#L Blair

Federal Emergency Management Agency

Washington, D.C. 20472

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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 99-06-1081R

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

Community: City of Albuquerque, New Mexico
Community No.: 350002

104

Dear Mayor Baca:

This responds to a request that the Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on 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 March 29, 1999, Ms. Susan M. Calongne, P.E., City/County Floodplain Administrator, City of Albuquerque/Bernalillo County, requested that FEMA evaluate the effects that proposed placement of fill along unnamed tributaries of Arroyo de Domingo Baca (unnamed tributaries) located south and north of Palomas Avenue and installation of additional drainage inlets at the intersection of San Pedro Drive and Palomas Avenue would have on the flood hazard information shown on the effective FIRM.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Daniel J. Grochowski, P.E., P.S., Project Manager, Water Resources Group, Bohannan-Huston, Inc., and Ms. Calongne.

We have completed our review of the submitted data and the flood data used to prepare the effective FIRM for your community. Our review of the submitted information revealed that the proposed drainage inlets at the intersection of San Pedro Drive and Palomas Avenue are intended to intercept discharges of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) that originate from an area bounded on the north by Paseo Del Norte, on the east by the San Pedro Drive, on the south by Arroyo de Domingo Baca, and on the west by Interstate Highway 25 frontage road. We believe that, if the proposed project is constructed as shown on the submitted plans entitled "Domingo Baca Tributaries CLOMR" and as described in the submitted report entitled "Domingo Baca Tributaries CLOMR," both prepared by Bohannan-Huston, Inc., and dated March 1999, and the data listed below are received, a revision to the FIRM would be warranted. As a result of the proposed project, the widths of Special Flood Hazard Areas (SFHAs), the areas that would be inundated by the base flood, along the unnamed tributaries will decrease.

Please note that this CLOMR request is based on a CLOMR issued on August 1, 1997 (Case No. 97-06-141R), prepared by Resource Technology, Inc. A Letter of Map Revision (LOMR) to follow up on this CLOMR cannot be issued until a LOMR request is received and reviewed and a LOMR is issued as a followup to Case No. 97-06-141R.

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM.

- Effective March 1, 1999, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the fee for your map revision request will be $3,400 and must be received before we can begin processing your request. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card. The payment must be forwarded to the following address:

  Federal Emergency Management Agency
  Fee-Collection System Administrator
  P.O. Box 3173
  Merrifield, VA 22116-3173

- As-built plans, certified by a registered professional engineer, of all proposed project elements

- Community acknowledgment of the map revision request

- Certification that all fill placed in the currently effective base floodplain and below the proposed base flood elevation is compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test method issued by the American Society for Testing and Materials (ASTM Standard D-698) or an acceptable equivalent method for all areas to be removed from the base floodplain

- Hydraulic analyses, for as-built conditions, of the base flood and the flood having a 0.2-percent chance of being equaled or exceeded in any given year, if they differ from the proposed conditions models

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM.

This CLOMR 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.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by contacting the Director, Mitigation Division of

FEMA in Denton, Texas, at (940) 898-5127. If you have any technical questions regarding this CLOMR, 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 Johnson

Alan A. Johnson, P.E., Project Engineer
Hazards Study Branch SPU
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. Daniel J. Grochowski, P.E., P.S.
Project Manager
Water Resources Group
Bohannan-Huston, Inc.

Federal Emergency Management Agency

Washington, D.C. 20472

May 20, 1999

Ms. Susan M. Calongne, P.E.
City/County Floodplain Administrator
City of Albuquerque/Bernalillo County
P.O. Box 1293
Albuquerque, NM 87103

IN REPLY REFER TO:
Case No.: 99-06-1081R
Community: City of Albuquerque, New Mexico
Community No.: 350002

316-ACK.FRQ

Dear Ms. Calongne:

This responds to your letter dated May 6, 1999, concerning a March 29, 1999, request that the Federal Emergency Management Agency (FEMA) issue a conditional revision to the Flood Insurance Rate Map (FIRM) for Bernalillo County, New Mexico and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Domingo Baca Tributaries
Flooding Source:	Arroyo De Domingo Baca
FIRM Panel(s) Affected:	35001C0137 D

We have completed an inventory of the items that you submitted. We have received the data and the review and processing fee ($3,100) required to begin a detailed technical review of your request. If additional data are required, we will inform you within 30 days of the date of this letter.

Please direct all questions concerning your request to our Technical Evaluation Contractor at the following address:

Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304

Attention: Ms. Laura D. Bittner
(703) 317-6292

When you write us about your request, you must include the case number referenced above in your letter.

If you have any questions concerning FEMA policy, or the National Flood Insurance Program in general, 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,

Matthew B. Miller

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

cc: Mr. Daniel J. Grochowski, P.E.
Project Manager
Water Resources Group
Bohannan-Houston, Inc.

COPY

May 6, 1999

Ms. Laura D. Bittner
Michael Baker Jr., Inc.
3601 Eisenhower Ave.
Suite 600
Alexandria, VA 22304

BOHANNAN-HUSTON, INC.
Courtyard One
7500 JEFFERSON NE
Albuquerque
NM 87109-4335
voice 505.823.1000
fax 505.821.0892

Re: CLOMR to Tributaries of the Domingo Baca Arroyo, Case No. 99-06-1081R
Community: City of Albuquerque and Bernalillo County, New Mexico
Community Numbers: 350002
FIRM Map Number and Date: 35001C0137 D, September 20, 1996

Dear Ms. Bittner:

In response to the letter from FEMA dated March 15, 1999, and subsequent telephone conversations with your office, we are submitting a computer diskette containing all input and output files supporting the AHYMO hydrologic analysis for the site. These AHYMO files are for the analysis of the site only and do not include the Arroyo de Domingo Baca. For the Arroyo, please refer to the previously submitted and approved CLOMR referenced in our original submittal.

If you have any questions or require additional information, please call me at (505) 823-1000.

Sincerely,
Bohannan Huston, Inc.

Daniel J. Grochowski

Daniel J. Grochowski, P.E.& P.S.
Project Manager
Water Resources Group

DJG/gr
Enclosure

cc: Ms. Susan Calongne, City of Albuquerque, w/ encl.

40 YEARS

P:\99315\hydro\corres\Laura Bittner letter1.doc - 05/06/99

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 29, 1999

Mr. Monther S. Madanat
Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304-6439

RE: Request for a Conditional Letter of Map Revision for the Domingo Baca Tributaries, City of Albuquerque, New Mexico, Community No. 350002, FIRM Panel 35001C0137D.

Dear Mr. Madanat:

The purpose of this submittal is to request a Conditional Letter of Map Revision for the tributaries to the Arroyo de Domingo Baca located south of Paseo del Notre, between I-25 and San Pedro Drive. This request is due to current road and storm drain construction in this area.

Enclosed with this letter are the Application and Certification forms for requesting revisions to the National Flood Insurance Program maps, along with the analyses and drawings for the improvements. A check in the amount of $3100.00 for the review is also included.

The City of Albuquerque has reviewed and approved the analyses and plans provided with this submittal. Our Community would greatly appreciate your prompt response and approval for this Conditional Letter of Map Revision. If you have any questions concerning this submittal, please call me at (505) 924-3982.

Sincerely,

Susan Calongne

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

Attachments

c: Daniel J. Grochowski, P.E., Bohannan-Huston, Inc. (Letter only)
Alan Johnson, FEMA Headquarters (Letter only)
Jack Quarles, FEMA Region VI (Letter only)

March 4, 1999

BOHANNAN-HUSTON, INC.
Courtyard One
7500 JEFFERSON NE
Albuquerque
NM 87109-4335
voice 505.823.1000
fax 505.821.0892

Susan Calongne, P.E.
City/County Floodplain Administrator
City of Albuquerque
600 2nd Street NW
2nd Floor
Albuquerque, NM 87103

Re: CLOMR to Tributaries of the Domingo Baca Arroyo at Interstate 25 and Paseo del Norte
Community: City of Albuquerque and Bernalillo County, New Mexico
Community Numbers: 350002 and 350001
FIRM Map Number and Date: 35001C0137 D, September 20, 1996

Dear Ms. Calongne:

Attached are two copies of the CLOMR to the FIRM map for the tributaries of the Domingo Baca Arroyo, on the property at the southeast corner of the intersection of Interstate 25 and Paseo del Norte. The CLOMR was completed by Bohannan Huston for the owner of the property. Please submit one copy of this letter and the supporting documents to FEMA for review.

Much of the supporting documentation for this CLOMR has already been provided to and approved by FEMA in the CLOMR for Paseo del Norte Storm Drains and Related Facilities (FEMA Case No. 979-06-141R). The Paseo CLOMR did not address the floodplains in the area covered by this CLOMR. The Paseo project will divert the runoff to the Domingo Baca Arroyo that previously crossed San Pedro and created the floodplains on the site. Hydrology for the site has been provided and hydraulics for the culvert crossings of I-25 and San Pedro inlets that were not in the Paseo CLOMR are included. The storm drain system was sized for the correct flow rates as stated in the Paseo CLOMR but the inlets in Palomas and San Pedro have been revised.

If you have any questions or require additional information, please call me at (505) 823-1000.

Sincerely,

Daniel J. Grochowski

Daniel J. Grochowski, P.E. and P.S.
Project Manager
Water Resources Group

RECEIVED
MAR 08 1999
HYDROLOGY SECTION

DJG/gr
Enclosure

40 YEARS

P:\99315\hydro\corres\Susan C submittal letter.doc - 03/04/99

1056

GARRETT CAPITAL LLC
PH. 505-858-1533
5325 WYOMING BLVD., NE, STE. 201
ALBUQUERQUE, NM 87109

NORWEST BANK NEW MEXICO, N.A. 0113
ALBUQUERQUE, NM 87103-1081
95-219-1070

3/26/99

PAY TO THE ORDER OF National Flood Insurance Program $**3,100.00

Three Thousand One Hundred and 00/100*** DOLLARS

National Flood Insurance Program

MEMO
To Accompany the FEMA Report

⑈001056⑈ ⑆107002192⑆ 1061306453⑈

DOMINGO BACA TRIBUTARIES CLOMR

BOHANNAN-HUSTON, INC.
Courtyard One
7500 JEFFERSON NE
Albuquerque
NM 87109-4335
voice 505.823.1000
fax 505.821.0892

MARCH, 1999

PREPARED FOR:

GARRETT CAPITOL
5325 WYOMING NE
SUITE 201
ALBUQUERQUE, NM 87109

40 YEARS

TABLE OF CONTENTS

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL**	O.M.B No. 3067-0148 Expires April 30, 2001

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

☒ CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60,65 & 72).

☐ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)

☐ Other Describe:

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data ☐ Floodway Revision

☒ Other Describe: Revision of the 100-year floodplain. See attached explanation 1.1.

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Tributaries to Arroyo de Domingo Baca

3. Project Name/Identifier: Domingo Baca Tributaries CLOMR

4. FEMA zone designations affected: A
(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	Katy, City Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
350002	Albuquerque, City	NM	35001C	0137D	09/20/1996

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☐ Riverine	☐ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☒ Bridge/Culvert
☒ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☒ Fill
☐ Other (describe)	☒ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
☐ Yes ☒ No

If Yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☒ No ☐ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)? ☐ Yes ☒ No

If the answer to either items is Yes, please attach documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☒ performing ☐ overseeing compliance with the maintenance and operation plans of the See attached explanation 1.3 (Name) flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Operation and maintenance plans are attached. ☒ Yes ☐ No ☐ N/A

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☒ Yes Fee amount: $3,100.00

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM; thus the project is fee exempt.
☐ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

Note: I understand that my signature indicates that all information submitted in support of this request is correct

Daniel J. Grochowski

Signature of Revision Requester

Daniel J. Grochowski, Project Manager
Printed Name and Title of Revision Requester

Bohannan Huston
Company Name

Telephone No.: (505) 823-1000 Date: 3-29-99

Note: Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.

Susan Calongne

Signature of Community Official

Susan W. Calongne, City/County Flood Plain Administrator
Printed Name and Title of Community Official

City of Albuquerque
Community Name

Telephone No.: (505)924-3982 Date: 3-29-99

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is in accordance with 44 CFR Ch. 1, Sect 65.2

Daniel J. Grochowski

Signature

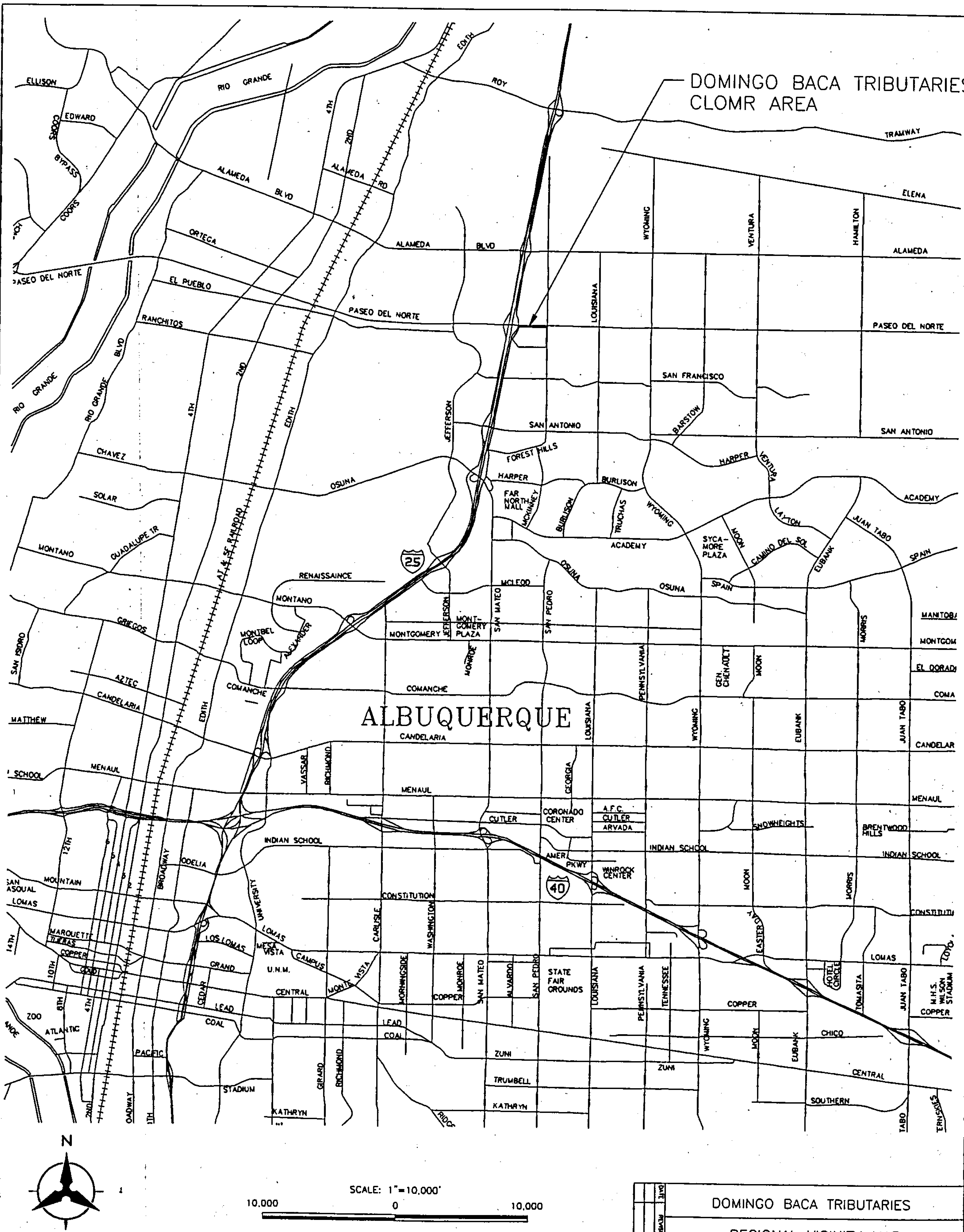
Daniel J. Grochowski, Project Manager
Printed Name and Title of Revision Requester

Registr No. 8766 (PE) Expires (Date) 12/31/2000 State NM

Type of License/Expertise: Civil Engineering (Hydrology, Hydraulics)

Check which forms have been included with this request

Form Name and (Number)	Required if ......
☒ **Hydrologic** (3)	new or revised discharges
☐ **Hydraulic** (4)	new or revised water-surface elevations
☒ **Mapping** (5)	floodplain/floodway changes
☐ **Channelization** (6)	channel is modified
☒ **Bridge/Culvert** (7)	addition/revision of bridge/culvert
☐ **Levee/Floodwall** (8)	addition/revision of levee/floodwall
☐ **Coastal** (9)	new or revised coastal elevations
☐ **Coastal Structures** (10)	addition/revision of coastal structure
☐ **Dam** (11)	addition/revision of dam
☐ **Alluvial Fan** (12)	structures proposed on alluvial fan



DOMINGO BACA TRIBUTARIES

REGIONAL VICINITY MAP

PROJECT No. 99315A 01

FIGURE 1-1

JOB No.: 99315A 01	SHEET 1-1
DRAWN BY: SFC	DATE: 2/08/99
CHECKED BY: DJG	SCALE: 1:10,000

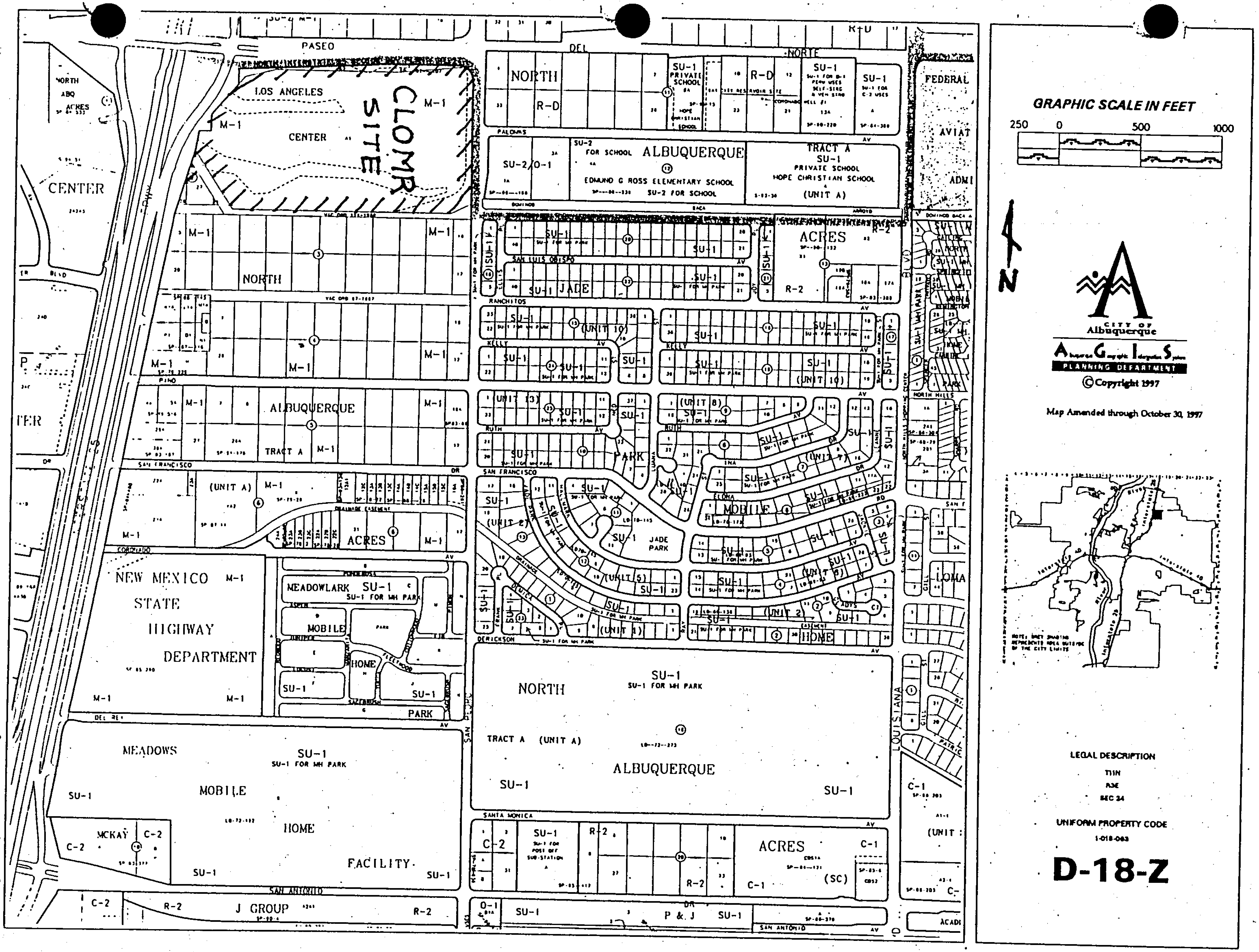
DATE | REVISION

Bohannan Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS

\\A_BHI_B01\99315\HYDRO\REPORTS\FIG1-1.DWG 2/08/99



GRAPHIC SCALE IN FEET
250 0 500 1000
N
CITY OF Albuquerque
PLANNING DEPARTMENT
©Copyright 1997
Map Amended through October 30, 1997
LEGAL DESCRIPTION
T11N
R3E
SEC 34
UNIFORM PROPERTY CODE
1-018-063
D-18-Z
CLOMR SITE
PASEO DEL NORTE
LOS ANGELES CENTER
NORTH ALBUQUERQUE ACRES
EDMUND G ROSS ELEMENTARY SCHOOL
SU-2 FOR SCHOOL
TRACT A
SU-1
PRIVATE SCHOOL
HOPE CHRISTIAN SCHOOL
(UNIT A)
FEDERAL AVIATION ADMI
JADE PARK
MOBILE HOME
NEW MEXICO STATE HIGHWAY DEPARTMENT
MEADOWLARK MOBILE HOME PARK
MEADOWS MOBILE HOME FACILITY
SU-1 FOR MH PARK
MCKAY
J GROUP
P & J
SAN FRANCISCO
CORONADO
DEL REY
SANTA MONICA
SAN ANTONIO
SAN PEDRO
LOUISIANA
PALOMAS
PINO
RANCHITOS
KELLY
RUTH
DERICKSON
M-1
R-D
R-2
C-1
C-2

Figure 1-2

ADDITIONAL EXPLANATIONS FOR FORM 1
Revision Requestor and Community Official Form

1.1 Basis for Revision Request (Sec. 2.1.)

This Conditional Letter of Map Revision (CLOMR) request is for the 100-year floodplains across Tract A-1 as shown on Figure 1. This area is bounded on the north by Paseo Del Norte, on the east by San Pedro Drive, on the south by the Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) Arroyo de Domingo Baca, and on the west by the Interstate 25 (I-25) frontage road. The floodplains being considered for revision are tributaries to the Arroyo de Domingo Baca between the I-25 frontage road and San Pedro Drive.

The floodplain revision is being requested due to ongoing construction of the Paseo Del Norte roadway improvements project and the proposed on-site grading which and will affect the hydrology and hydraulics in the vicinity. The construction includes rebuilding San Pedro Drive along the length of Tract A-1. It will be a four-lane curb and gutter section. The floodplains in Tract A-1, as shown on the Flood Insurance Rate Map, are primarily due to offsite flow east of San Pedro Drive. The new roadway and storm drain system will intercept the flow; therefore, flow in the tributary arroyos will come only from on-site runoff. The AHYMO Model (AMAFCA Hydrologic Model) was used to determine the existing on-site flows. With the small drainage basins (each less than 20 acres) the only possibility of flooding would be due to the capacity of the outfall structures. To prevent the backup of runoff from those structure from spreading on to the site, grading is proposed on-site near the outfall structures. Grading on-site will not affect the off-site limits of the floodplain because the depth of water is due to culverts with inlet control.

Grading adjacent to the AMAFCA arroyo, Arroyo de Domingo Baca, is shown on the plan (Figure 7.1) as being limited to Tract A-1. The owners of the property do not currently have permission from the New Mexico State Highway and Transportation Department (NMSHTD) to grade within the I-25 right-of-way. When the final grading is accomplished it may include some of the adjoining NMSHTD land to provide a more uniform grade, especially in the small triangular piece of land between the highway slope and the property lines. Grading of this triangular piece of land will not affect other off-site limits of the floodplain because the depth of water is due to culverts with inlet control. If this area is graded it should be included in the as-built request follow-up to CLOMR.

A CLOMR has already been approved by FEMA for the improvements being constructed with the Paseo del Norte project. A copy of the approval letter is included in the Appendix. The CLOMR was known as Paseo del Norte Storm Drains and Related Facilities (FEMA Case No. 979-06-141R, formerly 95-06-417P). The original plans for those improvements are not included in this CLOMR since they were part of the previous CLOMR; however, the installation of additional inlets in the San Pedro/Palomas intersection were not in the original plans and have been included here. Calculations showing that the proposed inlets have the capacity to capture the flows are also included.

1.2 Type of Structure (Sec. 2.6.)

Storm drain.

1.3 Operation and Maintenance of Flood Control Structures (Sec. 5.)

Various entities are responsible for the inspection and maintenance of the flood control structures in the CLOMR area. The responsible entities are described in the following table:

Flood Control Structure	Inspection		Maintenance
	Responsible Entity	Max. Interval Between Inspections	Responsible Entity
Arroyo de Domingo Baca Channel	AMAFCA	12 Months	AMAFCA
Paseo del Norte/San Pedro Storm Drain	City of Albuquerque	12 Months	City of Albuquerque
Interstate 25 Culverts	New Mexico State Highway and Transportation Department	12 Months	New Mexico State Highway and Transportation Department

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

Note: Fill out one form for each flooding source studied

Community Name: City of Albuquerque, Bernalillo County, New Mexico

Flooding Source: Local Runoff

Project Name/Identifier: Domingo Baca Tributaries CLOMR

1. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis ☐ Improved data ☐ Changed physical condition of watershed

☒ Alternative methodology ☒ Proposed Conditions (CLOMR) ☐ Other

For the reason stated above, please attach a detailed explanation. If a computer program/model was used in revising the hydrologic analysis, **please provide a diskette with the input files** for the same flood recurrence intervals contained in the FIS for that stream; and at least for the 1% annual chance (base) flood where no detailed study exists.

Explanation provided: ☒ Yes ☐ No **Diskettes provided:** ☒ Yes ☐ No

2. METHODOLOGY FOR NEW ANALYSIS

Indicate Method	Required Data	Data Included
☐ Statistical Analysis of Gage Records	Form 3 - Attachment A	☐ Yes ☐ No
☐ Regional Regression Equations	Form 3 - Attachment C	☐ Yes ☐ No
☒ Precipitation/Runoff Model	Form 3 - Attachment D	☒ Yes ☐ No
☐ Other	Back-up computations and supporting data	☐ Yes ☐ No

3. APPROVAL OF ANALYSIS

The hydrologic analysis has already been approved by a local, state, or Federal Agency. ☒ Yes ☐ No ☐ Not Required

If Yes, attach evidence of approval. ☐ **Approval attached.** If No, attach explanation. ☒ **Explanation attached.**

4. COMPARISON OF BASE FLOOD DISCHARGES

Location:	Drainage Area (SqMi)	FIS(cfs)	Revised (cfs)
See attached explanation 3.3			

Note: When revised discharges are not significantly different than the FIS discharges, FEMA may require a confidence limits analysis (see attachment B) at a later date to complete the review.

If only a portion of a detailed study area was revised please attach an explanation describing the transition from the proposed discharges to the effective discharges. ☐ **Explanation Included** ☒ **Explanation Not Required**

5. HISTORICAL FLOODING INFORMATION

If historical data are available for the flooding source please provide: Location, peak discharges/water-surface elevations and dates, and source of information. ☐ **Data Attached** ☒ **Data Not Available**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

ATTACHMENT D: PRECIPITATION/RUNOFF MODEL

		FIS:		Revised:	
1.	Method or model used:	N/A		AHYMO	
	Version:			AHYMO194	
	Date:			January 1994	
2.	Source of rainfall depth:			DPM Ch. 22-2	
3.	Source of rainfall distribution:			DPM Ch. 22-2	
4.	Rainfall duration:			24-hour	
5.	Areal adjustment to precipitation (%):			N/A	
6.	Maximum overland flow length			400 feet	
7.	Hydrograph development method:			Unit Hydrograph	
8.	Loss rate method:			IA/INF	
	Source of soils information:			NRCS	
	Source of land use information:			Field	
9.	Channel routing method:			Muskingum-Cunge	
10.	Reservoir routing:	☐ Yes	☐ No	☒ Yes	☐ No
11.	Baseflow considerations: **If Yes, explain below how baseflow was determined:**	☐ Yes	☐ No	☐ Yes	☒ No
12.	Snowmelt considerations:	☐ Yes	☐ No	☐ Yes	☒ No
13.	Model calibration: **If Yes, explain below how calibration was performed**	☐ Yes	☐ No	☐ Yes	☒ No
14.	Future land use condition: **If Yes, explain why below**	☐ Yes	☐ No	☐ Yes	☒ No

15. **Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.**

Information and Maps provided? ☒ Yes ☐ No

NOTE: FEMA policy is to base flooding on existing conditions.

ADDITIONAL EXPLANATIONS FOR FORM 3
Hydrologic Analysis Form

3.1 Reasons for New Hydrologic Analysis (Sec. 1.)

Proposed Conditions (CLOMR)

The original flooding source for the CLOMR area were tributaries of the Arroyo de Domingo Baca (as shown on the 1983 FEMA FIRM maps for the area). Diversions of the tributaries will function to remove the impact of the tributaries on the CLOMR area. Therefore, any current flooding in the CLOMR area is only due to local runoff.

The physical flood control measures that are being constructed in the CLOMR area are listed below. Further details for each control measure are provided later in the CLOMR. A few of the flood control measures were constructed prior to the 1983 FIRM maps being developed. The existence of these flood control structures is apparent on the 1983 floodplain maps. The hydraulics of the pre-1983 structures are reanalyzed in this CLOMR with the revised hydrology for the CLOMR area.

<u>Constructed prior to 1983:</u>
1. All culverts under Interstate 25 and the frontage road.

<u>Under Construction:</u>
1. Storm drain system in San Pedro Boulevard from Paseo del Norte and Wyoming (upstream) to the Arroyo de Domingo Baca Channel (downstream). The Paseo del Norte street improvements that includes the storm drain is under construction.
2. Storm drain system in Paseo del Norte from one of the two 60" culverts under the I-25 frontage road to San Pedro, then north in San Pedro to Holly Ave. The Paseo del Norte street improvements that includes the storm drain is under construction.

Alternative Methodology

The hydrologic model used for the CLOMR hydrology is the AHYMO computer model, used in accordance with the City of Albuquerque Development Process Manual (DPM). The AHYMO model was developed by the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) for use in modeling storms in the Albuquerque area. The hydrology used for this CLOMR comes from the North and South Domingo Baca Arroyos and Paseo del Norte Corridor Drainage Management Plan by Resource Technology, Inc. (RTI) in December, 1991, as revised in 1996 by RTI for the Paseo del Norte Storm Drains and Related Facilities CLOMR (FEMA Case No. 97-06-141R). An additional AHYMO run was made for this CLOMR for basins on the CLOMR site.

The effective (FIS) for this area was completed in 1982. The FIS was based on the hydrology completed in 1975 by Leonard Rice for the Northeast Heights Drainage Management Plan. The 1975 hydrologic study used the MIT Catchment Model (MITCA). The AHYMO model and the City of Albuquerque DPM, as used in this CLOMR submittal, are more current and accepted hydrologic methodologies, and are approved by FEMA for use in the Albuquerque area.

3.2 Approval of the Hydrologic Analysis (Sec. 3.)

FEMA has accepted the City of Albuquerque's Development Process Manual (DPM) in a letter dated November 14, 1991 to Mr. Gilbert Aldaz, City/County Floodplain Administrator. In addition, the use of the AHMYO computer model has been approved by AMAFCA.

3.3 Comparison of Base Flood Discharges (Sec. 4.)

Comparison of 100-Yr. Discharges

The source for the FIS discharges for Albuquerque is the Northeast Heights Drainage Management Plan, Leonard Rice, April 1975. The original flooding source for the CLOMR area were some tributaries of the Arroyo de Domingo Baca (as shown on the 1983 FEMA FIRM maps for the area). Diversions of the Arroyo de Domingo Baca tributaries will function to remove their impact on the CLOMR area. Since the original flooding source will no longer impact the CLOMR area, the flooding source is only local runoff. No detailed study was originally done of the tributaries; therefore, a comparison of flows between the proposed condition and the FIS is not possible for the CLOMR area.

Transitions to Unrevised Portions of the Floodplain in the LOMR Area

The revised floodplain for the CLOMR area on the downstream side ties into the existing floodplain shown in the Arroyo de Domingo Baca Channel that is confined to the constructed channel. At the entrance to the 4 – 8'x10' concrete box culverts under the I-25 frontage road the flood plain on the north side of the arroyo has been revised. At the entrance to the 60" culvert under the I-25 frontage road the total flood plain has been revised. There were no upstream ties.

3.4 Information and Maps Provided (Attach. D 15.)

The only information provided for the AHYMO model is for the specific site. The remaining time of concentration calculations, etc., were submitted and approved with the CLOMR for Paseo del Norte.

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE / COASTAL MAPPING**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Note: Fill out one form for each flooding source studied

Community Name: City of Albuquerque, Bernalillo County, New Mexico

Flooding Source: Local Runoff

Project Name/Identifier: Domingo Baca Tributaries CLOMR

This is a ☒ Manual ☐ Digital submission. *Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance as possible.*

1. MAPPING CHANGES

1. A topographic workmap must be submitted showing the following information (check N/A when not applicable):

a. Revised approximate 100-year floodplain boundaries (Zone A)	☒ Yes	☐ No	☐ N/A
b. Revised detailed 100- and 500-year floodplain boundaries.	☐ Yes	☐ No	☒ N/A
c. Revised floodway boundaries	☐ Yes	☐ No	☒ N/A
d. Location and alignment of all cross sections with stationing control indicated.	☒ Yes	☐ No	☐ N/A
e. Stream alignments, road alignments and dam alignments.	☐ Yes	☐ No	☒ N/A
f. Current community boundaries.	☐ Yes	☐ No	☒ N/A
g. Effective 100- year floodplain and floodway boundaries from FIRM/FBFM reduced or enlarged to the scale of the topographic workmap	☒ Yes	☐ No	☐ N/A
h. Tie-ins between the effective and revised 100-, 500-year and floodway boundaries	☐ Yes	☐ No	☒ N/A
i. The requester's property boundaries and community easements	☒ Yes	☐ No	☐ N/A
j. The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
k. Location and description of reference marks	☒ Yes	☐ No	☐ N/A
l. Vertical datum (example: NGVD, NAVD)	☒ Yes	☐ No	☐ N/A
m. Coastal zone designations tie into adjacent areas not being revised	☐ Yes	☐ No	☒ N/A
n. Location and alignment of all coastal transects used to revise the coastal analyze	☐ Yes	☐ No	☒ N/A
o. V-zone has been delineated to extend landward to the heel of the primary frontal dune	☐ Yes	☐ No	☒ N/A

If any items are marked No or N/A please attach an explanation.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; filed survey, May 1979, beach profile, June 1987 etc.)? Aerial Photo, July 28, 1998

3. What is the scale and contour interval of the following workmaps?

Effective FIS Scale 1"=500' Contour Interval 2'

Revision Request Scale 1"=60' Contour Interval 1'

NOTE: Revised topographic information must be of equal or greater detail than effective.

4. Attach an annotated FIRM/FBFM at the scale of the effective FIRM/FBFM showing the revised 100- and 500-year floodplain and the floodway boundaries and how they tie into those shown on the effective FIRM/FBFM downstream and upstream of the revisions or adjacent to the area of revision for coastal studies. **FIRM/FBFM attached?** ☒ Yes ☐ No

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☒ Proposed

2. Has fill been/will be placed in the regulatory floodway? ☐ Yes ☒ No
   If Yes, please attach completed Riverine Hydraulic Analysis Form (Form 4).

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ☒ Yes ☐ No

   If Yes, then complete A, B, C, and D below.

   a. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☒ No

      If Yes, justify steeper slopes

   b. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.)*

      ☒ Yes ☐ No

      If No, describe erosion protection provided

   c. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☒ Yes ☐ No

   d. Can structures conceivably be constructed on the fill at any time in the future? ☒ Yes ☐ No

   If Yes, attach certification of fill compaction (item 3c. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer in accordance with Subparagraph 65.5(a)(6) of the NFIP regulations.

   Fill certification attached ☐ Yes ☒ No

4. Has fill been/will be placed in a V zone? ☐ Yes ☒ No

   If Yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall?

   ☐ Yes ☐ No

   If Yes, attach the Coastal Structures Form (Form 10).

ADDITIONAL EXPLANATIONS FOR FORM 5
Riverine/Coastal Mapping Form

5.1 Explanation for N/A Responses for Mapping Changes (Sec. 1.1.)

b. For the area of interest there are no detailed 100- and 500-year boundaries for the effective floodplain.

c. There is not a floodway located within the study limits for this CLOMR.

e. There are no stream, road or dam alignments within the limits of this CLOMR.

f. The entire CLOMR area is within the limits of the City of Albuquerque.

h. The proposed revised floodplain does not tie to an existing floodplain. The floodplain in the Arroyo de Domingo Baca is confined to the constructed channel.

m. There are no coastal zones located within the study limits for this CLOMR.

n. There are no coastal zones located within the study limits for this CLOMR.

o. For the area of interest there is no Zone V for the effective floodplain.

5.2 Annotated Floodplain (FIRM) Map (Sec. 1.4.)

The annotated FIRM map is included with this CLOMR showing the revised 100-year floodplain. Since there are no floodways located in the CLOMR area, the FIRM and FBFM maps are identical for the 100-year floodplain areas.

5.3 Earth Fill Certification (Sec. 2.3.)

Since this is a CLOMR the fill has not yet been placed and certification cannot yet be provided.

TABLE OF CONTENTS FOR FORM 5 FIGURES

Riverine/Coastal Mapping Form

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Community Name: City of Albuquerque, Bernalillo County, New Mexico

Flooding Source: Local Runoff

Project Name/Identifier: Domingo Baca Tributaries CLOMR

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): 60" roadway culvert, 4-8'x10' CBC, storm drain inlets in San Pedro at Palomas

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   Downstream end of tributaries at Interstate 25 and, for storm drain inlets, at San Pedro

3. This revision reflects (check one of the following):

   ☐ New bridge/culvert not modeled in the FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☒ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   N/A - Hydraulic analysis completed using inlet calculations. Inlets modeled by orifice equation. See attached explanation and calculations.

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ Yes ☐ No ☒ N/A

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

- ☒ Dimensions (height, width, span, radius, length)
- ☒ Shape (culverts only)
- ☒ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Low Chord Elevations - Upstream and Downstream
- ☐ Top of Road Elevations - Upstream and Downstream
- ☒ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Skew Angle
- ☐ Cross-Section Locations
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information **(Check the box if provided):**

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

ADDITIONAL EXPLANATIONS FOR FORM 7.1

Bridge/Culvert Form – 60" CMP Interstate 25 Culvert, 4 – 8'x10' Concrete Box Interstate 25 Culverts and Storm Drain Inlets in San Pedro and Palomas at their intersection.

7.1.1 Explanation for Drawing Checklist (Sec. 2.)

At both outfall locations the structures defined in this form are culverts so the majority of the items on the drawing checklist (pertaining to bridges) do not apply. The depth of flow at the culverts were determined by using the FHWA culvert charts for inlet control. The storm drain inlets were modeled using the orifice equation for those in a sump condition and the City of Albuquerque street and grate capacity charts. The inlets in Palomas and two of the three in San Pedro are in a sump condition. Relevant portions of the plan and profile sheet for Palomas, sheet number 3-17 from the original Paseo del Norte construction plan set, has been marked up by Wilson and Company and included in Appendix C. The revisions were made to ensure the correct number of inlets are constructed and that the Palomas inlets are in a sump condition.

7.1.2 Sediment Transport Considerations (Sec. 3.)

The areas contributing flow to both Interstate 25 Culverts are on the CLOMR site. This area is undeveloped. There is a minor potential for sediment transport in the area.

The hydrology used for the area has a sediment bulking factor applied to the flow. The sediment bulking factor used, for this area, is 2.5 percent.

APPENDIX A

Federal Emergency Management Agency

Washington, D.C. 20472

AUG 01 1997

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 97-06-141R

The Honorable Martin J. Chavez
Mayor, City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103-1293

Community: City of Albuquerque, New Mexico
Community No.: 350002

104

Dear Mayor Chavez:

This responds to a request that the Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on 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 November 20, 1996, Ms. Susan M. Calongne, P.E., City/County Floodplain Administrator, City of Albuquerque/Bernalillo County, requested that FEMA evaluate the effects that the proposed Paseo del Norte storm drain system would have on the flood hazard information shown on the effective FIRM. The proposed storm drain system consists of a storm drain along Paseo del Norte Drive east of Lowell Street that will discharge into the South Domingo Baca Dam; a storm drain along Paseo del Norte Drive from just east of to approximately 1,500 feet west of Browning Street that will discharge into the North Domingo Baca Dam; a storm drain along Paseo del Norte Drive from just east of Eubank Boulevard to the intersection with San Pedro Drive, then south along San Pedro Drive, that will discharge into Arroyo de Domingo Baca; and a storm drain along Paseo del Norte Drive from San Pedro Drive to Interstate 25 (I-25) that will discharge into Arroyo de Domingo Baca.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Ms. Calongne and Mr. Donald S. Dixon, P.E., Vice President for Engineering, Resource Technology, Inc.

Ms. Calongne and Mr. Larry Blair, P.E., Executive Engineer, Albuquerque Metropolitan Arroyo Flood Control Authority, have certified that the project is a flood-control project that is sponsored by a Federal, State, or local government, is for public benefit, and is primarily intended for flood loss reduction to insurable structures in identified flood hazard areas that were in existence prior to commencement of the flood-control project. Therefore, the review and processing fees associated with our review of the CLOMR request have been waived.

We have completed our review of the submitted data and the flood data used to prepare the effective FIRM for your community. Our review of the submitted information reveals that the proposed storm drain system is intended to intercept discharges of the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), originating from or draining to Paseo del Norte Drive between Tramway Boulevard and I-25, and to convey the runoff to either Arroyo de Domingo Baca, the North Domingo Baca Dam, or the South Domingo Baca Dam. As a result of this project, the Special Flood Hazard Area (SFHA) designated Zone AO (Depth 1), the area that would be inundated by the base flood with average flood depths of approximately 1 foot, will be reduced for this runoff-intercepted area along an unnamed tributary to South Branch of North Arroyo de Domingo Baca (also referred to as Arroyo C), from its confluence with South

Branch of North Arroyo de Domingo Baca (also referred to as Arroyo B) to the upstream limit of study. The confluence of Arroyo C and Arroyo B occurs northeast of the intersection of San Pedro Drive and Carmel Avenue.

Before we can revise the FIRM, the following items must be addressed by your community when the project is completed. The change in SFHA boundary delineations will depend on the response to the items listed below.

- The submitted information is intended to show that no avulsion occurs along North Arroyo de Domingo Baca (also referred to as Arroyo A) between Barstow Street and Ventura Street. Please provide detailed survey information, certified by a registered professional land surveyor, to support the southern boundary delineation of Drainage Basin 926 from Cross Section 7065 to Cross Section 8070 of the submitted Arroyo A hydraulic model.

- If the above-described avulsion does occur, please provide a hydraulic analysis and associated SFHA mapping for the resulting floodplain along Arroyo C and Paseo del Norte Drive that includes the effects of the increased discharge.

- An analysis at each inlet along the Paseo del Norte storm drain system demonstrating that the runoff for which the storm drain system is designed can enter the system

- Effective October 1, 1996, FEMA revised the fee schedule for reviewing and processing requests for modifications to published flood information and maps. All requests dated October 1, 1996, or later will be processed under this new schedule. Under this schedule, FEMA established an initial fee for processing map revision requests involving structural measures on alluvial fans. Because the exemption for flood control projects sponsored by Federal, State, or local government that are for public benefit and are primarily intended to reduce flooding to existing development was eliminated on October 1, 1996, the initial fee for your map revision request will be $2,300 and must be received before we can begin processing your request. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card. The payment must be forwarded to the following address:

  Federal Emergency Management Agency
  Fee-Collection System Administrator
  P.O. Box 3173
  Merrifield, VA 22116-3173

- As-built plans, certified by a registered professional engineer, of all proposed project elements

- Community acknowledgment of the map revision request

- Hydraulic analyses, for as-built conditions, of the base flood for Arroyo C from its confluence with Arroyo B to Wyoming Boulevard, and SFHA bounadry delineations for all areas where the depth of flow is 1 foot or greater

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM. Because the base flood elevations (BFEs) would change as a result of the project, a 90-day appeal period would be initiated, during which community officials and interested persons may appeal the revised BFEs based on scientific or technical data.

The basis of this CLOMR is, in whole or in part, a storm drain system project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure 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 storm drain system rests with your community.

This CLOMR 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.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by contacting the Director, Mitigation Division of FEMA in Denton, Texas, at (817) 898-5127. If you have any technical questions regarding this CLOMR, 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,

for

Frederick H. Sharrocks, Jr., Chief
Hazard Identification Branch
Mitigation Directorate

cc: The Honorable Albert Valdez
Chairman, Bernalillo County Board
of Commissioners

Ms. Susan Calongne, P.E. ✓
City/County Floodplain Administrator
City of Albuquerque/Bernalillo County

Mr. Larry Blair, P.E.
Executive Engineer
Albuquerque Metropolitan Arroyo
Flood Control Authority

Mr. Donald S. Dixon, P.E.
Vice President for Engineering
Resource Technology, Inc.

FOR AMAFCA FACILITIE

PROJECT OPERATIONS

1. Definitions:

a. **Operations.** Within the context of "Operations, Maintenance, and Inspection," Operations is defined as the functioning of a flood control facility during or immediately after a storm. It includes the opening/closing of gates, valves, outlet works (if the facility has them) and may also involve hasty or emergency measures, if necessary to ensure proper functioning of the facility.

b. **Emergency Operations.** See Emergency Operations Plan No. 3, dated August, 1988.

2. General: During rainstorms, AMAFCA personnel, as needed or directed, will observe and monitor flood control facilities to ensure their proper operation.

3. Specific Instructions:

a. As weather conditions dictate, AMAFCA personnel will travel to affected areas or flood control facilities, with radio-equipped vehicles. This procedure will be in effect during both on- and off-duty hours.

b. Through communications, facilities affected will be identified, and closely monitored for proper operation and safety. Additional Authority forces will be called out, as required.

c. Photographs will be taken, where possible.

d. Flow or detention dam stages (depths) and times will be recorded.

e. Notes of project operation characteristics will be made, particularly where unusual conditions may be noted.

f. If necessary, assist police and rescue forces, as needed.

g. Following storms, project OMI folders will be updated with information gathered during the operation, and any remedial actions immediately planned and executed.

h. After a facility has functioned from stormwater, at the first opportunity, a detailed inspection will be made by an Authority engineer. Use of a checklist is recommended.

4. Preparatory Instructions:

a. Before each flood season, the following will be accomplished:

1) Stock adequate supplies of film (Foreman).

2) Ensure vehicles, radios, searchlights, etc., are in good condition (Foreman).

3) Repaint, as needed, depth gauges (Foreman).

4) Ensure all gates, valves, outlet works function properly, and keep wheels and cranks properly stored (Field Engineer, Foreman).

5) Keep cameras, flashlights, spray paint, rescue equipment available in vehicles (Field Engineer, Foreman).

b. During the flood season, the following applies:

1) Vacations and absences will be limited and controlled. (All, especially field personnel).

2) A daily assessment of storm potential will be made, and plans for response discussed (Field Engineer, Foreman).

3) Maintenance Foreman will take home a radio-equipped Authority vehicle during the period June 1 through September 30. (See Memo dated May 2, 1984).

4) Continuous inspections of Authority flood control facilities will be made. Secondary, incidental inspections may be made of facilities owned/operated by others to ensure complementary safe operation.

May, 1993
Date

Executive Engineer

PROJECT MAINTENANCE

1. Definition: Maintenance is defined as all measures taken to ensure that each facility will operate as intended and designed, and includes repairs, improvements, and all measures taken to assure that public welfare and safety are protected.

2. General:

   a. Maintenance and repairs will be accomplished by the most expeditious and cost-effective means. Both in-house forces and contractors may be used.

   b. Priority of effort will be:

      1) Correction of problems which could lead to failure and subsequent loss of life or major property damage (e.g., concrete channel repairs, blockages of outlets and channels)

      2) Installation or repair of features to protect public safety (e.g., guardrails, traffic barriers, reflectors, delineators)

      3) Repairs which are necessary to prevent deterioration to a condition which could lead to failure (e.g., serious erosion, gabion repairs)

      4) Work to maintain stormwater capacity (e.g., sediment, vegetation, and trash removal)

      5) Routine maintenance (e.g., normal erosion, replacement of riprap, concrete joint repairs)

      6) Minor/esthetic maintenance (e.g., minor sediment, graffiti)

3. Guidelines for allocation of effort:

   a. In-House crew

      1) Emergencies

      2) Safety - installation of new safety features; maintenance and upgrade of existing

      3) Inspection

      4) Concrete repair, except large jobs

      5) Jobs for which crew has experience, (e.g., silt removal in sensitive locations (Alameda Outlet Structure, NDC))

6) Routine and repetitive tasks

7) Short duration jobs (2 or less weeks duration)

b. Contractors

1) Production jobs, (e.g., larger dirt or silt moving)

2) Specialized tasks for which we lack in-house expertise and/or equipment

3) Appropriate backlog tasks which cannot be scheduled in a timely manner by Maintenance Crew

c. Other

1) Contractors and others may remove sediment from AMAFCA facilities, with written permission and assurance of adequate insurance. Permits may be issued by the Business Manager after appropriate approval by either the Executive Engineer, Field Engineer, and/or Maintenance Foreman.

2) Assisting others, (e.g., providing silt. See Resolution 1991-10)

4. Administration and Records

a. The Field Engineer and Maintenance Foreman will develop annual and monthly maintenance (including safety) schedules.

b. Insofar as possible, records of maintenance work (written, photographic, costs) will be kept in each project OMI folder.

c. Field Engineer and Maintenance Foreman will brief Executive Engineer monthly on accomplishments, schedule(s), safety, and other matters of interest. It is the Field Engineer's responsibility to schedule these meetings.

May, 1993
Date

Executive Engineer

PROJECT INSPECTIONS

1. Definitions:

   a. **Inspection.** Examination of an Authority facility to ensure its proper operation and to identify needed maintenance and repairs.

2. Procedures

   a. Intervals

      1) A detailed, formal inspection of each Authority facility will be made at least once per year, normally in the spring before flood season. This inspection will be accomplished using a check list (See Inspection Guides and Checklists file). Certain facilities (e.g., NDC and SDC) require more frequent inspections.

      2) An inspection will be conducted after each major storm event which affects a flood control facility, with the primary objective being to identify immediate measures needed to restore the facility's ability to function as designed.

      3) An informal inspection of each facility will be conducted, normally in the fall. The formal checklist is not required, but written record will be made.

      4) Conduits will be physically inspected (crawl-through) every two years (even-numbered years).

   b. Records

      1) Formal checklists will be completed, reviewed by the Executive Engineer, and filed in each facility's OMI folder.

      2) Sheet G-2 (required Maintenance/Repairs) will be duplicated, with a copy to the Maintenance Tasks/Backlog Folder and a copy to the Maintenance Foreman, to serve as a work directive.

      3) Results of informal inspections will be reported by informal notes, or in briefings to the Executive Engineer.

      4) The Field Engineer is responsible for developing inspection schedules.

      5) Progress on inspections will be reported monthly to the Executive Engineer.

3. As a matter of professional courtesy, and when convenient, AMAFCA personnel will informally inspect drainage facilities owned by other public agencies, and advise them of problems.

Aug 1993
Date

Executive Engineer

CITY OF
Albuquerque

Federal Emergency Management Agency
Hazard Identification & Risk Assessment Division
500 C Street SW, Room 422
Washington, D.C. 20472

Community: City of Albuquerque, New Mexico

Community No.: 350002

The City of Albuquerque, Public Works Department, Storm Drainage Maintenance Division, is responsible for the operation and maintenance of storm drainage systems in the City. The Storm Drainage Maintenance Division has 25 full-time employees, and is equipped to perform maintenance operations for all types of storm drainage facilities. Maintenance operations include sediment removal, pipe cleaning and flushing, pipeline, manhole, inlet repair and construction, concrete channel repair, and vegetation control.

Storm drainage maintenance activities are on-going throughout the year. Drainage system components are maintained per the following schedule:

System Component	*Inspection*	*Maintenance*
Pipes, Manholes, Inlets	Annual and following Complaints	Pipes, Manholes - Biannual Inlets - Annual
Channels, Arroyos	Annual	Annual, As Required
Detention Basins	Annual and following Complaints	Mowing - Annual Sediment Removal - As Req.

The Storm Drainage Maintenance Division is supervised by Mr. Glenn Jurgensen, Storm Drainage Superintendent.

Sincerely,

Larry A. Blair, P.E., Director
Public Works Department

APPENDIX B

DOMINGO BACA
TRIBUTARIES CLOMR

DRAINAGE BASIN MAP

FIGURE 3.1

Los Angeles Center CLOMR
Calculation of Time to Peak

Description	Var.	Unit		
Basin			**10.1**	**20.1**
Basin Area		Acres	17.44	12.54
Total Reach	L	Feet	1710.0	1830.0
Overland Reach	L1	Feet	400.0	400.0
Overland K	K1		0.7	0.7
Overland Slope	S1	Percent	3.25	3.75
Adj. Overland Slope	S1'	Percent	3.250	3.750
Gully Reach	L2	Feet	1310.0	1430.0
Gully K	K2		2.000	2.000
Gully Slope	S2	Percent	2.380	2.240
Adj. Gully Slope	S2'	Percent	2.380	2.240
Arroyo Reach	L3	Feet	0.0	0.0
Arroyo K	K3		3.000	3.000
Arroyo Slope	S3	Percent	1.710	1.820
Adj. Arroyo Slope	S3'	Percent	1.710	1.820
Lca (to centroid)	Lca	Feet	0.0	0.0
Base Discharge	Qb	cfs	0.0	0.0
Ground Slope S	S	Percent	2.584	2.570
Adjusted Slope S'	S'	Percent	2.584	2.570
K	K		1.435	1.477
K'	K'		1.435	1.477
K"	K"		0.000	0.000
K'"	K'"		0.000	0.000
Kn	Kn		0.033	0.033
Orig. TC	TC	Hrs.	0.206	0.215
Adjusted TC	TC'	Hrs.	0.206	0.215
Time Lag	Lg	Hrs.	-	-
Time to Peak	TP	Hrs.	**0.137**	**0.143**

```
*
START                 RAINFALL BEGINS AT 0.00 HOURS
*****************************************************************************
*
*       ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
*       ::                                                                ::
*       ::                  LOS ANGELES CENTER CLOMR                      ::
*       ::            EXISTING CONDITIONS DRAINAGE ANALYSIS               ::
*       ::                                                                ::
*       ::                                                                ::
*       ::                                                                ::
*       ::                                                                ::
*       ::                       SEPTEMBER 1998                           ::
*       ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
*
*****************************************************************************
*                         100-YEAR STORM EVENT
*****************************************************************************
*
*
RAINFALL              TYPE=2 RAIN QUARTER=0.0 RAIN ONE=2.08
                      RAIN SIX=2.45 RAIN DAY=2.85 DT=0.05
*
*
**** COMPUTE NM HYD DATA FOR BASIN 10.1 FOR EXISTING CONDITIONS
*
*SEDIMENT BULK         CODE=1     FACTOR=1.022
*                     ID    HYD   AREA        LANDUSE PERCENTAGES (%)      Tp  MASS
*                     NO     NO (SQ MI) TYPE A  TYPE B  TYPE C  TYPE D  (HR) RAIN
COMPUTE NM HYD        10    10.1 0.0286    53.0    25.0    20.0     2.0  0.137  -1
**** PRINT NM HYD OUTPUT FOR BASIN 10.1
*                     ID   PRINT
*                     NO    CODE
PRINT HYD             10      1
*
*
*****************************************************************************
*
*
**** COMPUTE NM HYD DATA FOR BASIN 20.1 FOR EXISTING CONDITIONS
*                     ID    HYD   AREA        LANDUSE PERCENTAGES (%)      Tp  MASS
*                     NO     NO (SQ MI) TYPE A  TYPE B  TYPE C  TYPE D  (HR) RAIN
COMPUTE NM HYD        20    20.1 0.0232    44.0    30.0    25.0     1.0 0.143   -1
**** PRINT NM HYD OUTPUT FOR BASIN 20.1
*                     ID   PRINT
*                     NO    CODE
PRINT HYD             20      1
*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = 100YR.HYM

RUN DATE (MON/DAY/YR) =09/22/1998
USER NO.= BOHN_HNM.STE

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.850
*SEDIMENT BULK	CODE=1		FACTOR=1.022							
COMPUTE NM HYD	10.10	-	10	.02860	39.30	1.195	.78329	1.500	2.147	PER IMP= 2.00
COMPUTE NM HYD	20.10	-	20	.02320	31.85	.995	.80409	1.500	2.145	PER IMP= 1.00
FINISH										

APPENDIX C

Los Angeles Center CLOMR

Two basins on-site for local runoff

(1) Basin 10.1 flows to 60" CMP culvert; entrance to culvert matches the slope.

From AHYMO Q = 39 cfs

From Fed. Hwy. chart, depth = 2.5'

Culvert invert = 5186.4

Water surface = 5186.4 + 2.5 = 5188.9

(2) Basin 20.1 flows overland to Arroyo de Domingo Baca Channel by flowing over the channel sill. The 4 - 8' x 10' CBC's under I-25 are in an inlet control situation. Q = 4092 cfs from AHYMO

From Fed. Hwy. chart, depth = 12'

Culvert invert = 5178.8

Water surface = 5178.8 + 12 = 5190.8

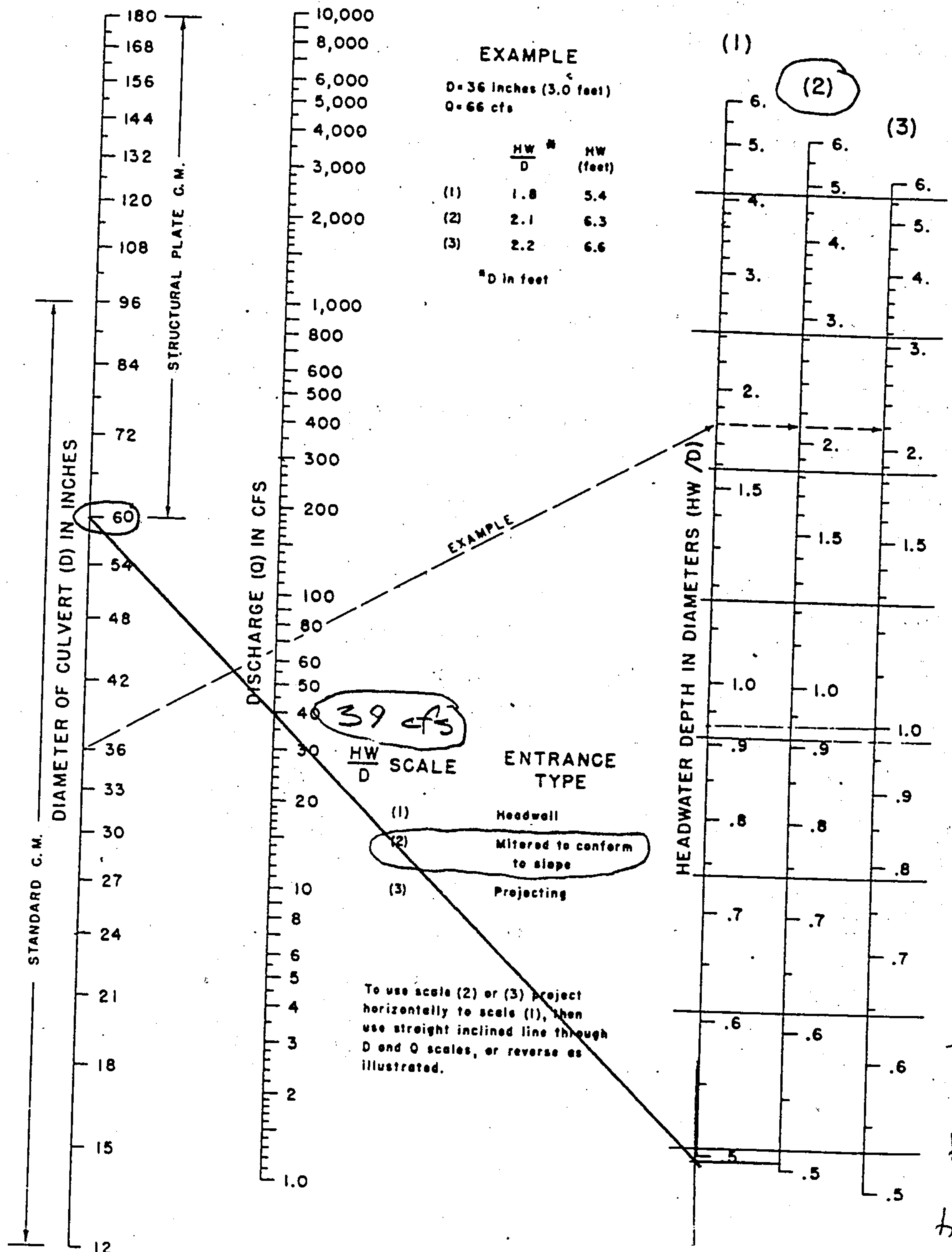
BOHANNAN-HUSTON INC.

PROJECT NAME Los Angeles Center CLOMR SHEET 1 OF

PROJECT NO. 99 315 BY DJG DATE 1/20/99

SUBJECT Water Surface Elev. CH'D DATE

CHART 2



HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

D = 60"

$\frac{HW}{D} = 0.5$

HW = 30"

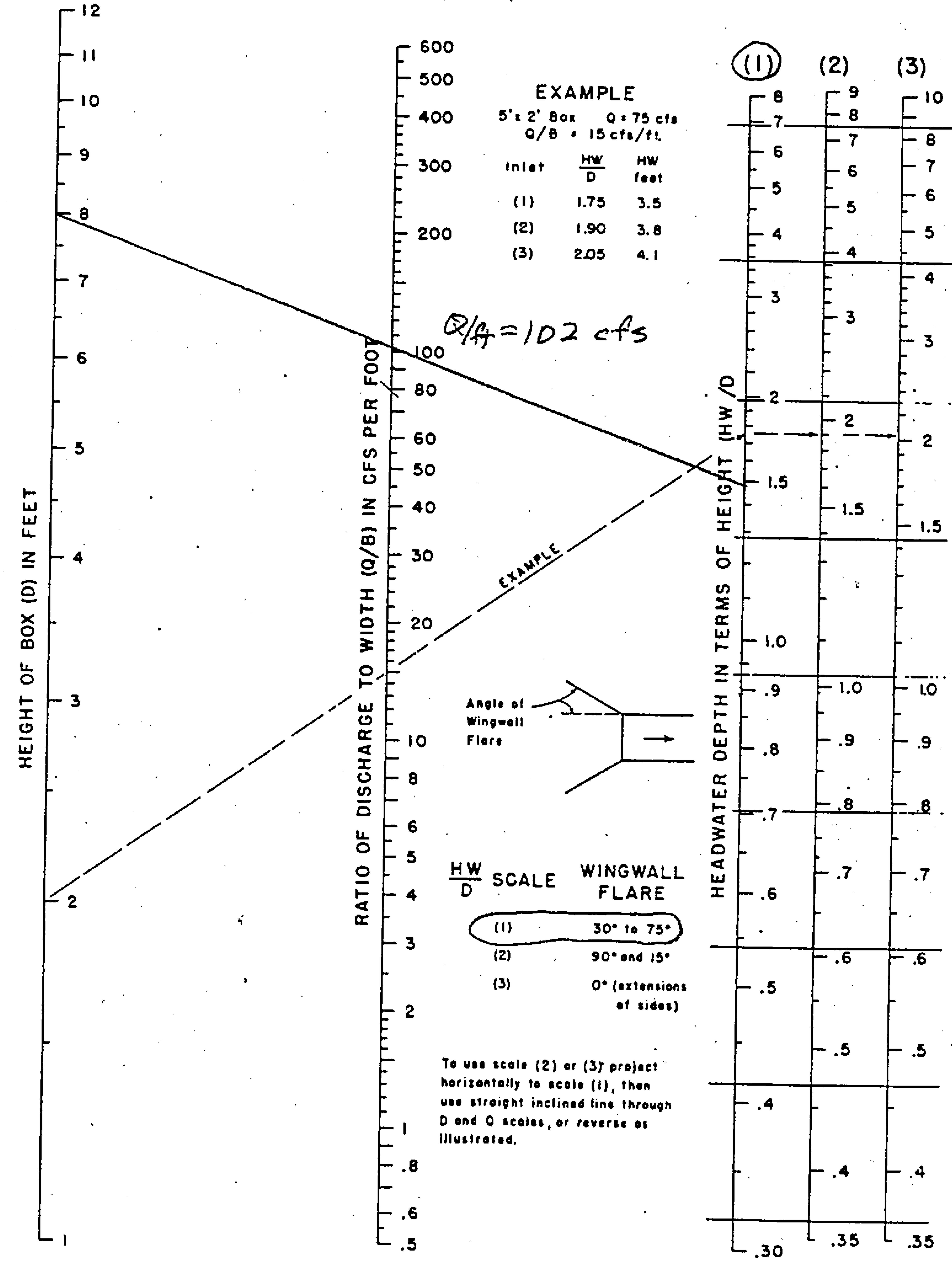
HW = 2.5'

BUREAU OF PUBLIC ROADS JAN. 1963

4 - 8' x 10' CBC =

4092 cfs
W = 40'

CHART 8



H = 8'

$\frac{HW}{D} = 1.5$

HW = 12'

HEADWATER DEPTH FOR BOX CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

Inlets in Palomas and San Pedro

Flow to Inlets 130.6 cfs

2 Double "C" Inlest
2 "A" Inlets

grate size: 2'-1½" x 2'-11⅜"
2.125' x 2.9479' = 6.2643 ft.²

6 grates 37.6 ft.²

less bar areas

7 x ½" x 2'-1½" = 0.6198

13 x ⅝" x 2'-11⅜" = 1.9960

− 13 x 7 x ½" x ⅝" = −0.1975

total bar areas 2.4 ft.² x6 = 14.5 ft.²

total open area 37.6 − 14.5 = 23.1 ft.²

BOHANNAN-HUSTON INC.

PROJECT NAME Los Angeles Center CLOMR SHEET 1 OF
PROJECT NO. 99 315 BY DJG DATE 2/22/99
SUBJECT San Pedro/Palomas Inlets CH'D DATE

Orifice Rating Curve for the 6 inlet grates with a sump condition in Palomas Ave. east of San Pedro Blvd. Flow line elevation is 5230.67. Maximum flow to the inlets is 130.6 cfs.

San Pedro north of Palomas
WEIR COEFFICENT=2.8000

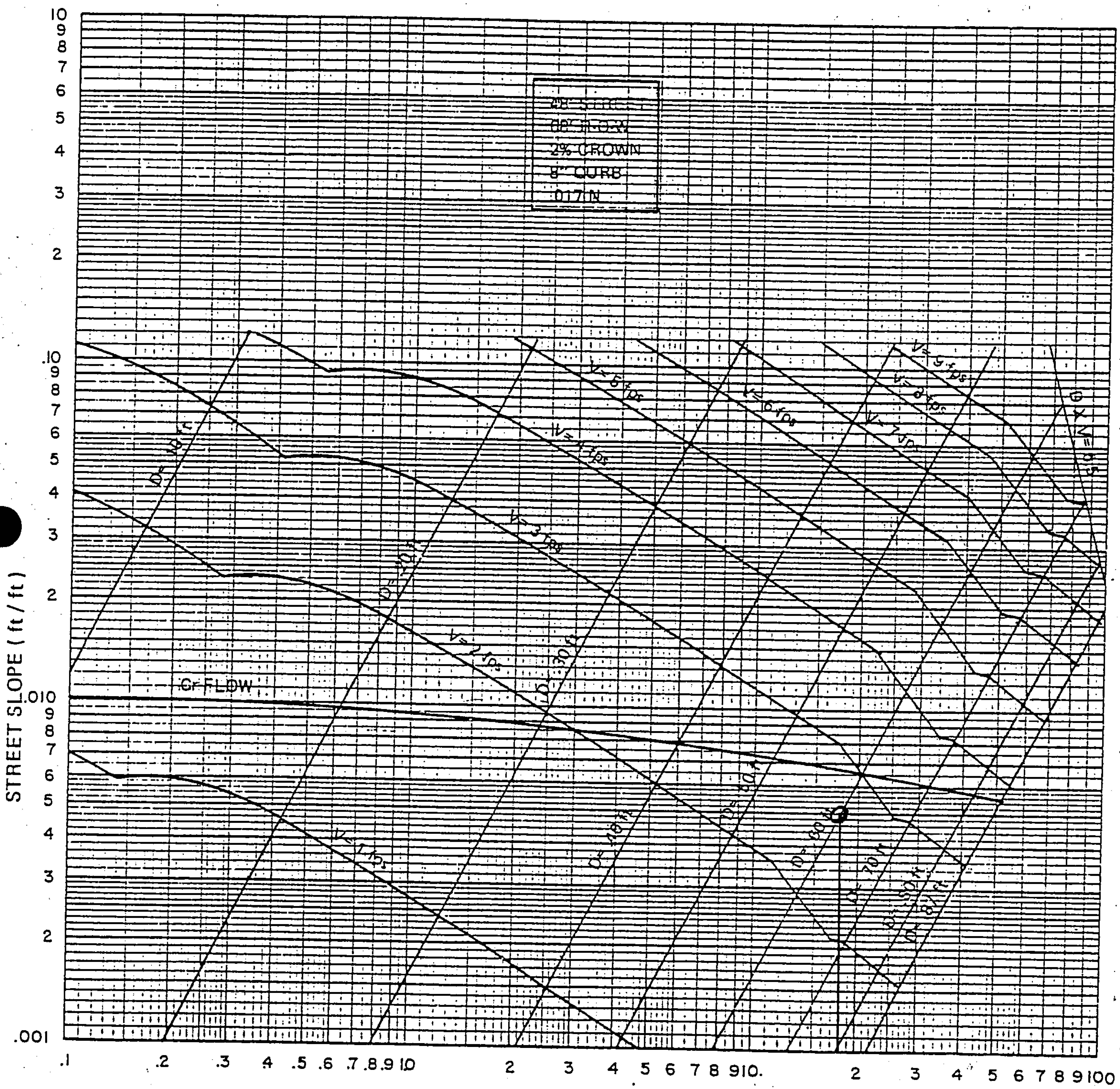
			WSEL FT.	DEPTH INC FT.	FLOW AREA SQ.FT.	FLOW RATE (CFS)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL (CFS)	
	5230.67000	0.00000							0.00	
	5230.77000	35.07297							35.07	
	5230.87000	49.60067							49.60	
	5230.97000	60.74817							60.75	
	5231.07000	70.14594	5231.06	.00	.00	.00	.00	.00	70.15	
	5231.17000	78.42554	5231.16	.10	.33	.24	.71	6.67	78.67	
	5231.27000	85.91088	5231.26	.20	1.33	1.33	1.00	13.33	87.24	
	5231.37000	92.79436	5231.36	.30	3.00	3.68	1.23	20.00	96.47	
	5231.47000	99.20134	5231.46	.40	5.28	7.53	1.43	24.00	106.73	
	5231.57000	105.21891	5231.56	.50	7.68	12.65	1.65	24.00	117.87	
---->	5231.67000	110.91047	5231.66	.60	10.08	18.71	1.86	24.00	129.62	<----
	5231.77000	116.32388	5231.76	.70	12.48	25.58	2.05	24.00	141.90	
	5231.87000	121.49634								
	5231.97000	126.45741								
	5232.07000	131.23105								
	5232.17000	135.83704								
	5232.27000	140.29189								
	5232.37000	144.60956								
	5232.47000	148.80202								
	5232.57000	152.87953								
	5232.67000	156.85109								

111 cfs flows to the inlets in the Palomas sump, 19 cfs flows north in San Pedro. Runoff in San Pedro flows to an inlet on that east side that is not in a sump and to two inlets on the west side (one in the median, one on the west curb) of San Pedro that are in a sump. Based on City of Albuquerque street flow charts the flow depth matches the weir flow depth of 0.60 feet and based on City of Albuquerque grate charts the flow into the inlet is 8 cfs. This leaves 11 cfs flowing to the two sump inlets in San Pedro. The depth of water per the orifice equation in a sump for one inlet is 0.35′. Water will not overflow the 0.5′ curb.

	ELEVATION (FT)	DISCHARGE (CFS)	
	0.00000	0.00000	
	0.10000	5.87366	
	0.20000	8.30662	
	0.30000	10.17349	
---->	0.40000	11.74733	<----
	0.50000	13.13391	
	0.60000	14.38748	

Depth of flow in San Pedro
Street slope = 0.5%
Q = 18 cfs

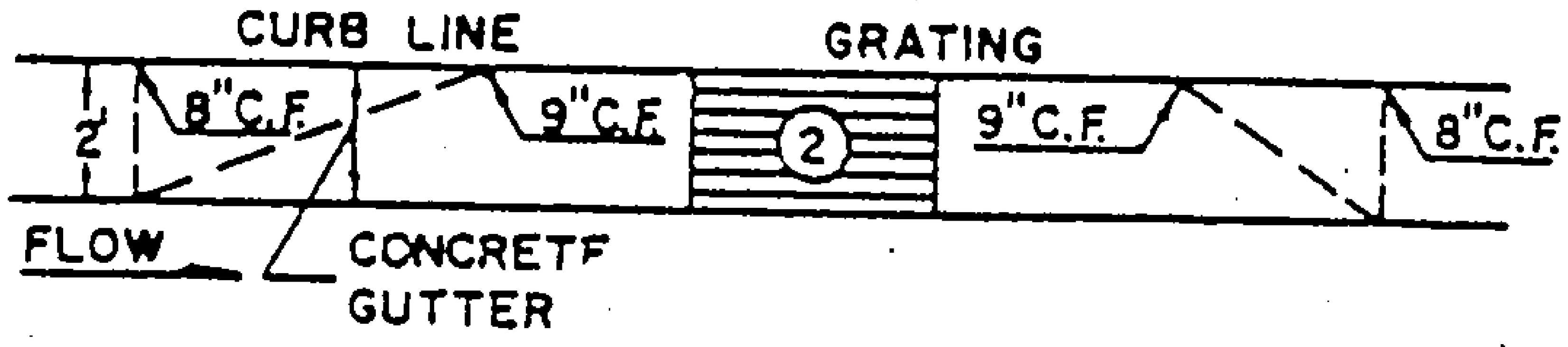
STREET CAPACITY



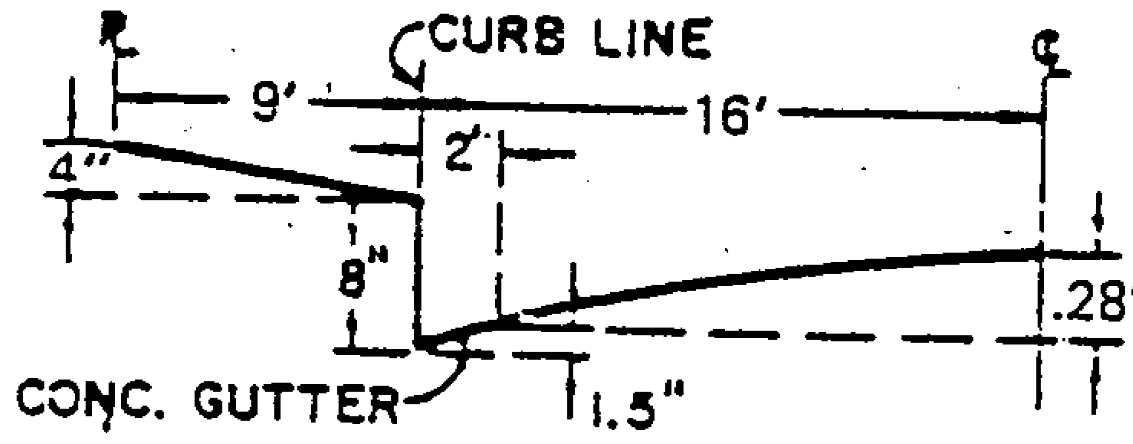
18 cfs
d = 0.60'

Flow to San Leandro inlet (non-sump)
Depth = 0.60'

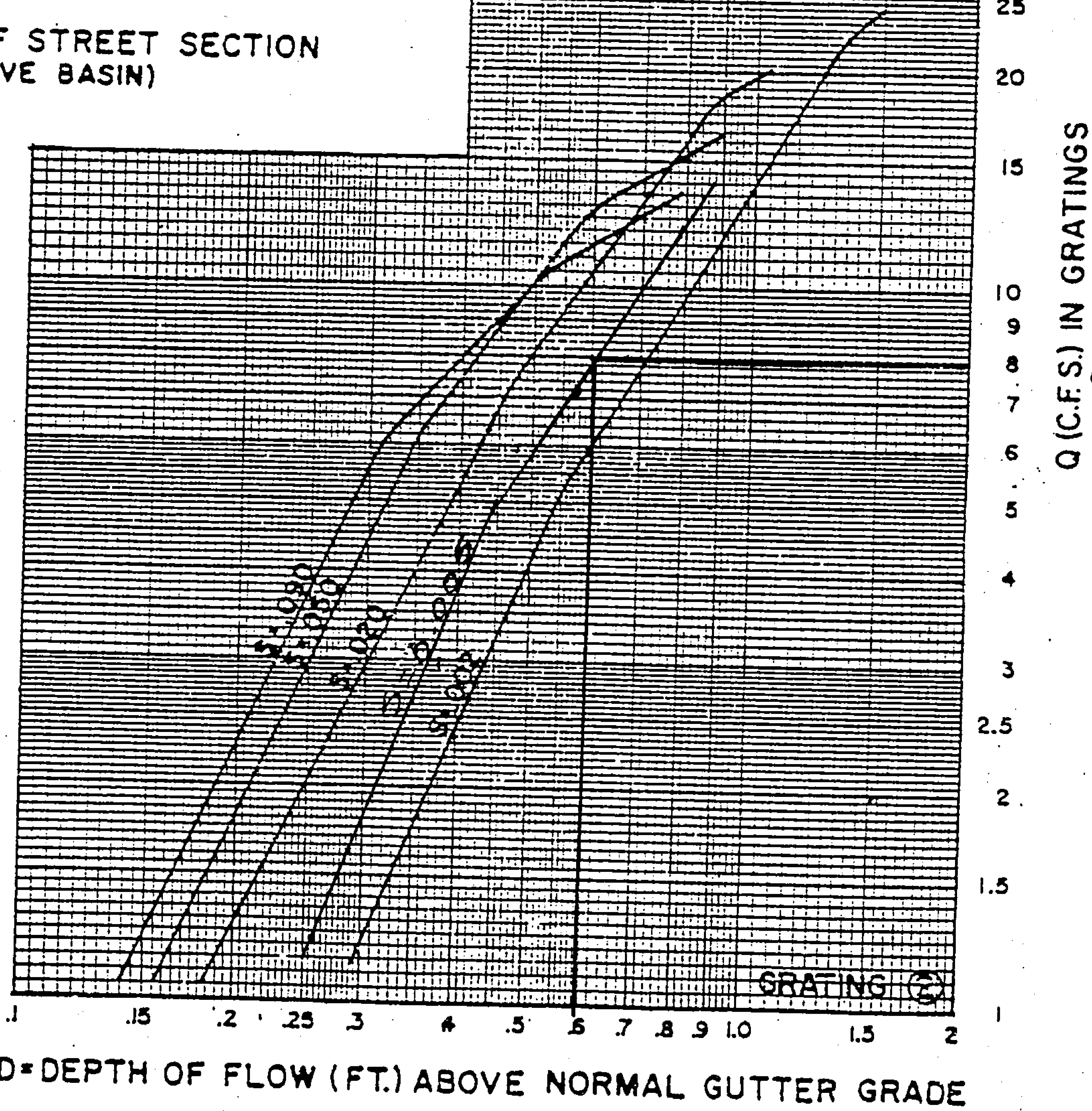
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

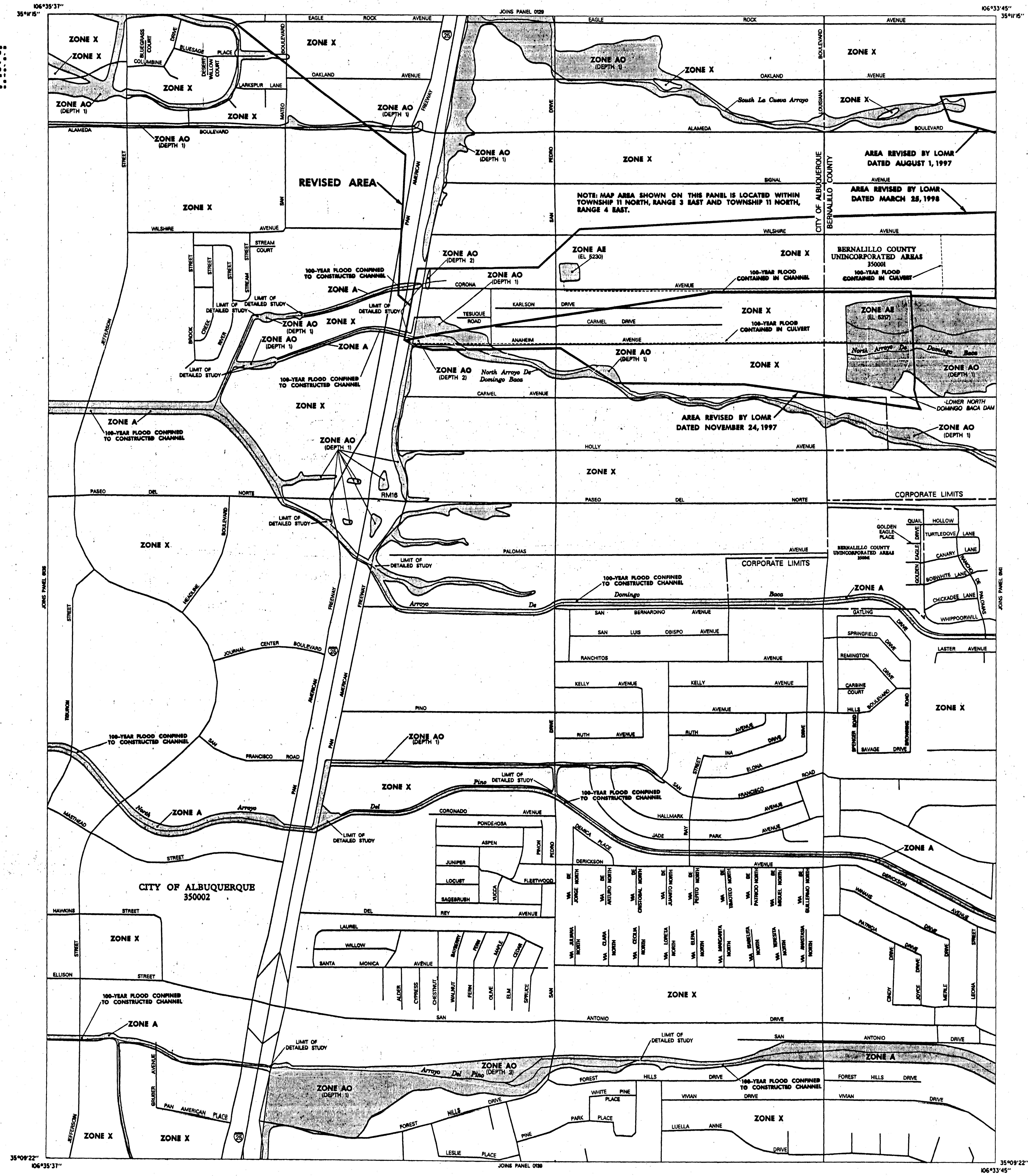


Sta. 3+27.20 Remove the existing concrete cut-off wall. The exposed asphalt edge shall be tack coated prior to laying the new asphalt pavement.
Sta. 3+27.20 Match Existing C & G. F/L El = 5238.41
Existing Asphalt Pavement
Existing Concrete Curb & Gutter
MAR 05 1999
HYDROLOGY SECTION
2.0%
2.0%
PALOMAS AVE.
FROM RETURN TO STATION 1 + 07 SEE SHEET 3-17 FOR TRANSITION TO PAVEMENT.
262.20'
13.25:1 Taper
Construction
8" Extruded Asphalt Curb South Edge (Only).
PALOMAS AVE.
Ref. Sta. 0+65, Lt. 20'
T/C El. ~~32.80~~ 31.34
Ref. Sta. 0+65, Rt. 20'
T/C El = ~~32.80~~ 31.34
SAN PEDRO BLVD.
℄ Sta. 0+00 Palomas Ave. = ℄ Sta. 50+06 San Pedro. See Sheet 3-8
Ref. Sta. 0-65, Rt. 13'
T/C El. = 32.80
Ref. Sta. 0-65, Lt. 13'
T/C El = 32.80
Install 4-8' long type III Barricades
No V.C.
T/C 32.00 F/L 31.33
F/L 31.60
T/C 32.5 F/L 31.85
T/C 32.66 F/L 31.99
F/L 31.86
T/C 32.38 F/L 31.7

℄ Sta. 0+00 Palomas Ave.
℄ Sta. 50+06 San Pedro
S= -1.00%
3:1
Sta. 0-35 @ Theoretical
F/L of Gutter
El. 5231.31
Sta. 0+35 @ Theoretical
F/L of Gutter
El. 5231.31
+40 PVC
31.26
0+40 PVC
31.24
0+46 Low Pt.
31.07
Existing Asphalt on
℄ of Construction
0+80
PVI 30.64
PG. 31.12
80 VC
MO: +0.48
Proposed Finish
Grade Profile on
℄ of Construction
+3.30%
Sta. 3+27.20 Remove
Existing Concrete Cut-Off
Wall EL = (5238.88) 5238.92
+27.20
PG. 38.80
PVI Sta. 3+75
(5240.12)
5240.44
150' VC
MO = +0.32
PVT Sta. 4+50
5243.53
Sta. 4+66.10
5244.23
5245
5240
5235
5230
5225
5231.96
5232.99
5235.58
5238.17
1-00
0+00
1+00
2+00
3+00
4+00
5+00

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM16	5205.87	New Mexico State Highway Commission (NMSHC) standard brass tablet, stamped "1-25-13", set in top of a concrete post projecting 0.3', located 62' east of Interstate Highway 25, 150' west of the east frontage road, and 5.6' north of a headwall on the north side of Los Angeles Avenue.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

~~~513~~~ Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

(D)———(D) Cross Section Line

(EL 987) Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

RM7 × Elevation Reference Mark

• M2 River Mile

97°07'30", 32°22'30" Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP:

SEPTEMBER 20, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET

500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

RECEIVED MAR 05 1999 HYDROLOGY SECTION

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 137 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CLOMR FIGURE 5.1

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0137	D
BERNALILLO COUNTY, UNINCORPORATED AREAS	350001	0137	D

REVISED TO REFLECT LOMR DATED SEP 11 1998

MAP NUMBER 35001C0137 D

EFFECTIVE DATE: SEPTEMBER 20, 1996

Federal Emergency Management Agency
~~~

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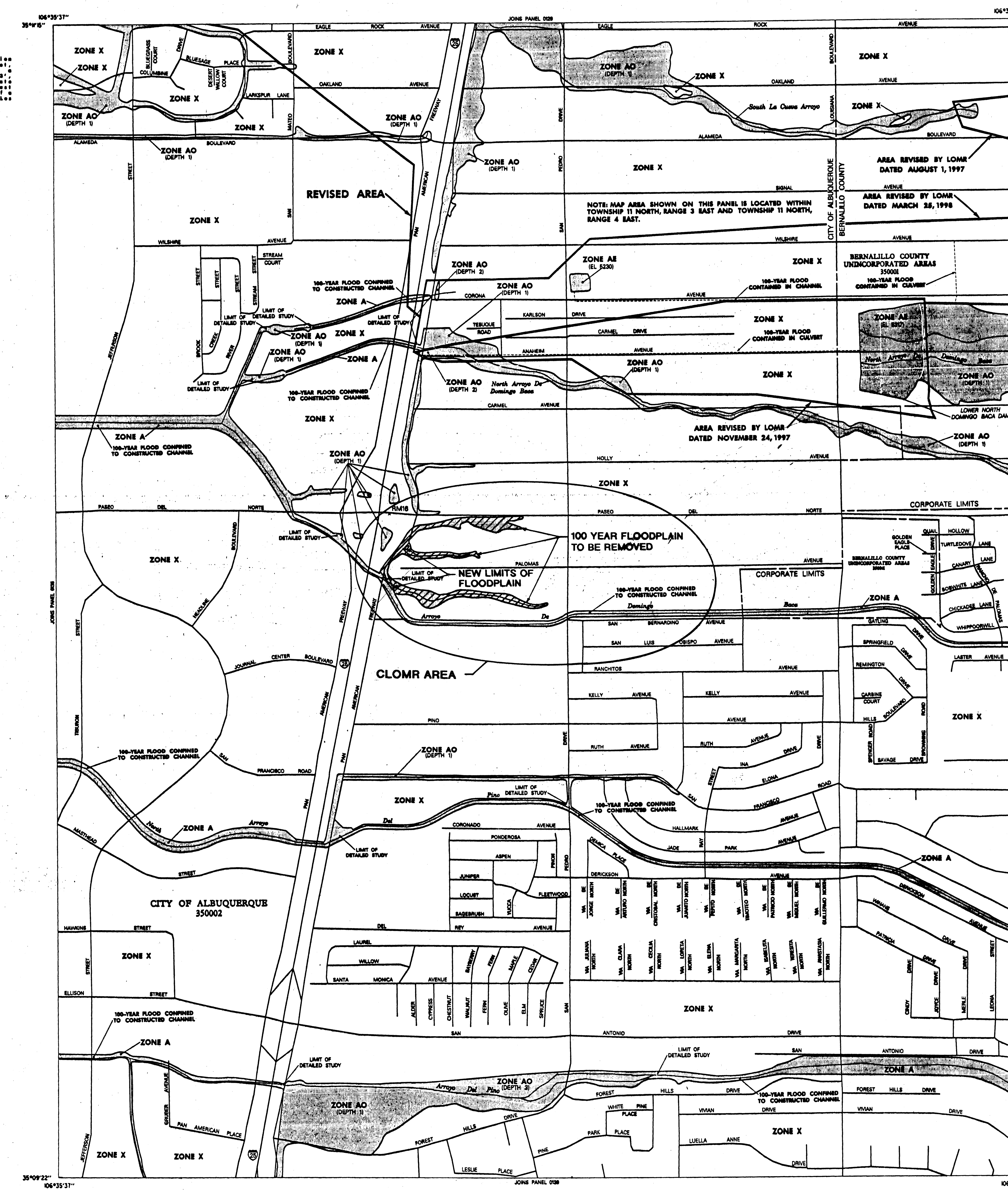

LEGEND

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	Floodway Boundary
	Zone D Boundary
	Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
~513~	Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.
D—D	Cross Section Line
(EL 987)	Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.
RM7 ×	Elevation Reference Mark
• M2	River Mile
97°07'30", 32°22'30"	Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

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APPROXIMATE SCALE IN FEET
500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 137 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CLOMR FIGURE 5.2

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0137	D
BERNALILLO COUNTY, UNINCORPORATED AREAS	350001	0137	D

REVISED TO REFLECT LOMR DATED SEP 11 1998

MAP NUMBER 35001C0137 D

EFFECTIVE DATE: SEPTEMBER 20, 1996

Federal Emergency Management Agency