEV DIST ELEV
0.00 0.85 4.0 0.79 10.0 0.67

10.1 0.00 24.0 0.28 38.0 0.00
38.1 0.67 44.0 0.79 48.0 0.85

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
.04	.10	.07	4.47
.09	.40	.46	8.94
.13	.90	1.37	13.41
.18	1.60	2.94	17.88
.22	2.50	5.33	22.36
.27	3.60	8.67	26.83
.31	4.85	13.81	27.99
.36	6.10	20.21	28.01
.40	7.35	27.54	28.02
.45	8.61	35.73	28.03
.49	9.86	44.73	28.05
.54	11.11	54.51	28.06
.58	12.37	65.01	28.07
.63	13.63	76.23	28.09
.67	14.88	87.92	28.20
.72	16.24	92.61	32.64
.76	17.80	99.38	37.08
.81	19.57	107.23	42.04
.85	21.58	115.81	48.00

*S
*

*S ROUTE FLOWS USING MCUNGE

ROUTE MCUNGE ID=31 HYD NO=100ROUTE INFLOW ID=13
DT=0.0 L=120 FT NS=0 SLOPE=0.015

INFLOW END= 202
DT= .033333
WIDTH MED= 23.48
TABLE PTS= 20
QMED= 6.17 CKMED= 3.0341
NREACH= 1 DX= 120.00

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME (HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.063	.0	1.00	.34	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.04	.1	.1	.046	4.5	1.02	.73	1.018	.009	.991	.013	-.005	.0	.999	.002	-.001
.09	.4	.5	.029	8.9	1.61	1.16	1.610	.018	.986	.239	-.225	.2	.987	.121	-.108
.13	.9	1.4	.022	13.4	2.07	1.52	2.066	.027	.982	.354	-.336	.9	.983	.288	-.271
.18	1.6	2.9	.018	17.9	2.48	1.84	2.482	.037	.979	.432	-.411	2.1	.980	.388	-.368
.22	2.5	5.3	.016	22.4	2.87	2.13	2.868	.046	.976	.489	-.465	4.1	.977	.458	-.435
.27	3.6	8.7	.014	26.8	3.48	2.41	3.482	.052	.977	.559	-.536	6.9	.975	.509	-.484
.31	4.8	13.8	.012	28.0	4.60	2.85	4.603	.060	.979	.647	-.626	11.1	.979	.619	-.598
.36	6.1	20.2	.010	28.0	5.49	3.31	5.490	.073	.978	.695	-.673	16.9	.979	.676	-.655
.40	7.4	27.5	.009	28.0	6.20	3.75	6.197	.088	.976	.725	-.701	23.8	.977	.711	-.688
.45	8.6	35.7	.008	28.0	6.86	4.15	6.860	.103	.974	.749	-.723	31.5	.975	.738	-.713
.49	9.9	44.7	.007	28.0	7.49	4.54	7.487	.118	.972	.768	-.740	40.1	.973	.759	-.732
.54	11.1	54.5	.007	28.1	8.08	4.90	8.083	.134	.971	.783	-.754	49.5	.972	.776	-.747
.58	12.4	65.0	.006	28.1	8.65	5.26	8.652	.149	.970	.796	-.766	59.7	.970	.790	-.760
.63	13.6	76.2	.006	28.1	9.12	5.59	9.123	.165	.968	.806	-.773	70.5	.969	.802	-.771
.67	14.9	87.9	.006	28.2	6.61	5.91	6.608	.262	.933	.746	-.679	82.0	.967	.809	-.775
.72	16.2	92.6	.006	32.6	3.94	5.70	3.936	.400	.850	.625	-.475	90.3	.805	.593	-.399
.76	17.8	99.4	.006	37.1	4.42	5.58	4.417	.337	.883	.652	-.535	96.0	.876	.648	-.524
.81	19.6	107.2	.006	42.0	4.38	5.48	4.382	.323	.887	.649	-.536	103.3	.886	.652	-.538
.85	21.6	115.8	.006	48.0	4.06	5.37	4.058	.330	.877	.629	-.506	111.5	.884	.642	-.526

MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 3 OCCURRED 4 TIMES. AVERAGE NUMBER ITERATIONS = 1.0724
Equations solved using the Ponce correction to C2

PRINT HYD

ID=31 CODE=1

HYDROGRAPH FROM AREA 100ROUTE

RUNOFF VOLUME = 1.37763 INCHES = .4188 ACRE-FEET
PEAK DISCHARGE RATE = 12.21 CFS AT 1.500 HOURS BASIN AREA = .0057 SQ. MI.

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*S*****

*S BASIN 200 - EAST HALF OF SUBDIVISION

*S*****

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*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME

*

COMPUTE LT TP

LCODE=1 NK=3 ISLOPE=0

LENGTH=100 FT SLOPE=0.01 K=0.7
LENGTH=400 FT SLOPE=0.0295 K=2
LENGTH=250 FT SLOPE=0.0113 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	100.0	.010000	.7000
SHALLOW FLOW PORTION	400.0	.029500	2.0000
CHANNEL FLOW PORTION	250.0	.011300	3.0000
TOTAL BASIN	750.0	.020833	1.5387

TIME OF CONCENTRATION (HRS)= .0938 TIME TO PEAK (HRS)= .0625 LAG TIME (HRS)= .0704

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

*

COMPUTE NM HYD

ID=14 HYD NO=200 DA=.00544 SQ MI

%A=0 %B=25 %C=24 %D=51

TP=0.0 HR
MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.951 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.8700
AREA = .002774 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118715HR TP = .133333HR K/TP RATIO = .890366 SHAPE CONSTANT, N = 3.983259
UNIT PEAK = 7.0782 CFS UNIT VOLUME = .9986 B = 354.05 P60 = 1.8700
AREA = .002666 SQ MI IA = .42653 INCHES INF = 1.04429 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD

ID=14 CODE=1

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 1.40049 INCHES = .4063 ACRE-FeET
PEAK DISCHARGE RATE = 11.92 CFS AT 1.500 HOURS BASIN AREA = .0054 SQ. MI.

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*S COMBINE ROUTED 100ROUTE AND 200
*

ADD HYD ID=41 HYD NO=200ADD ID I=14 ID II=31
PRINT HYD ID=41 CODE=1

HYDROGRAPH FROM AREA 200ADD

RUNOFF VOLUME = 1.38873 INCHES = .8251 ACRE-FeET
PEAK DISCHARGE RATE = 24.13 CFS AT 1.500 HOURS BASIN AREA = .0111 SQ. MI.

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FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 15:50:43

BLUEWATER POINTE

<u>Basin</u>	<u>Area</u>	<u>DW's</u>	<u>DW/AC</u>	<u>% D²</u>
100	3.65 AC	25	6.85	63
200	3.48 AC	28	8.05	72

$$\% D = 7 \sqrt{(N \times N) + (S \times N)}, \quad N = DW/AC$$

Driveway 2000' = 400 SF

PADS 1500 SF

STREETS 28' wide

100

$$550 \times 36 = 19,800$$

$$203 \times 36 + (\pi 35^2) = 11,157 > 30,957 SF$$

200

$$1080.7 \times 36 = 24,566 SF$$

Total Impervious Area

100

Roads 30,957

$$Lots \quad 25(1500 + 100) = 47,500$$

$$TOTAL = 78,457 SF = 1.80 AC = 49.9\% D$$

200

$$Roads = 24,566$$

$$Lots = 20(1900) = 53,200$$

$$TOTAL = 77,766 SF = 1.77 AC = 51.3\% D$$

22-041 30 SHEETS
22-042 100 SHEETS
22-043 100 SHEETS

22-044 100 SHEETS

APPENDIX B

HYDRAULIC CALCULATIONS

Basin 100 Adonai Road Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data

Channel Slope 0.015000 ft/ft

Elevation range: 0.00 ft to 0.53 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.53	0.00	4.00	0.013
4.00	0.45	4.00	10.00	0.025
10.00	0.33	10.00	12.00	0.013
10.10	0.00	12.00	36.00	0.017
12.00	0.04	36.00	38.10	0.013
24.00	0.28	38.10	44.00	0.025
36.00	0.04	44.00	48.00	0.013
38.00	0.00			
38.10	0.33			
44.00	0.45			
48.00	0.53			
Discharge	12.39	cfs		

Results

Wtd. Mannings Coefficient	0.015	
Water Surface Elevation	0.27	ft
Flow Area	3.78	ft ²
Wetted Perimeter	27.98	ft
Top Width	27.56	ft
Height	0.27	ft
Critical Depth	0.32	ft
Critical Slope	0.006079	ft/ft
Velocity	3.28	ft/s
Velocity Head	0.17	ft
Specific Energy	0.44	ft
Froude Number	1.56	
Flow is supercritical.		
Flow is divided.		

El Shaddai Street Capacity Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data

Channel Slope 0.011300 ft/ft

Elevation range: 0.00 ft to 0.87 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.87	0.00	4.00	0.013
4.00	0.79	4.00	10.00	0.025
10.00	0.67	10.00	12.00	0.013
10.10	0.00	12.00	32.00	0.017
12.00	0.04	32.00	34.10	0.013
22.00	0.24	34.10	40.00	0.025
32.00	0.04	40.00	44.00	0.013
34.00	0.00			
34.10	0.67			
40.00	0.79			
44.00	0.87			
Discharge	24.26	cfs		

Results

Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	0.37	ft
Flow Area	6.10	ft ²
Wetted Perimeter	24.66	ft
Top Width	24.01	ft
Height	0.37	ft
Critical Depth	0.44	ft
Critical Slope	0.005576	ft/ft
Velocity	3.98	ft/s
Velocity Head	0.25	ft
Specific Energy	0.62	ft
Froude Number	1.39	
Flow is supercritical.		

El Shaddai Street Capacity Cross Slope
Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\bluewater.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data	
Channel Slope	0.011300 ft/ft
Elevation range: 0.00 ft to 0.87 ft.	

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.87	0.00	4.00	0.013
4.00	0.79	4.00	10.00	0.025
10.00	0.67	10.00	12.00	0.013
10.10	0.00	12.00	32.00	0.017
12.00	0.04	32.00	34.10	0.013
22.00	0.12	34.10	40.00	0.025
32.00	0.20	40.00	44.00	0.013
34.00	0.24			
34.10	0.67			
40.00	0.79			
44.00	0.87			
Discharge	24.26	cfs		

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	0.38	ft
Flow Area	6.16	ft ²
Wetted Perimeter	24.42	ft
Top Width	23.99	ft
Height	0.38	ft
Critical Depth	0.44	ft
Critical Slope	0.005707	ft/ft
Velocity	3.94	ft/s
Velocity Head	0.24	ft
Specific Energy	0.62	ft
Froude Number	1.37	
Flow is supercritical.		

Basin 200 10 Foot-Wide Concrete Channel Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	10 Foot-Wide Concrete Channel
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.010700	ft/ft
Bottom Width	10.00	ft
Discharge	24.26	cfs

Results		
Depth	0.40	ft
Flow Area	3.99	ft ²
Wetted Perimeter	10.80	ft
Top Width	10.00	ft
Critical Depth	0.57	ft
Critical Slope	0.003433	ft/ft
Velocity	6.09	ft/s
Velocity Head	0.58	ft
Specific Energy	0.97	ft
Froude Number	1.70	
Flow is supercritical.		

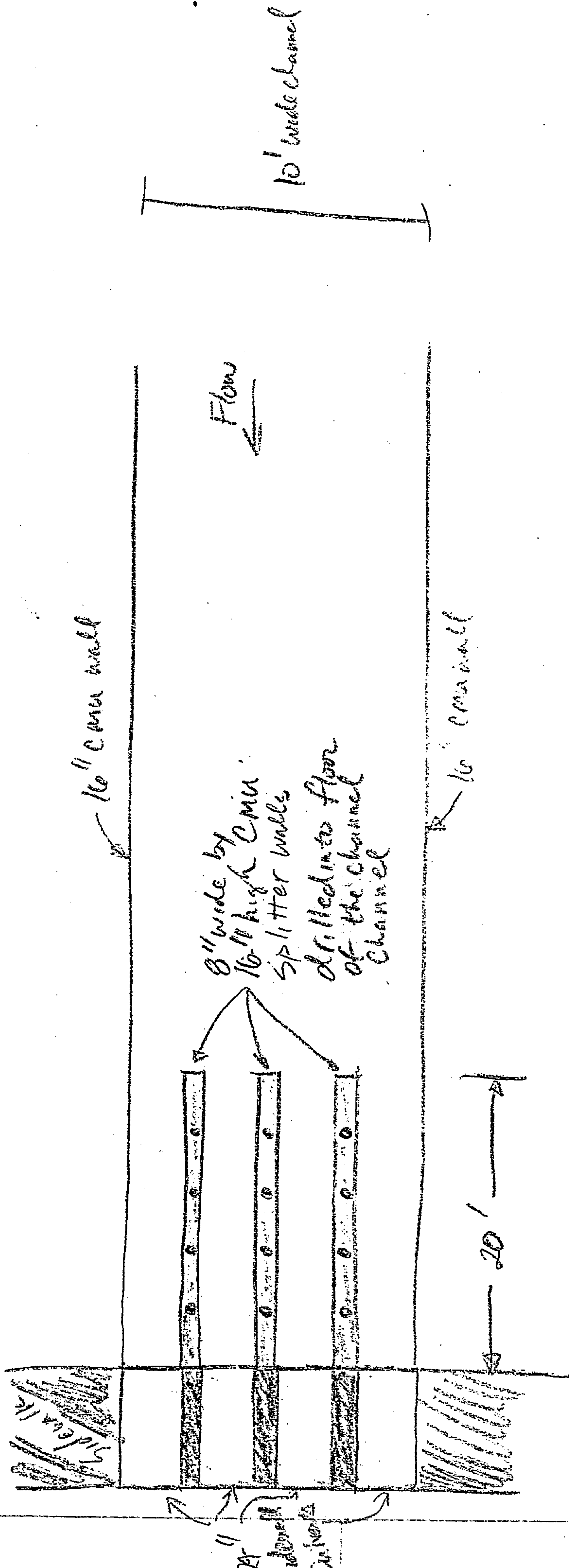
Basin 200 2 Foot-Wide Sidewalk Culvert
Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	~~210~~ Foot-Wide Concrete Channel
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.013
Channel Slope	0.010700 ft/ft
Bottom Width	2.00 ft
Discharge	6.07 cfs

*2' wide sections of
channel between splitter
walls*

Results	
Depth	0.52 ft
Flow Area	1.05 ft ²
Wetted Perimeter	3.05 ft
Top Width	2.00 ft
Critical Depth	0.66 ft
Critical Slope	0.005558 ft/ft
Velocity	5.80 ft/s
Velocity Head	0.52 ft
Specific Energy	1.05 ft
Froude Number	1.41
Flow is supercritical.	



Sketch of sidewalk curbs and
splitter walls

APPENDIX C
AMENDMENT 1 TO THE DRAINAGE MASTERPLAN FOR
AVALON SUBDIVISION (K9/D12) AND THE APPROVED
WEST RIDGE MOBILE HOME PARK, UNIT II
DRAINAGE REPORT

DRAINAGE REPORT

for

West Ridge Mobile Home Park Unit II

Prepared by

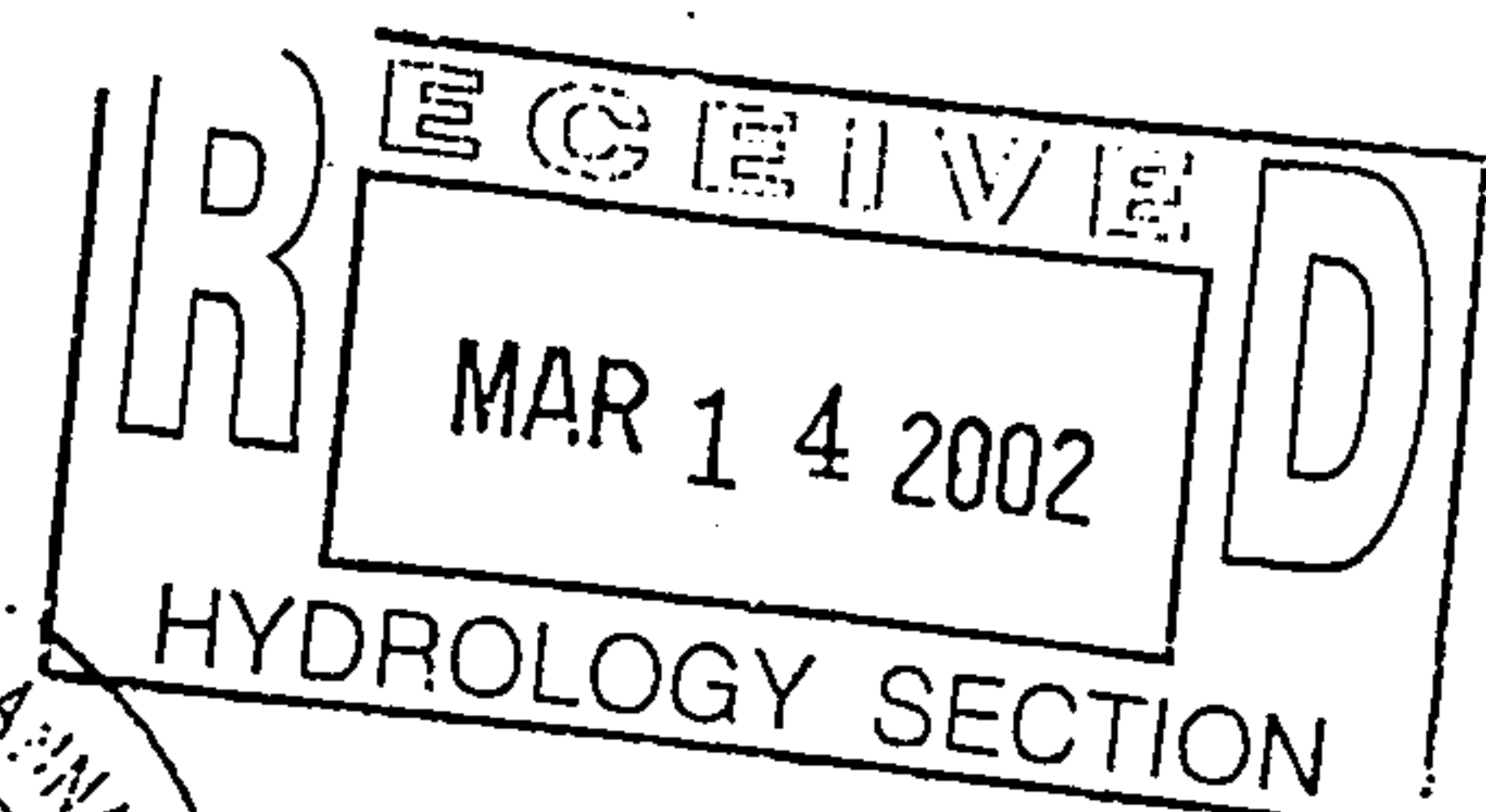
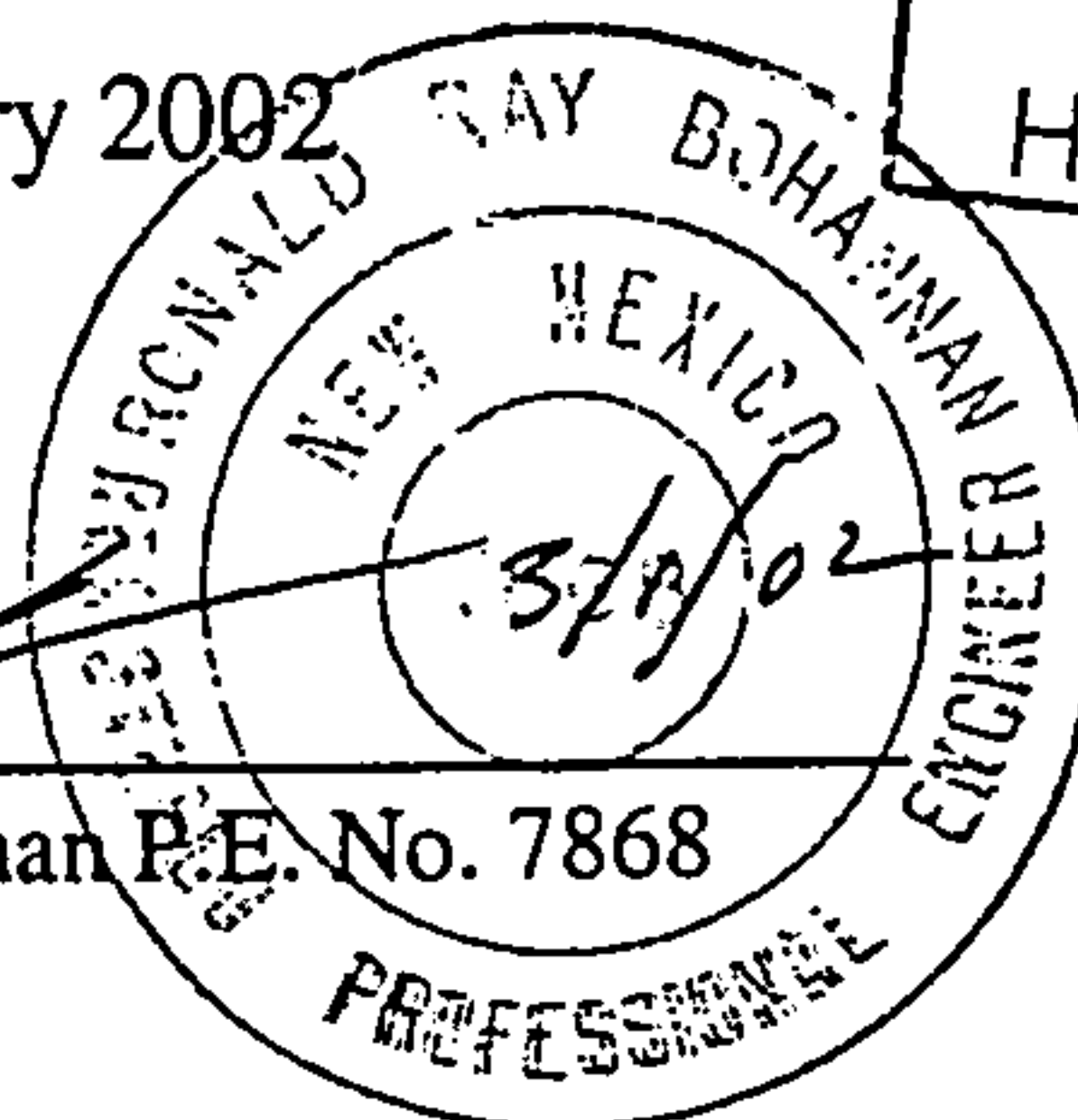
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

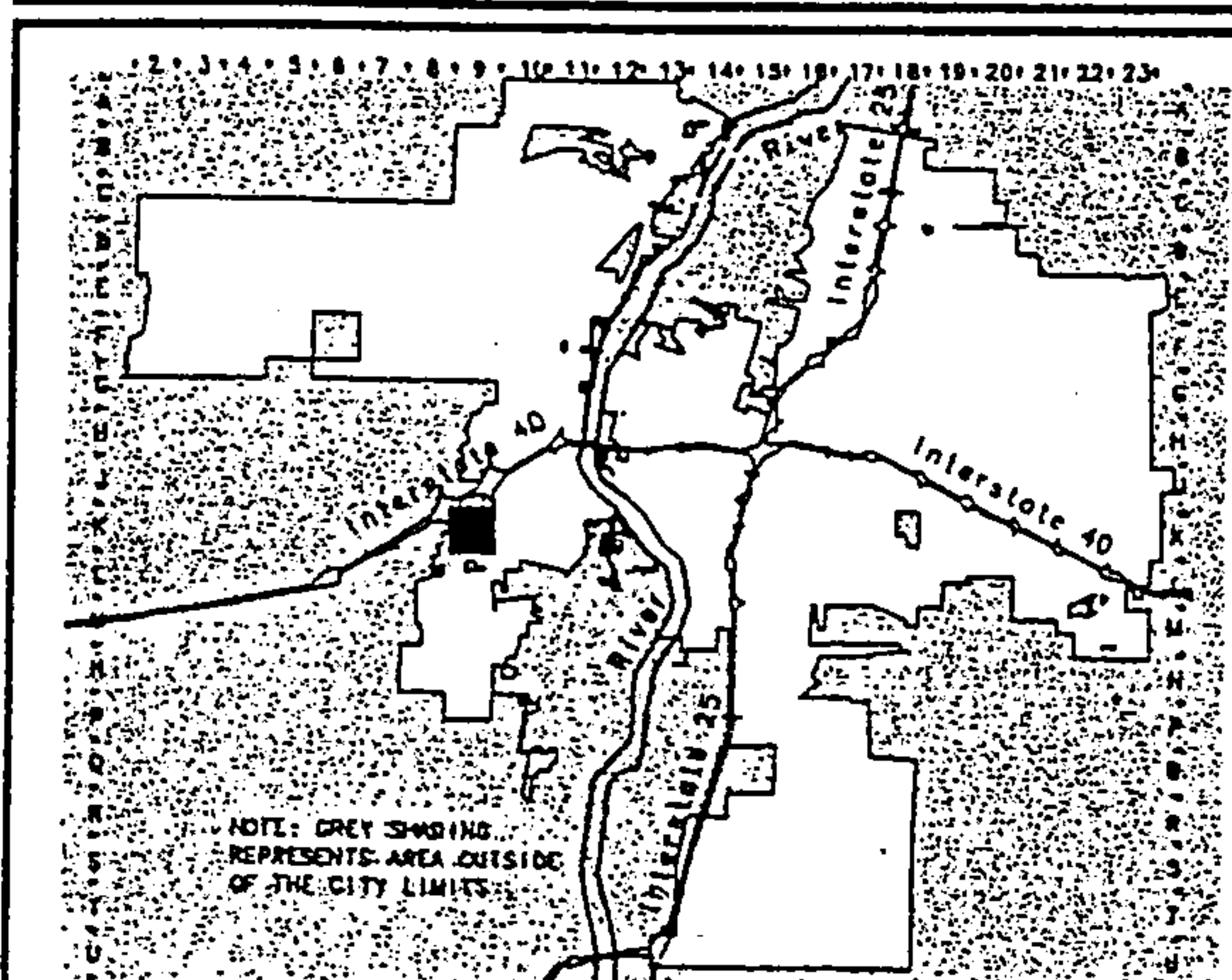
Prepared for

Fred Seeley
Western Security Real Estate Inc.
3511 Carlisle, NE
Albuquerque, New Mexico 87110

February 2002

Ronald R. Bohannon P.E. No. 7868





Location

West Ridge Mobile Home Park Unit 2 is located south of Bluewater Road and east of 94th Street. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 7.12 acres. The site is identified as Tracts 1, 2, 3 Town of Atrisco Grant, Unit 5. The purpose of this report is to provide the drainage analysis and management plan for the mobile home park.

Existing Drainage Conditions

The site is currently undeveloped and has a runoff rate of 9.17 cfs. There are no offsite flows entering the site from the south, north or east. The south and east sides of the site are developed and the flows contained on-site. A large retention pond is located north of the site and captures all flows from the north. The west is undeveloped and the natural topography drains south and does not impact the site.

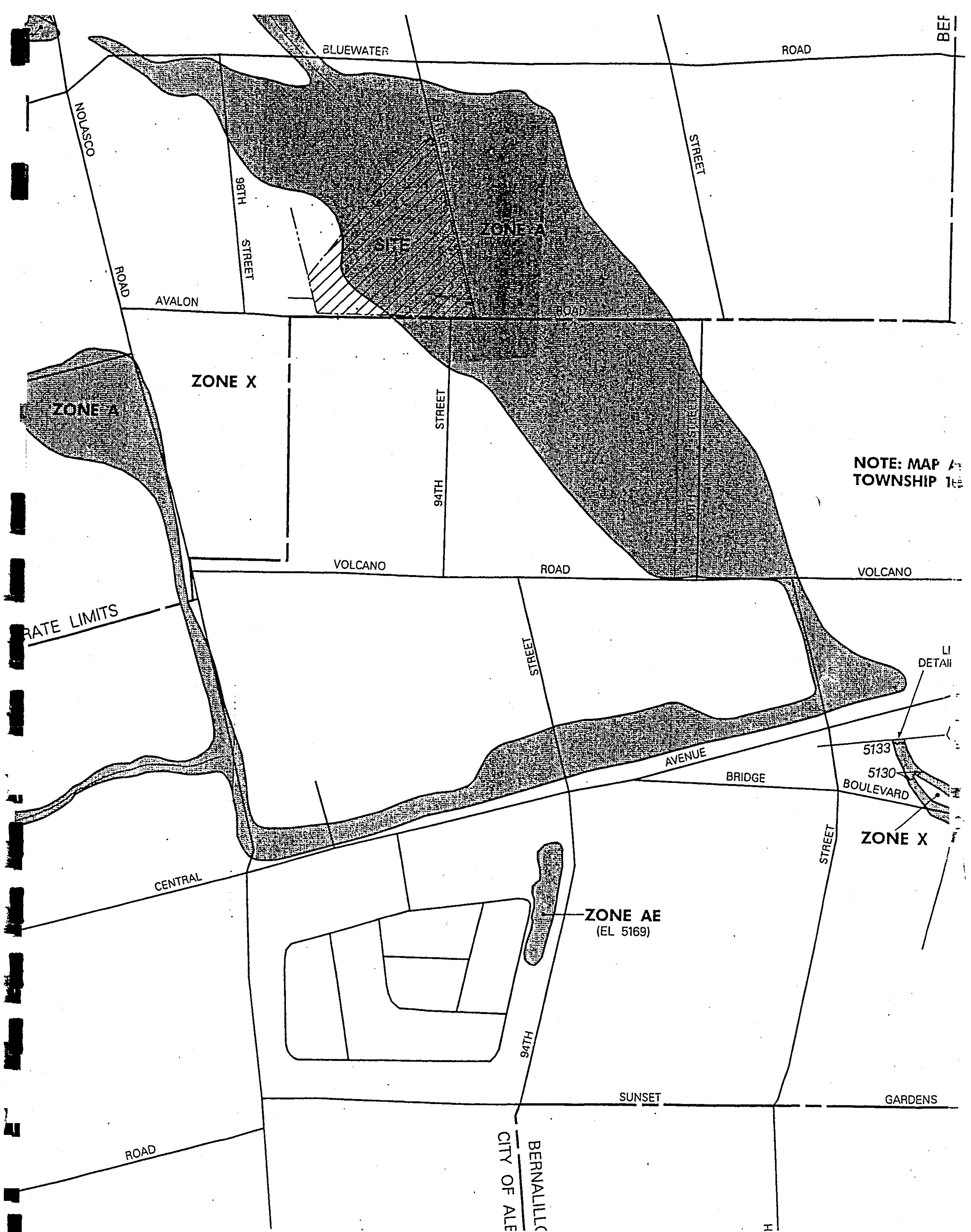
FIRM Map and Soil Conditions

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) was issued removing the 100 year flood plain. A copy of the LOMR approval is included with this report.

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.

On-Site Drainage Management Plan

The proposed drainage solution is to route a portion of the onsite runoff to Avalon Subdivision and a portion to West Ridge Mobile Home Park Unit 1. The site was divided into



35001C0328 D

three developed drainage basins. Basins 1 and 2 will drain to Avalon Subdivision with a combined flow of 9.77 cfs. Basin 3 with a developed flow of 8.77 cfs will drain to West Ridge Unit 1.

The original Master Plan Drainage Plan developed with West Ridge Unit 1 (K9/D6) called for all the flows from Unit 2 to drain to a storm drain in 94th Street. The adjacent Avalon Subdivision vacated 94th Street and modified the Master Plan. That Master Plan provided for 12.81 cfs draining south through West Ridge Unit 1 and 8.50 cfs draining to Avalon Subdivision.

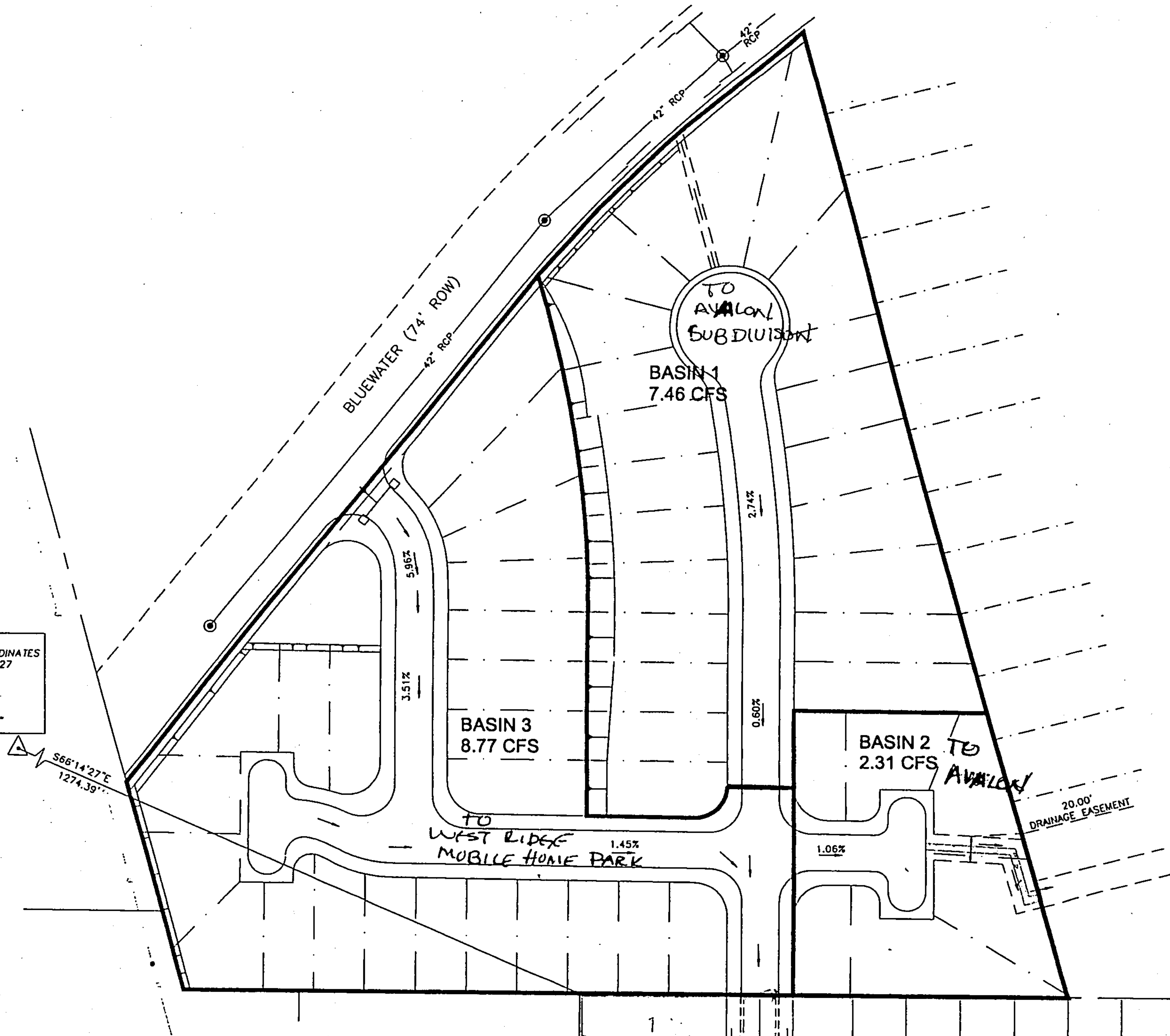
The 9.77 cfs will drain to a new 3' wide channel and connect to an existing 10' wide channel that was built with Avalon Subdivision to collect the flows from West Ridge. However, only one 24" wide sidewalk culvert was constructed from the existing channel to Jetty Court. An additional three 24" wide sidewalk culverts for a total of four culverts are required to carry 9.77 cfs to Jetty Court.

There is an additional 1.27 cfs (9.77 cfs – 8.45 cfs) entering Avalon Subdivision than was originally agreed. The channel entering Jetty Court has capacity for the additional flow as does the existing storm drain and pond within Avalon Subdivision.

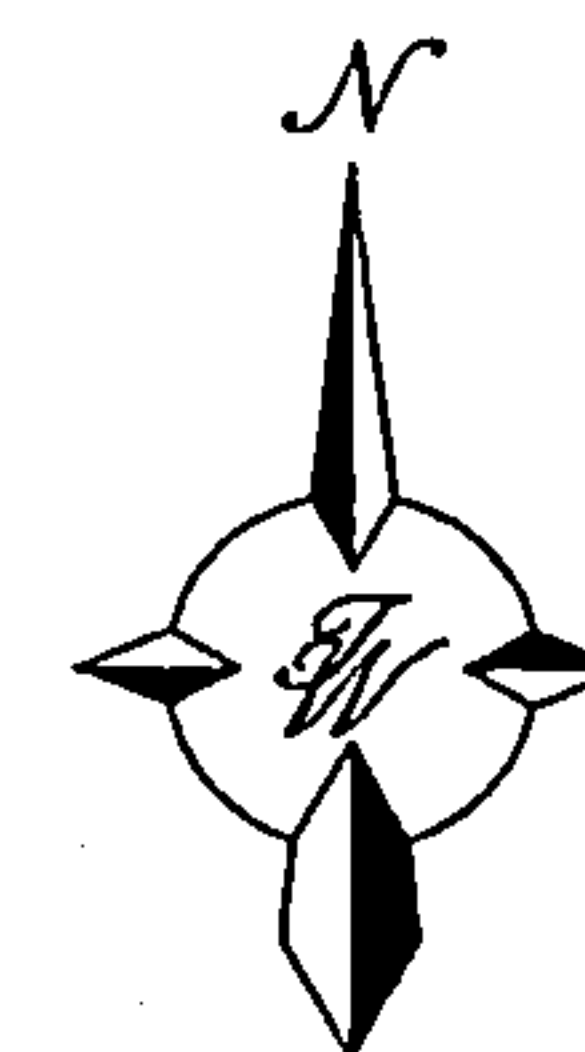
Summary

There are three developed basins on-site. Basin 1 and 2 will drain to Avalon Subdivision per an agreement. The flows will be conveyed via a 3' channel to an existing 10' channel within Avalon Subdivision. Basin 3 will drain to West Ridge Mobile Home Park Unit 1 per the same agreement. The streets will convey the flow to the temporary retention ponds located with West Ridge Unit 1 and Avalon Subdivision. When the offsite storm drain improvements are complete, the retention ponds will be removed.

MONUMENT "B-K9"
STATE PLANE COORDINATES
CENTRAL ZONE-NAD 1927
Easting: 352,217.80
Northing: 1,484,931.98
Zone: 5247.434
G=0.99967415
LTA ALPHA=-0°17'02"



AVALON
SUBDIVISION



DEVELOPED BASIN LAYOUT

Drainage Basins

Existing and Developed Basins

BASIN	AREA (SF)	AREA (AC)	AREA (MI ²)
1	124895	2.8672	0.00448
2	39472	0.9062	0.00142
3	146919	3.3728	0.00527
Total	311286	7.1461	0.01117

Runoff Calculation Results

Existing

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	3.69	1.27	0.159	0.054
2	1.14	0.39	0.049	0.016
3	4.34	1.49	0.187	0.063
Total	9.17	3.15	0.395	0.133

Developed

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	7.46	4.48	0.360	0.208
2	2.31	1.38	0.111	0.064
3	8.77	5.26	0.423	0.244
Total	18.54	11.12	0.894	0.516

RUN DATE (MON/DAY/YR) =02/18/2002
USER NO.= AHYMO-I-9702a0100011K-SH

[illegible]

```

*****
*                               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=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=100.1 AREA=0.004480 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 2
*
COMPUTE NM HYD ID=1 HYD NO=100.2 AREA=0.001377 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=0.005265 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=0.0333 HR
COMPUTE NM HYD ID=1 HYD NO=110.1 AREA=0.004480 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 2
*
COMPUTE NM HYD ID=1 HYD NO=110.2 AREA=0.001377 SQ MI
              PER A=0.00 PER B=20.00 PER C=20.00 PER D=60.00
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PRINT HYD     ID=1 CODE=1
*
* BASIN 3
*
COMPUTE NM HYD ID=1 HYD NO=110.3 AREA=0.005265 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
*
*****
*      100-YEAR, 6-HR STORM   (UNDER EXISTING CONDITIONS)      *
*****
*

```

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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=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.004480 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
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* BASIN 2
*
COMPUTE NM HYD       ID=1 HYD NO=100.2 AREA=0.001377 SQ MI
                     PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
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COMPUTE NM HYD       ID=1 HYD NO=100.3 AREA=0.005265 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
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RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
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COMPUTE NM HYD       ID=1 HYD NO=110.3 AREA=0.005265 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

```

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	3	3	0.67	2.01	4.34	0.4631336	1	13.79	9.77	4.86

Q req'd = 7.46 + 2.31 = 9.77 cfs

Manning's Equation:

$$Q = 1.49/n * A * R^{2/3} * S^{1/2}$$

A = Area

R = D/4

S = Slope

n = 0.013

SIDEWALK CULVERTS

Orifice Equation:

$$Q = CA\sqrt{2gH}$$

Where:

$$C = 0.6$$

$$A = 0.5833 \times 2 = 1.167 \text{ ft}^2$$

$$g = 32.2$$

H = Height of water measured from center of orifice

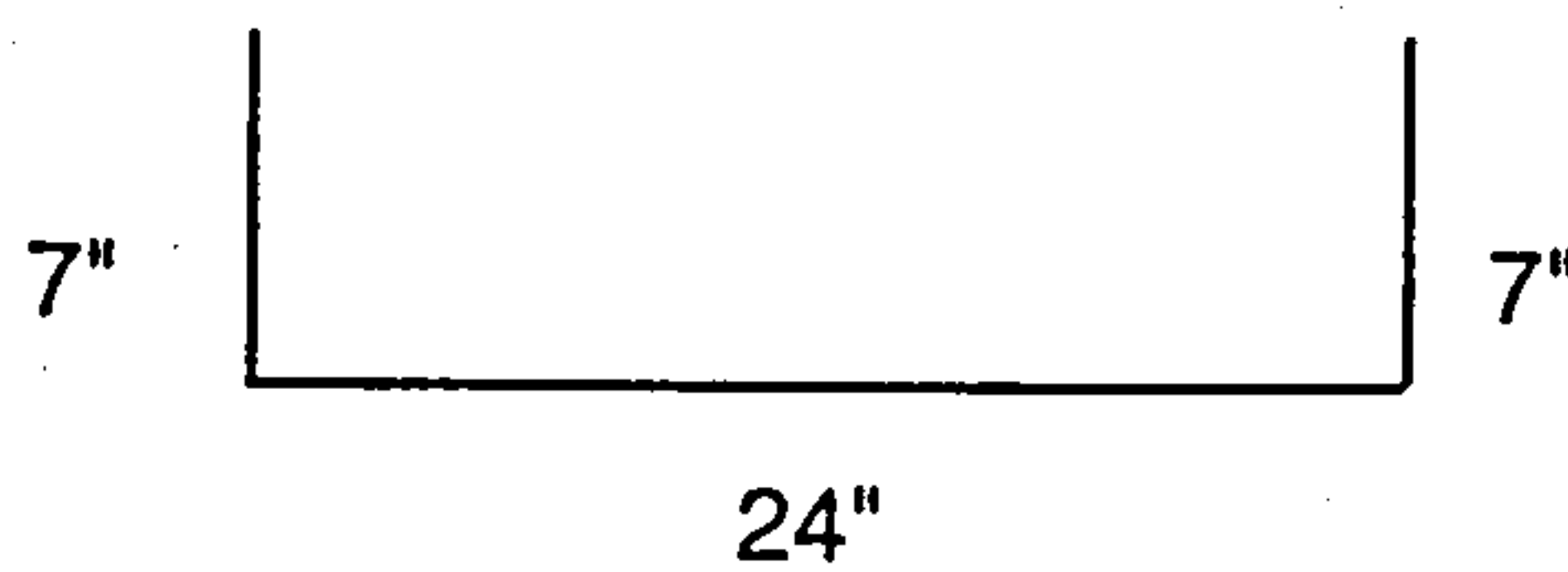
$$Q = 0.6 \times 1.1678 \times \sqrt{2 \times 32.2 \times 0.2917}$$

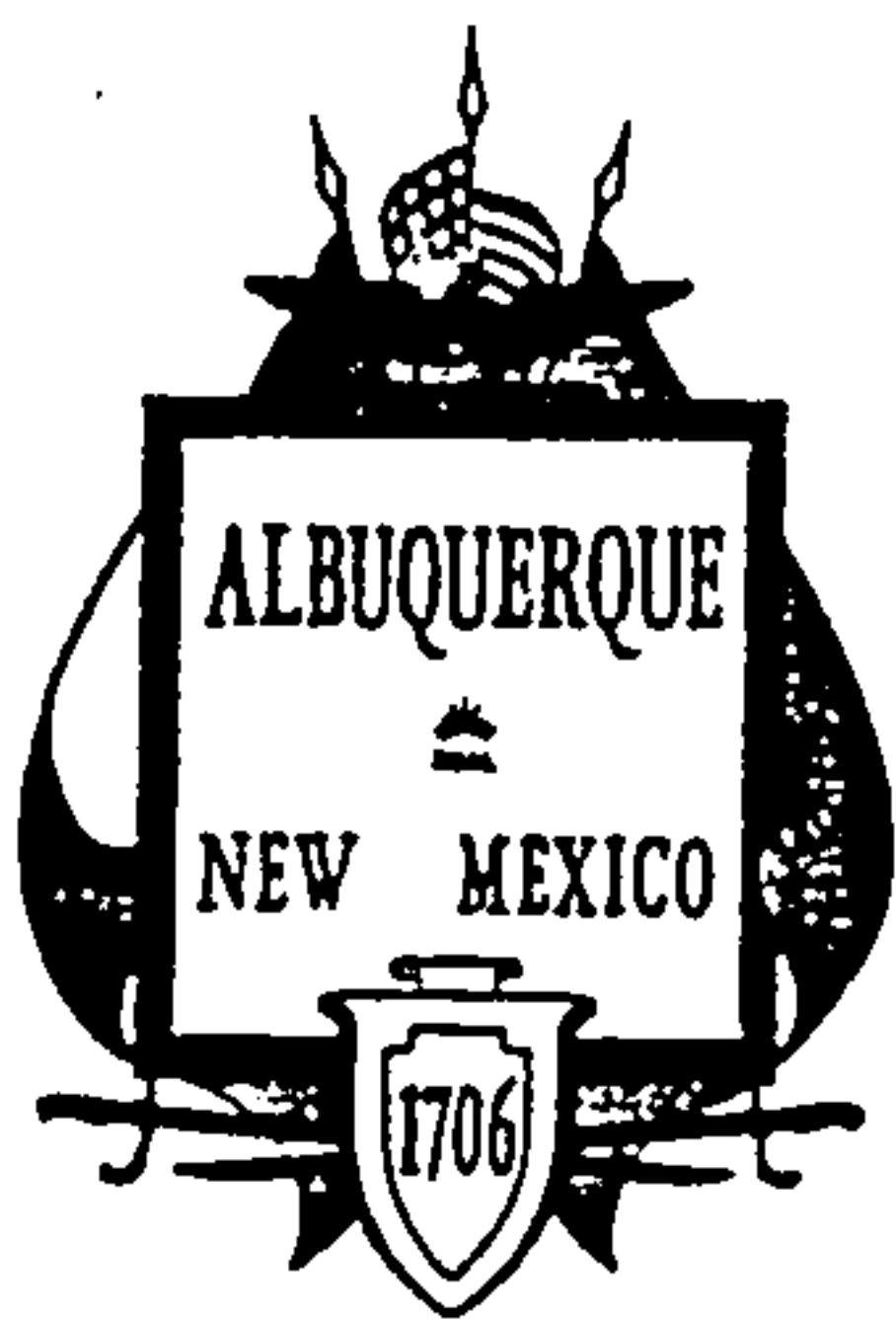
$$Q = 3.035 \text{ cfs}$$

Basin 1 and 2

$$12.14 \text{ cfs} > 9.77 \text{ cfs}$$

Use four 24" sidewalk culverts





City of Albuquerque

October 14, 1999

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Bldg. 1, Suite 210
Albuquerque, New Mexico 87110

RE: *Amendment No. 1 to the Drainage Masterplan for Avalon Subdivision, (K9/D12)*
Submitted for Revised Infrastructure List and Work Order Approval, Engineer's Stamp
Dated 9/29/99.

Dear Mr. Lorenz:

Based on the information provided, the above referenced Amendment to the Drainage Masterplan is adequate to justify revising the Infrastructure List and Work Order drawings for Avalon Subdivision. Please let me know what I can do to help make the changes to the Work Order plans.

The analysis indicates that the Avalon Subdivision will accept 8.5 cfs from Basin 1 of the West Ridge Mobile Home Park when that portion is developed in the future. The remaining runoff from Basin 1 must be diverted east onto North Ridge Avenue so that the downstream street capacities are not exceeded. Attached is a copy of a letter from Ron Bohannon indicating that a speed hump will be placed in West Ridge Street to turn the runoff to the east when Basin 1 is developed.

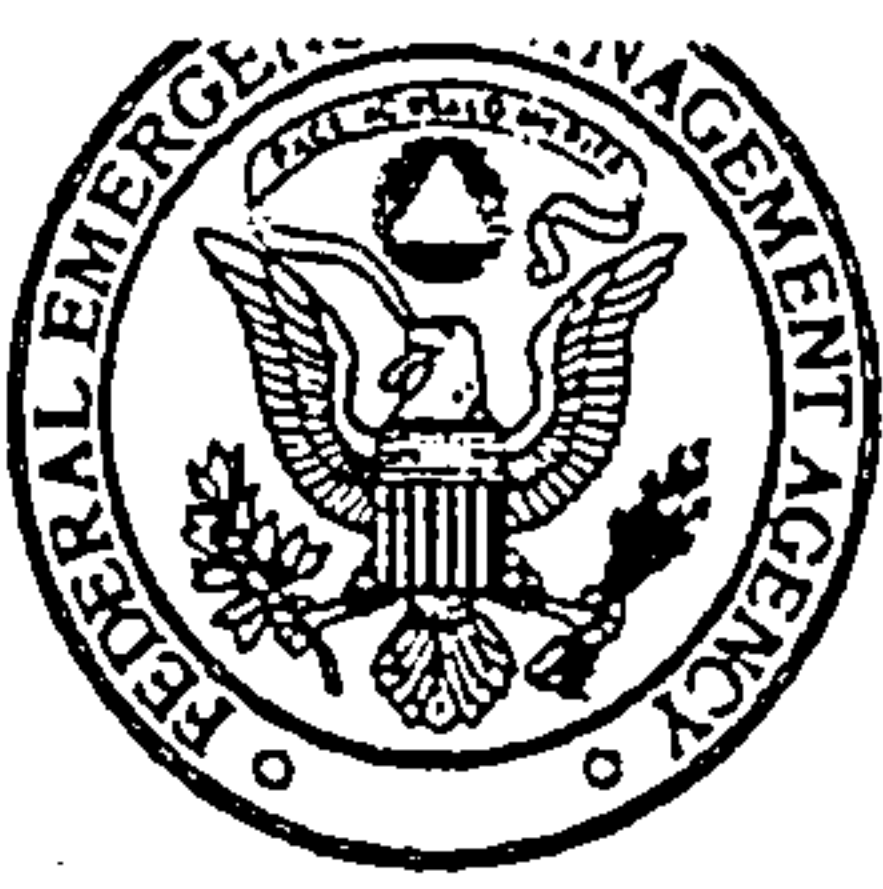
If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

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

Attachment

c: Bo K. Johnson, P.E., Curb Inc.
Ron Bohannon, P.E., Tierra West
File



Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 00-06-089P

The Honorable Jim Baca
Mayor
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Community: City of Albuquerque, New Mexico
Community No.: 350002
Panel Affected: 35001C0328 D
Effective Date of This Revision: **JAN 24 2000**

102-I-C

Dear Mayor Baca:

This responds to a request that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) for Bernalillo County, New Mexico and Incorporated Areas (the effective FIRM for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 14, 1999, Ms. Susan M. Calongne, P.E., City/County Floodplain Administrator, City of Albuquerque/Bernalillo County, requested that FEMA revise the FIRM to show the effects of a retention pond project associated with the West Ridge Mobile Home Park development along an unnamed arroyo from approximately 1,000 feet upstream of Bluewater Road to just upstream of Volcano Road. The retention pond project consists of one large retention pond with a capacity of 13.99 acre-feet approximately 500 feet downstream of Bluewater Road and two temporary ponds just upstream of Avalon Road and just upstream of Volcano Road.

All data required to complete our review of this request were submitted with letters from Mr. Ronald R. Bohannon, P.E., President, Tierra West, LLC, and Ms. Calongne.

We have completed our review of the submitted data and the flood data shown on the effective FIRM. We have revised the FIRM to modify the floodplain boundary delineations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) along the unnamed arroyo from approximately 1,000 feet upstream of Bluewater Road to just upstream of Volcano Road. As a result of the modifications, the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, for the unnamed arroyo increased in some areas and decreased in other areas. All increases in SFHA width are contained in the ponds. No insurable structures are affected by the increases in SFHA width. The modifications are shown on the enclosed annotated copy of FIRM Panel(s) 35001C0328 D. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel(s) of the effective FIRM dated September 20, 1996.

The modifications are effective as of the date shown above. The map panel(s) as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

A review of the determination made by this LOMR and any requests to alter this determination should be made within 30 days. Any request to alter the determination must be based on scientific or technical data.

We will not physically revise and republish the FIRM and Flood Insurance Study (FIS) report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

The basis of this LOMR is, in whole or in part, a retention pond project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities 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 regulations. Consequently, the ultimate responsibility for maintenance of the retention ponds rests with your community.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications made by this LOMR. Our records show that your community has met this requirement.

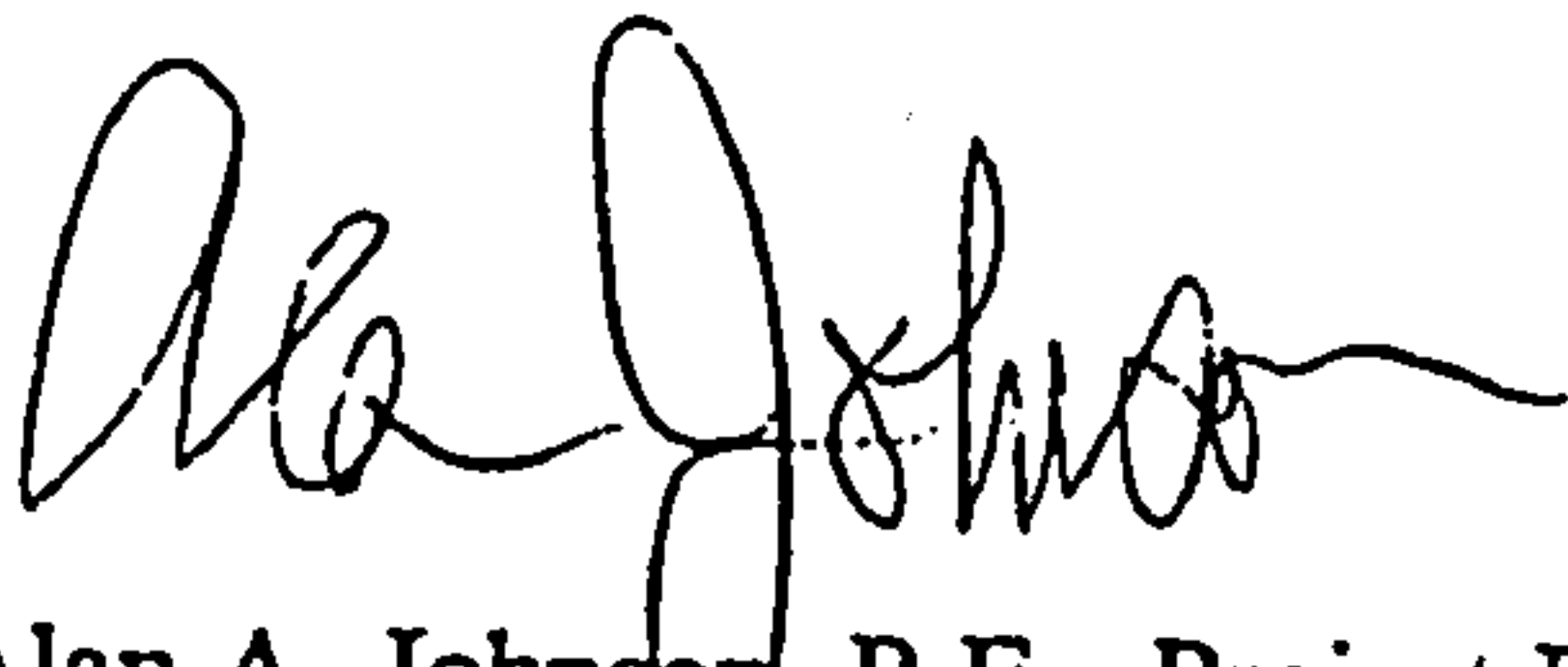
A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Frank Pagano
Director, Mitigation Division
Federal Emergency Management Agency, Region VI
Federal Regional Center, Room 206
800 North Loop 288
Denton, Texas 76201-3698
(940) 898-5127

FEMA makes flood insurance available in participating communities; in addition, we encourage communities to develop their own loss reduction and prevention programs. Our Project Impact initiative, developed by FEMA Director James Lee Witt, seeks to focus the energy of businesses, citizens, and communities in the United States on the importance of reducing their susceptibility to the impact of all natural disasters, including floods, hurricanes, severe storms, earthquakes, and wildfires. Natural hazard mitigation is most effective when it is planned for and implemented at the local level, by the entities who are most knowledgeable of local conditions and whose economic stability and safety are at stake. For your information, we are enclosing a Project Impact Fact Sheet. For additional information on Project Impact, please visit our Web site at www.fema.gov.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. Alan Johnson of our staff in Washington, DC, either by telephone at (202) 646-3403 or by facsimile at (202) 646-4596.

Sincerely,



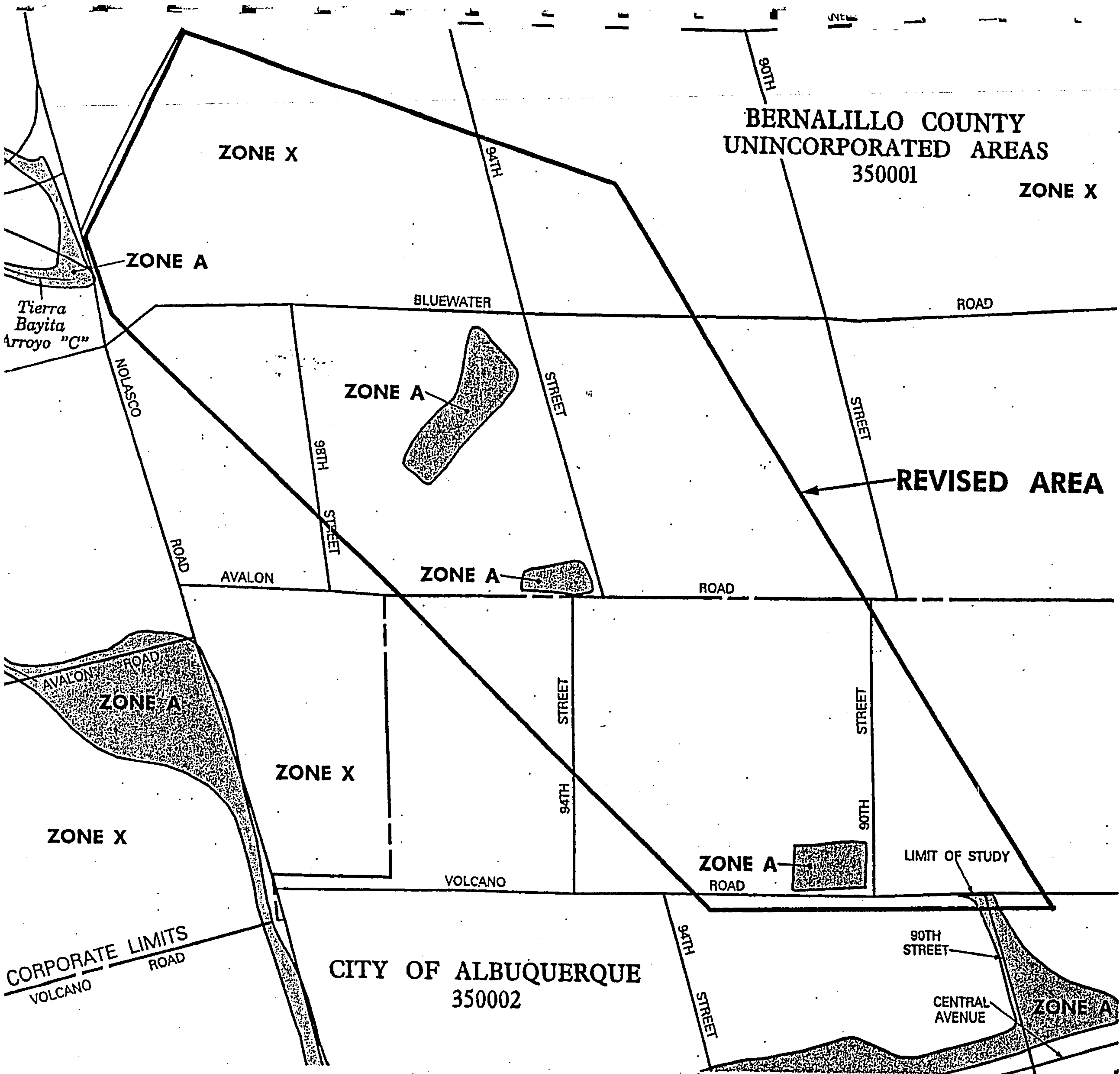
Alan A. Johnson, P.E., Project Engineer
Hazards Study Branch
Mitigation Directorate

For: Matthew B. Miller, P.E., Chief
Hazards Study Branch
Mitigation Directorate

Enclosure(s)

cc: Ms. Susan M. Calongne, P.E.
City/County Floodplain Administrator
City of Albuquerque/Bernalillo County

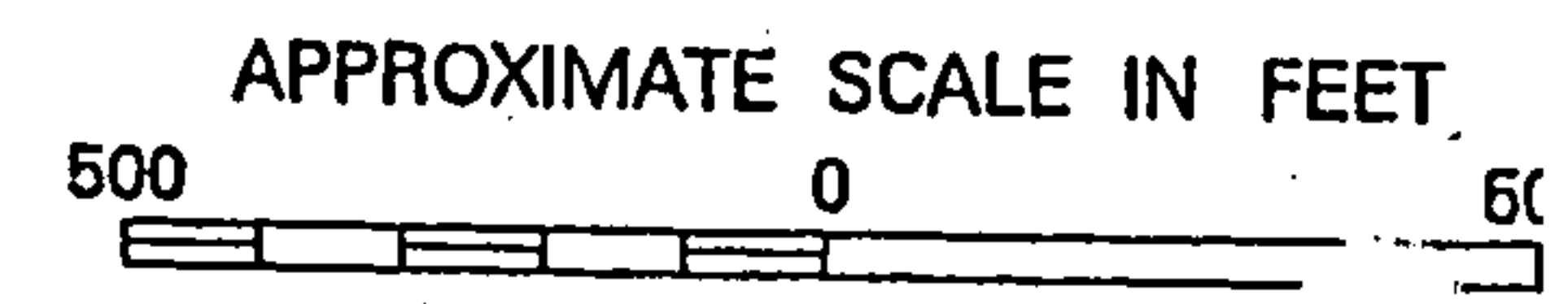
Mr. Ronald R. Bohannon, P.E.
President
Tierra West, LLC



**BERNALILLO COUNTY
UNINCORPORATED AREAS
350001**

**BERNALILLO COUNTY
CITY OF ALBUQUERQUE**

**CITY OF ALBUQUERQUE
350002**



NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS**

**PANEL 328 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)**

CONTAINS: COMMUNITY	NUMBER	PANE	FIX
BERNALILLO COUNTY UNINCORPORATED AREAS	328	0328	0
BERNALILLO COUNTY INCORPORATED AREAS	328	0328	0

**REVISED TO
REFLECT LOMR
DATED JAN 24 2000**

**MAP NUMBER
35001C0328 D**

**EFFECTIVE DATE:
SEPTEMBER 20, 1996**



Federal Emergency Management Agency

May-19-99 02:05P Brasher & Lorenz

8886188

P.02

BRASHER & LORENZ, INC.

CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

May 19, 1999

Ronald Bohannon, PE
Tierra West LLC
4421 McLeod Road NE
Albuquerque, New Mexico 87108

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.

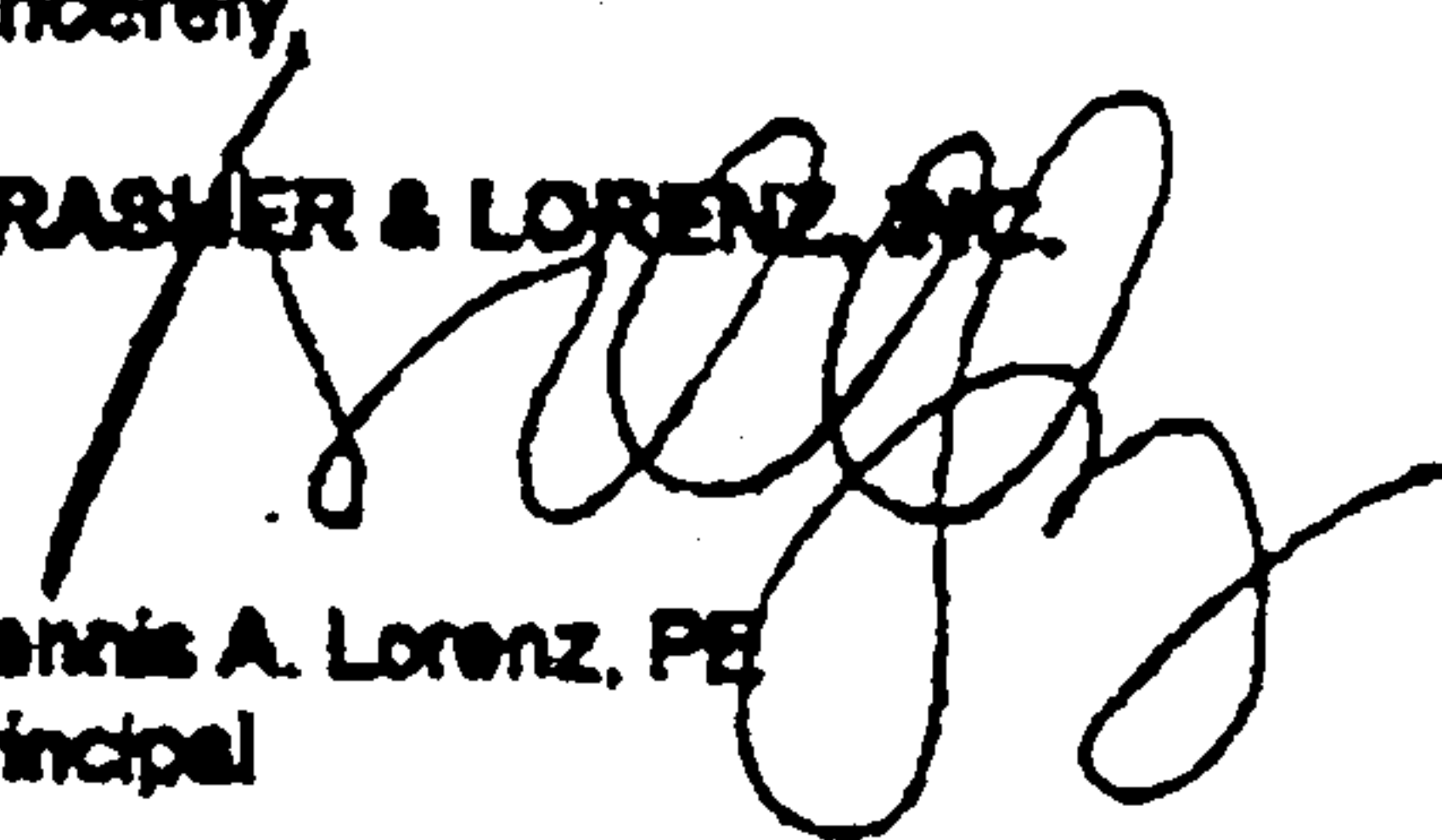
We would like to reduce our infrastructure demand by taking advantage of your offer to rout developed flows from Phase 2 through the mobile home park to the existing ponding areas. We would provide an interim pond at the southeast corner of the tract to retain undeveloped flows.

Your acknowledgment of our agreement by signing below will allow us to proceed with Preliminary Plat approval, which is up for renewal on May 28, 1999.

If you have any questions please call.

Sincerely,

BRASHER & LORENZ, INC.


Dennis A. Lorenz, PE
Principal



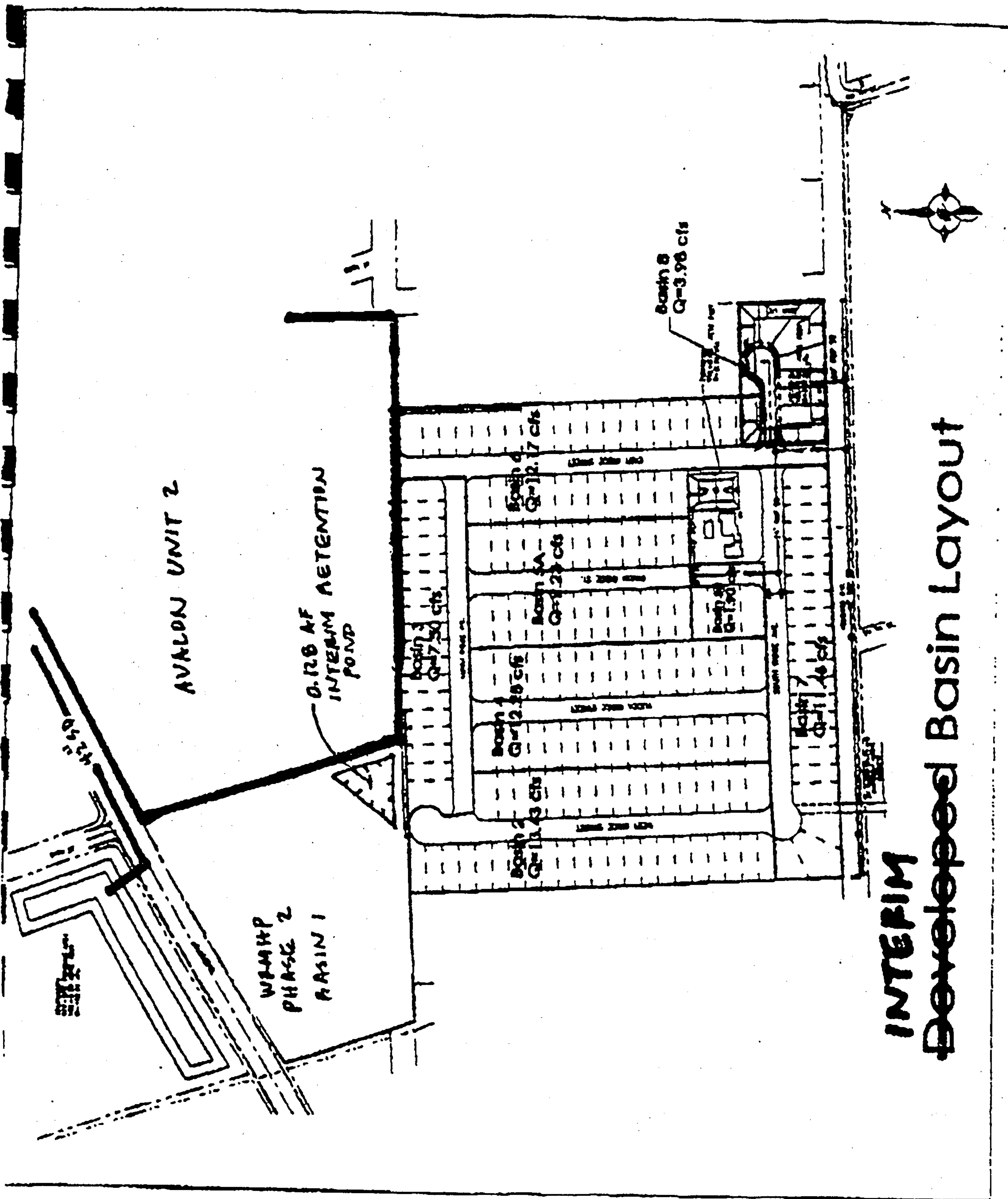
Ronald Bohannon, PE
Agent for West Ridge Mobile Home Park

Date

Jdl/99504

Encl

CC: Bo Johnson, 5905 Azueco Ct. NW, Albq, NM 87120



ON-SITE DRAINAGE BASINS

Existing

BASIN	AREA (SF)	AREA (AC)	AREA (MP)
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

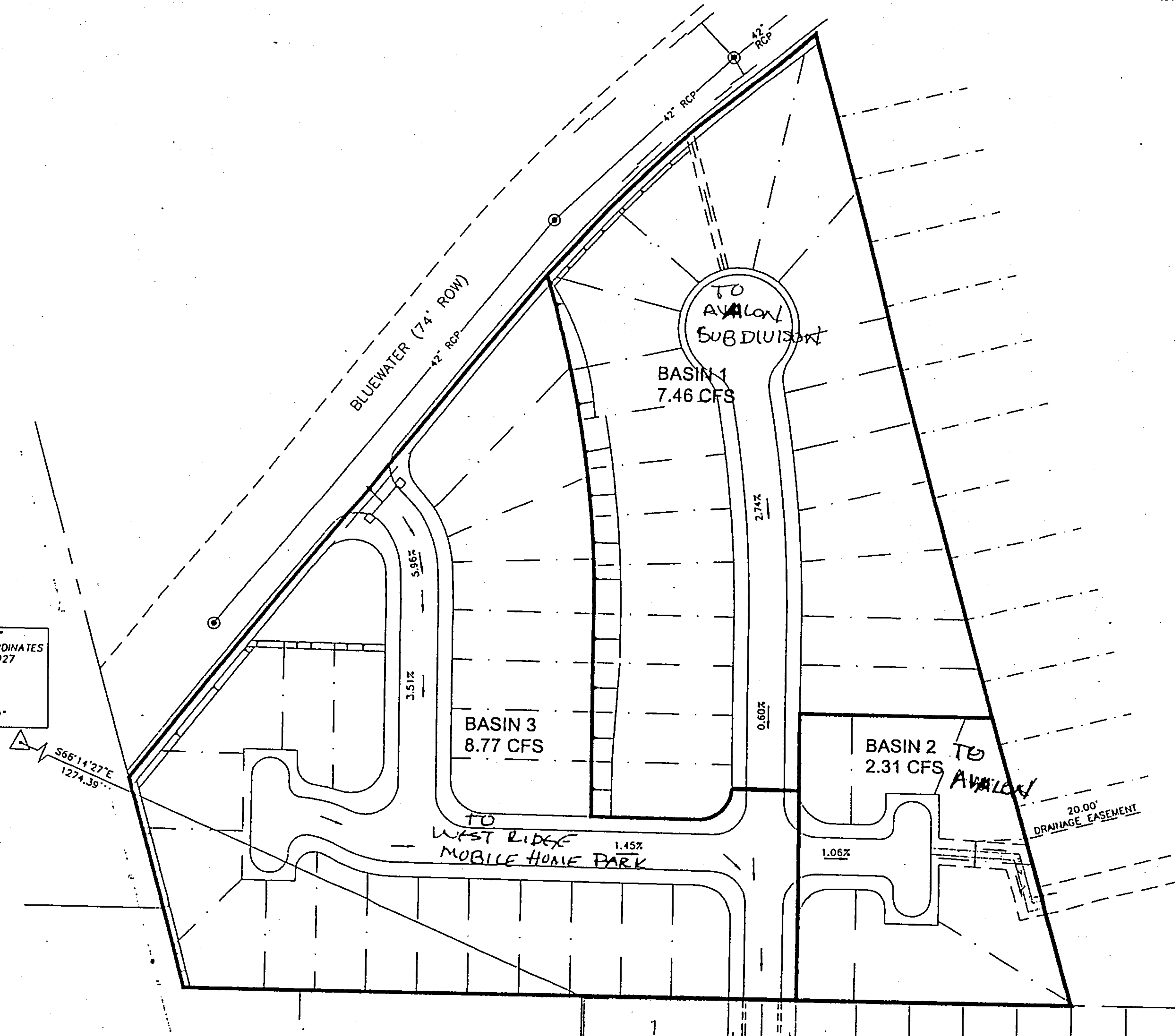
Existing

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

MONUMENT "8-K9"
STATE PLANE COORDINATES
NAD 1927
Easting 152,217.80
Northing 1,484,931.98
Slope 0.99967415
TA ALPHA = -0°17'02"



DEVELOPED BASIN LAYOUT

AVALON
SUBDIVISION

May-20-99 11:58A Brasher & Lorenz

8886188

P.01

May-19-99 02:05P Brasher & Lorenz

8886188

FAX TRANSMITTAL

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING NO. 1, SUITE 210 ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 888-6088 FAX (505) 888-6188

TO: Ronald Bohannon FAX NO: 883-7034

COMPANY: Tierra West LLC

FROM: Dennis Lorenz

DATE: 5/19/99 SUBJECT: _____

PAGES, INCLUDING COVER: 4

MESSAGE:

Bonnie

*Please fax back to Dennis Lorenz. Send copy
to Fred Seely for his files.*

May-20-99 11:58A Brasher & Lorenz
5-20-1999 11:58AM T. R. Brasher & Lorenz, LLC

8886188

P.03

May-19-99 02:05P Brasher & Lorenz

8886188

P.03

DRAINAGE REPORT

for

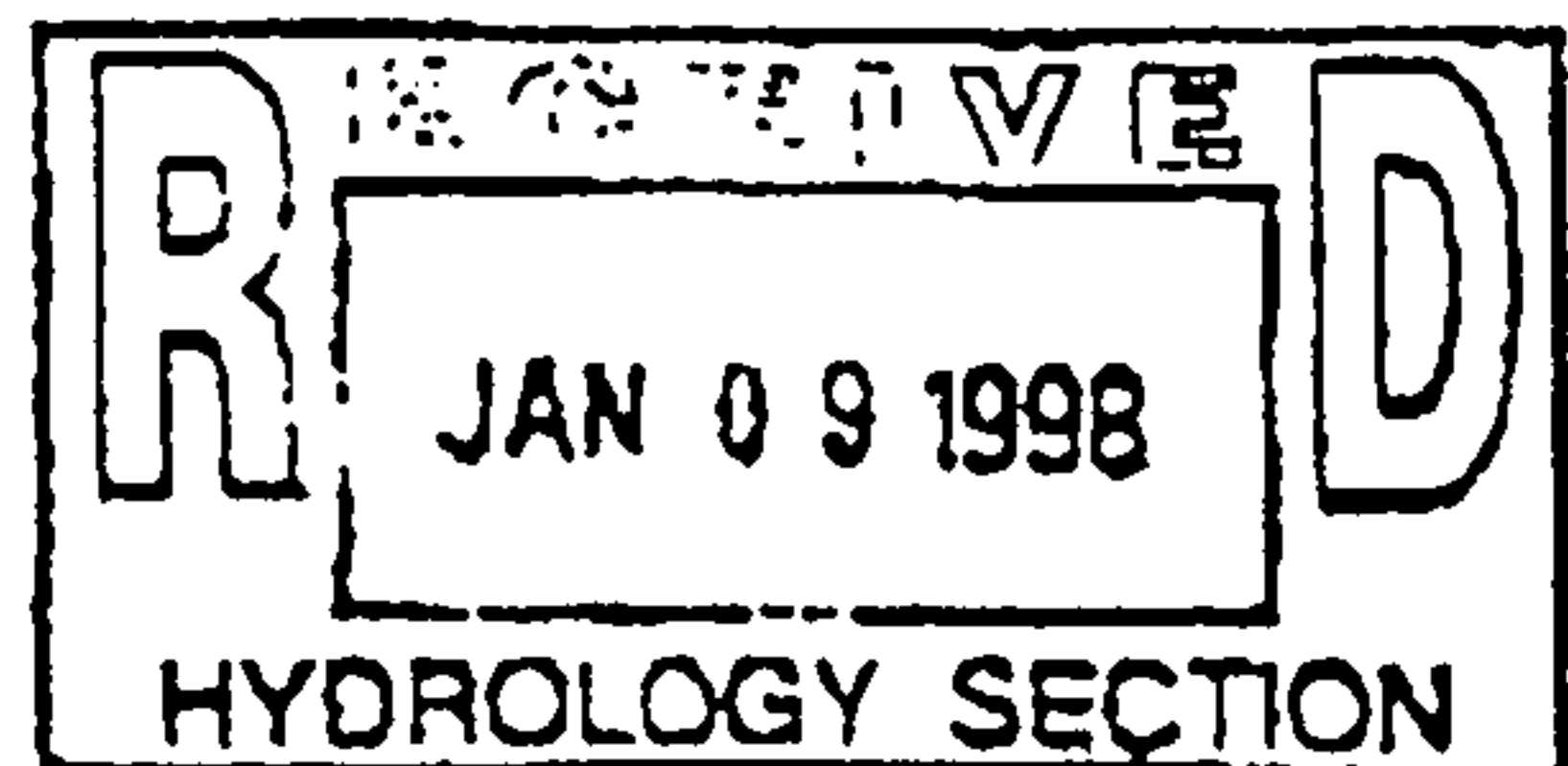
West Ridge Mobile Home Park

Prepared by

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

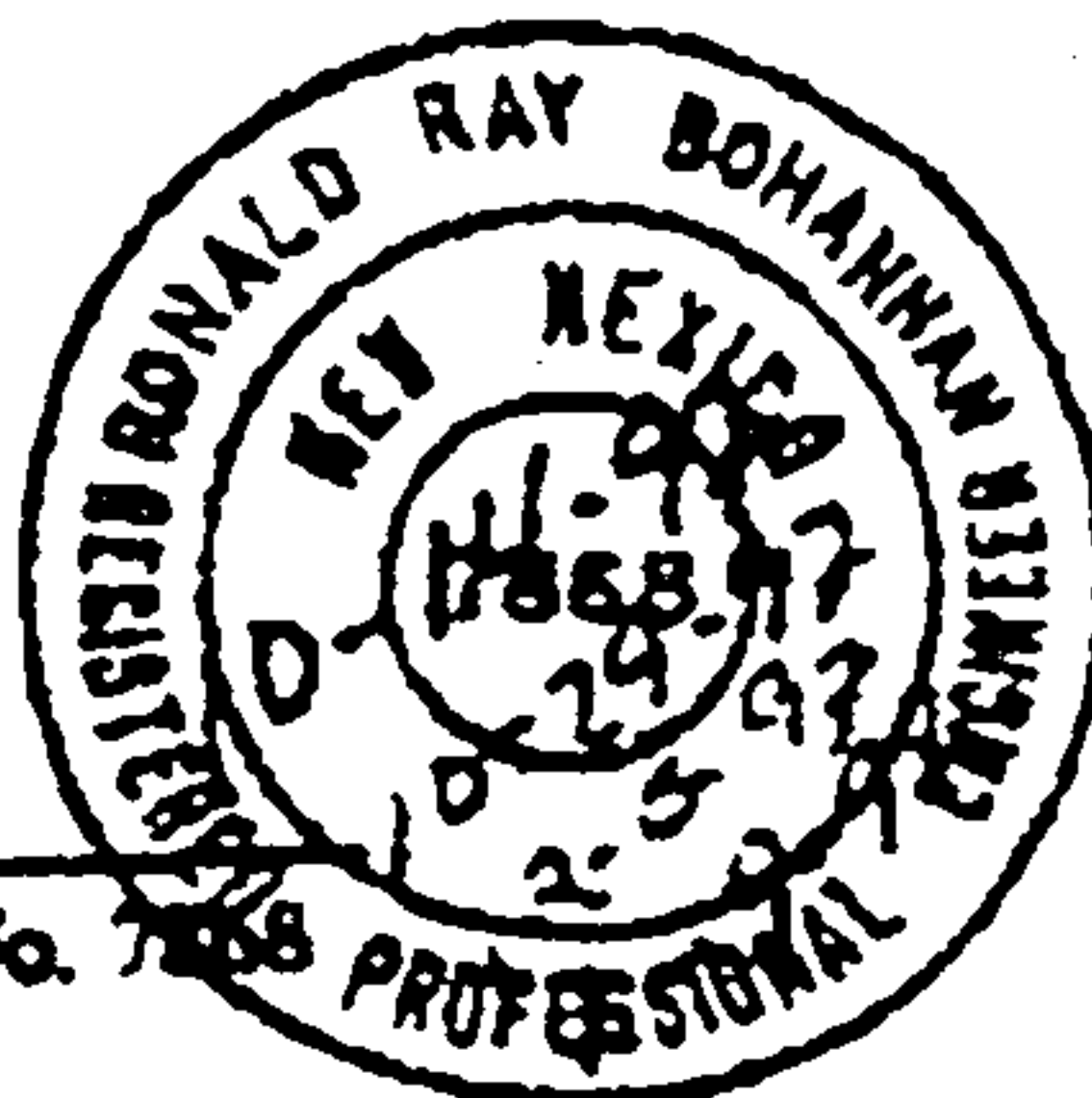
Prepared for

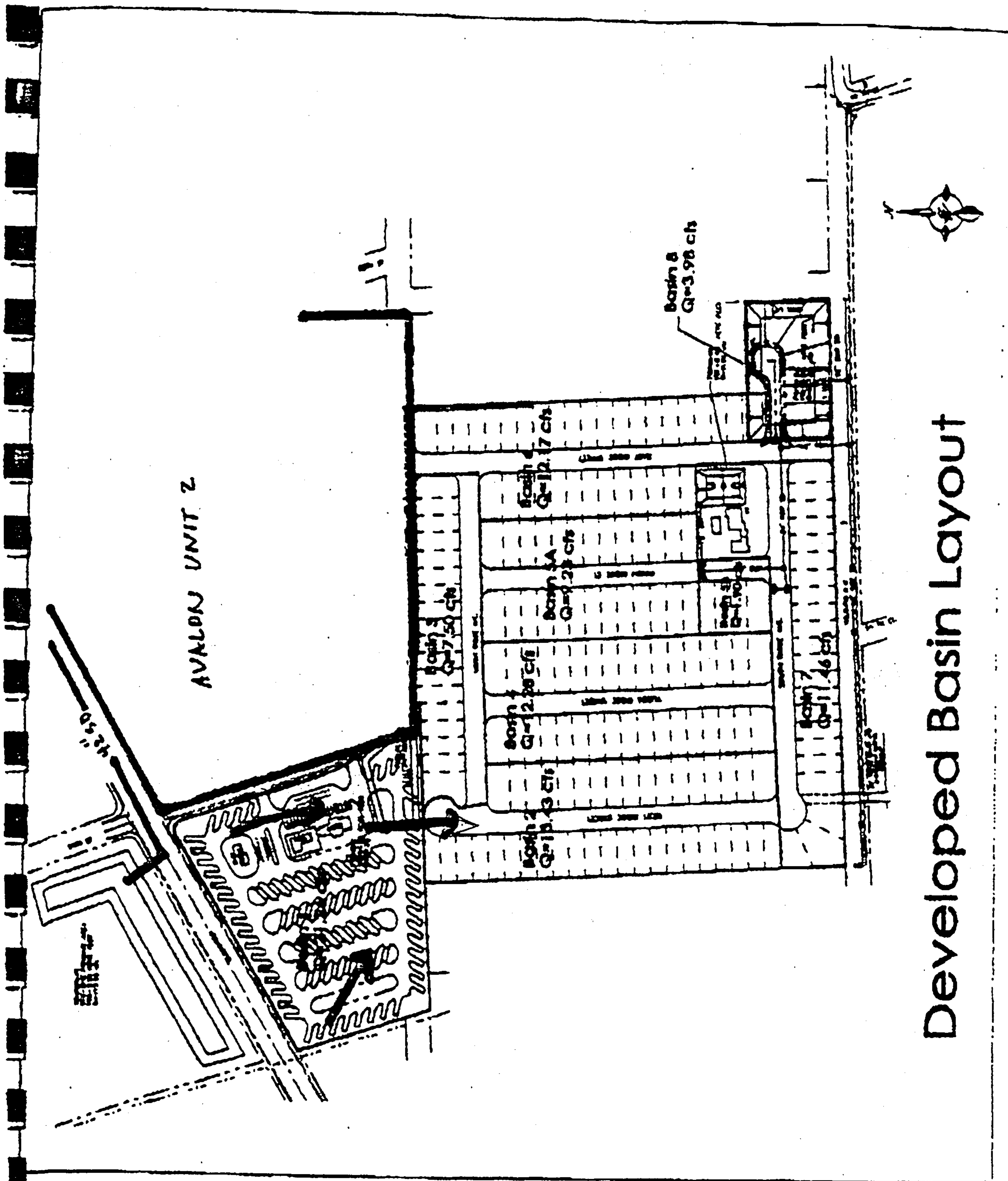
Fred Seeley
Great Western Realty
3511 Carlisle Blvd, NE
Albuquerque, New Mexico 87107



October 1997


Ronald R. Bohannon P.E. No. 7858







City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 14, 2004

Dave Thompson, PE
Thompson Engineering Consultants, Inc.
4800-C Juan Tabo NE
Albuquerque, NM 87111

Re: Bluewater Pointe Subdivision Drainage Report
Engineer's Stamp dated 4-20-04, (K9/D6A)

Dear Mr. Thompson,

Based on information contained in your submittal dated 4-23-04, the above referenced report cannot be approved for Preliminary Plat until the following comments are addressed.

- Please provide the elevations of the adjoining properties in order to determine if, and to what extent, any retaining wall is needed.
- In order to drain public water through a private system, I would need to have a public drainage easement up to and including the existing West Ridge MH 1 pond prior to plat approval. An Agreement and Covenant for the maintenance of this pond would be required on your infrastructure list. Finally, a connection to the recently completed system in Volcano is required.

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

Sincerely,

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

C: file

DRAINAGE INFORMATION SHEET
(REV. 1/28/2003rd)

D6A

PROJECT TITLE: BLUEWATER POINTE SUBDIVISION ZONE MAP/DRG. FILE #: K9 / ~~D-229~~
DRB #: _____ EPC #: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: TRACT B, WESTRIDGE MOBILE HOME PARK, PHASE 2
CITY ADDRESS: _____

ENGINEERING FIRM: Thompson Engineering Consultants, Inc.
ADDRESS: 4800 Juan Tabo NE, Suite C
CITY, STATE: Albuquerque, NM

CONTACT: David Thompson
PHONE: 271-2199
ZIP CODE: 87111

OWNER: Western Security Real Estate, Inc.
ADDRESS: 3511 Carlisle NE
CITY, STATE: Albuquerque, NM

CONTACT: Fred Seeley
PHONE: 888-9777
ZIP CODE: 87110

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: A.M. Surveying Company
ADDRESS: 612 Cerro de Ortega SE
CITY, STATE: Rio Rancho, NM

CONTACT: Mike Shook
PHONE: 896-1716
ZIP CODE: 87124

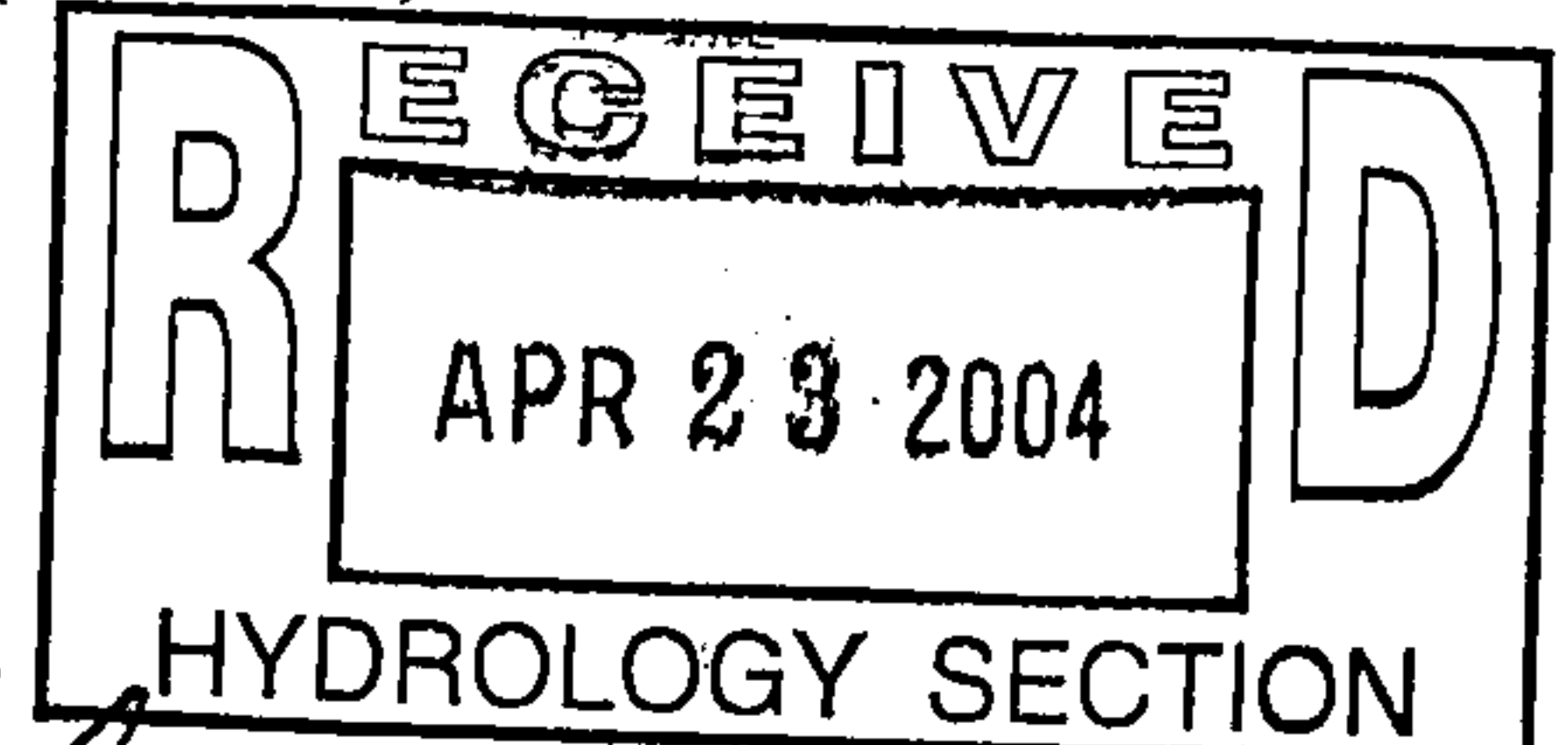
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ADDRESS: _____
CITY, STATE: _____

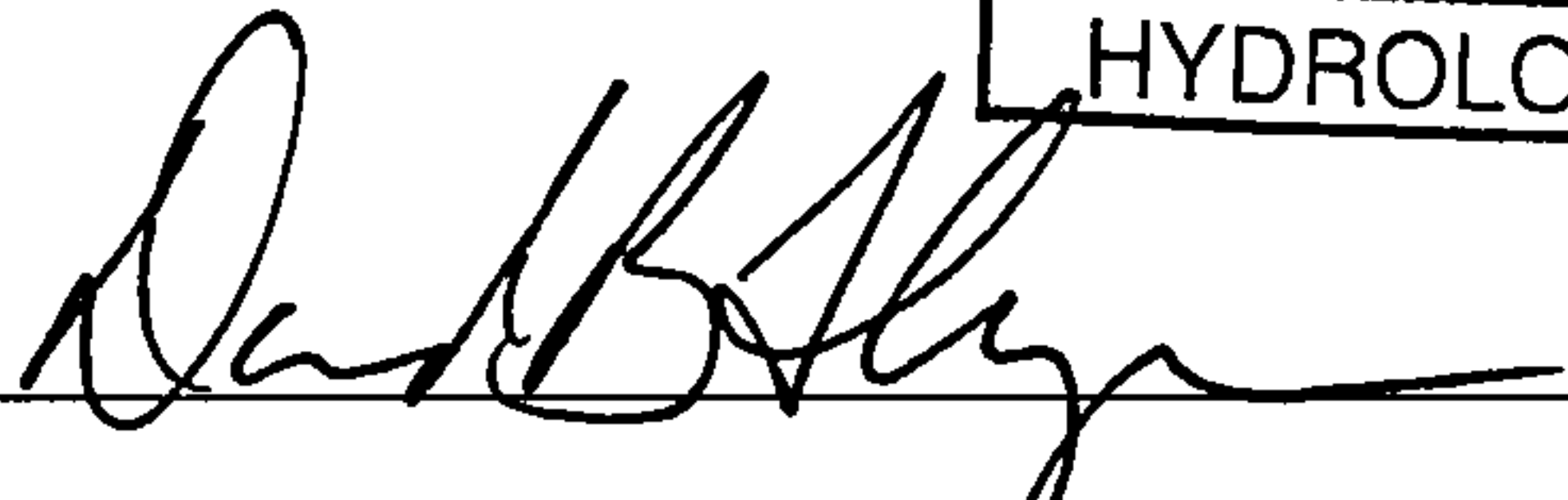
CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:
☒ DRAINAGE REPORT
☐ 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)
☐ ENGINEER'S CERTIFICATION(TCL)
☐ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
☐ SIA/FINANCIAL 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.)
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:
☐ YES
☒ NO
☐ COPY PROVIDED

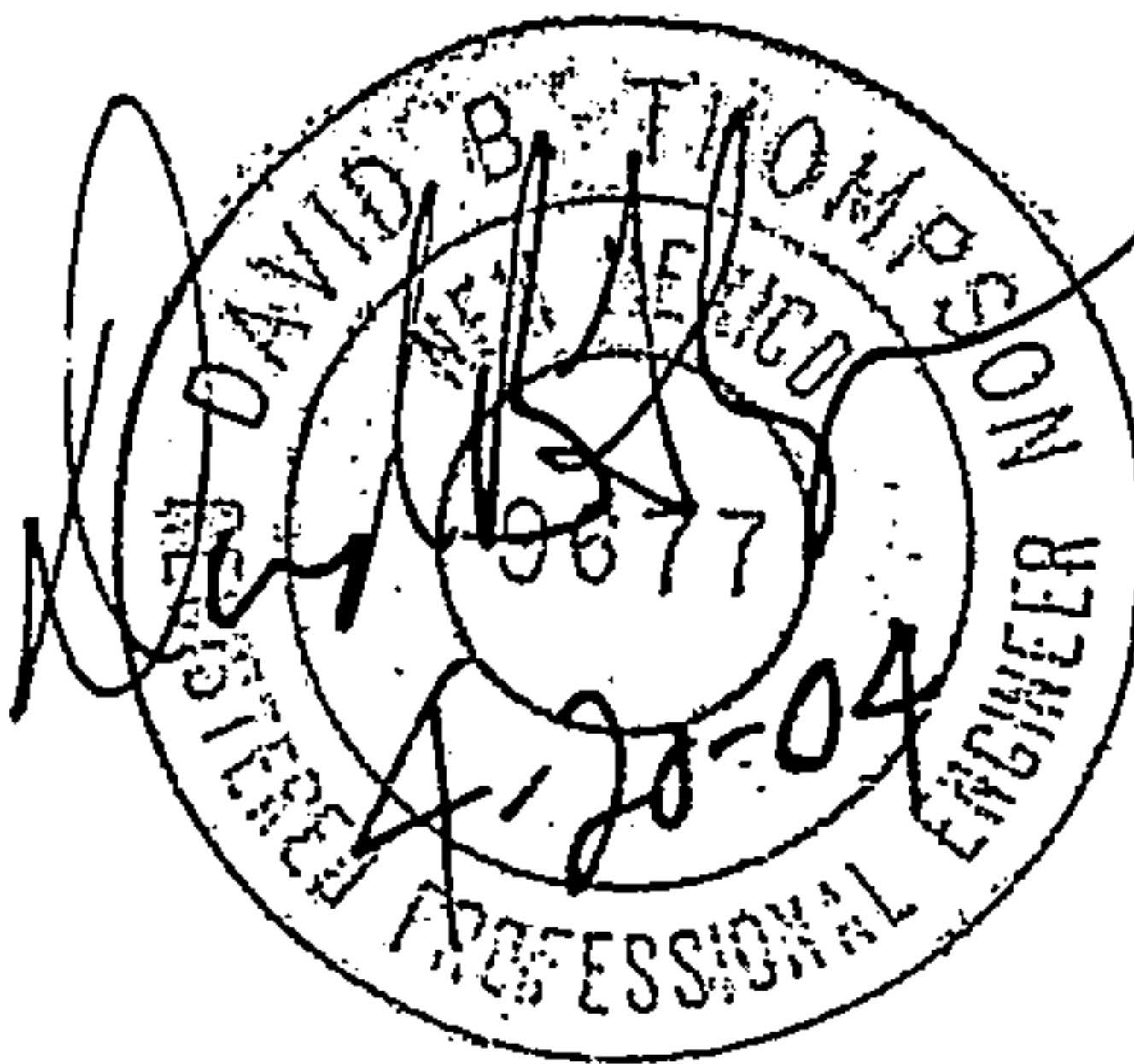


DATE SUBMITTED: April 21, 2004 BY: 

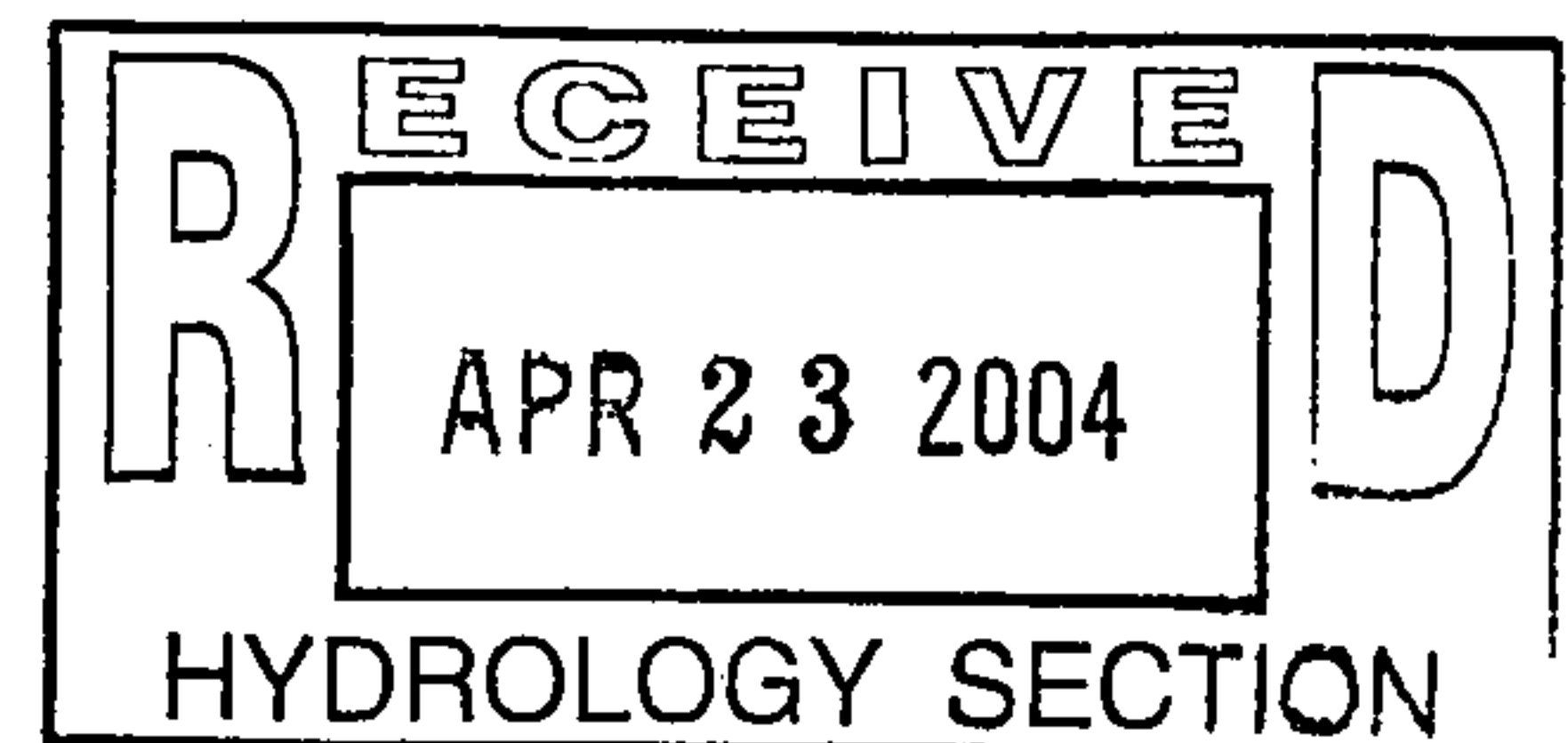
Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on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

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five acres
2. **Drainage Plans:** Required for building permits, grading permits, paving permits, and site plans less than five (5)
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or

DRAINAGE REPORT
FOR
BLUEWATER POINTE
SUBDIVISION



April 2004



DRAINAGE REPORT
FOR
BLUEWATER POINTE
SUBDIVISION

Prepared by:
Thompson Engineering Consultants, Inc.
4800 Juan Tabo N.E., Suite C
Albuquerque, NM 87111

April 2004

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION AND SITE LOCATION	1
METHODOLOGY	1
EXISTING DRAINAGE CONDITIONS.....	1
INTRODUCTION.....	1
OFFSITE FLOWS	4
ON-SITE FLOWS AND DRAINAGE BASIN DELINEATION.....	4
DEVELOPED DRAINAGE CONDITIONS	4
HYDROLOGIC ANALYSIS	4
HYDRAULICS ANALYSIS	6
<i>Street Hydraulic Analysis</i>	6

APPENDIX A -- HYDROLOGIC CALCULATIONS

APPENDIX B -- HYDRAULIC CALCULATIONS

APPENDIX C – AMENDMENT NO. 1 TO THE DRAINAGE MASTERPLAN FOR THE AVALON SUBDIVISION AND THE APPROVED WEST RIDGE MOBILE HOME PARK, UNIT II DRAINAGE REPORT

LIST OF PLATES

	<u>PAGE</u>
PLATE 1 – GRADING AND DRAINAGE PLAN	POCKET

LIST OF FIGURES

	<u>PAGE</u>
FIGURE 1 - ZONE ATLAS MAP K-9	2
FIGURE 2 FEMA FLOOD INSURANCE RATE MAP	3

LIST OF TABLES

	<u>PAGE</u>
TABLE 1 EXISTING DRAINAGE CONDITIONS	4
TABLE 2 DEVELOPED DRAINAGE CONDITIONS	5
TABLE 3 STREET HYDRAULIC ANALYSIS.....	6
TABLE 4 CHANNEL HYDRAULIC ANALYSIS	6

INTRODUCTION AND SITE LOCATION

Bluewater Pointe subdivision is located south of Bluewater Road and east of 94th Street. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 7.13 acres. The site is identified as Tracts 1, 2, and 3 Town of Atrisco Grant, Unit 5. The purpose of this report is to provide the drainage analysis and management plan for Bluewater Pointe Subdivision. The Bluewater Pointe Subdivision consists of 53 single family residential lots.

A previous site development, grading and drainage plan was approved for this site known as West Ridge Mobile Home Park, Unit II. The drainage concept that was approved for the West Ridge Mobile Home Part, Unit II was utilized for the development of this report.

METHODOLOGY

The hydrologic and hydraulic criteria in Section 22 of the City of Albuquerque Development Process Manual (DPM), entitled "Drainage, Flood Control, and Erosion Control," was followed to perform the analyses given in this report. The design storm used for both the existing undeveloped and developed conditions of the Bluewater Pointe Subdivision is the 100-year, 6-hour storm event for peak flow computations. The property is located in Zone 1, which has a 100-year 6-hour storm event of 2.2 inches.

Street capacities were modeled using Haested Methods Flowmaster program to determine normal depths and conjugate depths.

EXISTING DRAINAGE CONDITIONS

INTRODUCTION

The site is currently undeveloped. The site drains from northwest to southeast into a temporary retention pond that was constructed with West Ridge Mobile Home Park, Unit I. The existing site generates a 100-year undeveloped runoff rate of 9.26 cfs and a 100-year volume of 0.260 acre-feet. The site contains two different soils as identified 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 have rapid permeability. Runoff is slow and the hazard of soil blowing is severe for both soils.

The site is located on FEMA Flood Insurance Rate Map Number 35001C0328 D as shown on Page 3 of this report. The site is encumbered with a Flood Hazard Zone A at the location of the temporary retention pond at the southeast corner of the property. A letter of Map revision (LOMR) will need to be completed to remove the flood hazard zone.

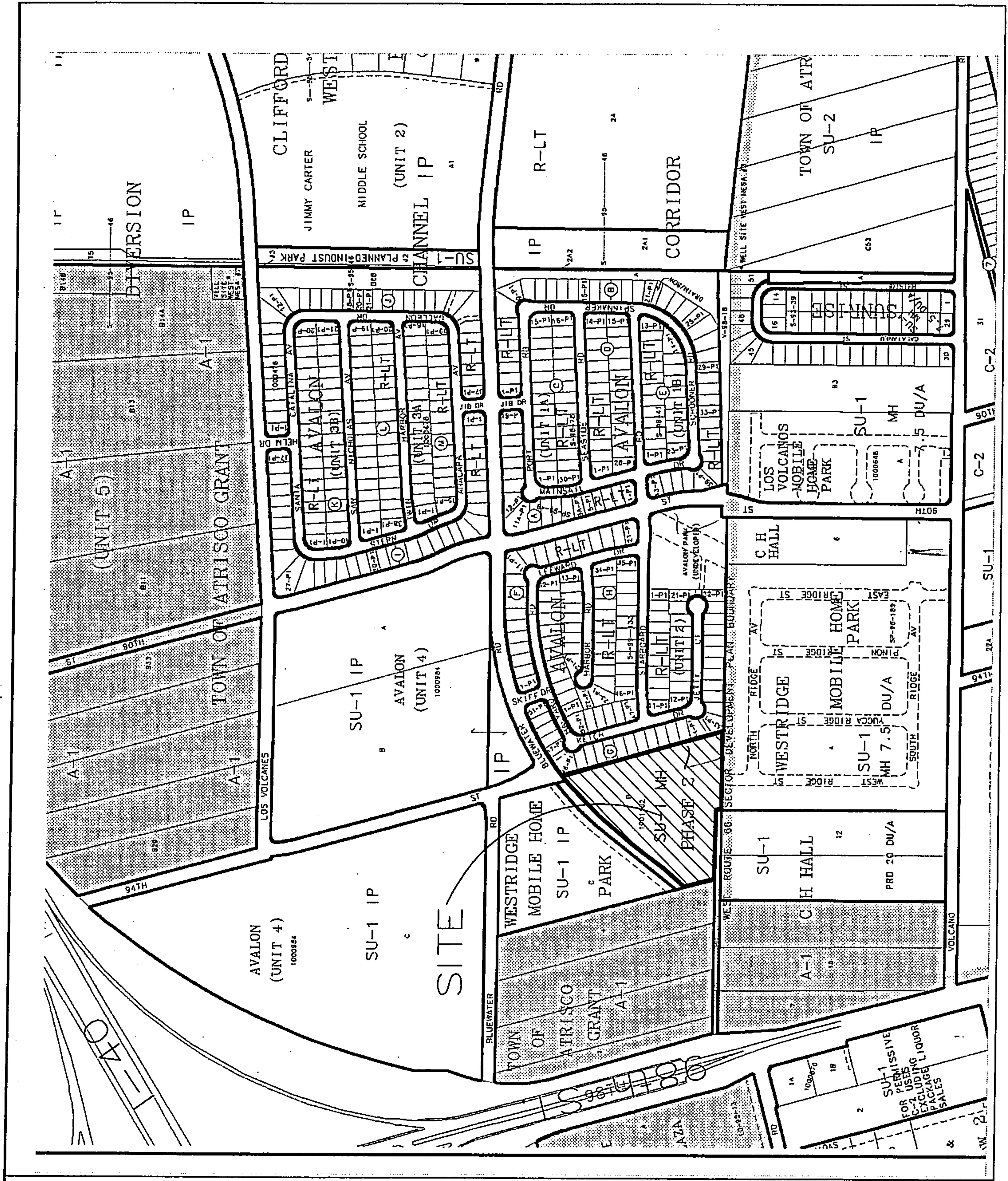
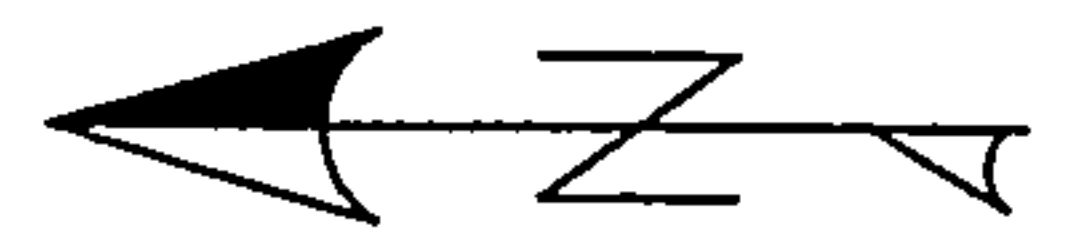


Figure 1 - Zone Atlas Map K-9



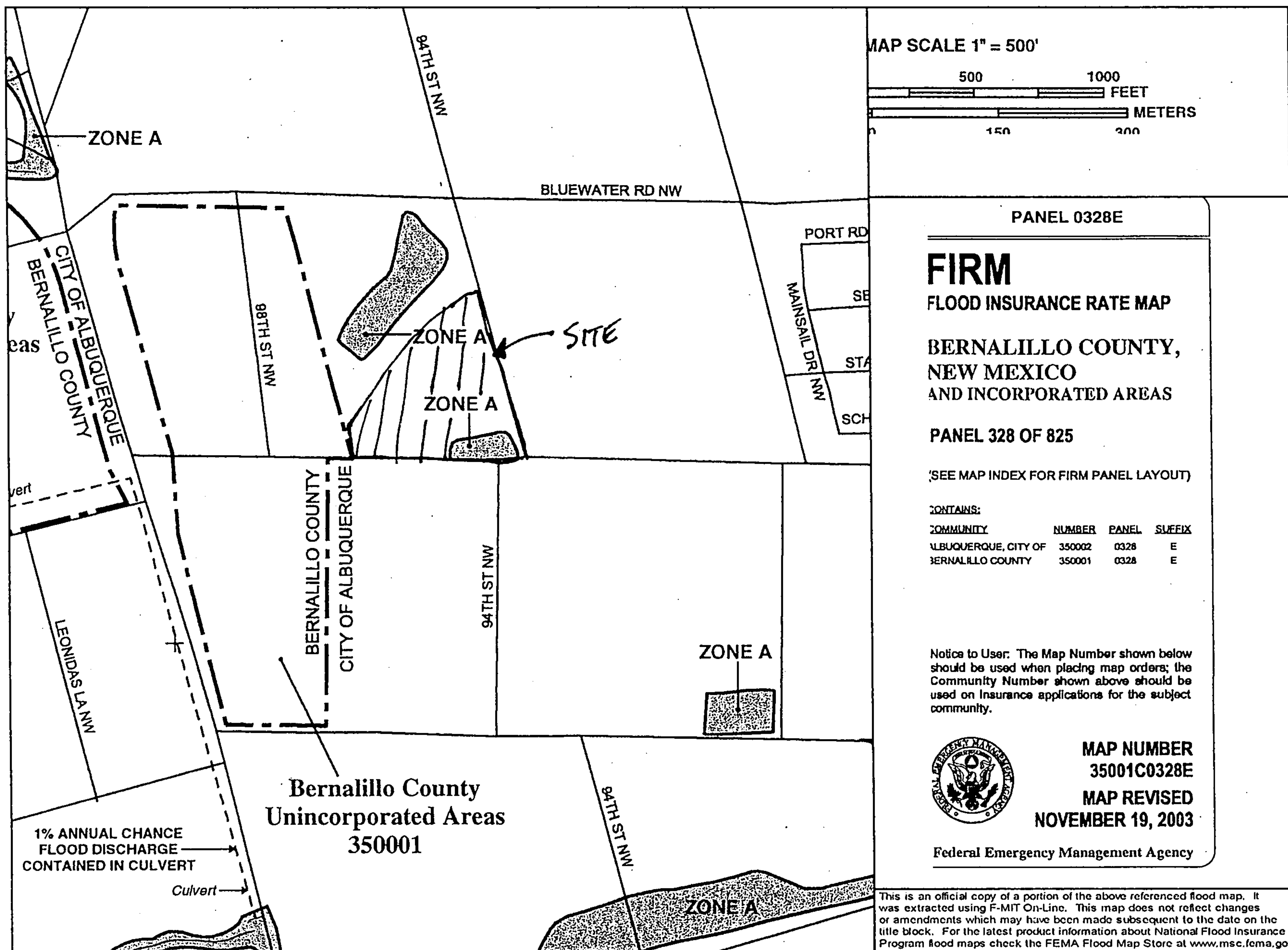


Figure 2 FEMA Flood Insurance Rate Map

OFFSITE FLOWS

There are no offsite flows entering the site from the north, south or east. The south and east sides of the subdivision are developed with the flows contained on-site. A large existing retention pond, located north of the site, captures all flows from the north. The west is undeveloped with the natural topography draining to the south and therefore does not affect this site.

ON-SITE FLOWS AND DRAINAGE BASIN DELINEATION

For the existing conditions hydrologic analysis, Land Treatment A was used to determine peak flows. The site was divided into two drainage basins. Basin 100 includes approximately the western half of the subdivision. Basin 200 includes approximately the eastern half of the subdivision. Basin 300 includes the western half ROW of Bluewater Road and Basin 400 includes the eastern half ROW of Bluewater Road.

Table 1 Existing Drainage Conditions

BASINS	Area (acres)	100yr-6hr Peak Flow (cfs)	100yr- 6hr Runoff Volume (acre-ft)	Land Treatment
100	3.65	4.74	0.134	100%A
200	3.48	4.52	0.127	100%A
300	0.47	0.61	0.017	100%A
400	0.14	0.19	0.005	100%A
TOTAL SUBD.	7.13	9.26	0.260	

DEVELOPED DRAINAGE CONDITIONS

HYDROLOGIC ANALYSIS

The original Master Drainage Plan developed with the West Ridge Unit 1 (Zone Atlas Maps K9/D6) called for all the flows from Unit 2 to drain to a storm drain in 94th Street. The adjacent Avalon Subdivision, however, vacated 94th Street and modified the Master Plan. That Master Plan provided for 8.5 CFS from Bluewater Pointe Subdivision draining to Avalon Subdivision and 12.81 CFS draining south through West Ridge Unit 1. The developer of this site has agreements to allow for draining this site into the existing subdivision.

Basin 100 includes the east-west street and the cul-de-sac and all lots that drain into these streets. Basin 100 will drain south into the existing channel that drains to West Ridge Unit 1. Basin 300 is the southern half ROW of Bluewater Road from the intersection of the North-South Street to the west property line of the subdivision. The runoff from Basin 300 will be routed in the East-West Street in the subdivision and added to the runoff from Basin 100. The routed flows will drain to the low point in the East-West Street and will discharge to the 10 foot-wide concrete channel through sidewalk culverts. The revised Master Drainage Plan for this site allowed for 12.81 CFS from the subdivision to drain into the existing concrete channel to West Ridge Road and eventually into a retention pond in West Ridge Mobile Home Park, Unit I.

Basin 200 includes the north-south street along the east side of the subdivision and all of the lots that drain to the street. Basin 200 will drain into the existing 10-foot wide concrete channel that drains to Jetty Court and ultimately into the existing drainage pond developed for the Avalon Subdivision. The revised Master Drainage Plan for this site allowed for 9.77 CFS from Basin 200 to drain into the existing concrete channel. Basin 400 is the southern half ROW of Bluewater Road from the intersection of the North-South Street to the east property line of the subdivision. Runoff from this basin will drain in Bluewater to an existing storm inlet just east of the subdivision.

The site was assigned land treatment values in accordance with Tables A-4 and A-5 of the DPM's section 22.2. Table 1 shows the Land Treatments and peak flows for each basin. The total peak flow for Basin 100 and 300 is 13.78 CFS, which is slightly higher than the 12.81 CFS allowed in the revised Master Drainage Report. The channel draining to West Ridge Street and the pond in West Ridge Mobile Home Park, Unit I has the capacity to accept the additional flow.

The total peak flows from Basin 200 was computed to be 11.96 CFS, which is slightly higher than the 9.77 CFS allowed in the revised Master Drainage Report. The channel draining into Jetty Court as well as the existing storm drain and pond in Avalon Subdivision has the capacity to accept the additional flow. The channel draining into Jetty Court has only one 24" sidewalk culvert. An additional 3-24" sidewalk culverts will be required to convey the 11.96 CFS into Jetty Court. The hydrologic calculations are provided in Appendix A.

Table 2 Developed Drainage Conditions

BASINS	Area (acres)	100yr-6hr Peak Flow (cfs)	100yr- 6hr Runoff Volume (acre-ft)	100yr- 10day Runoff Volume (acre-ft)	Land Treatment
100	3.65	12.34	0.419	0.644	26%B, 25%C, 49%D
200	3.48	11.92	0.406	0.630	25%B, 24%C, 51%D
300	0.47	1.93	0.071	0.121	12%B, 88%D
400	0.14	0.59	0.021	0.036	12%B, 88%D
TOTAL SUBD.	7.13	24.26			

HYDRAULICS ANALYSIS

Street Hydraulic Analysis

A hydraulic analysis of the street flows was completed to determine normal depth and sequent depth of the flow (see Appendix B). The sequent depth must remain within the street right-of-way. Therefore, the sequent depth must be equal to or less than 0.53 feet, since the streets will have mountable curb and gutter.

Table 3 presents the results of the analysis including the energy grade depth.

Table 3 Street Hydraulic Analysis

Street	Width (ft)	Slope (%)	Contributing Basins	Flow (cfs)	Normal Depth (ft)	Energy Grade Depth (ft)
East-West	28	1.50	100 & 300	13.78	0.29	0.46
North-South	28	1.13	200	11.96	0.29	0.42

Channel Hydraulic Analysis

A hydraulic analysis was performed to determine the design characteristics of the new channels carrying flow to both Avalon and West Ridge Unit 1 channels. In addition, a hydraulic analysis of the flows leaving the site was completed to determine channel capacities, normal depth and velocity of the existing channels. Each channel has a 10-foot bottom width with 8" vertical side walls.

For the Basin 100 Concrete channel that accepts flow from the East-West street, a total of 4- 24-inch wide sidewalk culverts will be required to pass the 13.78 to the channel. Only one 24-inch wide sidewalk culvert was constructed from the existing channel that drains to Jetty Court in the Avalon Subdivision. An additional 3 sidewalk culverts will need to be added. See Appendix B for channel and sidewalk calculations.

Table 4 Channel Hydraulic Analysis

Channel	Width (ft)	Slope (%)	Contributing Basins	Flow (cfs)	Normal Depth (ft)	Energy Grade Depth (ft)
Basin 100	10	0.936	100 & 300	13.78	0.29	0.64
Basin 200	10	2.28	200	11.96	0.20	0.73

APPENDIX A
HYDROLOGIC CALCULATIONS

RUN DATE (MON/DAY/YR) =04/20/2004
USER NO.= AHYMO-I-9702a01000K21-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										
RAINFALL TYPE= 1										TIME=.00
*SEDIMENT BULK										RAIN6= 2.200
CODE=1 BULK FACTOR=1.10										

*S BASIN 400 - BLUEWATER ROAD EAST										

COMPUTE NM HYD	400.00	-	10	.00022	.59	.021	1.80969	1.500	4.182	PER IMP= 88.00

*S BASIN 300 - BLUEWATER ROAD WEST										

COMPUTE NM HYD	300.00	-	12	.00073	1.93	.071	1.80970	1.500	4.121	PER IMP= 88.00
*S ROUTE FLOWS DOWN EAST-WEST STREET TO LOW POINT										
*S ASSUME 46' ROW AND 28' F-F										
*S										
*S ROUTE FLOWS USING MCUNGE										
ROUTE MCUNGE	300ROUTE	12	31	.00073	1.93	.071	1.81117	1.567	4.133	CCODE = .2
*S										

*S BASIN 100 - WEST HALF OF SUBDIVISION										

COMPUTE NM HYD	100.00	-	13	.00570	12.34	.419	1.37750	1.500	3.384	PER IMP= 49.00
*S COMBINE Routed 300ROUTE AND 100										
ADD HYD	100ADD 13&31	41		.00643	13.78	.489	1.42667	1.500	3.348	
*S										
*S BASIN 200 - EAST HALF OF SUBDIVISION										

COMPUTE NM HYD	200.00	-	14	.00544	11.92	.406	1.40049	1.500	3.423	PER IMP= 51.00
FINISH										

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -
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- VERSION: .1997.02c

RUN DATE (MON/DAY/YR) =04/20/2004
USER NO.= AHYMO-I-9702a01000K21-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										
RAINFALL TYPE= 1										TIME= .00
*SEDIMENT BULK										RAIN6= 2.200
CODE=1 BULK FACTOR=1.10										

*S*****										
*S BASIN 400 - BLUEWATER ROAD EAST										
*S*****										
COMPUTE NM HYD	400.00	-	10	.00022	.19	.005	.43922	1.533	1.339	PER IMP= .00
*S*****										
*S BASIN 300 - BLUEWATER ROAD WEST										
*S*****										
COMPUTE NM HYD	300.00	-	12	.00073	.61	.017	.43922	1.533	1.309	PER IMP= .00
*S*****										
*S BASIN 100 - WEST HALF OF SUBDIVISION										
*S*****										
COMPUTE NM HYD	100.00	-	13	.00570	4.74	.134	.43922	1.533	1.298	PER IMP= .00
*S*****										
*S BASIN 200 - EAST HALF OF SUBDIVISION										
*S*****										
COMPUTE NM HYD	200.00	-	14	.00544	4.52	.127	.43922	1.533	1.298	PER IMP= .00
FINISH										

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bluewater pointe
HYDROLOGIC MODEL--DEVELOPED CONDITIONS
20 APRIL 2004

HYDROLOGIC MODEL FOR OFFSITE AND ONSITE BASINS
100-YEAR, 6-HOUR STORM:

PRECIPITATION:

P60 = 1.87"
P360 = 2.20"
P1440 = 2.66"

START TIME=0.0 HR PUNCH CODE=0

24-Hour rainfall distribution based on NOAA ATLAS

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.20 IN
RAIN DAY=2.66 IN DT=0.033333 HRS

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033333 HOURS END TIME = 5.999940 HOURS

.0000	.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	.0810	.0865	.0924	.1051
.1335	.1773	.2400	.3257	.4384	.5820	.7607
.9789	1.1808	1.2652	1.3365	1.4000	1.4577	1.5108
1.5602	1.6063	1.6495	1.6902	1.7285	1.7648	1.7991
1.8316	1.8624	1.8917	1.9194	1.9458	1.9519	1.9576
1.9631	1.9683	1.9732	1.9780	1.9826	1.9870	1.9912
1.9953	1.9993	2.0031	2.0068	2.0105	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0476	2.0502	2.0529	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0701	2.0724	2.0746
2.0769	2.0791	2.0812	2.0834	2.0855	2.0876	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1052	2.1070	2.1088	2.1106	2.1124	2.1142	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	2.1461	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1601	2.1614	2.1627	2.1641	2.1654	2.1667	2.1680
2.1693	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1793	2.1805	2.1817	2.1829	2.1841	2.1852
2.1864	2.1876	2.1887	2.1899	2.1911	2.1922	2.1933

2.1945 2.1956 2.1967 2.1978 2.1989 2.2000

*
*

*SEDIMENT BULK CODE=1 BULK FACTOR=1.10

*

*S*****

*

*

*

*S*****

*S BASIN 400 - BLUEWATER ROAD EAST

*S*****

*

*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME

*

COMPUTE LT TP LCODE=1 NK=1 ISLOPE=0
LENGTH=180 FT SLOPE=0.03 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	.0	.000000	.0000
SHALLOW FLOW PORTION	.0	.000000	.0000
CHANNEL FLOW PORTION	180.0	.030000	3.0000
TOTAL BASIN	180.0	.030000	3.0000

TIME OF CONCENTRATION (HRS)= .0096 TIME TO PEAK (HRS)= .0064 LAG TIME (HRS)= .0072

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

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

*

COMPUTE NM HYD ID=10 HYD NO=400 DA=.00022 SQ MI
%A=0 %B=12 %C=0 %D=88
TP=0.0 HR
MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .76415 CFS UNIT VOLUME = .9840 B = 526.28 P60 = 1.8700
AREA = .000194 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .131024HR TP = .133333HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .64763E-01CFS UNIT VOLUME = .8722 B = 327.09 P60 = 1.8700
AREA = .000026 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=10 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.80969 INCHES = .0212 ACRE-FEET
PEAK DISCHARGE RATE = .59 CFS AT 1.500 HOURS BASIN AREA = .0002 SQ. MI.

```

*
*
*S*****
*S BASIN 300 - BLUEWATER ROAD WEST
*S*****
*
*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME
*
COMPUTE LT TP          LCODE=1 NK=1 ISLOPE=0
                        LENGTH=600 FT  SLOPE=0.006  K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

SHEET FLOW PORTION      LENGTH (FT)      SLOPE (FT/FT)      COMPOSITE K
SHALLOW FLOW PORTION    .0              .000000            .0000
CHANNEL FLOW PORTION     600.0          .006000            3.0000
TOTAL BASIN              600.0          .006000            3.0000

TIME OF CONCENTRATION (HRS)= .0717    TIME TO PEAK (HRS)= .0478    LAG TIME (HRS)= .0538

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

*
COMPUTE NM HYD          ID=12  HYD NO=300  DA=.000731 SQ MI
                        %A=0  %B=12  %C=0  %D=88
                        TP=0.0 HR
                        MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR    TP = .133333HR    K/TP RATIO = .545000    SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.5391 CFS    UNIT VOLUME = .9949    B = 526.28    P60 = 1.8700
AREA = .000643 SQ MI    IA = .10000 INCHES    INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .131024HR    TP = .133333HR    K/TP RATIO = .982685    SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .21519 CFS    UNIT VOLUME = .9353    B = 327.09    P60 = 1.8700
AREA = .000088 SQ MI    IA = .50000 INCHES    INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD          ID=12 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.80970 INCHES = .0706 ACRE-FEET
PEAK DISCHARGE RATE = 1.93 CFS AT 1.500 HOURS BASIN AREA = .0007 SQ. MI.

*
*S ROUTE FLOWS DOWN EAST-WEST STREET TO LOW POINT
*S ASSUME 46' ROW AND 28' F-F
*
COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

```

MIN ELEV=0.00 MAX ELEV=0.53
 CH SLOPE=0.015 FP SLOPE=0.015
 N=0.017 DIST=48.0
 DIST ELEV DIST ELEV DIST ELEV
 0.00 0.53 4.0 0.45 10.0 0.33
 10.1 0.00 24.0 0.28 38.0 0.00
 38.1 0.33 44.0 0.45 48.0 0.53

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
.00	.00	.00	.00
.03	.04	.02	2.80
.06	.16	.15	5.59
.08	.35	.45	8.39
.11	.62	.97	11.19
.14	.98	1.75	13.98
.17	1.40	2.85	16.78
.20	1.91	4.30	19.57
.22	2.50	6.13	22.37
.25	3.16	8.40	25.17
.28	3.90	11.12	27.96
.31	4.68	15.03	28.09
.33	5.47	19.22	28.57
.36	6.30	22.93	31.34
.39	7.22	27.17	34.10
.42	8.21	31.98	36.87
.45	9.27	37.38	39.63
.47	10.42	43.40	42.42
.50	11.64	50.06	45.21
.53	12.94	57.41	48.00

*S

*

*S ROUTE FLOWS USING MCUNGE

ROUTE MCUNGE ID=31 HYD NO=300ROUTE INFLOW ID=12
 DT=0.0 L=530 FT NS=0 SLOPE=0.015

INFLOW END= 193 TABLE PTS= 20
 DT= .033333 QMED= .96 CKMED= 1.8949
 WIDTH MED= 11.18 NREACH= 5 DX= 106.00

DEPTH (FT)	AREA (SQ FT)	Q (CFS)	TRAVEL TIME (HR)	WIDTH (FT)	ck (FPS)	VEL (FPS)	C	D	C1	C2	C3	Q-M (CFS)	C1-M	C2-M	C3-M
.00	.0	.0	.328	.0	.88	.28	1.000	.000	1.000	.000	.000	.0	1.000	.000	.000
.03	.0	.0	.240	2.8	.88	.61	.994	.006	.994	.000	.006	.0	.999	.000	.001
.06	.2	.2	.151	5.6	1.36	.97	1.535	.013	.990	.215	-.205	.1	.991	.096	-.087
.08	.4	.4	.115	8.4	1.74	1.28	1.970	.019	.987	.331	-.318	.3	.988	.264	-.252
.11	.6	1.0	.095	11.2	2.09	1.55	2.367	.026	.985	.411	-.395	.7	.985	.366	-.351
.14	1.0	1.8	.082	14.0	2.42	1.80	2.735	.033	.983	.469	-.452	1.3	.983	.437	-.420
.17	1.4	2.8	.073	16.8	2.72	2.03	3.081	.039	.981	.515	-.496	2.3	.981	.490	-.471
.20	1.9	4.3	.066	19.6	3.01	2.25	3.409	.046	.979	.551	-.530	3.5	.980	.531	-.511
.22	2.5	6.1	.060	22.4	3.29	2.46	3.723	.052	.978	.581	-.559	5.2	.978	.565	-.544
.25	3.2	8.4	.055	25.2	3.55	2.66	4.024	.059	.977	.607	-.583	7.2	.977	.593	-.570
.28	3.9	11.1	.052	28.0	4.20	2.85	4.750	.060	.979	.656	-.635	9.7	.976	.617	-.593
.31	4.7	15.0	.046	28.1	5.19	3.21	5.877	.065	.981	.712	-.693	13.0	.983	.702	-.685
.33	5.5	19.2	.042	28.6	5.02	3.52	5.678	.084	.975	.704	-.679	17.1	.980	.718	-.697
.36	6.3	22.9	.040	31.3	4.55	3.64	5.150	.101	.968	.680	-.648	21.0	.967	.673	-.641
.39	7.2	27.2	.039	34.1	4.76	3.77	5.388	.105	.968	.692	-.660	25.0	.967	.686	-.653
.42	8.2	32.0	.038	36.9	4.97	3.90	5.622	.110	.967	.703	-.670	29.5	.967	.697	-.664
.45	9.3	37.4	.037	39.6	5.17	4.03	5.848	.115	.967	.713	-.680	34.6	.967	.708	-.675
.47	10.4	43.4	.035	42.4	5.36	4.17	6.068	.120	.967	.722	-.688	40.4	.967	.717	-.684
.50	11.6	50.1	.034	45.2	5.56	4.30	6.293	.125	.966	.730	-.697	46.7	.966	.726	-.692

.53 12.9 57.4 .033 48.0 5.61 4.44 6.353 .134 .964 .733 -.697 53.7 .966 .734 -.700
 MAXIMUM NO. ITERATIONS FOR SOLUTION (KKMAX) = 2 OCCURRED 133 TIMES. AVERAGE NUMBER ITERATIONS = 1.0470
 Equations solved using the Ponce correction to C2
 *

PRINT HYD ID=31 CODE=1

HYDROGRAPH FROM AREA 300ROUTE

RUNOFF VOLUME = 1.81117 INCHES = .0706 ACRE-FEET
 PEAK DISCHARGE RATE = 1.93 CFS AT 1.567 HOURS BASIN AREA = .0007 SQ. MI.

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 *S*****
 *S BASIN 100 - WEST HALF OF SUBDIVISION
 *S*****
 *
 *COMPUTE TIME TO PEAK USING UPLAND/LAG TIME
 *
 COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0

LENGTH=100 FT SLOPE=0.01 K=0.7
 LENGTH=200 FT SLOPE=0.0426 K=2
 LENGTH=265 FT SLOPE=0.01 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	ADJUSTED SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	100.0	.010000	.7000
SHALLOW FLOW PORTION	200.0	.042413	2.0000
CHANNEL FLOW PORTION	265.0	.010000	3.0000
TOTAL BASIN	565.0	.021474	1.3783

TIME OF CONCENTRATION (HRS)= .0777 TIME TO PEAK (HRS)= .0518 LAG TIME (HRS)= .0583

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

*
 COMPUTE NM HYD ID=13 HYD NO=100 DA=.00570 SQ MI
 %A=0 %B=26 %C=25 %D=49
 TP=0.0 HR
 MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 11.024 CFS UNIT VOLUME = .9984 B = 526.28 P60 = 1.8700
 AREA = .002793 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118705HR TP = .133333HR K/TP RATIO = .890290 SHAPE CONSTANT, N = 3.983628
 UNIT PEAK = 7.7198 CFS UNIT VOLUME = .9988 B = 354.08 P60 = 1.8700
 AREA = .002907 SQ MI IA = .42647 INCHES INF = 1.04412 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.37750 INCHES = .4188 ACRE-Feet
PEAK DISCHARGE RATE = 12.34 CFS AT 1.500 HOURS BASIN AREA = .0057 SQ. MI.

*
*
*S COMBINE ROUTED 300ROUTE AND 100
*

ADD HYD ID=41 HYD NO=100ADD ID I=13 ID II=31
PRINT HYD ID=41 CODE=1

HYDROGRAPH FROM AREA 100ADD

RUNOFF VOLUME = 1.42667 INCHES = .4893 ACRE-Feet
PEAK DISCHARGE RATE = 13.78 CFS AT 1.500 HOURS BASIN AREA = .0064 SQ. MI.

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*S*****
*S BASIN 200 - EAST HALF OF SUBDIVISION
*S*****
*
*COMPUTE TIME TO PEAK USING UPLAND/LAG TIME
*

COMPUTE LT TP LCODE=1 NK=3 ISLOPE=0
LENGTH=100 FT SLOPE=0.01 K=0.7
LENGTH=400 FT SLOPE=0.0295 K=2
LENGTH=250 FT SLOPE=0.0113 K=3

Tc AND Tp COMPUTED BY UPLAND/LAG TIME PROCEDURE

SCS UPLAND METHOD FACTORS

	LENGTH (FT)	SLOPE (FT/FT)	COMPOSITE K
SHEET FLOW PORTION	100.0	.010000	.7000
SHALLOW FLOW PORTION	400.0	.029500	2.0000
CHANNEL FLOW PORTION	250.0	.011300	3.0000
TOTAL BASIN	750.0	.020833	1.5387

TIME OF CONCENTRATION (HRS)= .0938 TIME TO PEAK (HRS)= .0625 LAG TIME (HRS)= .0704

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

*
COMPUTE NM HYD ID=14 HYD NO=200 DA=.00544 SQ MI
%A=0 %B=25 %C=24 %D=51
TP=0.0 HR
MASS RAINFALL=-1
TIME TO PEAK (hrs)= .1333

```

K = .118715HR      TP = .133333HR      K/TP RATIO = .890366      SHAPE CONSTANT, N = 3.983259
UNIT PEAK = 7.0782      CFS      UNIT VOLUME = .9986      B = 354.05      P60 = 1.8700
AREA = .002666 SQ MI      IA = .42653 INCHES      INF = 1.04429 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

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PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 1.40049 INCHES = .4063 ACRE-FEET
PEAK DISCHARGE RATE = 11.92 CFS AT 1.500 HOURS BASIN AREA = .0054 SQ. MI.

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END TIME (HR:MIN:SEC) = 10:21:34

BLUEWATER POINTE
HYDROLOGIC MODEL--DEVELOPED CONDITIONS
10 APRIL 2004

HYDROLOGIC MODEL FOR OFFSITE AND ONSITE BASINS
100-YEAR, 6-HOUR STORM:

PRECIPITATION:

P60 = 1.87"
P360 = 2.20"
P1440 = 2.66"

START TIME=0.0 HR PUNCH CODE=0

24-Hour rainfall distribution based on NOAA ATLAS

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.20 IN
RAIN DAY=2.66 IN DT=0.033333 HRS

SEDIMENT BULK CODE=1 BULK FACTOR=1.10

S*****

S*****

S BASIN 400 - BLUEWATER ROAD EAST

S*****

COMPUTE TIME TO PEAK USING UPLAND/LAG TIME

COMPUTE LT TP LCODE=1 NK=1 ISLOPE=0
LENGTH=180 FT SLOPE=0.03 K=3

COMPUTE NM HYD ID=10 HYD NO=400 DA=.00022 SQ MI
%A=0 %B=12 %C=0 %D=88
TP=0.0 HR
MASS RAINFALL=-1

PRINT HYD ID=10 CODE=1

S*****

S BASIN 300 - BLUEWATER ROAD WEST

S*****

COMPUTE TIME TO PEAK USING UPLAND/LAG TIME

COMPUTE LT TP LCODE=1 NK=1 ISLOPE=0
LENGTH=600 FT SLOPE=0.006 K=3

COMPUTE NM HYD ID=12 HYD NO=300 DA=.000731 SQ MI
%A=0 %B=12 %C=0 %D=88
TP=0.0 HR
MASS RAINFALL=-1

PRINT HYD ID=12 CODE=1

S ROUTE FLOWS DOWN EAST-WEST STREET TO LOW POINT

S ASSUME 46' ROW AND 28' F-F

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1

MIN ELEV=0.00 MAX ELEV=0.53
CH SLOPE=0.015 FP SLOPE=0.015
N=0.017 DIST=48.0
DIST ELEV DIST ELEV DIST ELEV
0.00 0.53 4.0 0.45 10.0 0.33
10.1 0.00 24.0 0.28 38.0 0.00
38.1 0.33 44.0 0.45 48.0 0.53

S

S ROUTE FLOWS USING MCUNGE

ROUTE MCUNGE ID=31 HYD NO=300ROUTE INFLOW ID=12

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*S BASIN 100 - WEST HALF OF SUBDIVISION

*§*****

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PRINT HYD

ID=13 CODE=1

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*S*****

*S BASIN 200 - EAST HALF OF SUBDIVISION

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PRINT HYD

ID=14 CODE=1

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FINISH

BLUEWATER POINTE

<u>BASIN</u>	<u>AREA</u>	<u>DU's</u>	<u>DU/AC</u>	<u>% D*</u>
100	3.65 AC	25	6.85	63
200	3.48 AC	28	8.05	72

$$\% D = 7 \sqrt{(N \times N) + (5 \times N)}, N = DU/AC$$

Driveway 20' x 20' = 400 SF

PADS 1500 SF

STREETS 28' wide

100

$$550 \times 36 = 19,800$$

$$20' \times 36 + (\pi 35^2) = 11,157 > 30,957 SF$$

200

$$1082.9 \times 36 = 24,566 SF$$

Total Impervious Area

100

Roads 30,957

$$Lots 25(1500 + 400) = 47,500$$

$$TOTAL = 78,457 SF = 1.80 AC = 49.9\% D$$

200

Roads = 24,566

$$Lots = 28(1900) = 53,200$$

$$TOTAL = 77,766 SF = 1.79 AC = 51.3\% D$$

APPENDIX B
HYDRAULIC CALCULATIONS

Basin 100 East-West Street Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

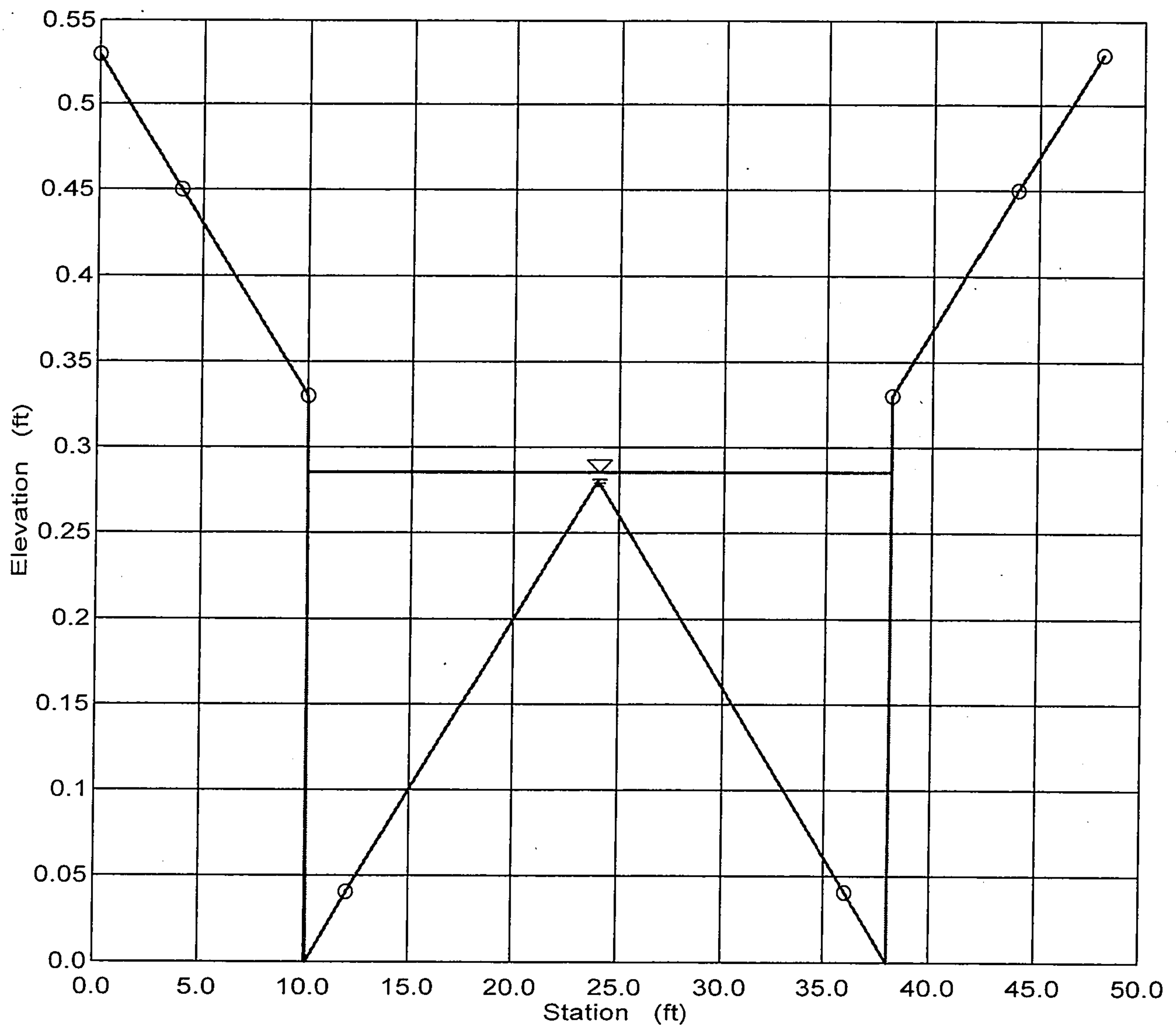
Input Data		
Channel Slope	0.015000 ft/ft	
Elevation range: 0.00 ft to 0.53 ft.		
Station (ft)	Elevation (ft)	Sta
0.00	0.53	
4.00	0.45	
10.00	0.33	
10.10	0.00	
12.00	0.04	
24.00	0.28	
36.00	0.04	
38.00	0.00	
38.10	0.33	
44.00	0.45	
48.00	0.53	
Discharge	13.78	cfs

Results	
Wtd. Mannings Coefficient	0.015
Water Surface Elevation	0.29 ft
Flow Area	4.08 ft ²
Wetted Perimeter	28.50 ft
Top Width	28.07 ft
Height	0.29 ft
Critical Depth	0.34 ft
Critical Slope	0.005868 ft/ft
Velocity	3.38 ft/s
Velocity Head	0.18 ft
Specific Energy	0.46 ft
Froude Number	1.56
Flow is supercritical.	

Basin 100 East-West Street
Cross Section for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\bluewater.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.015
Channel Slope	0.015000 ft/ft
Water Surface Elevation	0.29 ft
Discharge	13.78 cfs



Basin 200 North-South Street
Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data

Channel Slope 0.011300 ft/ft

Elevation range: 0.00 ft to 0.53 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.53	0.00	4.00	0.013
4.00	0.45	4.00	10.00	0.025
10.00	0.33	10.00	12.00	0.013
10.10	0.00	12.00	36.00	0.017
12.00	0.04	36.00	38.10	0.013
24.00	0.28	38.10	44.00	0.025
36.00	0.04	44.00	48.00	0.013
38.00	0.00			
38.10	0.33			
44.00	0.45			
48.00	0.53			
Discharge	11.92	cfs		

Results

Wtd. Mannings Coefficient	0.015	
Water Surface Elevation	0.29	ft
Flow Area	4.07	ft ²
Wetted Perimeter	28.50	ft
Top Width	28.07	ft
Height	0.29	ft
Critical Depth	0.32	ft
Critical Slope	0.006094	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	0.42	ft
Froude Number	1.36	
Flow is supercritical.		

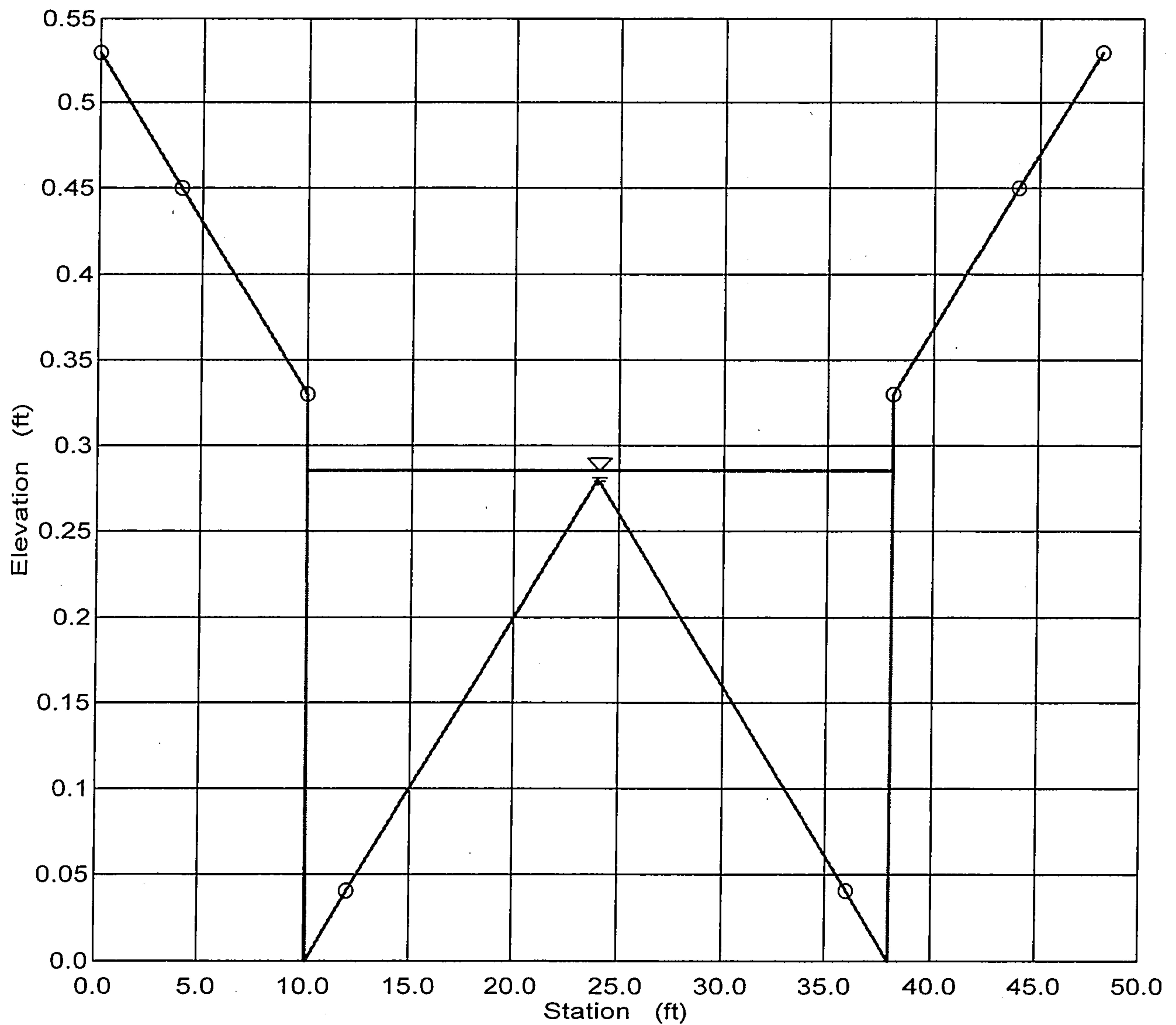
Basin 200 North-South Street
Cross Section for Irregular Channel

Project Description

Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	SUBDIVISION STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data

Wtd. Mannings Coefficient	0.015
Channel Slope	0.011300 ft/ft
Water Surface Elevation	0.29 ft
Discharge	11.92 cfs



Basin 100 10 Foot-Wide Concrete Channel

Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	10 Foot-Wide Concrete Channel
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.013	
Channel Slope	0.009360	ft/ft
Bottom Width	10.00	ft
Discharge	13.78	cfs

Results		
Depth	0.29	ft
Flow Area	2.93	ft ²
Wetted Perimeter	10.59	ft
Top Width	10.00	ft
Critical Depth	0.39	ft
Critical Slope	0.003727	ft/ft
Velocity	4.70	ft/s
Velocity Head	0.34	ft
Specific Energy	0.64	ft
Froude Number	1.53	
Flow is supercritical.		

Basin 200 10 Foot-Wide Concrete Channel
Worksheet for Rectangular Channel

Project Description	
Project File	c:\haestad\fmw\bluewate.fm2
Worksheet	10 Foot-Wide Concrete Channel
Flow Element	Rectangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.013
Channel Slope	0.022800 ft/ft
Bottom Width	10.00 ft
Discharge	11.96 cfs

Results	
Depth	0.20 ft
Flow Area	2.05 ft ²
Wetted Perimeter	10.41 ft
Top Width	10.00 ft
Critical Depth	0.35 ft
Critical Slope	0.003813 ft/ft
Velocity	5.84 ft/s
Velocity Head	0.53 ft
Specific Energy	0.73 ft
Froude Number	2.27
Flow is supercritical.	

CAPACITY OF SIDEWALK CULVERTS (24" WIDE)

USE WEIR EQUATION TO DETERMINE CAPACITY OF
SIDEWALK CULVERT

$$Q = CLH^{3/2}$$
$$= 3.0(2)(0.67)^{3/2} = 3.29 \text{ CFS EACH}$$

BASIN 100
TO PASS 12.39 CFS

$$13.78 / 3.29 = 4.18 \Rightarrow \text{USE 4 24" SIDEWALK CULVERTS}$$

AT BEGINNING OF CHANNEL AT EAST-WEST STREET

BASIN 200

$$11.96 \text{ CFS} / 3.29 = 3.63 \Rightarrow \text{USE 4 24" SIDEWALK CULVERTS}$$

AT ENDS OF 10' CONCRETE CHANNEL AT JETTY COURT

APPENDIX C
AMENDMENT 1 TO THE DRAINAGE MASTERPLAN FOR
AVALON SUBDIVISION (K9/D12) AND THE APPROVED
WEST RIDGE MOBILE HOME PARK, UNIT II
DRAINAGE REPORT

DRAINAGE REPORT

for

West Ridge Mobile Home Park Unit II

Prepared by

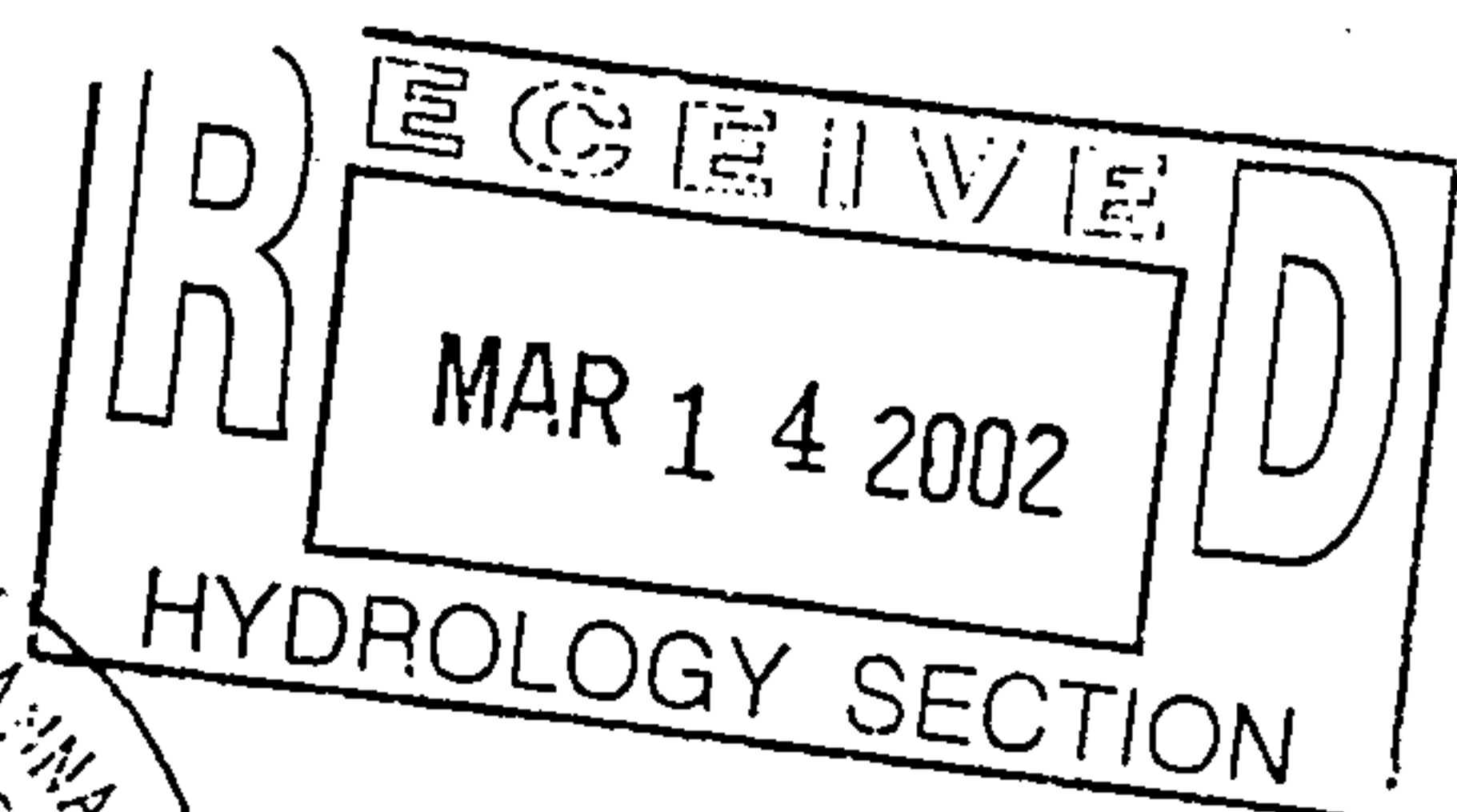
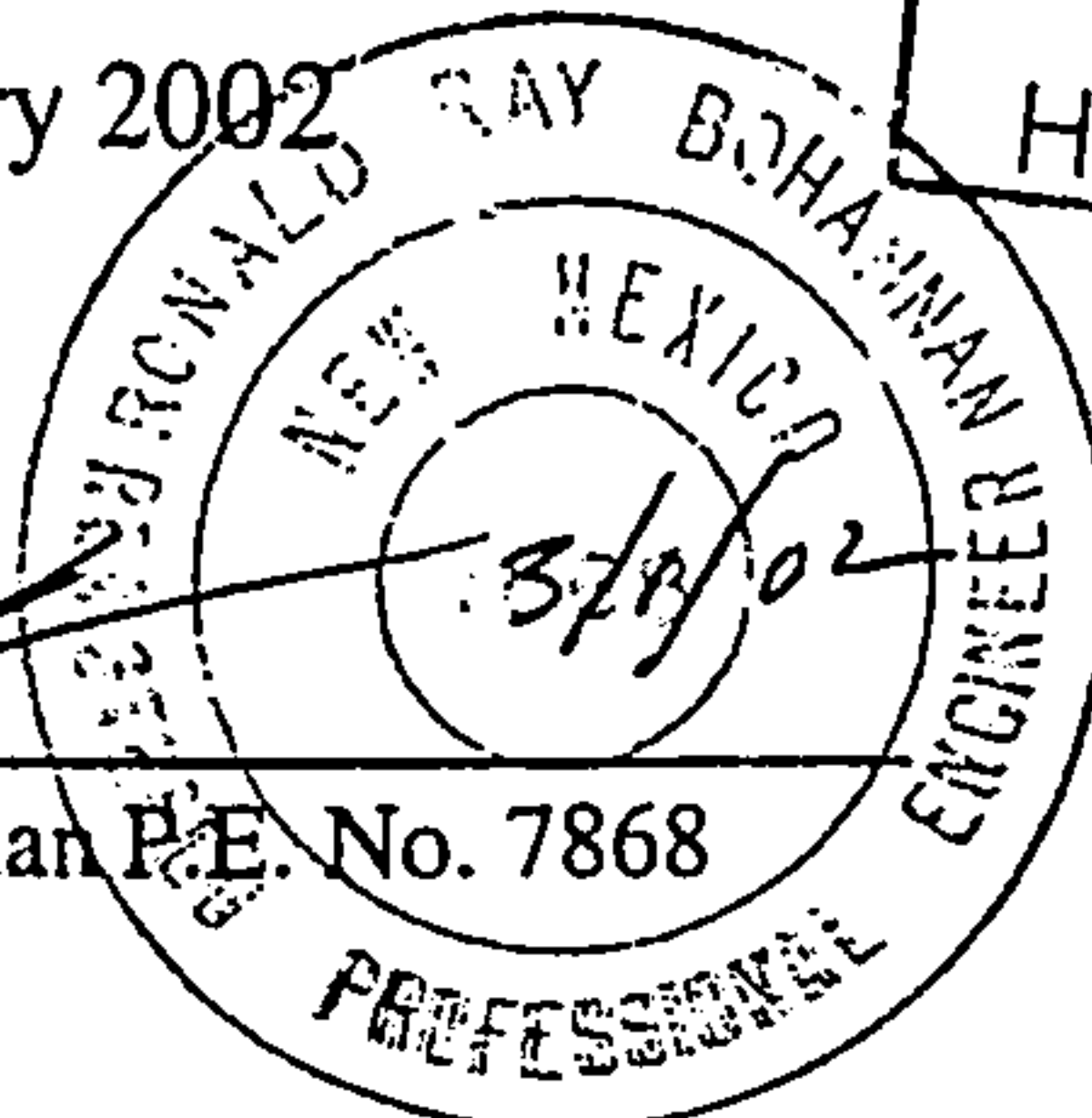
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

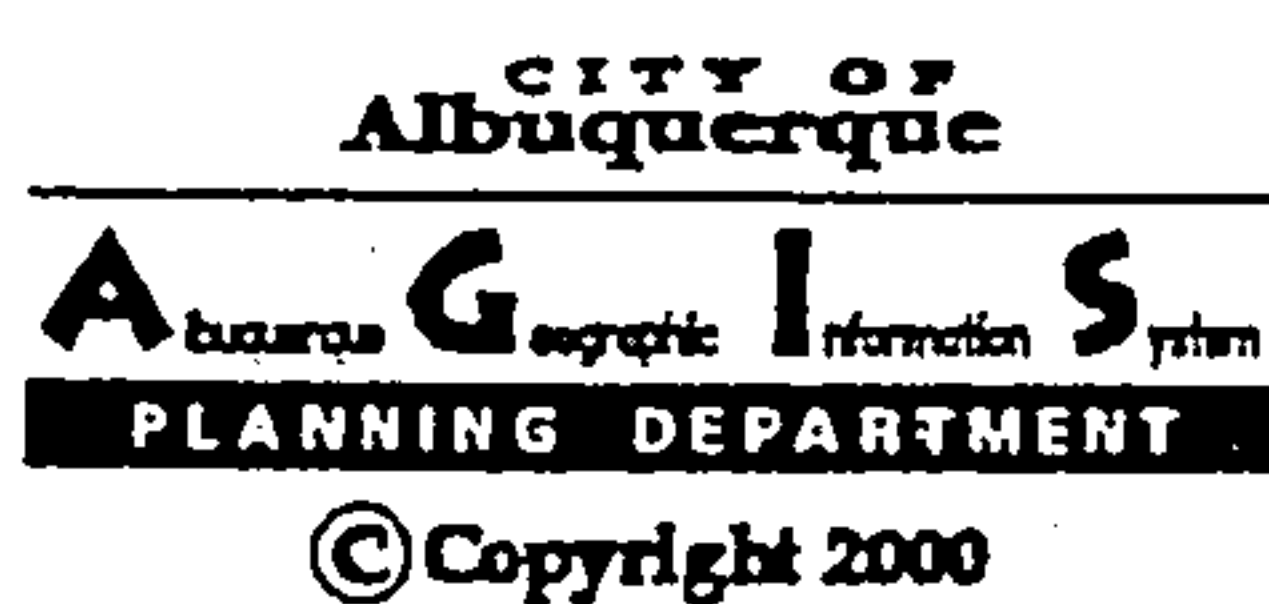
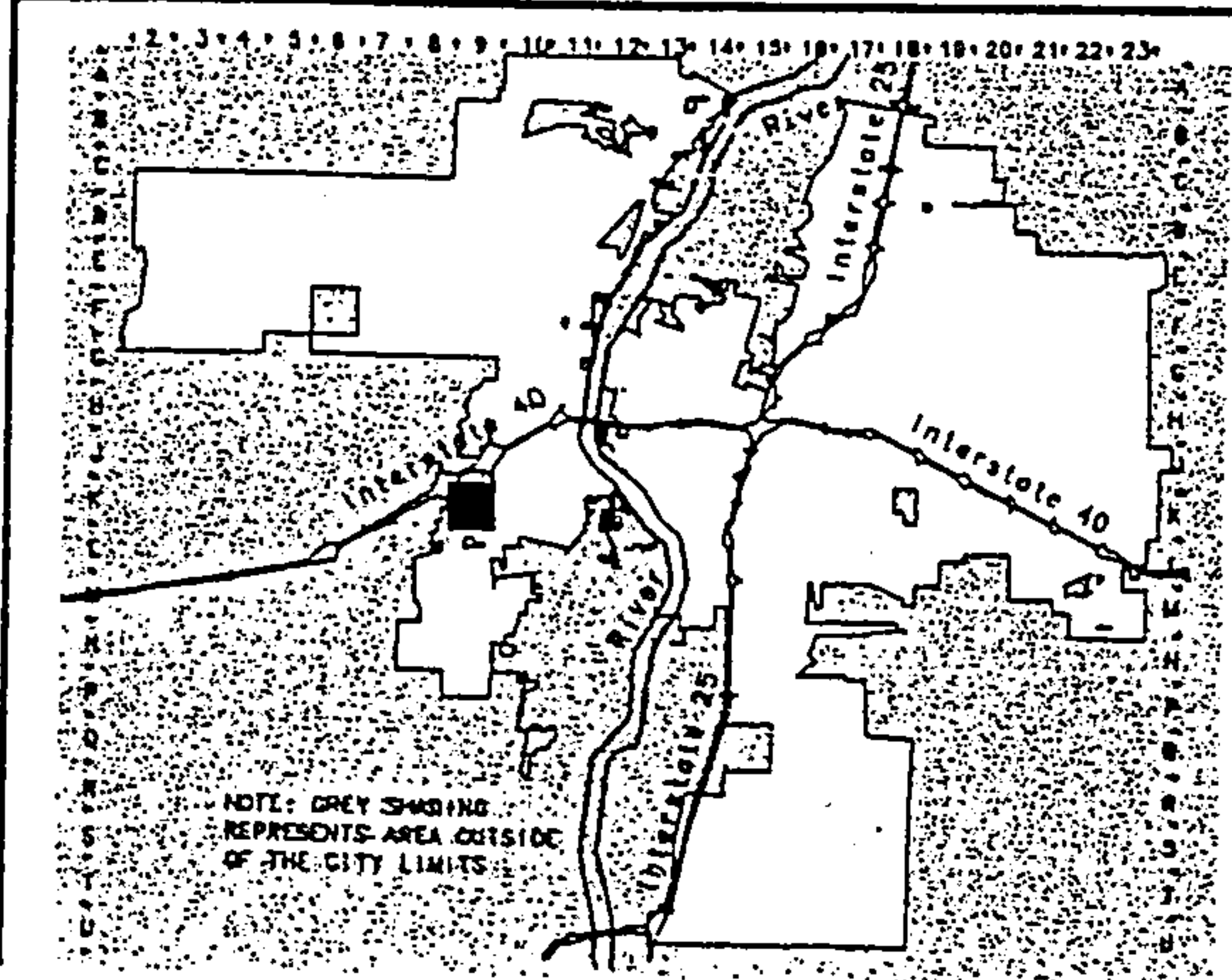
Prepared for

Fred Seeley
Western Security Real Estate Inc.
3511 Carlisle, NE
Albuquerque, New Mexico 87110

February 2002

Ronald R. Bohannon P.E. No. 7868





K-9-Z

Map Amended through July 28, 2000

Location

West Ridge Mobile Home Park Unit 2 is located south of Bluewater Road and east of 94th Street. The site is shown on the attached Zone Atlas Map (K-9) and contains approximately 7.12 acres. The site is identified as Tracts 1, 2, 3 Town of Atrisco Grant, Unit 5. The purpose of this report is to provide the drainage analysis and management plan for the mobile home park.

Existing Drainage Conditions

The site is currently undeveloped and has a runoff rate of 9.17 cfs. There are no offsite flows entering the site from the south, north or east. The south and east sides of the site are developed and the flows contained on-site. A large retention pond is located north of the site and captures all flows from the north. The west is undeveloped and the natural topography drains south and does not impact the site.

FIRM 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) was issued removing the 100 year flood plain. A copy of the LOMR approval is included with this report.

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.

On-Site Drainage Management Plan

The proposed drainage solution is to route a portion of the onsite runoff to Avalon Subdivision and a portion to West Ridge Mobile Home Park Unit 1. The site was divided into

three developed drainage basins. Basins 1 and 2 will drain to Avalon Subdivision with a combined flow of 9.77 cfs. Basin 3 with a developed flow of 8.77 cfs will drain to West Ridge Unit 1.

The original Master Plan Drainage Plan developed with West Ridge Unit 1 (K9/D6) called for all the flows from Unit 2 to drain to a storm drain in 94th Street. The adjacent Avalon Subdivision vacated 94th Street and modified the Master Plan. That Master Plan provided for 12.81 cfs draining south through West Ridge Unit 1 and 8.50 cfs draining to Avalon Subdivision.

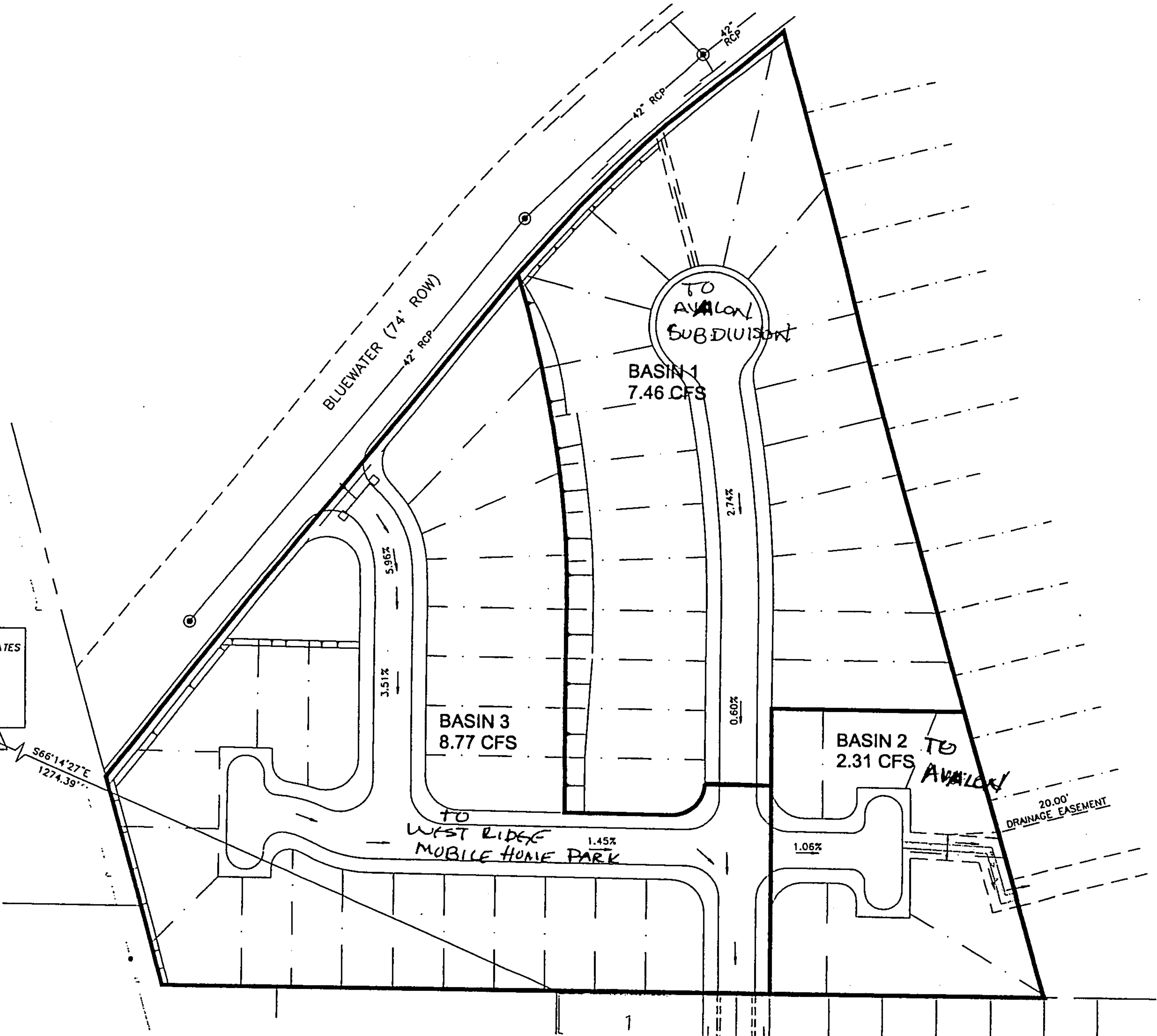
The 9.77 cfs will drain to a new 3' wide channel and connect to an existing 10' wide channel that was built with Avalon Subdivision to collect the flows from West Ridge. However, only one 24" wide sidewalk culvert was constructed from the existing channel to Jetty Court. An additional three 24" wide sidewalk culverts for a total of four culverts are required to carry 9.77 cfs to Jetty Court.

There is an additional 1.27 cfs (9.77 cfs – 8.45 cfs) entering Avalon Subdivision than was originally agreed. The channel entering Jetty Court has capacity for the additional flow as does the existing storm drain and pond within Avalon Subdivision.

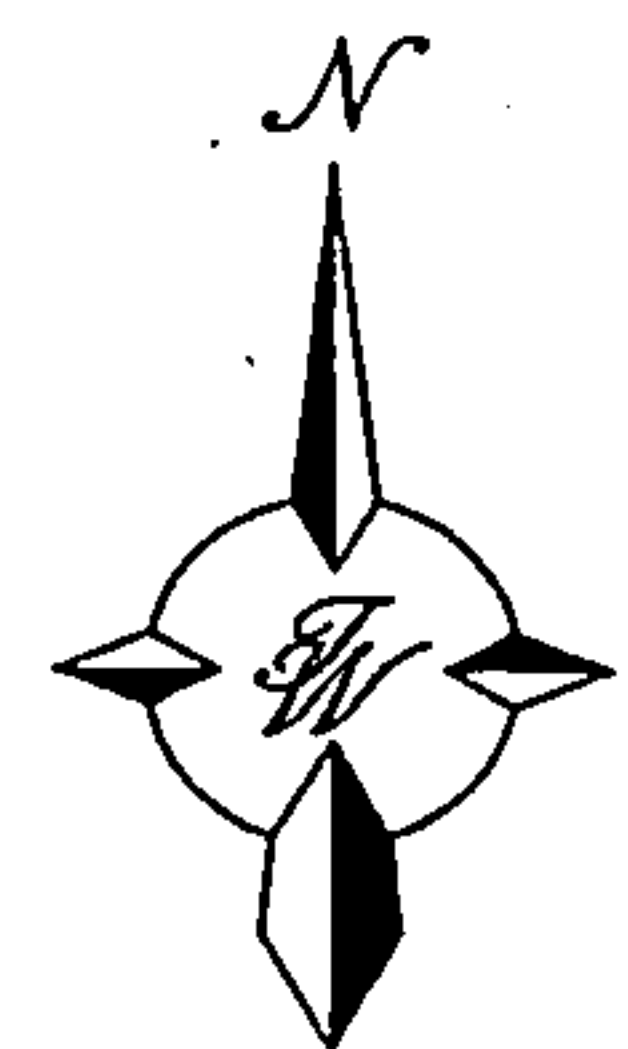
Summary

There are three developed basins on-site. Basin 1 and 2 will drain to Avalon Subdivision per an agreement. The flows will be conveyed via a 3' channel to an existing 10' channel within Avalon Subdivision. Basin 3 will drain to West Ridge Mobile Home Park Unit 1 per the same agreement. The streets will convey the flow to the temporary retention ponds located with West Ridge Unit 1 and Avalon Subdivision. When the offsite storm drain improvements are complete, the retention ponds will be removed.

CS MONUMENT "8-K9"
4 STATE PLANE COORDINATES
CENTRAL ZONE-NAD 1927
=352,217.80
=1,484,931.98
=5247.434
=0.99967415
ELTA ALPHA=-0'17'02"



AVALON
SUBDIVISION



DEVELOPED BASIN LAYOUT

Drainage Basins

Existing and Developed Basins

BASIN	AREA (SF)	AREA (AC)	AREA (MI ²)
1	124895	2.8672	0.00448
2	39472	0.9062	0.00142
3	146919	3.3728	0.00527
Total	311286	7.1461	0.01117

Runoff Calculation Results

Existing

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	3.69	1.27	0.159	0.054
2	1.14	0.39	0.049	0.016
3	4.34	1.49	0.187	0.063
Total	9.17	3.15	0.395	0.133

Developed

BASIN	Q-100 CFS	Q-10 CFS	V-100 AC-FT	V-10 AC-FT
1	7.46	4.48	0.360	0.208
2	2.31	1.38	0.111	0.064
3	8.77	5.26	0.423	0.244
Total	18.54	11.12	0.894	0.516


```

*****
*                               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=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=100.1 AREA=0.004480 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 2
*
COMPUTE NM HYD ID=1 HYD NO=100.2 AREA=0.001377 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=0.005265 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=0.0333 HR
COMPUTE NM HYD ID=1 HYD NO=110.1 AREA=0.004480 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 2
*
COMPUTE NM HYD ID=1 HYD NO=110.2 AREA=0.001377 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=0.005265 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
*
*****
*      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=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.004480 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=0.001377 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=0.005265 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
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RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.25 IN RAIN SIX=1.47 IN
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PRINT HYD            ID=1 CODE=1
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* BASIN 2
*
COMPUTE NM HYD       ID=1 HYD NO=110.2 AREA=0.001377 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
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* BASIN 3
*
COMPUTE NM HYD       ID=1 HYD NO=110.3 AREA=0.005265 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

```

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	3	3	0.67	2.01	4.34	0.4631336	1	13.79	9.77	4.86

Q req'd = 7.46 + 2.31 = 9.77 cfs

Manning's Equation:

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

A = Area

R = D/4

S = Slope

n = 0.013

SIDEWALK CULVERTS

Orifice Equation:

$$Q = CA\sqrt{2gH}$$

Where:

$$C = 0.6$$

$$A = 0.5833 \times 2 = 1.167 \text{ ft}^2$$

$$g = 32.2$$

H = Height of water measured from center of orifice

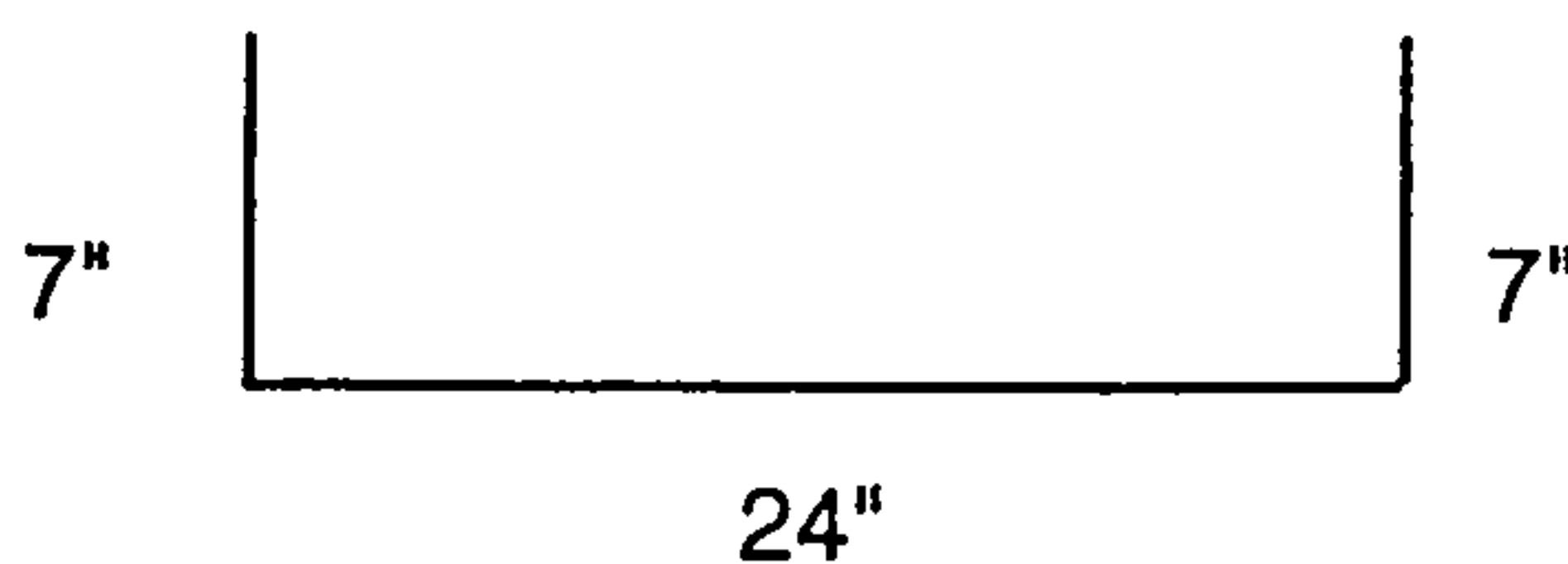
$$Q = 0.6 \times 1.1678 \sqrt{2 \times 32.2 \times 0.2917}$$

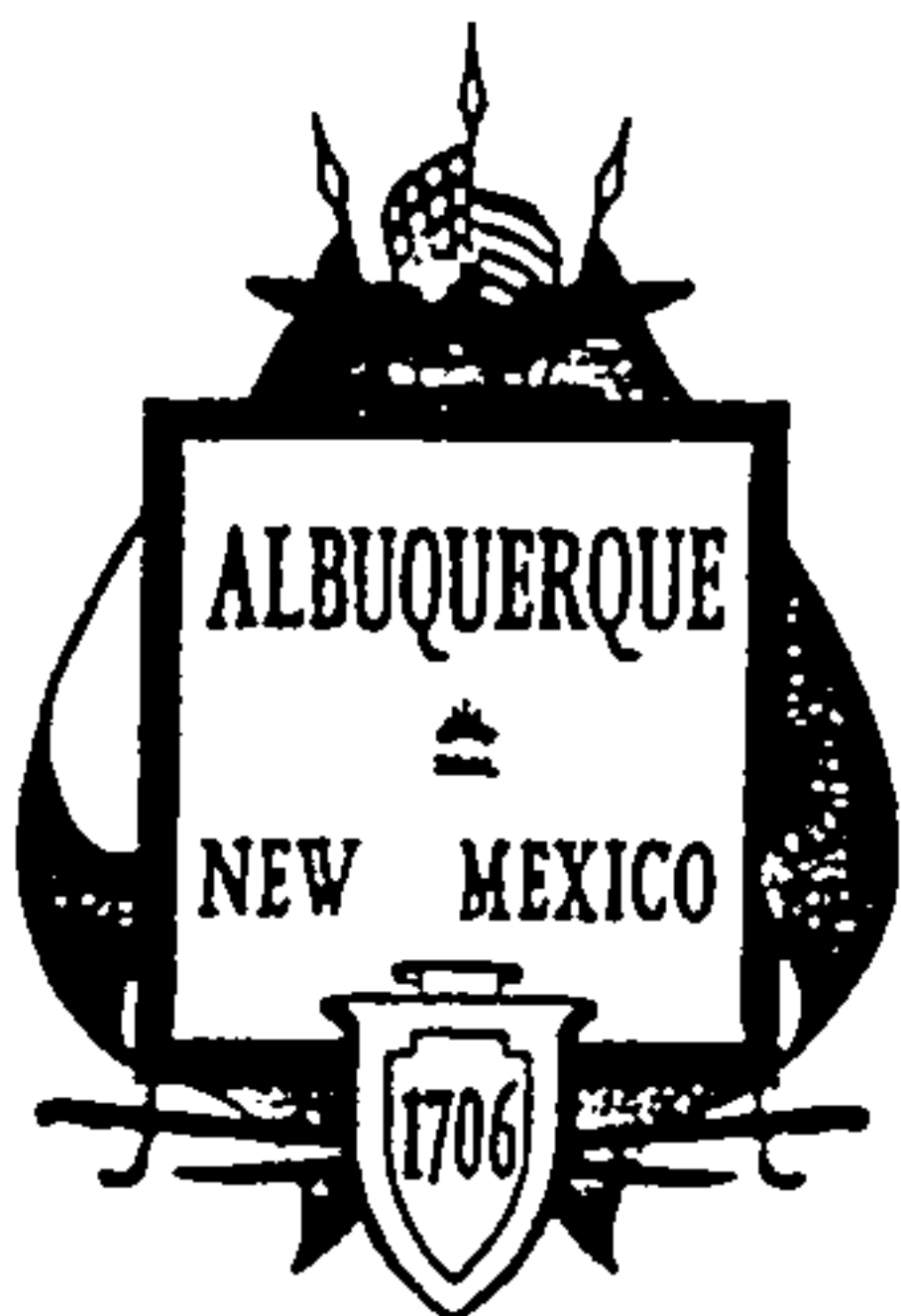
$$Q = 3.035 \text{ cfs}$$

Basin 1 and 2

$$12.14 \text{ cfs} > 9.77 \text{ cfs}$$

Use four 24" sidewalk culverts





City of Albuquerque

October 14, 1999

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Bldg. 1, Suite 210
Albuquerque, New Mexico 87110

RE: *Amendment No. 1 to the Drainage Masterplan for Avalon Subdivision, (K9/D12)*
Submitted for Revised Infrastructure List and Work Order Approval, Engineer's Stamp
Dated 9/29/99.

Dear Mr. Lorenz:

Based on the information provided, the above referenced Amendment to the Drainage Masterplan is adequate to justify revising the Infrastructure List and Work Order drawings for Avalon Subdivision. Please let me know what I can do to help make the changes to the Work Order plans.

The analysis indicates that the Avalon Subdivision will accept 8.5 cfs from Basin 1 of the West Ridge Mobile Home Park when that portion is developed in the future. The remaining runoff from Basin 1 must be diverted east onto North Ridge Avenue so that the downstream street capacities are not exceeded. Attached is a copy of a letter from Ron Bohannon indicating that a speed hump will be placed in West Ridge Street to turn the runoff to the east when Basin 1 is developed.

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

Attachment

c: Bo K. Johnson, P.E., Curb Inc.
Ron Bohannon, P.E., Tierra West
File



Federal Emergency Management Agency

Washington, D.C. 20472

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 00-06-089P

The Honorable Jim Baca
Mayor
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Community: City of Albuquerque, New Mexico
Community No.: 350002
Panel Affected: 35001C0328 D
Effective Date of **JAN 24 2000**
This Revision:

102-I-C

Dear Mayor Baca:

This responds to a request that the Federal Emergency Management Agency (FEMA) revise the effective Flood Insurance Rate Map (FIRM) for Bernalillo County, New Mexico and Incorporated Areas (the effective FIRM for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 14, 1999, Ms. Susan M. Calongne, P.E., City/County Floodplain Administrator, City of Albuquerque/Bernalillo County, requested that FEMA revise the FIRM to show the effects of a retention pond project associated with the West Ridge Mobile Home Park development along an unnamed arroyo from approximately 1,000 feet upstream of Bluewater Road to just upstream of Volcano Road. The retention pond project consists of one large retention pond with a capacity of 13.99 acre-feet approximately 500 feet downstream of Bluewater Road and two temporary ponds just upstream of Avalon Road and just upstream of Volcano Road.

All data required to complete our review of this request were submitted with letters from Mr. Ronald R. Bohannon, P.E., President, Tierra West, LLC, and Ms. Calongne.

We have completed our review of the submitted data and the flood data shown on the effective FIRM. We have revised the FIRM to modify the floodplain boundary delineations of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) along the unnamed arroyo from approximately 1,000 feet upstream of Bluewater Road to just upstream of Volcano Road. As a result of the modifications, the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, for the unnamed arroyo increased in some areas and decreased in other areas. All increases in SFHA width are contained in the ponds. No insurable structures are affected by the increases in SFHA width. The modifications are shown on the enclosed annotated copy of FIRM Panel(s) 35001C0328 D. This Letter of Map Revision (LOMR) hereby revises the above-referenced panel(s) of the effective FIRM dated September 20, 1996.

The modifications are effective as of the date shown above. The map panel(s) as listed above and as modified by this letter will be used for all flood insurance policies and renewals issued for your community.

A review of the determination made by this LOMR and any requests to alter this determination should be made within 30 days. Any request to alter the determination must be based on scientific or technical data.

We will not physically revise and republish the FIRM and Flood Insurance Study (FIS) report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This LOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development, and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

The basis of this LOMR is, in whole or in part, a retention pond project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities 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 regulations. Consequently, the ultimate responsibility for maintenance of the retention ponds rests with your community.

Because this LOMR will not be printed and distributed to primary users, such as local insurance agents and mortgage lenders, your community will serve as a repository for these new data. We encourage you to disseminate the information reflected by this LOMR throughout the community, so that interested persons, such as property owners, local insurance agents, and mortgage lenders, may benefit from the information. We also encourage you to prepare a related article for publication in your community's local newspaper. This article should describe the changes that have been made and the assistance that officials of your community will give to interested persons by providing these data and interpreting the NFIP maps.

This determination has been made pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (Public Law 93-234) and is in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, Public Law 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed minimum NFIP criteria. These criteria are the minimum and do not supersede any State or local requirements of a more stringent nature. This includes adoption of the effective FIRM to which the regulations apply and the modifications made by this LOMR. Our records show that your community has met this requirement.

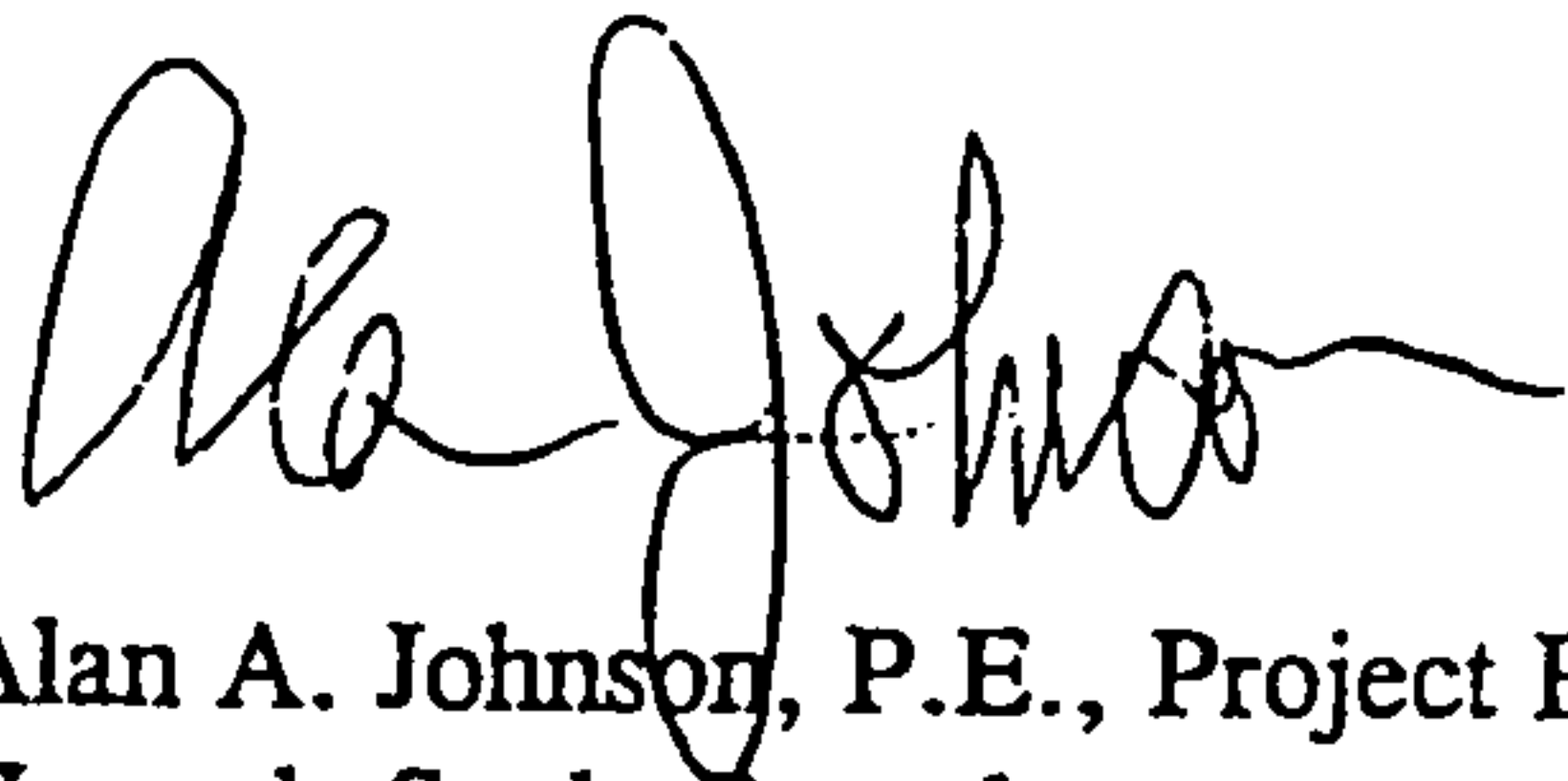
A Consultation Coordination Officer (CCO) has been designated to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Frank Pagano
Director, Mitigation Division
Federal Emergency Management Agency, Region VI
Federal Regional Center, Room 206
800 North Loop 288
Denton, Texas 76201-3698
(940) 898-5127

FEMA makes flood insurance available in participating communities; in addition, we encourage communities to develop their own loss reduction and prevention programs. Our Project Impact initiative, developed by FEMA Director James Lee Witt, seeks to focus the energy of businesses, citizens, and communities in the United States on the importance of reducing their susceptibility to the impact of all natural disasters, including floods, hurricanes, severe storms, earthquakes, and wildfires. Natural hazard mitigation is most effective when it is planned for and implemented at the local level, by the entities who are most knowledgeable of local conditions and whose economic stability and safety are at stake. For your information, we are enclosing a Project Impact Fact Sheet. For additional information on Project Impact, please visit our Web site at www.fema.gov.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the CCO for your community at the telephone number cited above. If you have any technical questions regarding this LOMR, please contact Mr. Alan Johnson of our staff in Washington, DC, either by telephone at (202) 646-3403 or by facsimile at (202) 646-4596.

Sincerely,



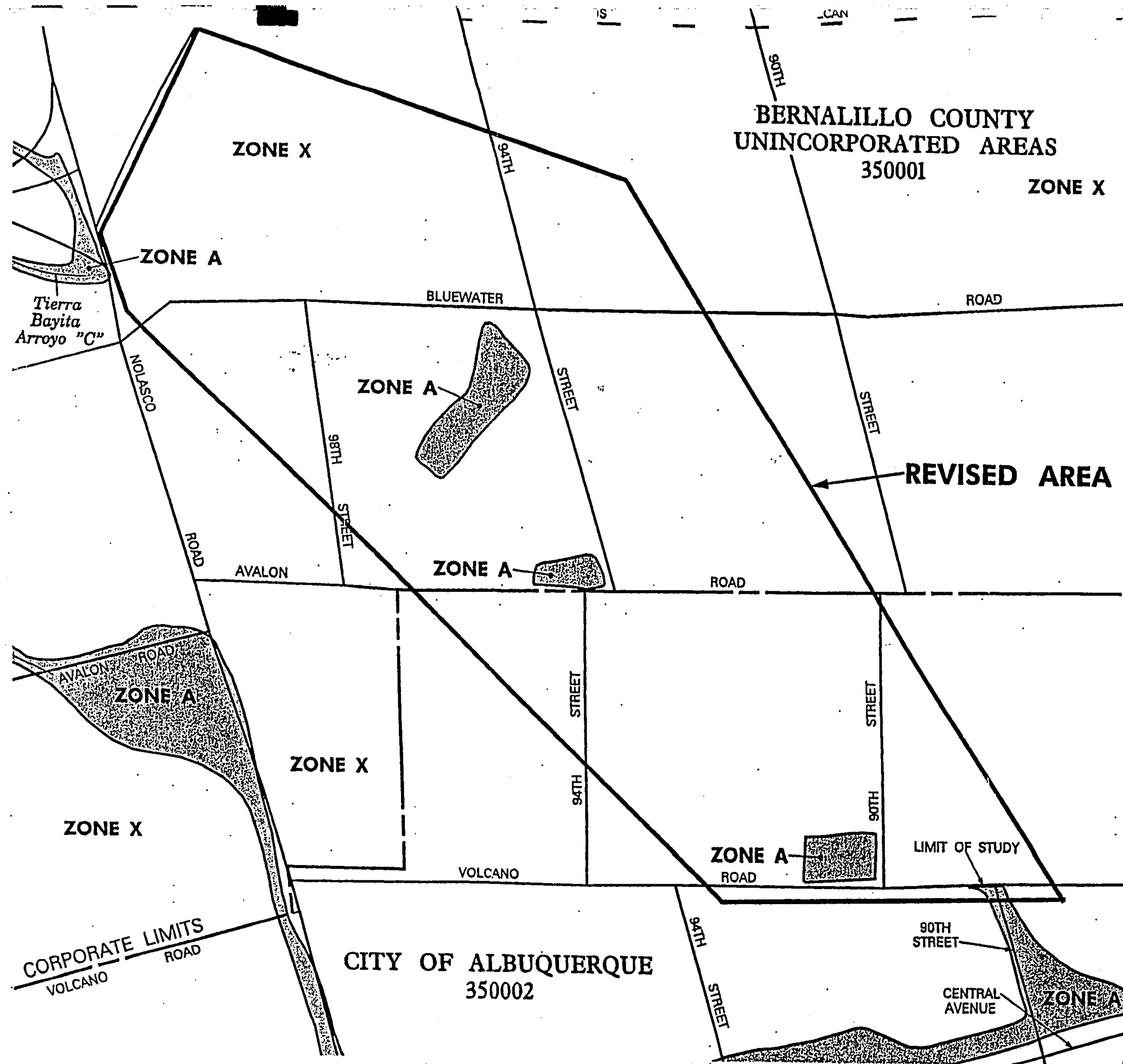
Alan A. Johnson, P.E., Project Engineer
Hazards Study Branch
Mitigation Directorate

For: Matthew B. Miller, P.E., Chief
Hazards Study Branch
Mitigation Directorate

Enclosure(s)

cc: Ms. Susan M. Calongne, P.E.
City/County Floodplain Administrator
City of Albuquerque/Bernalillo County

Mr. Ronald R. Bohannon, P.E.
President
Tierra West, LLC



BERNALILLO COUNTY
CITY OF ALBUQUERQUE

CITY OF ALBUQUERQUE
350002



APPROXIMATE SCALE IN FEET
500 0

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS

PANEL 328 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:
COMMUNITY

NUMBER PANEL
0328 0328

REFLECT LOMR

DATED JAN 24 2000

MAP NUMBER
35001C0328

EFFECTIVE DATE
SEPTEMBER 20, 1999



Federal Emergency Management Agency

May-19-99 02:05P Brasher & Lorenz

8886188

P.02

BRASHER & LORENZ, INC. CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

May 19, 1999

Ronald Bohannon, PE
Tierra West LLC
4421 McLeod Road NE
Albuquerque, New Mexico 87108

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



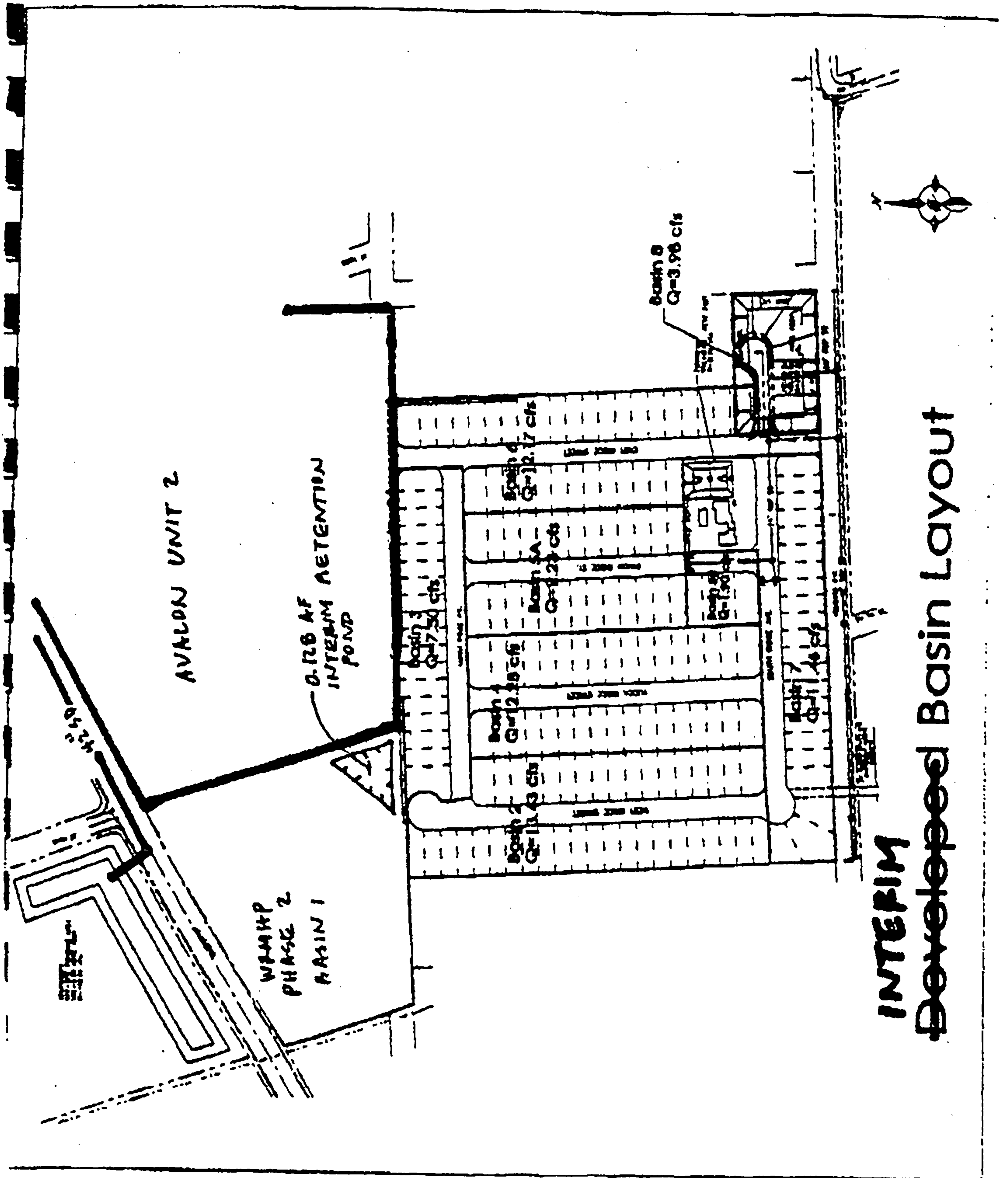
Ronald Bohannon, PE
Agent for West Ridge Mobile Home Park

Date

Ad/99504

Encl

CC: Bo Johnson, 5905 Azulejo Ct. NW, Albq, NM 87120



ON-SITE DRAINAGE BASINS

Existing

BASIN	AREA (SF)	AREA (AC)	AREA (MP)
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

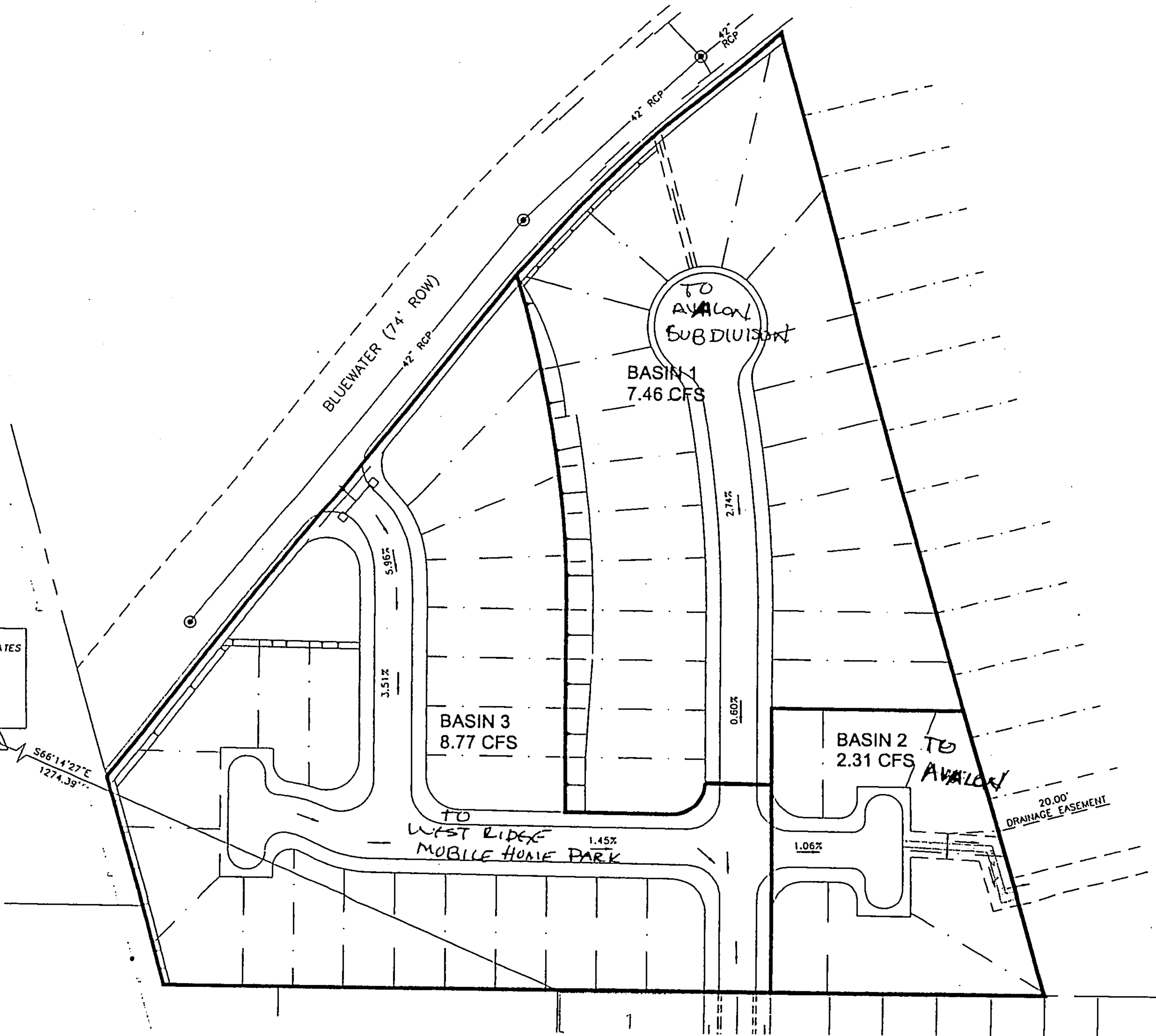
Existing

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

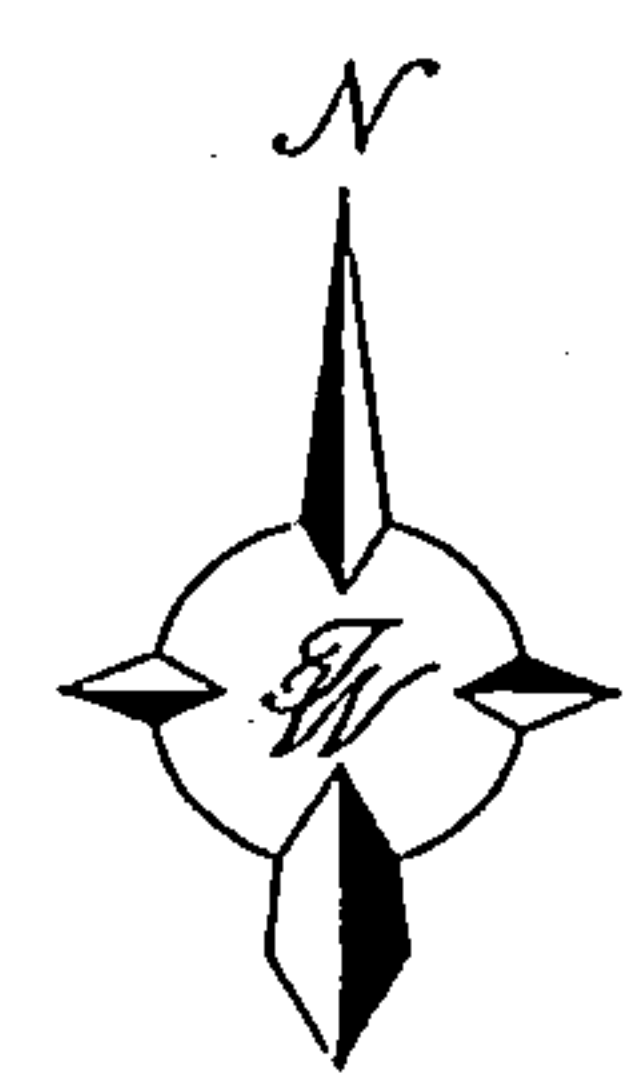
Proposed

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

CS MONUMENT "8-K9"
STATE PLANE COORDINATES
CENTRAL ZONE-NAD 1927
E=352,217.80
N=1,484,931.98
S=5247.434
G=0.99967415
DELTA ALPHA=-0°17'02"



AVALON
SUBDIVISION



DEVELOPED BASIN LAYOUT

May-20-99 11:58A Brasher & Lorenz

8886188

P.01

May-19-99 02:05P Brasher & Lorenz

8886188

FAX TRANSMITTAL

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING NO. 1, SUITE 210 ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 888-6088 FAX (505) 888-6188

TO: Ronald Bohannon FAX NO: 883-7034

COMPANY: Tierra West LLC

FROM: Dennis Lorenz

DATE: 5/19/99 SUBJECT: _____

PAGES, INCLUDING COVER: 4

MESSAGE:

Burner

*Please fax back to Dennis Lorenz. Send copy
to Fred Seely for his files.*

DRAINAGE REPORT

for

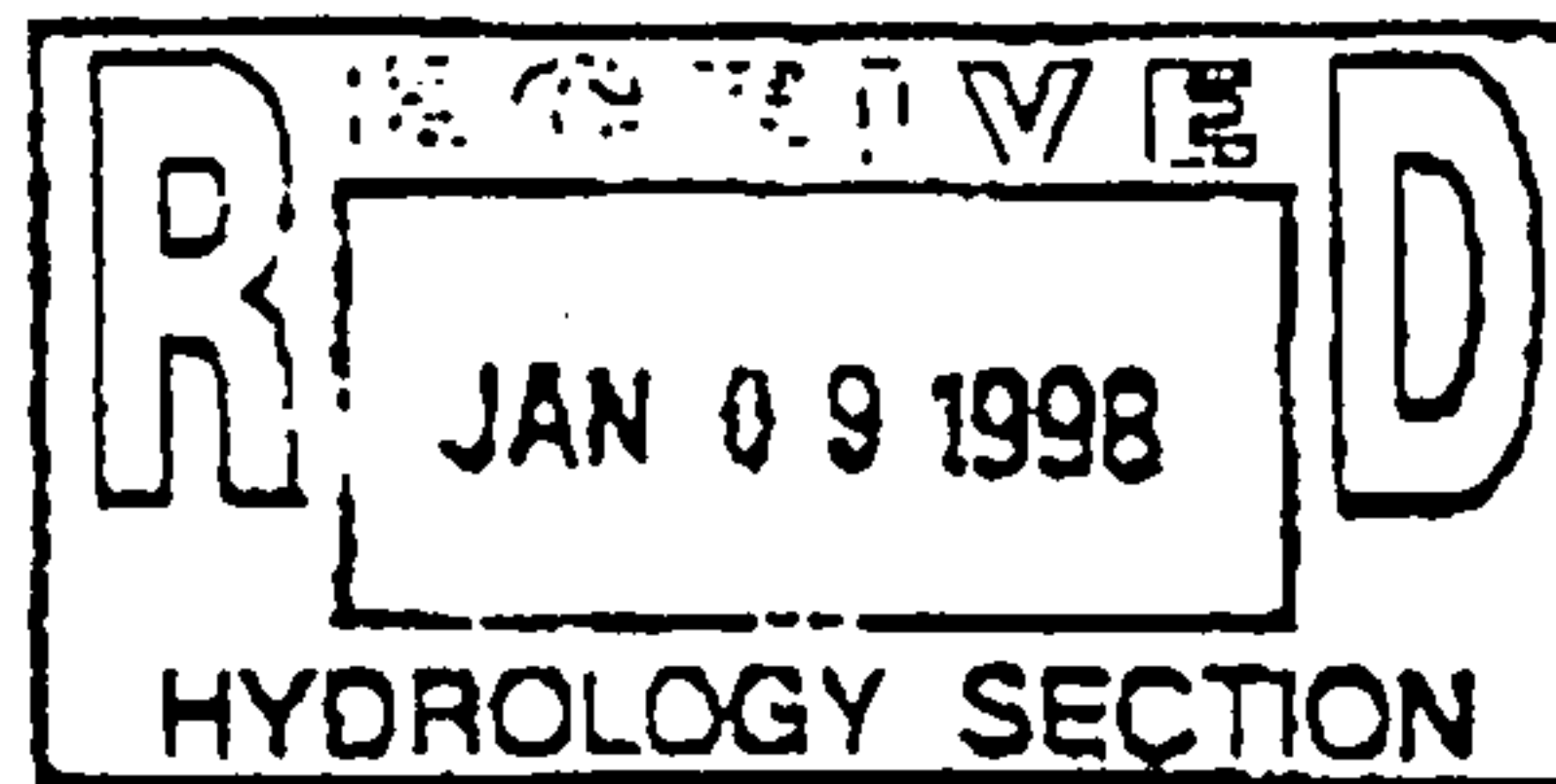
West Ridge Mobile Home Park

Prepared by

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

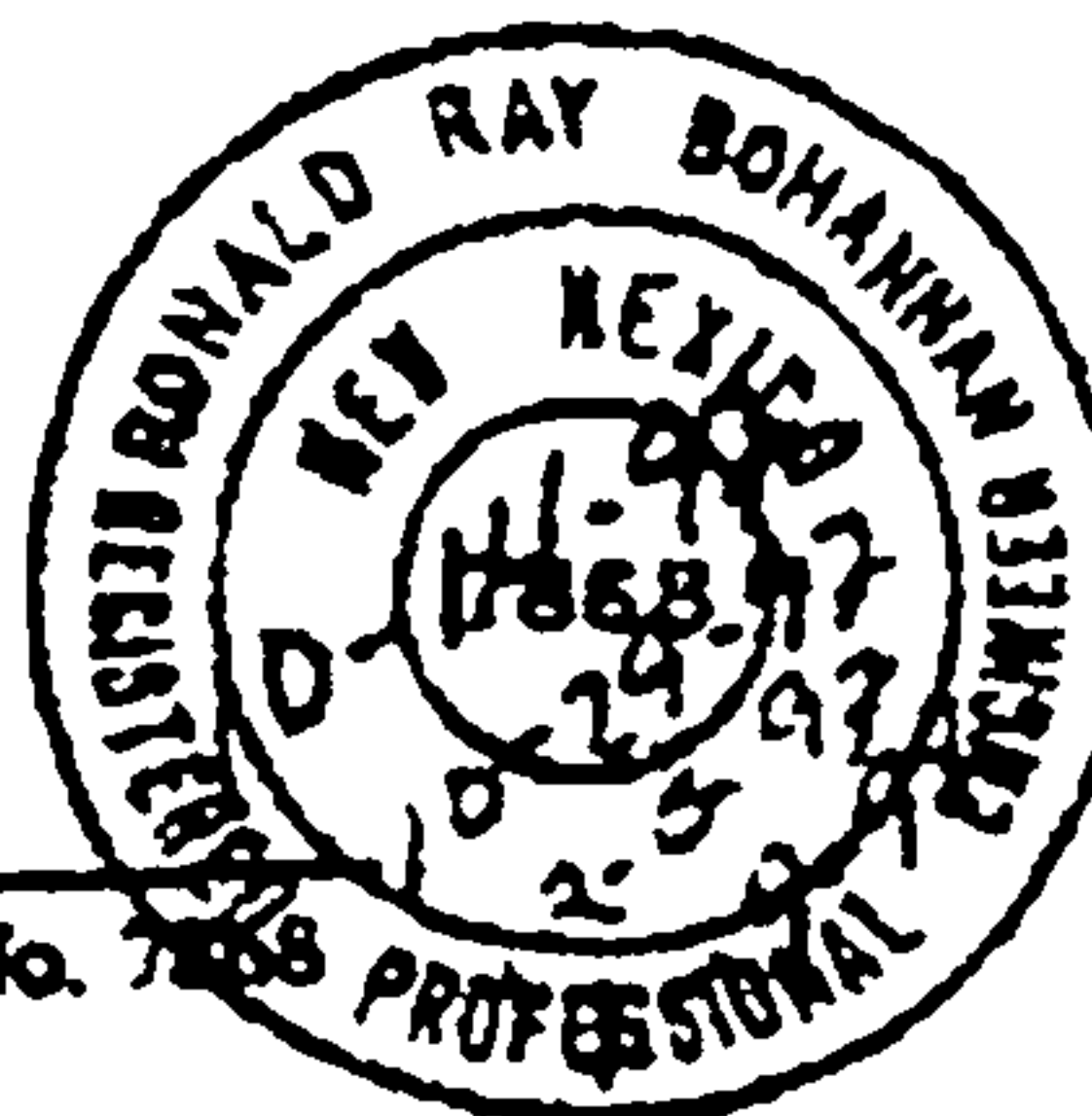
Prepared for

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



October 1997


Ronald R. Bohannon P.E. No. 7868



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P. 04



DRAINAGE INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: BLUEWATER POINTE SUBDIVISION ZONE MAP/DRG. FILE #: K9/D6A
DRB #: 1001182 EPC #: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: TRACT B, WESTRIDGE MOBILE HOME PARK, PHASE 2
CITY ADDRESS: _____

ENGINEERING FIRM: Thompson Engineering Consultants, Inc.
ADDRESS: 4800 Juan Tabo NE, Suite C
CITY, STATE: Albuquerque, NM

CONTACT: David Thompson
PHONE: 271-2199
ZIP CODE: 87111

OWNER: Western Security Real Estate, Inc.
ADDRESS: 3511 Carlisle NE
CITY, STATE: Albuquerque, NM

CONTACT: Fred Seeley
PHONE: 888-9777
ZIP CODE: 87110

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: A.M. Surveying Company
ADDRESS: 612 Cerro de Ortega SE
CITY, STATE: Rio Rancho, NM

CONTACT: Mike Shook
PHONE: 896-1716
ZIP CODE: 87124

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☐ 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)
☐ ENGINEER'S CERTIFICATION(TCL)
☐ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

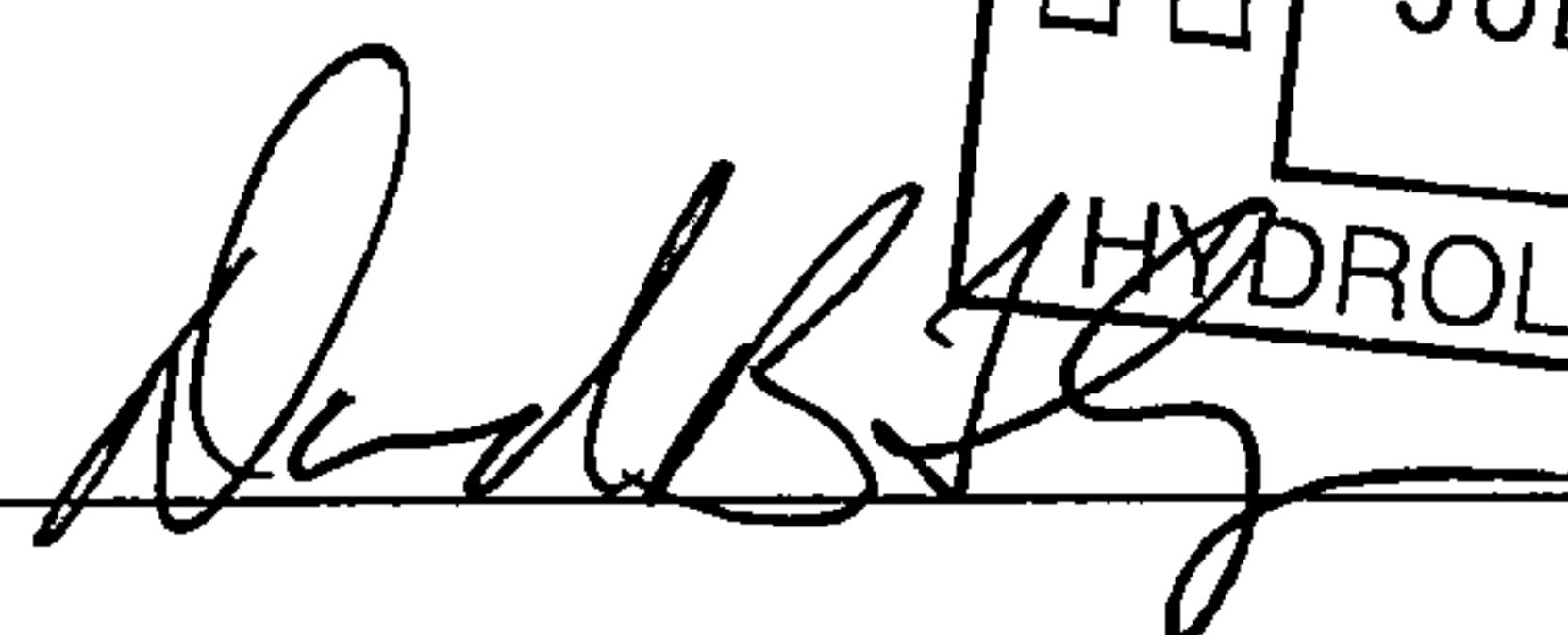
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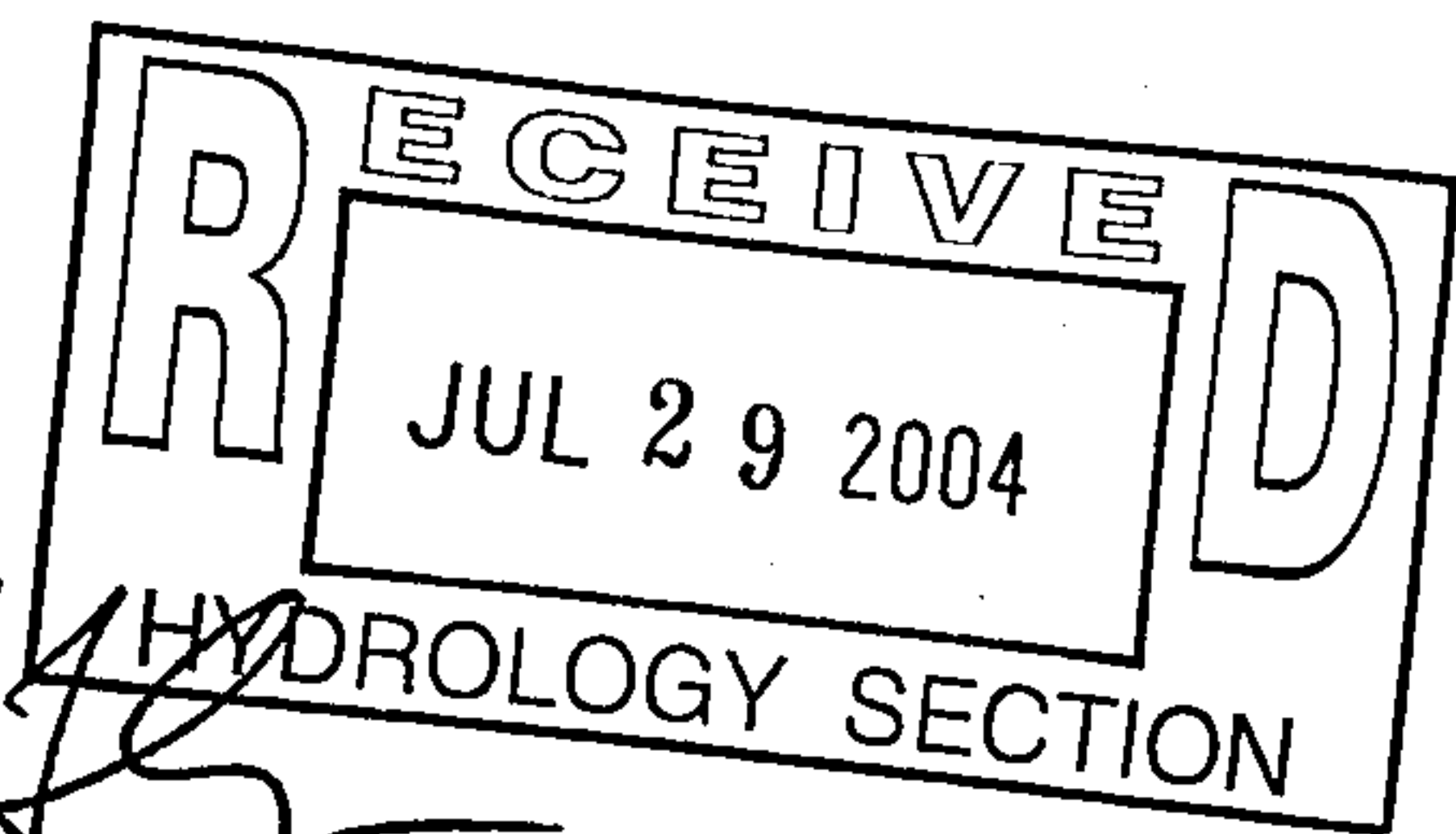
- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D. APPROVAL
☐ S. DEV PLAN FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM.)
☐ CERTIFICATE OF OCCUPANCY (TEMP.)
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED

DATE SUBMITTED: July 29, 2004

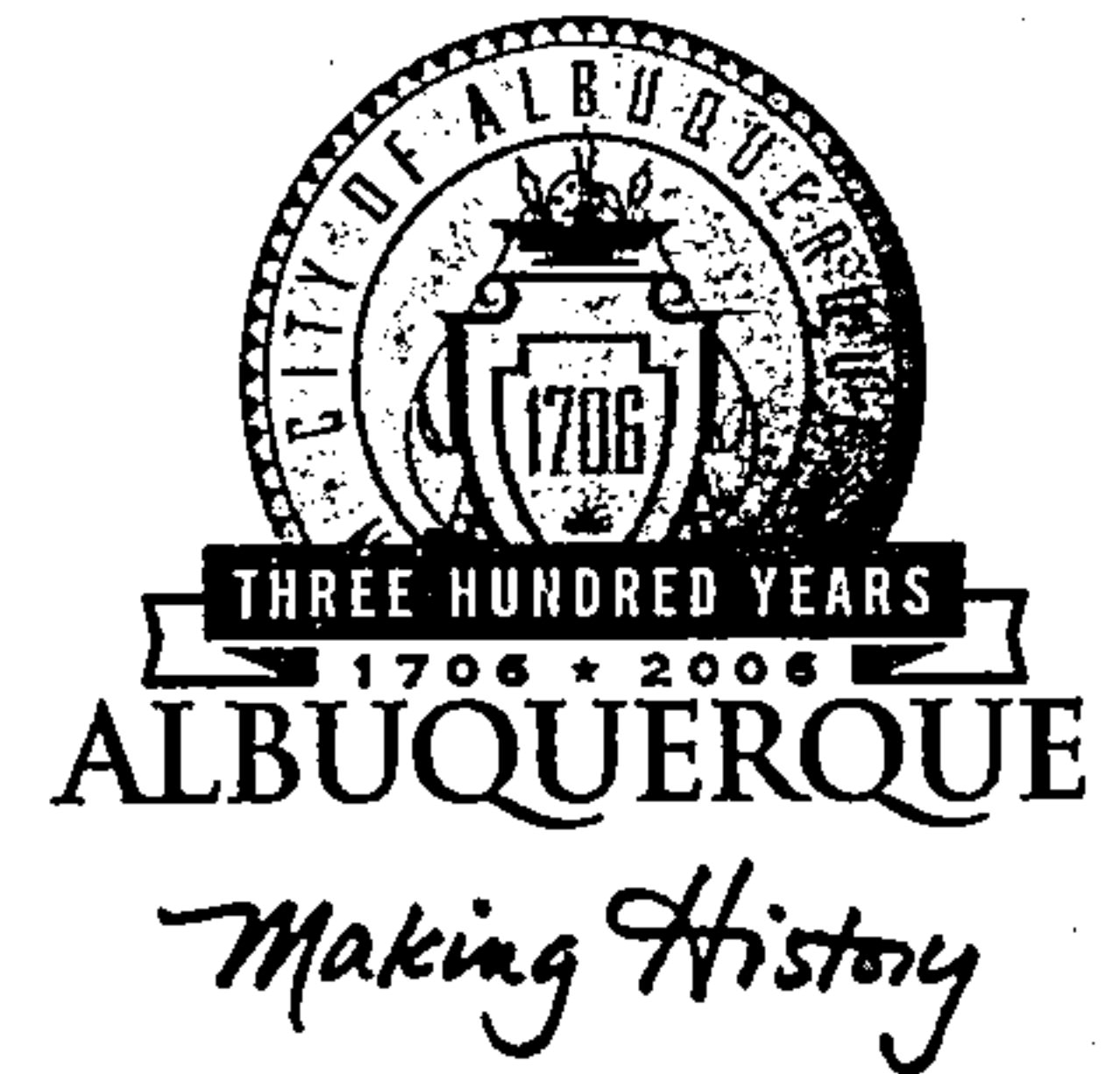
BY: 



Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of 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 acres
2. **Drainage Plans:** Required for building permits, grading permits, paving permits, and site plans less than five (5)
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or

CITY OF ALBUQUERQUE



August 9, 2004

Dave Thompson, PE
Thompson Engineering Consultants, Inc.
4800-C Juan Tabo NE
Albuquerque, NM 87111

Re: Bluewater Pointe Subdivision Drainage Report
Engineer's Stamp dated 7-28-04, (K9/D6A)

Dear Mr. Thompson,

Based on information contained in your submittal dated 7-29-04, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board approves the plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

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

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

Sincerely,

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

C: Chuck Caruso, DMD
file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

CITY OF ALBUQUERQUE



September 29, 2006

Mr. David Soule, PE
RIO GRANDE ENGINEERING
2105 Golf Course Road NW
Rio Rancho, NM 87124

RE: BLUEWATER POINTE SUBDIVISION (K-9/D6A)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 07/28/2004
Engineers Certification dated 09/26/2006

Dear David:

Based upon the information provided in your Engineer's Certification Submittal dated 09/29/2006, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

P.O. Box 1293

If you have any questions, you can contact me at 924-3982.

Albuquerque

Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

New Mexico 87103

C: Marilyn Maldonado, COA# 751681
File

www.cabq.gov

Split

03191445BE

Mesa Reprographics
5901 Lomas Blvd. NE
262-2046 office
256-9435 fax

Date: 3-16-07

PLEASE CALL/DELIVER COPIES & INVOICE TO:

Marco Gamboa

Wilson + Company

4900 Lang Ave NE

ABQ NM 87109

348-4091

PLEASE RETURN ORIGINALS

TO:

City Of Albuquerque

Planning Department / Publications

2nd Level (on the west side from the entry area)

600 2nd St. NW Suite 201

CONTACT:

Sandy Handley @ 924-3861 or
Joseph Perea @ 924-3895

DOCUMENT: _____

RELEASED TO: MICHAEL MARTIN MESA REPRO

DATE: 3 16

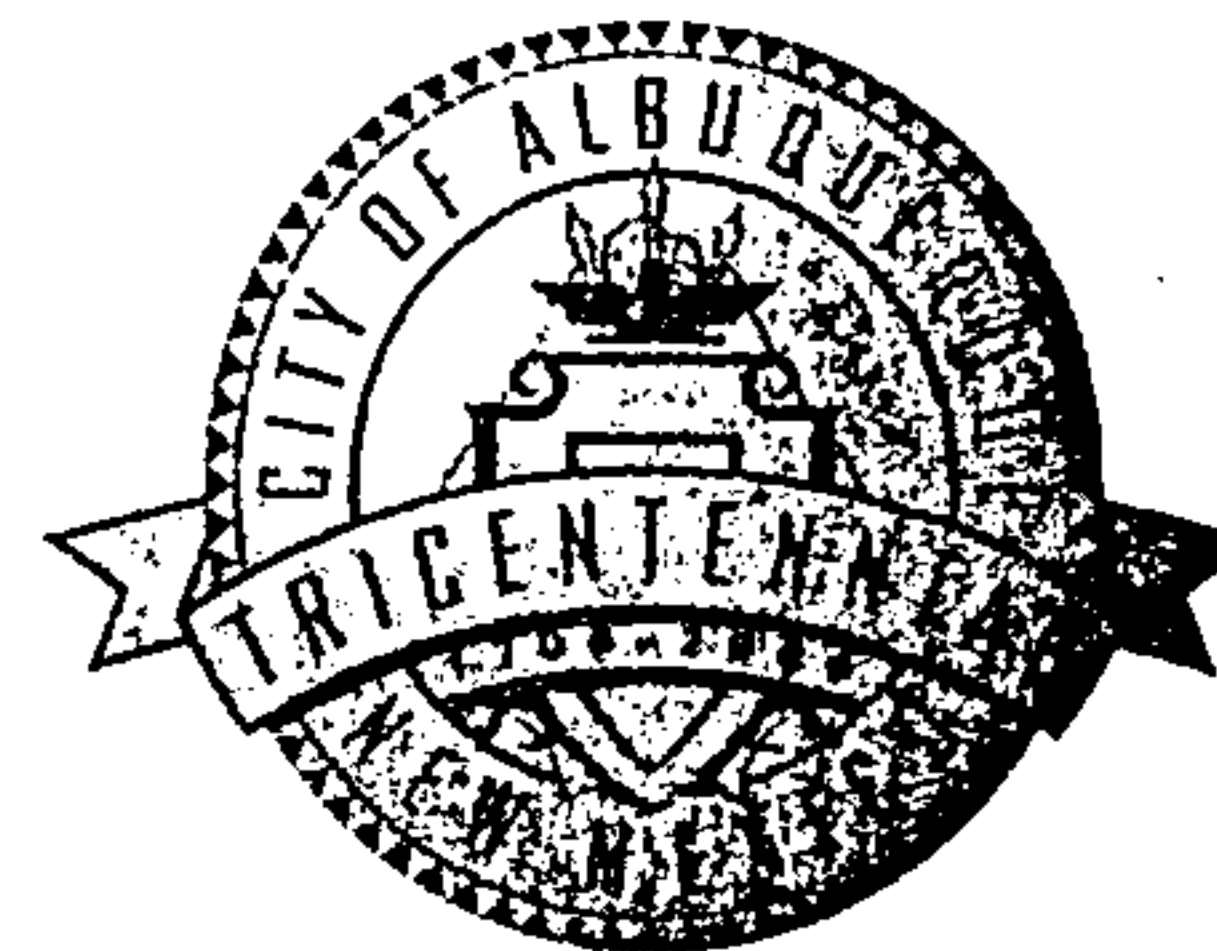
RETURNED TO: _____

DATE: _____

DPSSB 36

CYCLER = 35

CITY OF ALBUQUERQUE



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Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 751681
File

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 01/28/2003rd)

PROJECT TITLE: Bluewater Pointe Subdivision
DRB #: _____ EPC #: _____

ZONE MAP/DRG. FILE #: K-9/D6A
WORK ORDER #: _____

LEGAL DESCRIPTION: Bluewater Pointe Subdivision
CITY ADDRESS: Bluewater and 98th street

ENGINEERING FIRM: Rio Grande Engineering
ADDRESS: 2105 Golf Course Road SE, Suite B
CITY, STATE: Rio Rancho, New Mexico

CONTACT: David Soule, PE
PHONE: (505)321-9099
ZIP CODE: 87124

OWNER: Vision Development
ADDRESS: 3511 Carlisle NE
CITY, STATE: Albuquerque, NM

CONTACT: David Soule
PHONE: 321-6336
ZIP CODE: 87110

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: Jordan Gallegos inc
ADDRESS: PO Box 2532
CITY, STATE: Corrales, NM

CONTACT: John Gallegos
PHONE: 975-4567
ZIP CODE: 87048

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

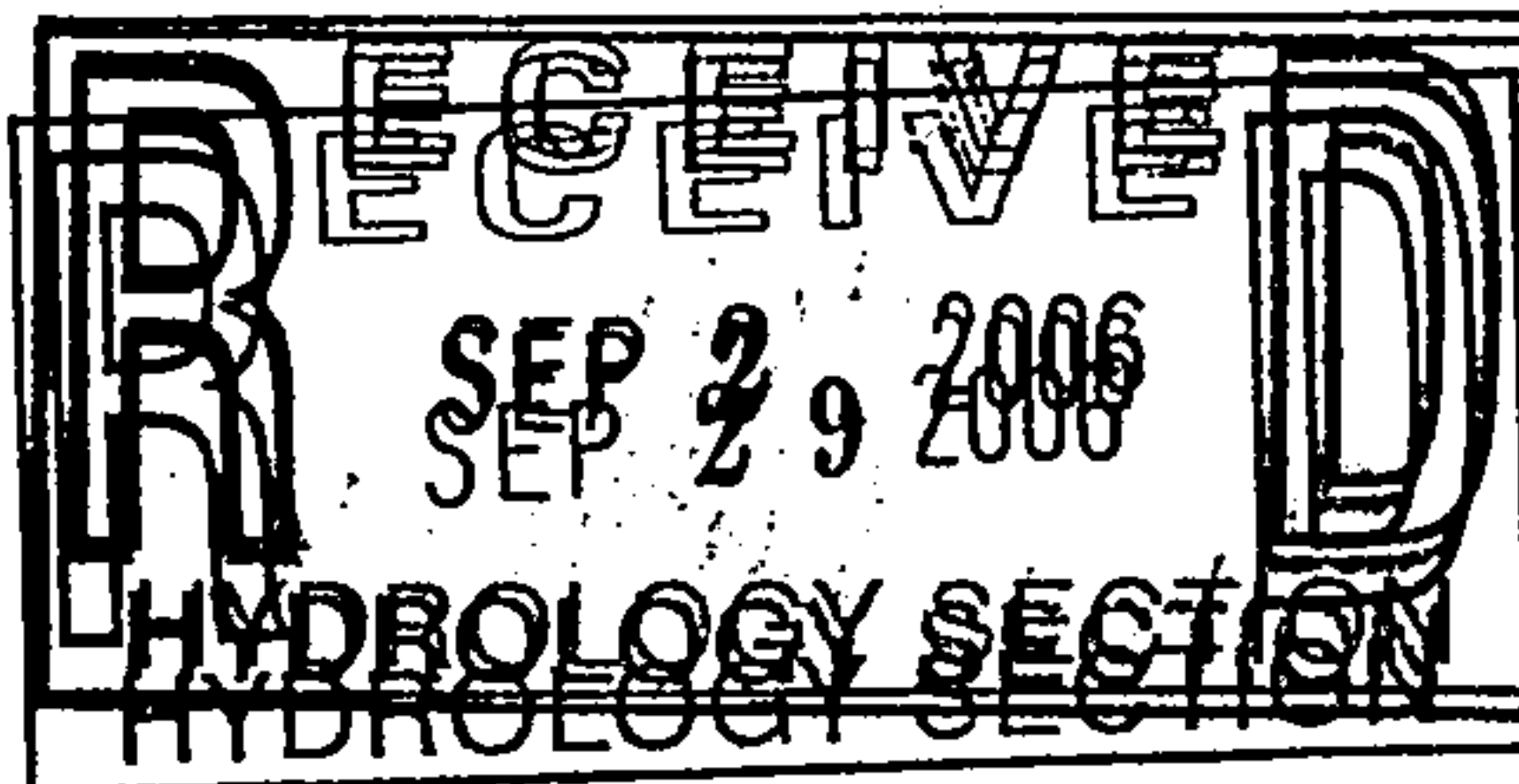
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☐ CERTIFICATE OF OCCUPANCY (TEMP.)
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☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☒ OTHER (release of financial guarantee)

*Ltr from Dave Thompson attached,
authorizing David Soule to
Certify this plan.*

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☐ NO
☐ COPY PROVIDED



DATE SUBMITTED: 9/16/2006 BY: David Soule

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.

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P.O. Box 65760
Albuquerque, NM 87193
Phone: 271-2199
Fax: 830-9248

**Thompson
Engineering
Consultants, Inc.**

Fax

To: Arlene Portillo, COA

From: David B. Thompson

Fax: 924-3864

Date: September 29, 2006

Phone: 924-3982

Pages: 2

Re: Release Letter

CC:

☐ **Urgent**

☐ **For Review**

☐ **Please Comment**

☐ **Please Reply**

☐ **Please Recycle**

•Comments:

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 01/28/2003rd)

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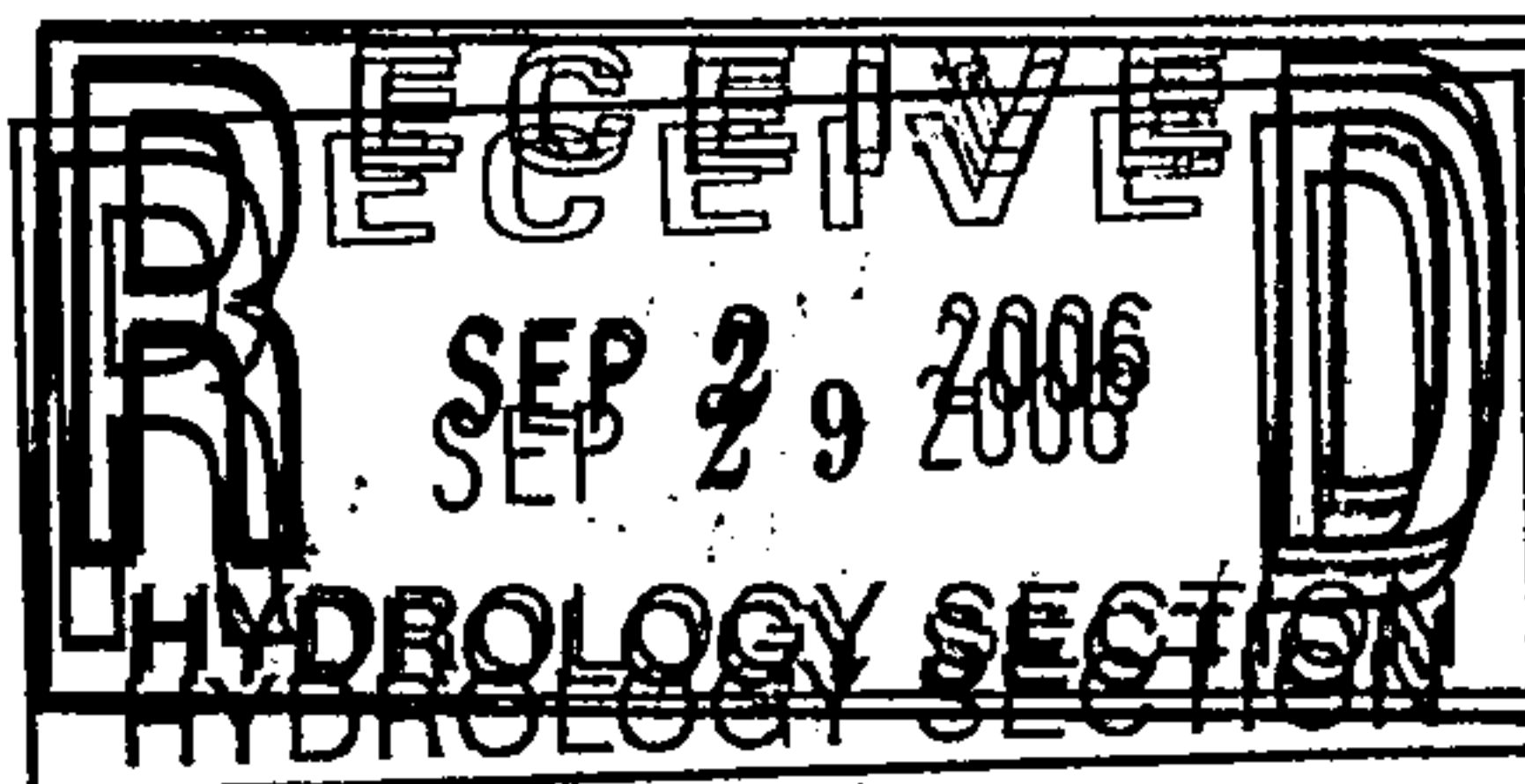
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File

DEVELOPMENT & BUILDING SERVICE CENTER
ONE STOP SHOP
600 SECOND ST. N.W.

ATTENTION: Academy Repro
505-924-3900

Records Withdrawal Form

Project No. ① K9/D6A ② F-16 D3E Date: 5/2/05

Project Title: ① Bluewater Point ② Bis Event

a. File b. Mylars c. Redlines/Comments
④ Other Grading Plan & Approval Letter

Requested by: David Soria - Rio Grande Eng. Phone No.: 321-9099
Name and Company

Comments:

Anticipated Return Date: next day

I hereby accept full responsibility for the security of the above noted records/plans until return receipt acknowledgement is completed. Records/plans will be returned to the Development and Building Services Center on or before the indicated anticipated return date.

Delivery Picked Up By:

Name: RON BLADES
Print

Organization: ACADEMY REPRO

Signed: Ron Blades

Date: 5-03-05

Office Use Only

Return Acknowledged:

Received By: Andrew Garcia
Print

Date: May 3, 2005

these were returned

THOMPSON Engineering Consultants, Inc.

September 29, 2006

Ms. Arlene Portillo
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

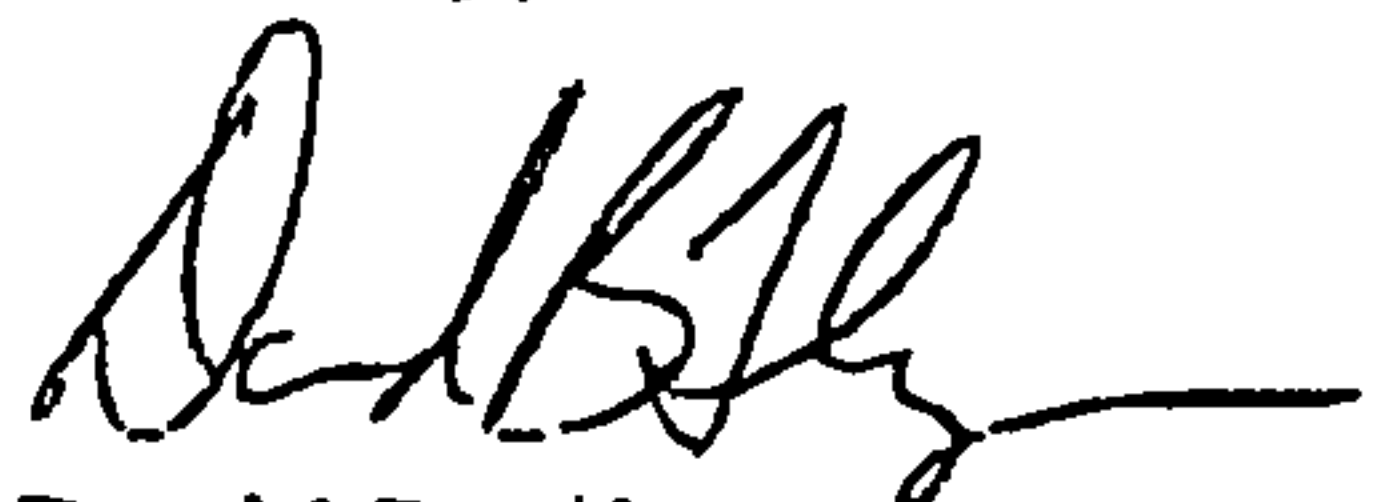
Re: SUBMITTAL OF BLUEWATER POINTE SUBDIVISION (K-9/D6A)

Dear Ms. Portillo:

I hereby authorize Mr. David Soule, P.E., Rio Grande Engineering, to certify Bluewater Pointe Subdivision for SIA/Financial Guarantee Release.

If you should have any questions about the plans or responses to comments, please call.

Sincerely,



David B. Thompson, P.E.