

CITY OF ALBUQUERQUE



**Planning Department
Transportation Development Services Section**

February 27, 2007

Ken Hovey, Registered Architect
2430 Midtown Place NE, Ste. A
Albuquerque, NM 87107

Re: Certification Submittal for Final Building Certificate of Occupancy for
Gateway West Business Park(Phase 2), [K-9 / D23]
8551 Saul Bell Road NW
Architect's Stamp Dated 02/26/07

Dear Mr. Hovey:

The TCL / Letter of Certification submitted on February 27, 2007 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

**KEN HOVEY, ARCHITECT
2430 MIDTOWN PLACE NE, SUITE A
ALBUQUERQUE, NEW MEXICO 87107
PHONE: (505) 341-3302
FAX: (505) 343-1183**

February 26, 2007

City of Albuquerque
Transportation Department
600 Second Street NW
Albuquerque, New Mexico

Subject: Architect's TCL certification for 8551 Saul Bell Rd. NW.

I, Ken Hovey, an Architect registered in the State of New Mexico, am the Architect-of-Record for the subject projects located in the Clifford West Business Park. I have visited the site and performed a visual inspection of the as-built construction and I find that it is in substantial compliance with the Amended Site Development Plan dated 8/11/06.

This certification is for the Building No. Two construction only. Building No. One was certified previously.

I have submitted, herewith, a copy of the approved TCL with redlines showing any departure from the approved plan. The submitted plan is representative of actual site conditions and is true and correct to the best of my knowledge and belief.

The information presented on the redlined TCL is intended only to verify substantial compliance of the Traffic aspects of this project and is not necessarily complete. Those relying on this record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

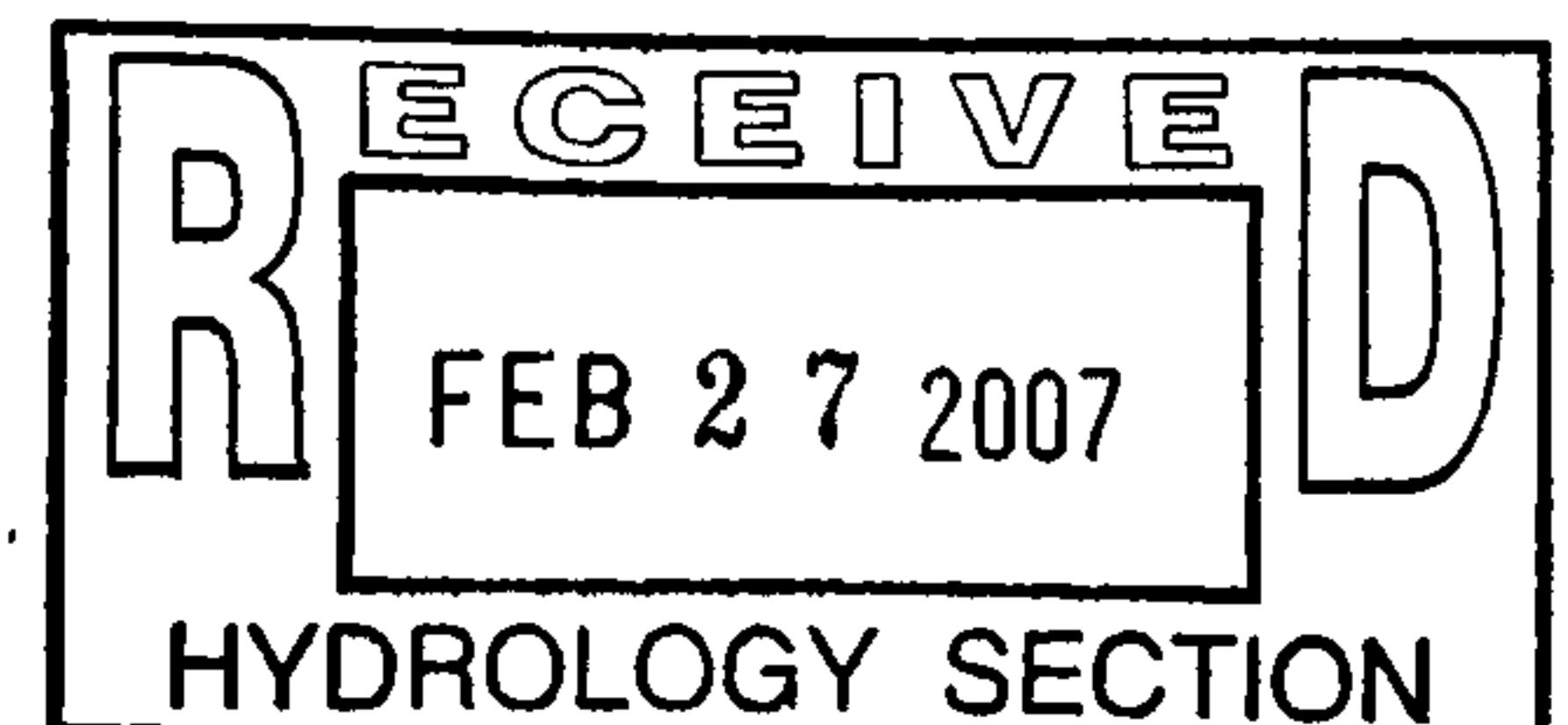
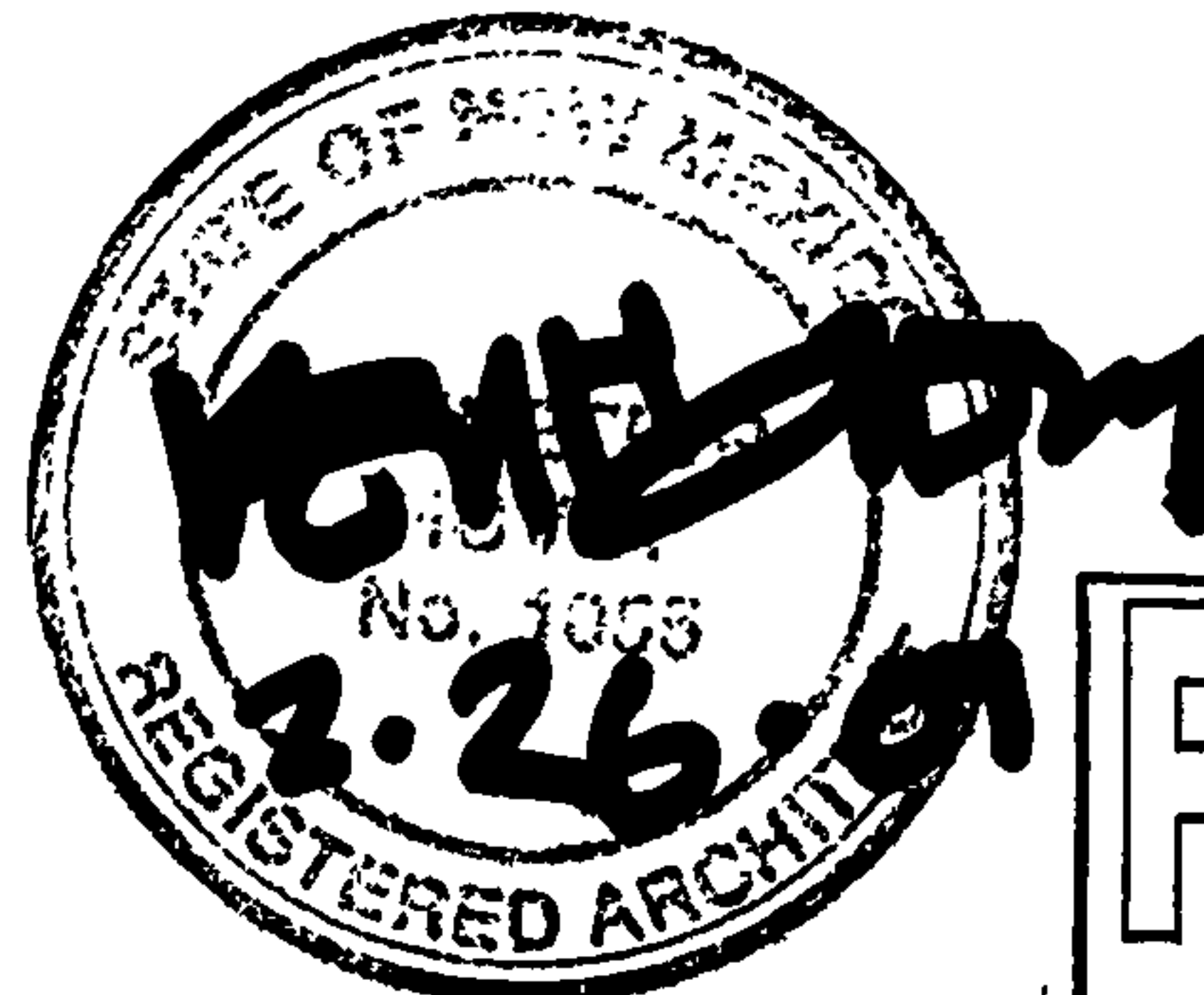
This Architect's certification is submitted in support of issuance of a Certificate of Completion for the subject addresses.

If you have any questions, or if further discussion is required, please don't hesitate to contact me at (505) 341-3302 or by email at kenhovey@industrialwest.com.

Sincerely,



Ken Hovey



DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(Rev. 12/05)

K-9/D23

PROJECT TITLE: GATEWAY WEST BUSINESS PARK - PHASE 2 ZONE MAP/DRG. FILE # K-9
 DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: TRACT A-2-C-1-B BLOCK 1 CLIFFORD WEST BUSINESS PARK UNIT 3
 CITY ADDRESS: 8551 SAUL BELL ROAD NW

ENGINEERING FIRM: _____
 ADDRESS: _____
 CITY, STATE: _____

CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

OWNER: S.P. ROAD LLC
 ADDRESS: 2430 MIDTOWN PLACE NE SUITE A
 CITY, STATE: ALBUQUERQUE NM 87107

CONTACT: CHARL GERBER
 PHONE: 341-3302
 ZIP CODE: 87107

ARCHITECT: KEN HOVEY
 ADDRESS: 2430 MIDTOWN PLACE NE SUITE A
 CITY, STATE: ALBUQUERQUE NM 87107

CONTACT: KEN HOVEY
 PHONE: 341-3302
 ZIP CODE: 87107

SURVEYOR: _____
 ADDRESS: _____
 CITY, STATE: _____

CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

CONTRACTOR: INDUSTRIAL WEST CONSTRUCTORS
 ADDRESS: 2430 MIDTOWN PLACE
 CITY, STATE: ALBUQUERQUE NM 87107

CONTACT: THOMAS KAEGER
 PHONE: 341-3302
 ZIP CODE: 87107

TYPE OF SUBMITTAL:

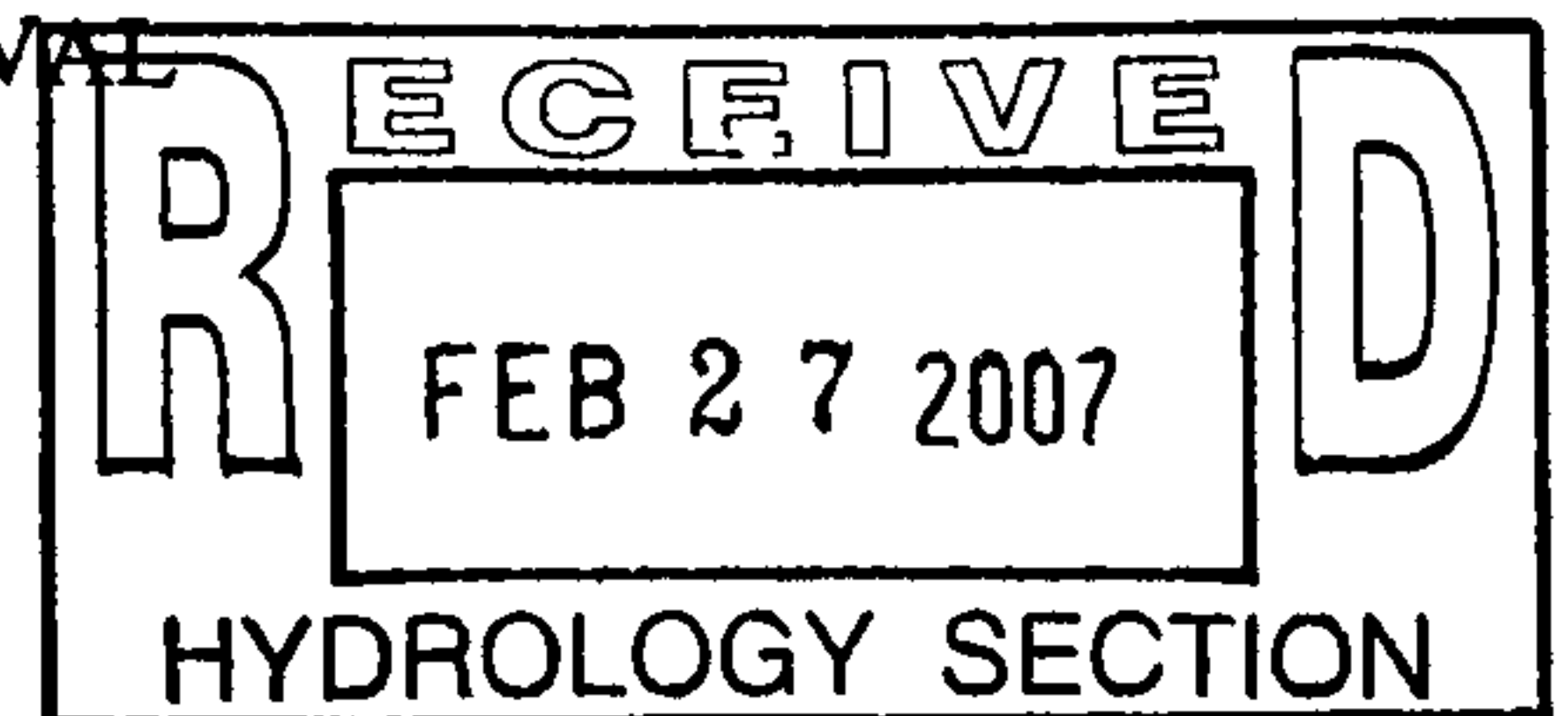
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☒ TRAFFIC CIRCULATION LAYOUT
☒ ENGINEER/ARCHITECT CERT (TCL)
☐ ENGINEER/ARCHITECT CERT (DRB S.P.)
☐ ENGINEER/ARCHITECT CERT (AA)
☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ 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



SUBMITTED BY: KEN HOVEY DATE: 2-27-07

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

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

CITY OF ALBUQUERQUE

December 12, 2007



Via Hand Delivery

Tony Abbo, District Engineer
District 3 Office
New Mexico Department of Transportation
7500 Pan American Blvd.
Albuquerque, New Mexico 87199-1750

Re: Unser Blvd. Access Control

Dear Tony:

The Environmental Planning Commission for the City of Albuquerque is considering to approve a development project located east of Unser Blvd., north of Los Volcanes Road and south of I-40. The City has determined that its road system, particularly the Unser Blvd/Los Volcanes Road intersection, would operate at an improved level of service if a public road were to connect Unser Blvd. to the new Gallatin Place extension, generally as shown on the attachment. The developer of this property has agreed to dedicate the right-of-way and to construct this public road.

P.O. Box 1293

Albuquerque

New Mexico 87103

Unser Blvd. is currently access controlled from the I-40 interchange to Los Volcanes Road. Therefore, to facilitate this public road connection the City requests a permanent break in the Unser Blvd access control line for this roadway. This break is ± 940 feet north of the Los Volcanes intersection. The access control break is to permit a right-in, right-out, and left-in intersection.

www.cabq.gov

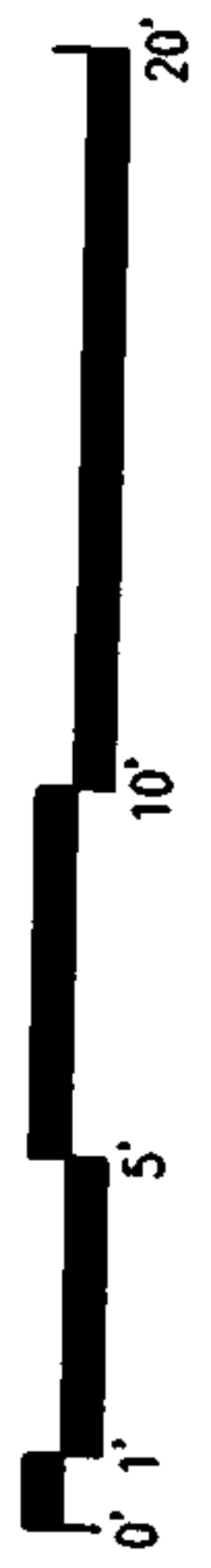
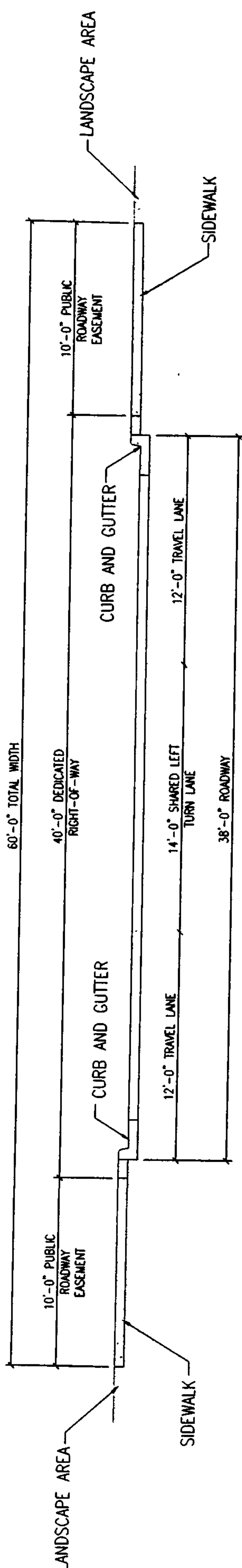
It is our understanding that Terry Brown, P.E. has provided to you the technical data necessary to support this request. The City has requested that this matter be considered by the NMDOT Access Control Review Committee. Correspondingly, we respectfully request that you schedule this request to be heard by the Transportation Coordinating Committee of MRCOG.

Please contact me if you require additional information. Thank you for your assistance.

Sincerely,

Richard Dourte, PE
City Engineer
Planning Dept.

Cc: Kristal Metro, PE, Traffic Engineer, Planning Dept.
John Hartman, Transportation Planning, DMD



RIGHT-OF-WAY CROSS SECTION
N.T.S.

CITY OF ALBUQUERQUE

December 12, 2007



Via Hand Delivery

Jack Lord
Mid-Region Council of Governments
809 Copper Ave NW
Albuquerque, New Mexico 87102

Re: Unser Blvd. Access Control

Dear Jack:

The Environmental Planning Commission for the City of Albuquerque is considering to approve a development project located east of Unser Blvd., north of Los Volcanes Road and south of I-40. The City has determined that its road system, particularly the Unser Blvd/Los Volcanes Road intersection, would operate at an improved level of service if a public road were to connect Unser Blvd. to the new Gallatin Place extension, generally as shown on the attachment. The developer of this property has agreed to dedicate the right-of-way and to construct this public road.

P.O. Box 1293

Albuquerque

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New Mexico 87103

www.cabq.gov

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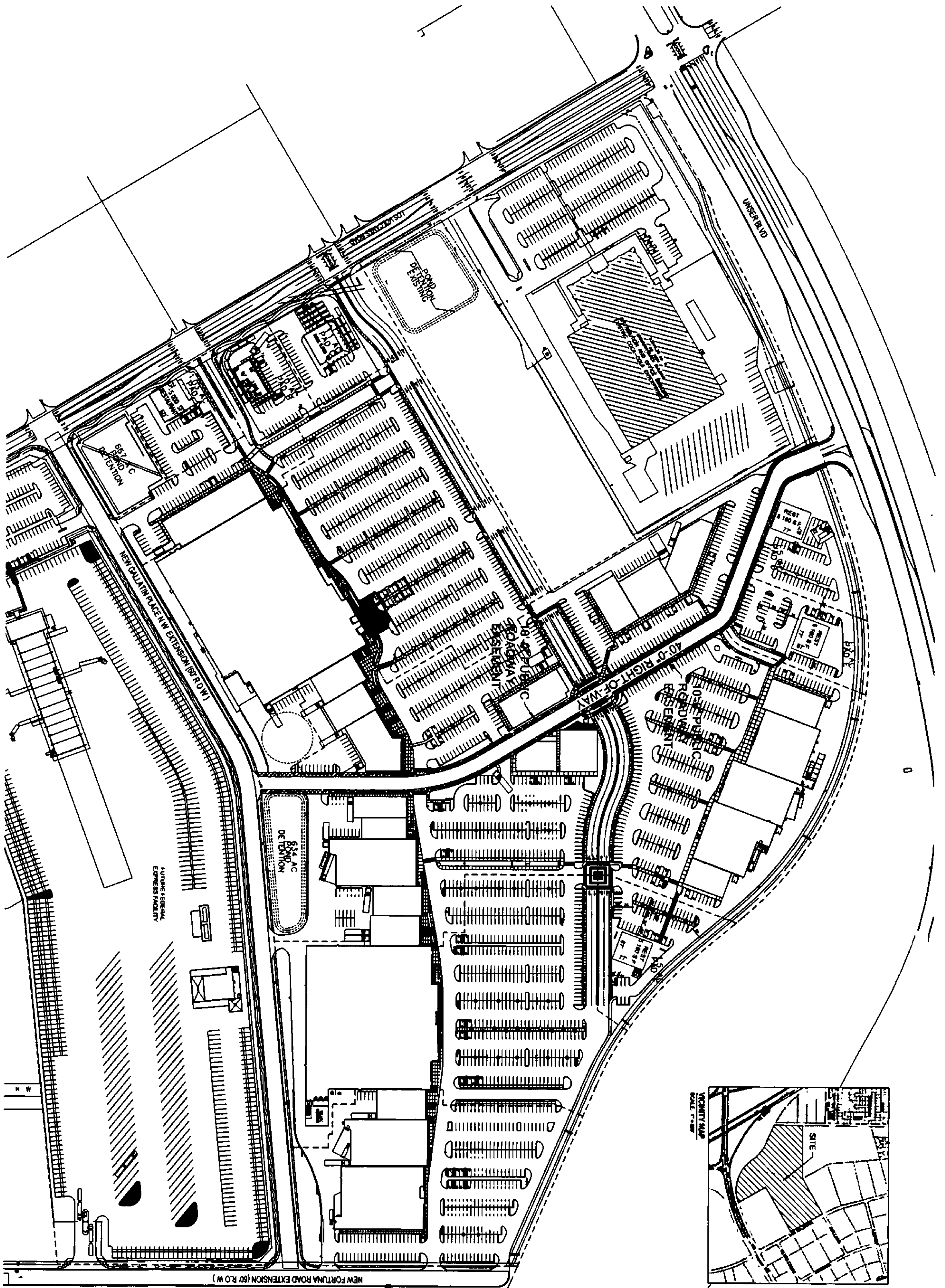
Please contact me if you require additional information. Thank you for your assistance.

Sincerely,

Richard Dourte, PE
City Engineer
Planning Dept.

Cc: Kristal Metro, PE, Traffic Engineer, Planning Dept.
John Hartman, Transportation Planning, DMD

2
SITE PLAN
SHEET 1 OF 1

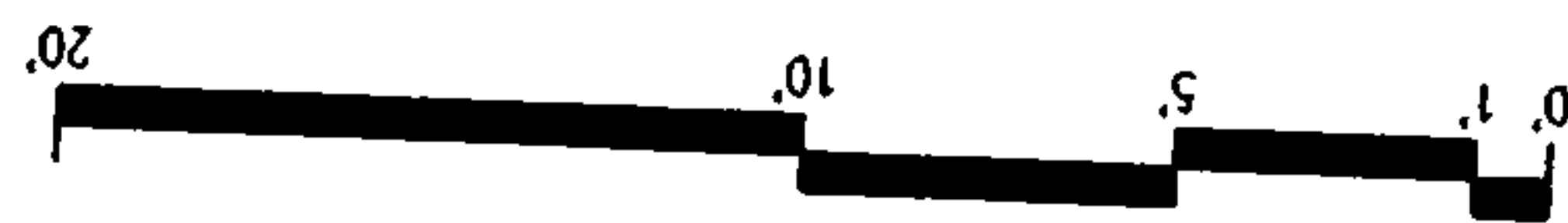
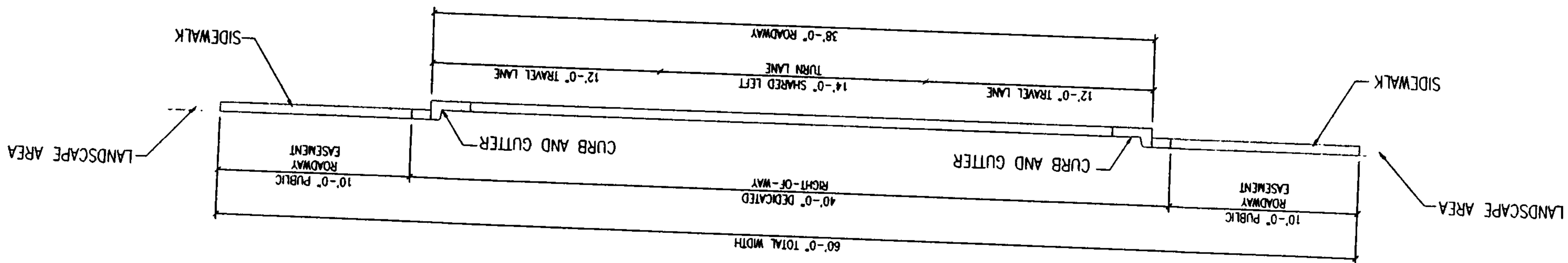


DATE 8/27/07 SCALE AS NOTED PROJECT ASI	PROJECT TITLE UNSER TOWNE CROSSING		
	140 AND UNSER ALBUQUERQUE, NM		
	PROJECT MANAGER	JOB NO.	DRAWN BY
			JCS
SHEET TITLE SITE PLAN FOR SUBDIVISION			

GEORGE RAINHART, ARCHITECT AND ASSOCIATES P.C.
2325 SAN PEDRO NE., SUITE 2-B
ALBUQUERQUE, NEW MEXICO 87110
PHONE (505) 884-9110 FAX (505) 837-9877

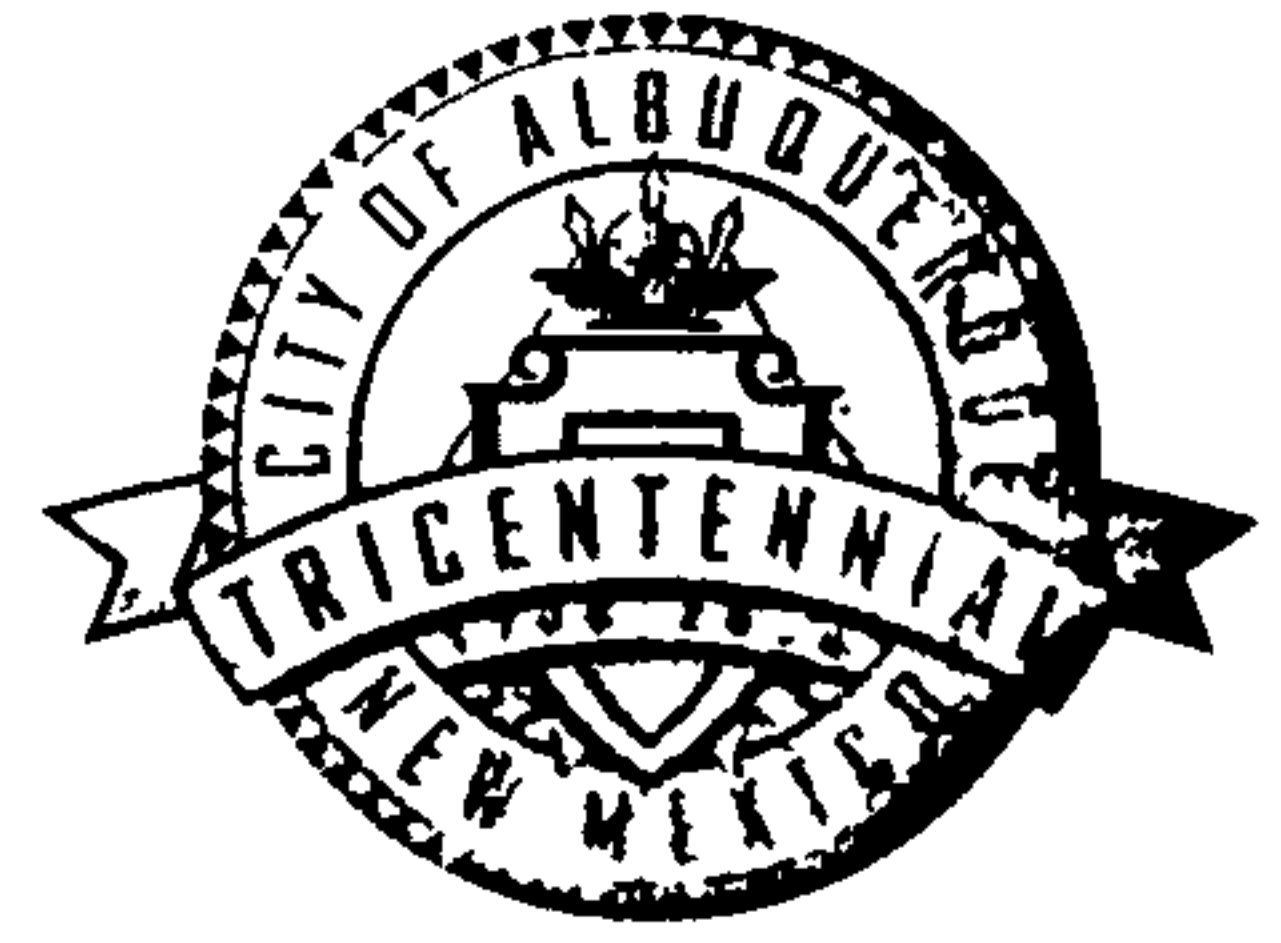


REV	DATE	BY	REVISION
1			
2			
3			
4			
5			



RIGHT-OF-WAY CROSS SECTION
N.T.S.

CITY OF ALBUQUERQUE



**Planning Department
Transportation Development Services Section**

January 10, 2007

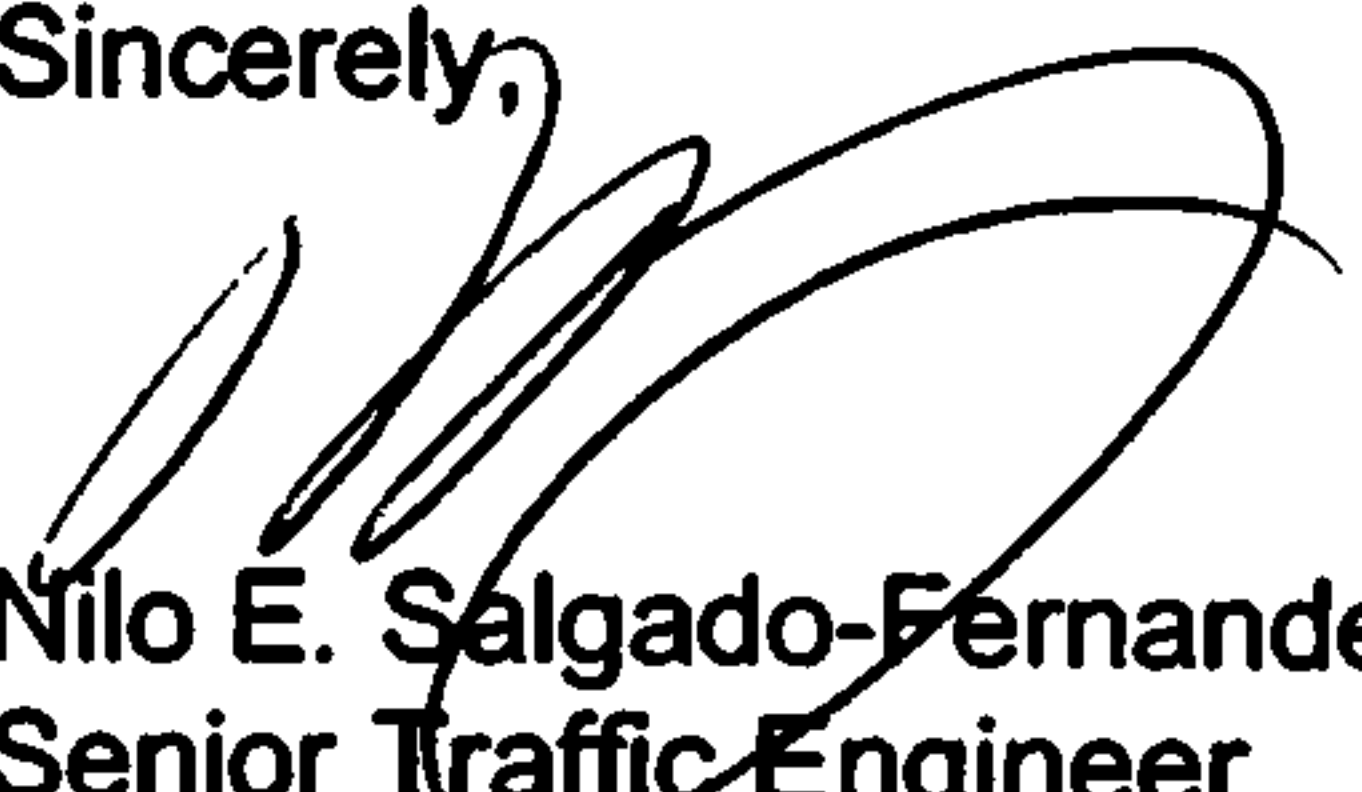
Ken Hovey, Registered Architect
2430 Midtown Place NE, Ste. A
Albuquerque, NM 87107

Re: Certification Submittal for Final Building Certificate of Occupancy for
Gateway West Business Park Phase 1(Bldg 1), [K-9 / D23]
8500 Los Volcanes Rd NW
Architect's Stamp Dated 01/10/07

Dear Mr. Hovey:

The TCL / Letter of Certification submitted on January 10, 2007 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,


Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(Rev. 12/05)

PROJECT TITLE: GATEWAY WEST BUSINESS PARK PH. I ZONE MAP/DRG. FILE # K9/023
DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: _____
CITY ADDRESS: _____

ENGINEERING FIRM: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

OWNER: I-40 GATEWAY WEST LLC CONTACT: CARL GERBER
ADDRESS: 2430 MIDTOWN PLACE NE STE 'A' PHONE: 505-341-3302
CITY, STATE: ABQ, NM ZIP CODE: 87107

ARCHITECT: KEN HOVEY CONTACT: KEN HOVEY
ADDRESS: 2430 MIDTOWN PLACE NE STE 'A' PHONE: 505-341-3302
CITY, STATE: ABQ, NM ZIP CODE: 87107

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

CONTRACTOR: INDUSTRIAL WEST CONSTRUCTORS LLC CONTACT: DON WHITLOW
ADDRESS: 2430 MIDTOWN PLACE NE STE 'A' PHONE: 505-341-3302
CITY, STATE: ABQ, NM ZIP CODE: 87107

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☒ ENGINEER/ARCHITECT CERT (TCL)
☐ ENGINEER/ARCHITECT CERT (DRB S.P.)
☐ ENGINEER/ARCHITECT CERT (AA)
☐ OTHER (SPECIFY) _____

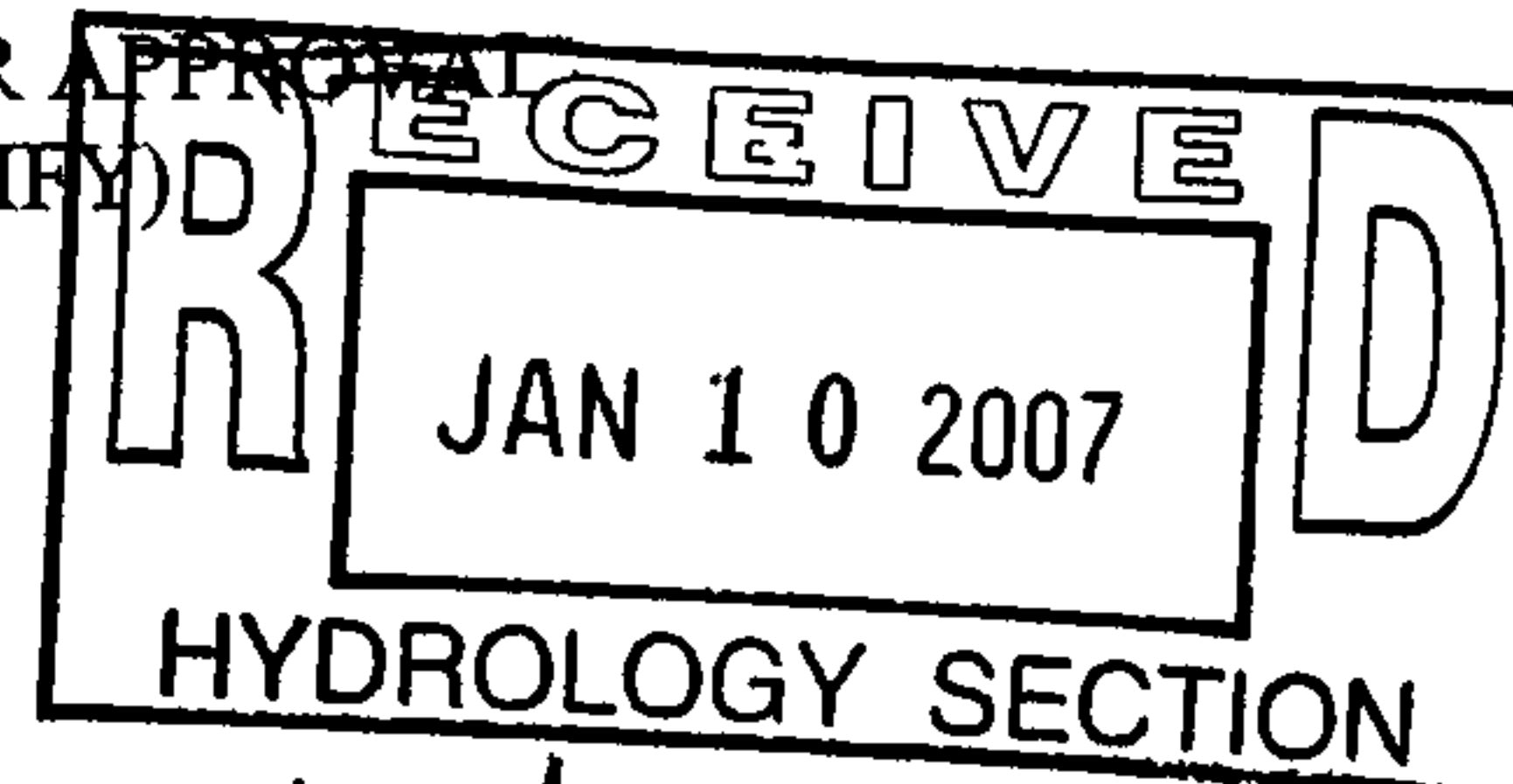
CHECK TYPE OF APPROVAL SOUGHT:

☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
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☐ 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

SUBMITTED BY: Howard Cream DATE: 1/10/07



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

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

KEN HOVEY, ARCHITECT
2430 MIDTOWN PLACE NE, SUITE A
ALBUQUERQUE, NEW MEXICO 87107
PHONE: (505) 341-3302
FAX: (505) 343-1183

January 8, 2007

City of Albuquerque
Transportation Department
600 Second Street NW
Albuquerque, New Mexico

Subject: Traffic certification for 8500 Los Volcanes Rd. NW.

I, Ken Hovey, an Architect registered in the State of New Mexico, am the Architect-of-Record for the subject projects located in the Clifford West Business Park. I have visited the site and performed a visual inspection of the as-built construction and I find that it is in substantial compliance with the Amended Site Development Plan dated 8/11/06.

This certification is for the Building No. One construction only. Building No. Two is currently under construction and will require separate certification when that construction has been completed.

I have submitted, herewith, a copy of the approved TCL with redlines showing any departure from the approved plan. The submitted plan is representative of actual site conditions and is true and correct to the best of my knowledge and belief.

The information presented on the redlined TCL is intended only to verify substantial compliance of the Traffic aspects of this project and is not necessarily complete. Those relying on this record document are advised to obtain independent verification of its accuracy before using it for any other purpose.

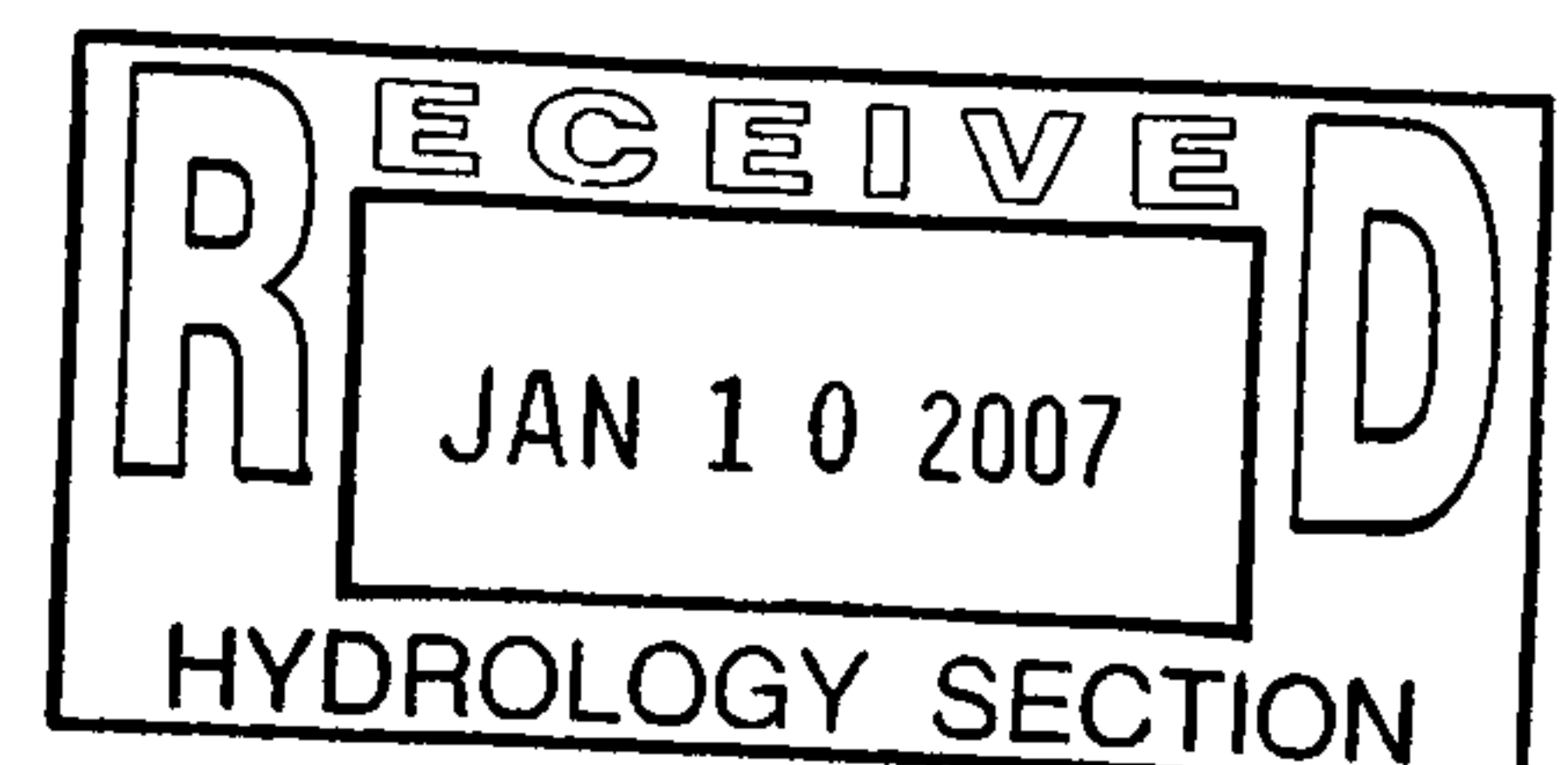
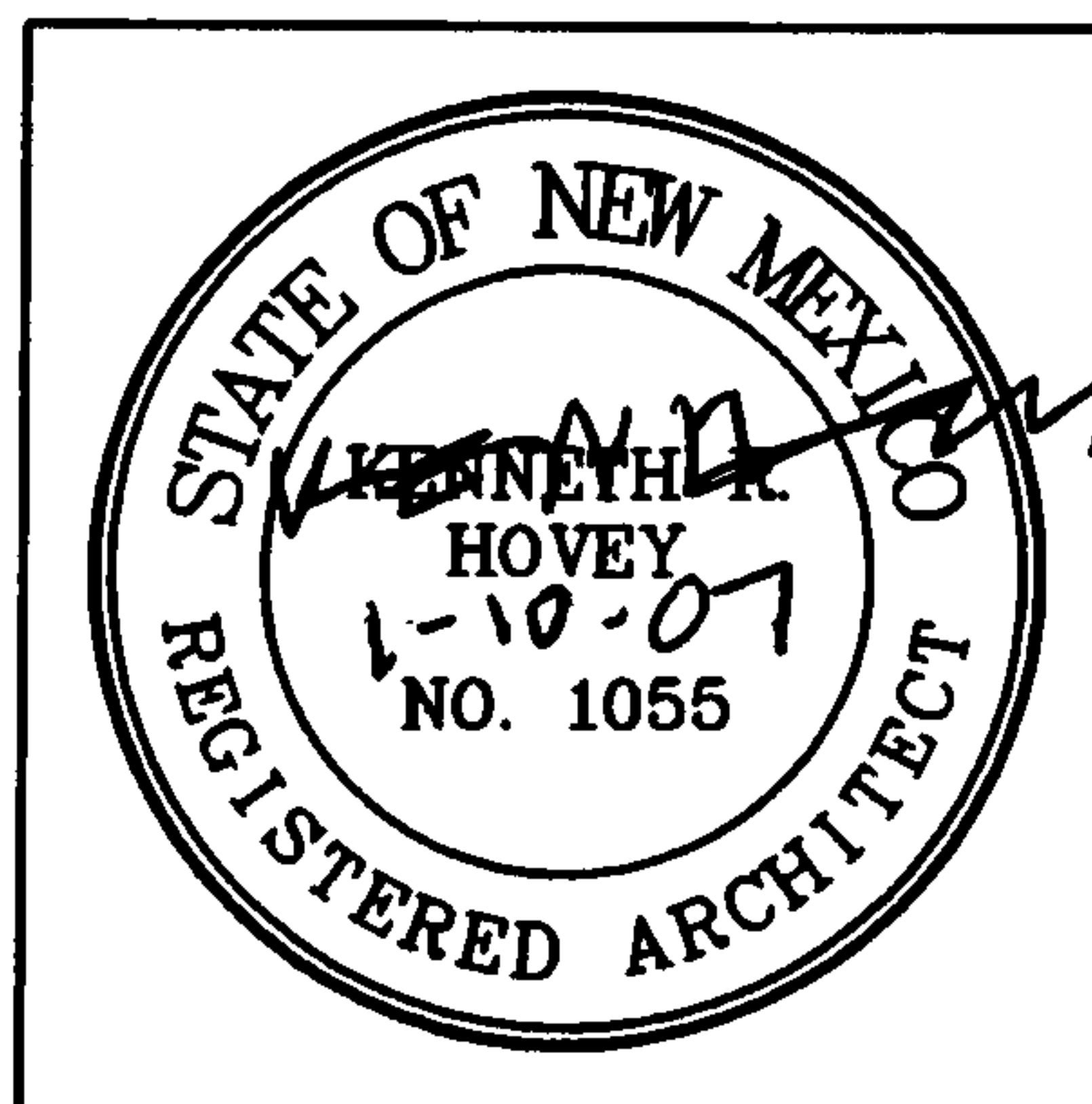
This Architect's certification is submitted in support of issuance of a Certificate of Completion for the subject addresses.

If you have any questions, or if further discussion is required, please don't hesitate to contact me at (505) 341-3302 or by email at kenhovey@industrialwest.com.

Sincerely,



Ken Hovey



CITY OF ALBUQUERQUE



March 9, 2007

J. Graeme Means, P.E.
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

**Re: Gateway West Business Park Phase 2 Building 2, 8551 Saul Bell Rd NW,
Engineer's Stamp dated 2-23-06 (K9-D23)
Certification dated 3-09-07**

Dear Mr. Means,

P.O. Box 1293

Based upon the information provided in your submittal received 3-09-07, the above referenced certification is approved for release of permanent Certificate of Occupancy by Hydrology.

Albuquerque

If you have any questions, you can contact me at 924-3981.

New Mexico 87103

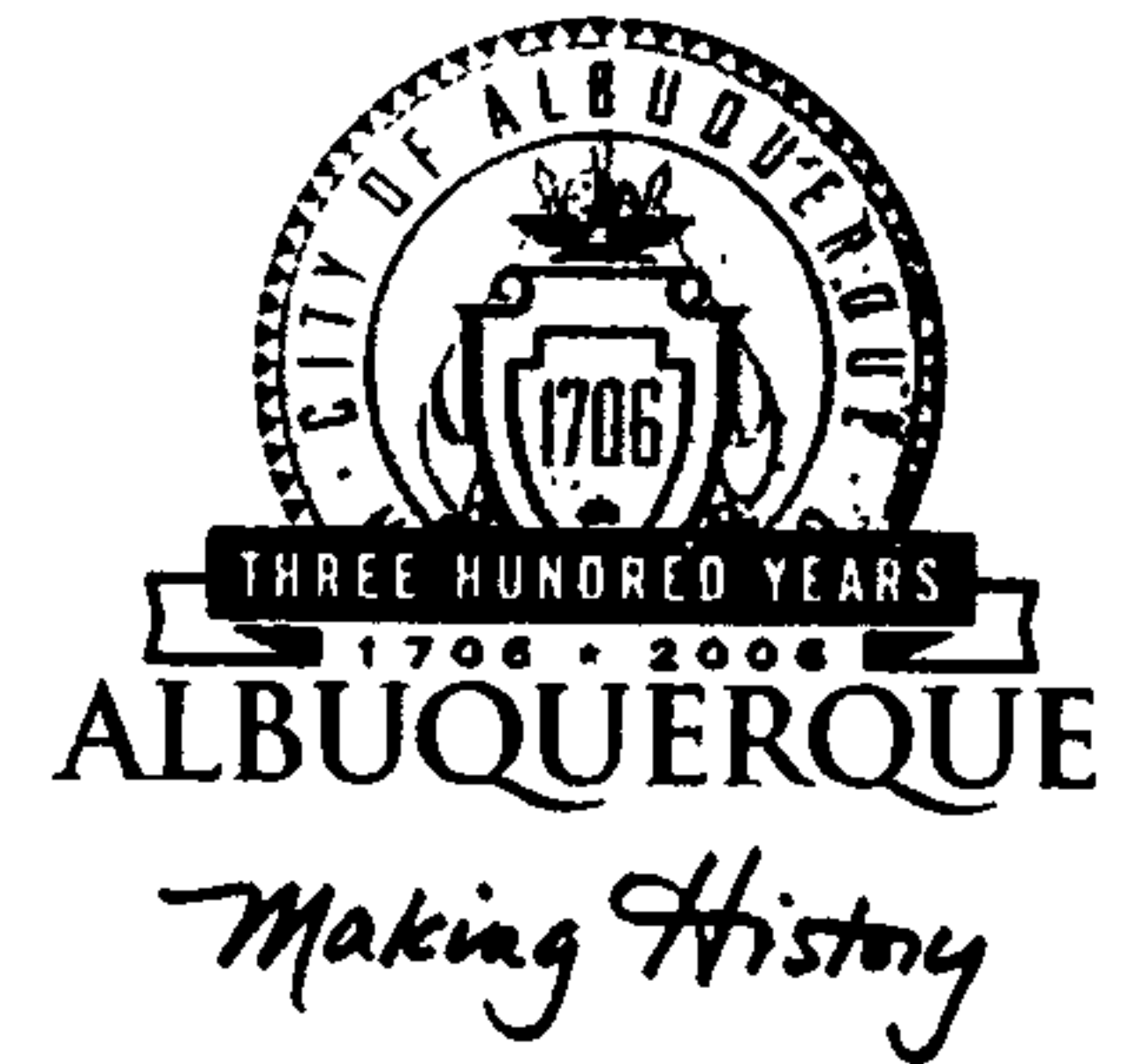
Sincerely,

Kristal D. Metro, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

www.cabq.gov

C: CO Clerk
File

CITY OF ALBUQUERQUE



October 25, 2005

J. Graeme Means, P.E.
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

**Re: Gateway West Business Park, Saul Bell & Oliver Rose NW
Grading and Drainage Plan
Engineer's Stamp dated 10-13-05 (K9-D23)**

Dear Mr. Means,

Based upon the information provided in your submittal received 10-14-05, the above referenced plan is approved for Building Permit and SO19 Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. **Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.**

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. If you have any questions regarding this permit please feel free to call the DMD Storm Drainage Design section at 768-3654 (Charles Caruso).

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

Sincerely,

Rudy E. Rael, Associate Engineer
Planning Department.
Development and Building Services

C: Charles Caruso
File

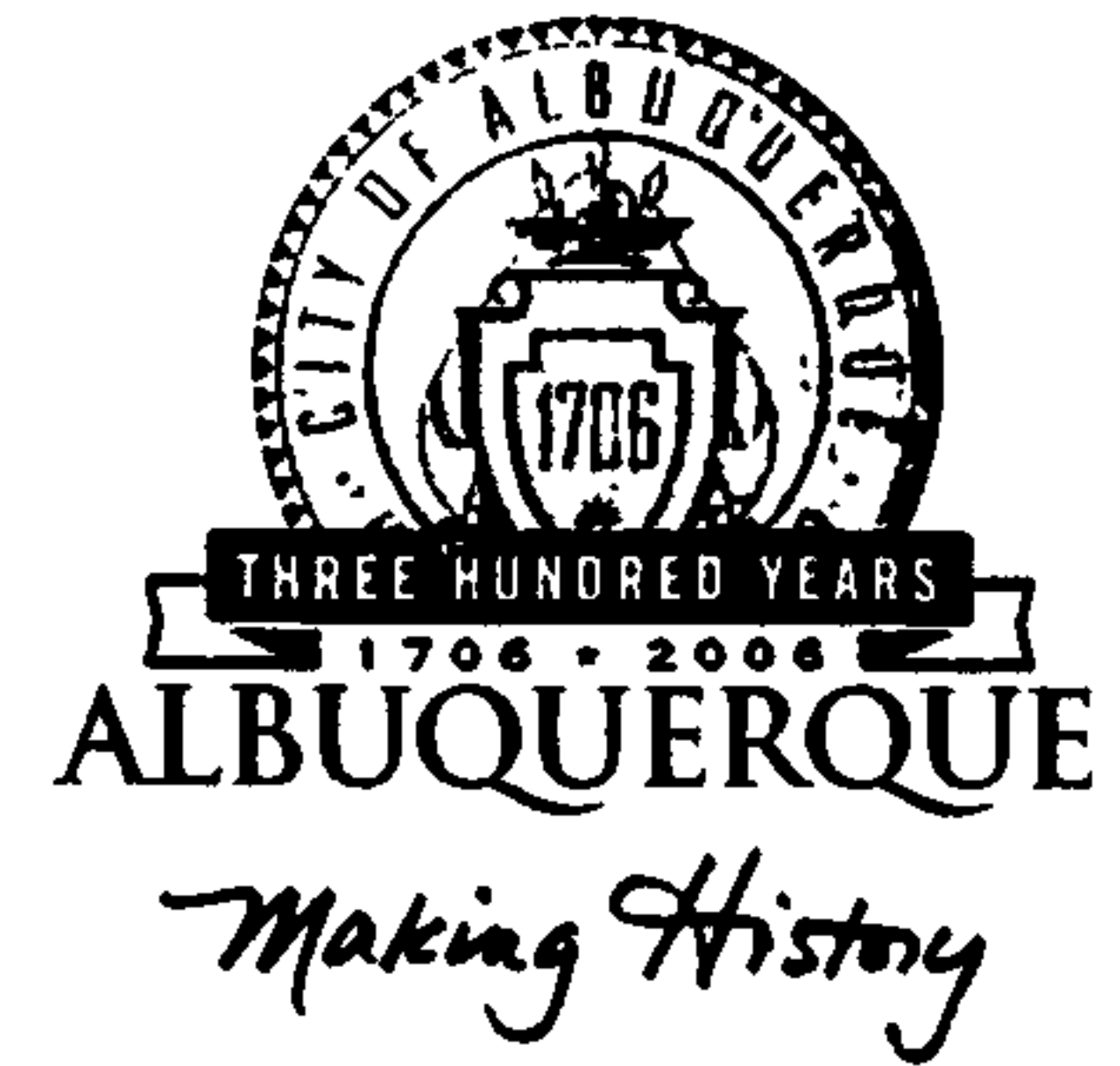
P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

CITY OF ALBUQUERQUE



July 13, 2005

J. Graeme Means, P.E.
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

**Re: Gateway West – Phase 1, 8551 Saul Bell Rd. NW, Grading & Drainage Plan
Engineer's Stamp dated 6-24-05 (K9-D23)**

Dear Mr. Means,

Based upon the information provided in your submittal dated 6-27-05, the above referenced plan is approved for Building Permit and SO19 Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology. Additionally, prior to release of the Certificate of Occupancy an Engineer's Certification of the grading plan per the DPM checklist will be required.

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 924-3990.

Sincerely,

Phillip J. Lovato, E.I., C.F.M.
Engineering Associate, Hydrology,
Development and Building Services,
Planning Department

cc: Charles Caruso, DMD
Liz Sanchez, Excavation & Barricading
Matt Cline, Storm Drain Maintenance
file

CITY OF ALBUQUERQUE



December 18, 2006

Mr. Graeme Means, PE
JEFF MORTENSEN & ASSOCIATES
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

Re: GATEWAY WEST, PHASE 1, BUILDING 1
8500 Los Volcanes NW
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 02/23/2006 (K-9/D23)
Certification dated 12/12/2006

P.O. Box 1293 Dear Graeme,

Based upon the information provided in your submittal received 12/13/2006, the above
referenced certification is approved for release of Permanent Certificate of Occupancy by
Albuquerque Hydrology.

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

New Mexico 87103

www.cabq.gov

Sincerely,

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

C: CO Clerk
File

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Gateway West - Phase 1, Bldg 1 ZONE ATLAS/DRNG. FILE #: K-9/D23
 DRB #: 1003057 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Tract A-2-C-1 Clifford West Ind. Park, Block 1, Unit 3
 CITY ADDRESS: 8500 Los Volcanes NW

ENGINEERING FIRM: Jeff Mortensen & Assoc., Inc. CONTACT: J. Graeme Means
 ADDRESS: 6010-B Midway Park Blvd. NE PHONE: (505) 345-4250
 CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: I-40 Gateway West LLC CONTACT: Bob Russell
 ADDRESS: 8585 East Hartford Drive, Suite 500 PHONE: 480-505-4048
 CITY, STATE: Scottsdale, AZ ZIP CODE: 85255

ARCHITECT: Industrial West Constructors LLC CONTACT: Ken
 ADDRESS: 2430 Midtown Place NE, Suite A PHONE: 341-0218
 CITY, STATE: Albuquerque, NM ZIP CODE: 87107

SURVEYOR: Tony Harris (Topo), Surveys Southwest (Platting) CONTACT: Owner
 ADDRESS: And Wayjohn (Staking and As-Built) PHONE: _____
 CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: Industrial West Constructors LLC CONTACT: Don Whitlow
 ADDRESS: _____ PHONE: 341-0218
 CITY, STATE: _____ ZIP CODE: _____

TYPE OF SUBMITTAL:

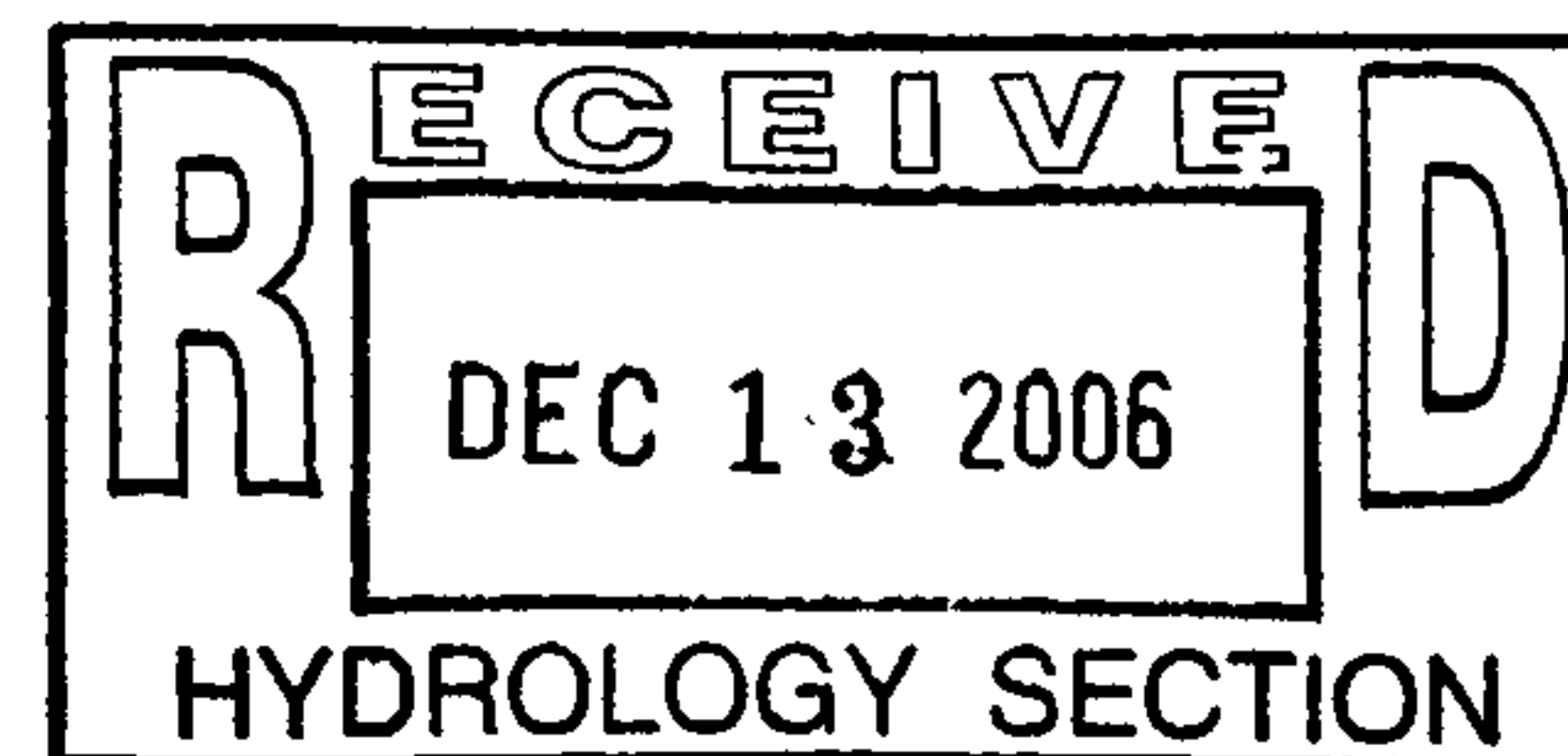
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal***
***DRB approved site plan will be TCL**
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION (HYDROLOGY) **BLDG 1**
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION 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
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☐ BUILDING PERMIT APPROVAL
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☐ CERTIFICATE OF OCCUPANCY (TEMP.)
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☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☐ NO
☐ COPY PROVIDED



DATE SUBMITTED: 12/13/2006 BY: J. Graeme Means

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 upon the following:

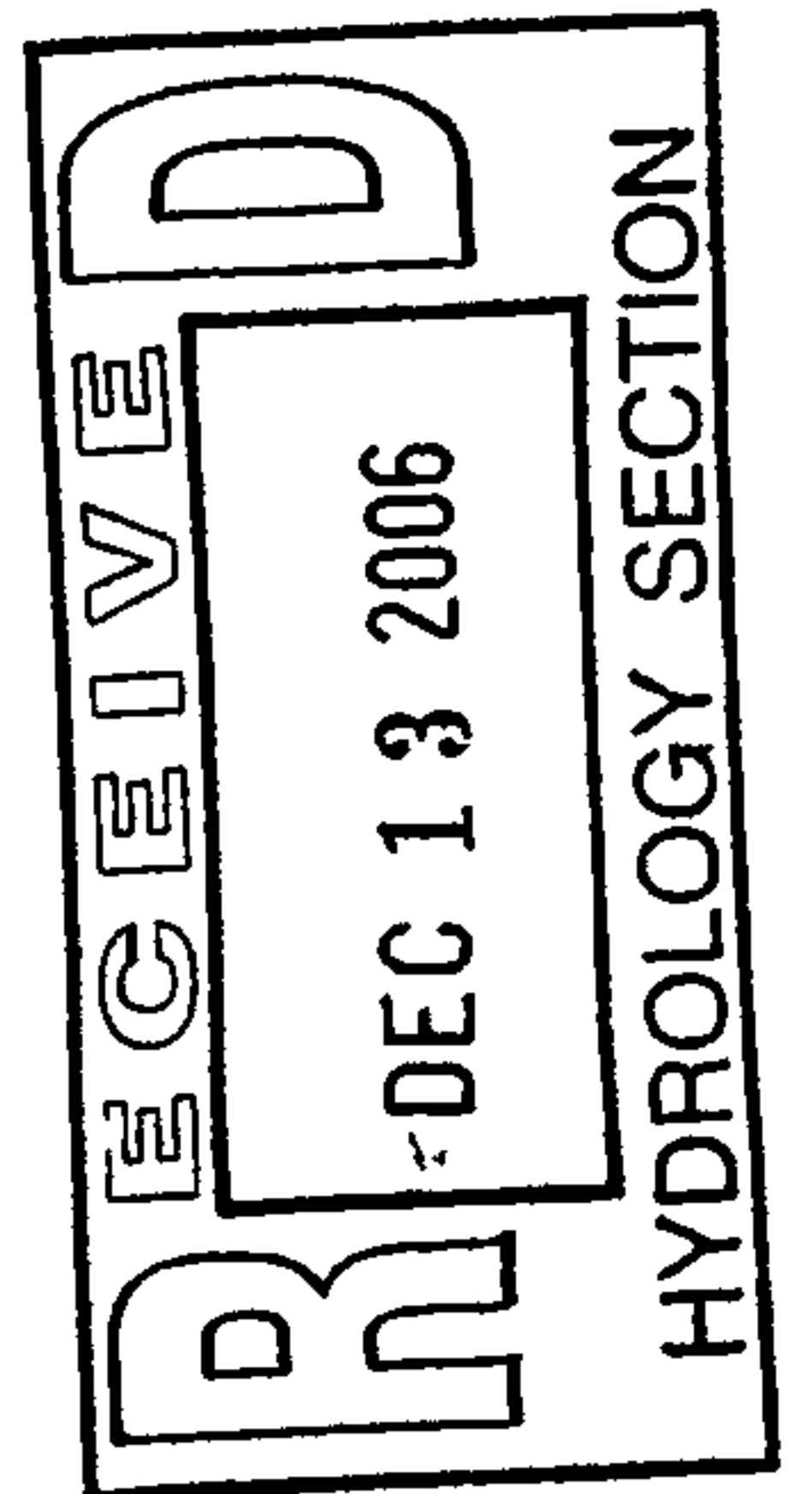
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3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

**CODE ADMINISTRATION DIVISION
CITY OF ALBUQUERQUE, P.O. BOX 1293
MECHANICAL SECTION**

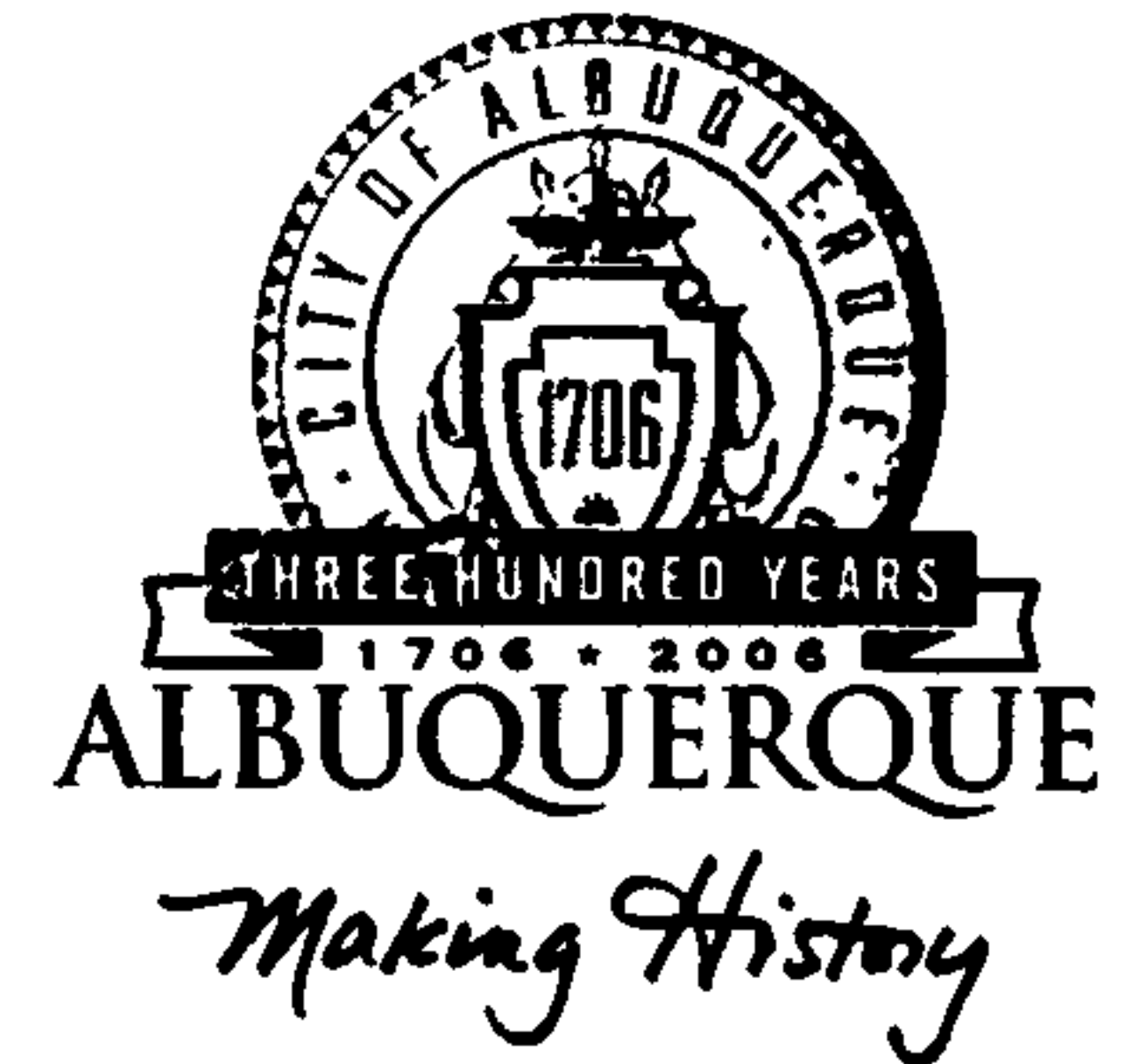
Location 8551 Saul Bell
Type of Inspection Storm Drain
Piping SE Corner
Date 11-07-06, 20____
Approved CARMINE
Inspector

FORM B-20

P111201



CITY OF ALBUQUERQUE



March 20, 2006

J. Graeme Means, P.E.
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

**Re: Gateway West Business Park – Phase 1, 8551 Saul Bell Road NW,
Grading and Drainage Plan
Engineer's Stamp dated 2-23-06 (K9-D23)**

Dear Mr. Means,

Based upon the information provided in your submittal received 2-27-06, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

A separate permit (SO#19) is required for construction within City Right of Way. A copy of this approval letter must be on hand when applying for the excavation permit. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. If you have any questions regarding this permit please feel free to call the DMD Storm Drainage Design section at 768-3654 (Charles Caruso).

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: Edward Elwell, DMD Street / Storm Maintenance
Liz Sanchez, Excavation Permits
Charles Caruso, DMD Storm Drainage Design
File

```

*2345678901234567890
*
* GATEWAY WEST - CLIFFORD INDISTRIAL PARK - 100 year storm
*
* JMA JOB NUMBER 2005.035.2
*
*
START          TIME = 0.0 HR PUNCH CODE = 0 PRINT LINES = -1
*
* RAINFALL DATA FROM DPM 22.2 - Zone 1
*
RAINFALL      TYPE = 2 RAIN QUARTER = 0.0
              RAIN ONE = 1.87 IN RAIN SIX = 2.20 IN
              RAIN DAY = 2.66 IN DT = 0.03333
*
* COMPUTE EXISTING CONDITIONS ENTIRE SITE (100% TREATMENT A)
*
COMPUTE NM HYD ID = 1 HYD NO = EXIST AREA = 0.01789063 SQ MI
              PER A = 100 PER B = 0 PER C = 0 PER D = 00
              TP = -0.13333 HRS MASS RAIN = -1
PRINT HYD     ID = 1 CODE = 1
*
*
* COMPUTE DEVELOPED CONDITIONS
*
* BASIN A
*
COMPUTE NM HYD ID = 2 HYD NO = BASINA AREA = 0.00109594 SQ MI
              PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4
              TP = -0.13333 HRS MASS RAIN = -1
PRINT HYD     ID = 2 CODE = 1
*
* UP TO 2.11 CFS WILL DRAIN TO INLET AND INTO OLIVER ROSS SD
* REMAINDER WILL SPILL TO BASIN B
*
DIVIDE HYD     ID = 2 Q = 2.11 ID I = 3 HYD NO = ATOSD
              ID II = 4 HYD NO = ASPILLTOB
PRINT HYD     ID = 3 CODE = 1
PRINT HYD     ID = 4 CODE = 1
*
* BASIN B
*
COMPUTE NM HYD ID = 5 HYD NO = BASINB AREA = 0.00399919 SQ MI
              PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4
              TP = -0.13333 HRS MASS RAIN = -1
PRINT HYD     ID = 5 CODE = 1
*
* ADD BASIN A OVERFLOW TO BASIN B
*
ADD HYD        ID = 6 HYD NO = BTOTAL ID I = 4 ID II = 5
PRINT HYD      ID = 6 CODE = 1
*
* BASIN C
*
COMPUTE NM HYD ID = 7 HYD NO = BASINC AREA = 0.00499315 SQ MI
              PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4
              TP = -0.13333 HRS MASS RAIN = -1
PRINT HYD     ID = 7 CODE = 1
*
* ADD TO GET TOTAL DEVELOPED FLOW TO POND

```

```
*
ADD HYD      ID = 8 HYD NO = DEVTOPOND ID I = 6 ID II = 7
PRINT HYD    ID = 8 CODE = 1
*
* BASIN D - TRACT A-2-C-2 AREA DRAINING TO POND
*
COMPUTE NM HYD  ID = 9 HYD NO = BASIND AREA = 0.00779563 SQ MI
              PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4
              TP = -0.13333 HRS MASS RAIN = -1
PRINT HYD     ID = 9 CODE = 1
*
* ADD BASIN D TO GET TOTAL OVERALL FLOW TO PONDS
*
ADD HYD      ID = 10 HYD NO = TOTALPOND ID I = 8 ID II = 9
PRINT HYD    ID = 10 CODE = 1
*
* ROUTE BASINS A-D THROUGH POND
*
ROUTE RESERVOIR  ID = 11 HYD NO = POND INFLOW ID = 10 CODE = 5
                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV(FT)
                0              0              30
                2.67           0.239           31
                4.63           0.478           32
                5.98           0.716           33
                7.07           0.955           34
                8.02           1.194           35
*
PRINT HYD     ID = 11 CODE = 1
*
* ADD POND OUTFALL TO BASIN A OUTFALL TO GET TOTAL SITE DISCHARGE
*
ADD HYD      ID = 12 HYD NO = TOTALOUT ID I = 3 ID II = 11
PRINT HYD    ID = 12 CODE = 1
*
FINISH

*****
```

AHYMO PROGRAM (AHYMO_97) -

- Version: 1997.02c

RUN DATE (MON/DAY/YR) = 03/20/2006

START TIME (HR:MIN:SEC) = 16:59:45 USER NO. = AHYMO-I-9702c0100021U-SH

INPUT FILE = H:\PROGRAMS\AHYMO_97\200503~1.2\GATEWA~1\Revised.txt

* GATEWAY WEST - CLIFFORD INDUSTRIAL PARK - 100 year storm

*

* JMA JOB NUMBER 2005.035.2

*

*

START TIME = 0.0 HR PUNCH CODE = 0 PRINT LINES = -1

*

* RAINFALL DATA FROM DPM 22.2 - Zone 1

*

RAINFALL TYPE = 2 RAIN QUARTER = 0.0

RAIN ONE = 1.87 IN RAIN SIX = 2.20 IN

RAIN DAY = 2.66 IN DT = 0.03333

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 19.964670 HOURS

.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0160	.0180	.0201	.0222	.0243
.0266	.0289	.0312	.0337	.0362	.0388	.0415
.0443	.0472	.0502	.0534	.0567	.0601	.0637
.0675	.0715	.0758	.0809	.0865	.0924	.1050
.1334	.1771	.2398	.3254	.4379	.5814	.7600
.9780	1.1804	1.2649	1.3363	1.3997	1.4575	1.5106
1.5600	1.6061	1.6493	1.6900	1.7284	1.7646	1.7989
1.8314	1.8623	1.8915	1.9193	1.9456	1.9518	1.9576
1.9630	1.9682	1.9732	1.9780	1.9825	1.9869	1.9912
1.9953	1.9993	2.0031	2.0068	2.0104	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0475	2.0502	2.0528	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0700	2.0723	2.0746
2.0768	2.0790	2.0812	2.0833	2.0855	2.0875	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1051	2.1070	2.1088	2.1106	2.1124	2.1141	2.1159
2.1176	2.1193	2.1210	2.1227	2.1244	2.1260	2.1276
2.1292	2.1308	2.1324	2.1340	2.1355	2.1371	2.1386
2.1401	2.1416	2.1431	2.1446	2.1460	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1600	2.1614	2.1627	2.1640	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1792	2.1804	2.1817	2.1829	2.1840	2.1852
2.1864	2.1876	2.1887	2.1899	2.1910	2.1922	2.1933
2.1944	2.1956	2.1967	2.1978	2.1989	2.2000	2.2013
2.2026	2.2039	2.2052	2.2065	2.2078	2.2091	2.2103
2.2116	2.2129	2.2142	2.2155	2.2167	2.2180	2.2193
2.2205	2.2218	2.2230	2.2243	2.2255	2.2268	2.2280
2.2293	2.2305	2.2318	2.2330	2.2342	2.2354	2.2367
2.2379	2.2391	2.2403	2.2415	2.2428	2.2440	2.2452
2.2464	2.2476	2.2488	2.2500	2.2512	2.2524	2.2536
2.2547	2.2559	2.2571	2.2583	2.2595	2.2606	2.2618
2.2630	2.2641	2.2653	2.2665	2.2676	2.2688	2.2699
2.2711	2.2722	2.2734	2.2745	2.2757	2.2768	2.2779
2.2791	2.2802	2.2813	2.2825	2.2836	2.2847	2.2858
2.2870	2.2881	2.2892	2.2903	2.2914	2.2925	2.2936
2.2947	2.2958	2.2969	2.2980	2.2991	2.3002	2.3013
2.3024	2.3035	2.3046	2.3057	2.3067	2.3078	2.3089
2.3100	2.3110	2.3121	2.3132	2.3142	2.3153	2.3164

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

*

* COMPUTE EXISTING CONDITIONS ENTIRE SITE (100% TREATMENT A)

*

COMPUTE NM HYD ID = 1 HYD NO = EXIST AREA = 0.01789063 SQ MI

PER A = 100 PER B = 0 PER C = 0 PER D = 00

TP = -0.13333 HRS MASS RAIN = -1

K = .163721HR TP = .133330HR K/TP RATIO = 1.227936 SHAPE CONSTANT, N = 2.899764

UNIT PEAK = 36.705 CFS UNIT VOLUME = .9993 B = 273.54 P60 = 1.8700

AREA = .017891 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID = 1 CODE = 1

HYDROGRAPH FROM AREA EXIST

RUNOFF VOLUME = .43925 INCHES = .4191 ACRE-FEET

PEAK DISCHARGE RATE = 14.85 CFS AT 1.533 HOURS BASIN AREA = .0179 SQ. MI.

*

* COMPUTE DEVELOPED CONDITIONS

*

* BASIN A

*

COMPUTE NM HYD ID = 2 HYD NO = BASINA AREA = 0.00109594 SQ MI

PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4

TP = -0.13333 HRS MASS RAIN = -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 3.7808 CFS UNIT VOLUME = .9965 B = 526.28 P60 = 1.8700

AREA = .000958 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .131021HR TP = .133330HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448

UNIT PEAK = .33876 CFS UNIT VOLUME = .9612 B = 327.09 P60 = 1.8700

AREA = .000138 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID = 2 CODE = 1

HYDROGRAPH FROM AREA BASINA

RUNOFF VOLUME = 2.13379 INCHES = .1247 ACRE-FEET

PEAK DISCHARGE RATE = 2.87 CFS AT 1.500 HOURS BASIN AREA = .0011 SQ. MI.

* UP TO 2.11 CFS WILL DRAIN TO INLET AND INTO OLIVER ROSS SD

* REMAINDER WILL SPILL TO BASIN B

DIVIDE HYD ID = 2 Q = 2.11 ID I = 3 HYD NO = ATOSD

ID II = 4 HYD NO = ASPILLTOB

PRINT HYD ID = 3 CODE = 1

HYDROGRAPH FROM AREA ATOSD

RUNOFF VOLUME = 2.13379 INCHES = .1187 ACRE-FEET

PEAK DISCHARGE RATE = 2.11 CFS AT 1.433 HOURS BASIN AREA = .0010 SQ. MI.

PRINT HYD ID = 4 CODE = 1

HYDROGRAPH FROM AREA ASPILLTOB

RUNOFF VOLUME = 2.13378 INCHES = .0060 ACRE-FEET

PEAK DISCHARGE RATE = .76 CFS AT 1.500 HOURS BASIN AREA = .0001 SQ. MI.

* BASIN B

COMPUTE NM HYD ID = 5 HYD NO = BASINB AREA = 0.00399919 SQ MI

PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4

TP = -0.13333 HRS MASS RAIN = -1

K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 13.796 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 1.8700

AREA = .003495 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .131021HR TP = .133330HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448

UNIT PEAK = 1.2362 CFS UNIT VOLUME = .9894 B = 327.09 P60 = 1.8700

AREA = .000504 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID = 5 CODE = 1

HYDROGRAPH FROM AREA BASINB

RUNOFF VOLUME = 2.13375 INCHES = .4551 ACRE-FEET

PEAK DISCHARGE RATE = 10.44 CFS AT 1.500 HOURS BASIN AREA = .0040 SQ. MI.

* ADD BASIN A OVERFLOW TO BASIN B

*

ADD HYD ID = 6 HYD NO = BTOTAL ID I = 4 ID II = 5

PRINT HYD ID = 6 CODE = 1

HYDROGRAPH FROM AREA BTOTAL

RUNOFF VOLUME = 2.13375 INCHES = .4611 ACRE-FEET

PEAK DISCHARGE RATE = 11.20 CFS AT 1.500 HOURS BASIN AREA = .0041 SQ. MI.
* BASIN C
*

COMPUTE NM HYD ID = 7 HYD NO = BASINC AREA = 0.00499315 SQ MI
PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4
TP = -0.13333 HRS MASS RAIN = -1
K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 17.225 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.8700
AREA = .004364 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
K = .131021HR TP = .133330HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 1.5434 CFS UNIT VOLUME = .9911 B = 327.09 P60 = 1.8700
AREA = .000629 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID = 7 CODE = 1

HYDROGRAPH FROM AREA BASINC
RUNOFF VOLUME = 2.13374 INCHES = .5682 ACRE-FEET
PEAK DISCHARGE RATE = 13.03 CFS AT 1.500 HOURS BASIN AREA = .0050 SQ. MI.
* ADD TO GET TOTAL DEVELOPED FLOW TO POND
*

ADD HYD ID = 8 HYD NO = DEVTOPOND ID I = 6 ID II = 7
PRINT HYD ID = 8 CODE = 1

HYDROGRAPH FROM AREA DEVTOPOND
RUNOFF VOLUME = 2.13374 INCHES = 1.0293 ACRE-FEET
PEAK DISCHARGE RATE = 24.23 CFS AT 1.500 HOURS BASIN AREA = .0090 SQ. MI.
* BASIN D - TRACT A-2-C-2 AREA DRAINING TO POND
*

COMPUTE NM HYD ID = 9 HYD NO = BASIND AREA = 0.00779563 SQ MI
PER A = 0 PER B = 12.6 PER C = 0 PER D = 87.4
TP = -0.13333 HRS MASS RAIN = -1
K = .072665HR TP = .133330HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 26.894 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.8700
AREA = .006813 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330
K = .131021HR TP = .133330HR K/TP RATIO = .982685 SHAPE CONSTANT, N = 3.593448
UNIT PEAK = 2.4097 CFS UNIT VOLUME = .9948 B = 327.09 P60 = 1.8700
AREA = .000982 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID = 9 CODE = 1

HYDROGRAPH FROM AREA BASIND
RUNOFF VOLUME = 2.13374 INCHES = .8871 ACRE-FEET
PEAK DISCHARGE RATE = 20.34 CFS AT 1.500 HOURS BASIN AREA = .0078 SQ. MI.
* ADD BASIN D TO GET TOTAL OVERALL FLOW TO PONDS
*

ADD HYD ID = 10 HYD NO = TOTALPOND ID I = 8 ID II = 9
PRINT HYD ID = 10 CODE = 1

HYDROGRAPH FROM AREA TOTALPOND
RUNOFF VOLUME = 2.13374 INCHES = 1.9165 ACRE-FEET
PEAK DISCHARGE RATE = 44.57 CFS AT 1.500 HOURS BASIN AREA = .0168 SQ. MI.
* ROUTE BASINS A-D THROUGH POND
*

ROUTE RESERVOIR ID = 11 HYD NO = POND INFLOW ID = 10 CODE = 5
OUTFLOW (CFS) STORAGE (AC FT) ELEV(FT)

0	0	30
2.67	0.239	31
4.63	0.478	32
5.98	0.716	33
7.07	0.955	34
8.02	1.194	35

* * * * *

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)

.00	.00	30.00	.000	.00
.17	.00	30.00	.000	.00
.33	.00	30.00	.000	.00
.50	.00	30.00	.000	.00
.67	.00	30.00	.000	.00
.83	.00	30.00	.000	.00
1.00	.00	30.00	.000	.00
1.17	.11	30.00	.000	.00
1.33	12.71	30.25	.060	.67
1.50	44.57	31.79	.428	4.22
1.67	22.24	33.41	.814	6.43
1.83	14.31	34.03	.963	7.10
2.00	10.46	34.32	1.031	7.37
2.17	4.77	34.35	1.039	7.40
2.33	2.24	34.12	.982	7.18
2.50	1.39	33.81	.910	6.87
2.67	.93	33.49	.834	6.52
2.83	.65	33.17	.757	6.17
3.00	.47	32.86	.682	5.79
3.17	.37	32.56	.611	5.38
3.33	.32	32.28	.544	5.01
3.50	.29	32.02	.482	4.65
3.67	.27	31.78	.425	4.19
3.83	.25	31.56	.374	3.77
4.00	.24	31.37	.328	3.40
4.17	.24	31.20	.286	3.06
4.33	.23	31.04	.250	2.76
4.50	.23	30.91	.217	2.43
4.67	.23	30.79	.189	2.11
4.83	.24	30.69	.165	1.85
5.00	.24	30.61	.145	1.62
5.17	.25	30.53	.127	1.42
5.33	.26	30.47	.112	1.25
5.50	.27	30.42	.100	1.11
5.67	.28	30.37	.089	.99
5.83	.29	30.33	.080	.89
6.00	.30	30.30	.072	.81
6.17	.34	30.28	.066	.74
6.33	.36	30.26	.061	.68
6.50	.36	30.24	.057	.64
6.67	.36	30.22	.053	.60
6.83	.36	30.21	.050	.56
7.00	.35	30.20	.048	.53
7.17	.35	30.19	.045	.51
7.33	.34	30.18	.043	.48
7.50	.34	30.17	.041	.46
7.67	.34	30.17	.040	.45
7.83	.33	30.16	.038	.43
8.00	.33	30.16	.037	.42
8.17	.33	30.15	.036	.40

8.33	.32	30.15	.035	.39
8.50	.32	30.14	.034	.38
8.67	.31	30.14	.033	.37
8.83	.31	30.14	.033	.36
9.00	.31	30.13	.032	.36
9.17	.31	30.13	.031	.35

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

9.33	.30	30.13	.031	.34
9.50	.30	30.13	.030	.34
9.67	.30	30.12	.030	.33
9.83	.30	30.12	.029	.33
10.00	.29	30.12	.029	.32
10.17	.29	30.12	.028	.32
10.33	.29	30.12	.028	.31
10.50	.28	30.12	.028	.31
10.67	.28	30.11	.027	.31
10.83	.28	30.11	.027	.30
11.00	.28	30.11	.027	.30
11.17	.28	30.11	.027	.30
11.33	.27	30.11	.026	.29
11.50	.27	30.11	.026	.29
11.67	.27	30.11	.026	.29
11.83	.27	30.11	.025	.28
12.00	.26	30.11	.025	.28
12.17	.26	30.10	.025	.28
12.33	.26	30.10	.025	.28
12.50	.26	30.10	.025	.27
12.67	.26	30.10	.024	.27
12.83	.25	30.10	.024	.27
13.00	.25	30.10	.024	.27
13.17	.25	30.10	.024	.26
13.33	.25	30.10	.023	.26
13.50	.25	30.10	.023	.26
13.67	.24	30.10	.023	.26
13.83	.24	30.10	.023	.26
14.00	.24	30.10	.023	.25
14.17	.24	30.09	.023	.25
14.33	.24	30.09	.022	.25
14.50	.23	30.09	.022	.25
14.67	.23	30.09	.022	.25
14.83	.23	30.09	.022	.24
15.00	.23	30.09	.022	.24
15.17	.23	30.09	.022	.24
15.33	.23	30.09	.021	.24
15.50	.23	30.09	.021	.24
15.67	.23	30.09	.021	.24
15.83	.22	30.09	.021	.23
16.00	.22	30.09	.021	.23
16.17	.22	30.09	.021	.23
16.33	.22	30.09	.021	.23
16.50	.22	30.09	.020	.23
16.67	.22	30.08	.020	.23
16.83	.21	30.08	.020	.22
17.00	.21	30.08	.020	.22
17.16	.21	30.08	.020	.22
17.33	.21	30.08	.020	.22
17.50	.21	30.08	.020	.22

17.66	.21	30.08	.019	.22
17.83	.21	30.08	.019	.22
18.00	.20	30.08	.019	.21
18.16	.20	30.08	.019	.21
18.33	.20	30.08	.019	.21
18.50	.20	30.08	.019	.21

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

18.66	.20	30.08	.019	.21
18.83	.20	30.08	.019	.21
19.00	.20	30.08	.018	.21
19.16	.20	30.08	.018	.21
19.33	.20	30.08	.018	.20
19.50	.19	30.08	.018	.20
19.66	.19	30.08	.018	.20
19.83	.19	30.08	.018	.20

PEAK DISCHARGE = 7.434 CFS - PEAK OCCURS AT HOUR 2.10
 MAXIMUM WATER SURFACE ELEVATION = 34.383
 MAXIMUM STORAGE = 1.0465 AC-FT INCREMENTAL TIME= .033330HRS

*
 PRINT HYD ID = 11 CODE = 1

HYDROGRAPH FROM AREA POND

RUNOFF VOLUME = 2.11388 INCHES = 1.8986 ACRE-FEET
 PEAK DISCHARGE RATE = 7.43 CFS AT 2.100 HOURS BASIN AREA = .0168 SQ. MI.

* ADD POND OUTFALL TO BASIN A OUTFALL TO GET TOTAL SITE DISCHARGE
 *

ADD HYD ID = 12 HYD NO = TOTALOUT ID I = 3 ID II = 11
 PRINT HYD ID = 12 CODE = 1

HYDROGRAPH FROM AREA TOTALOUT

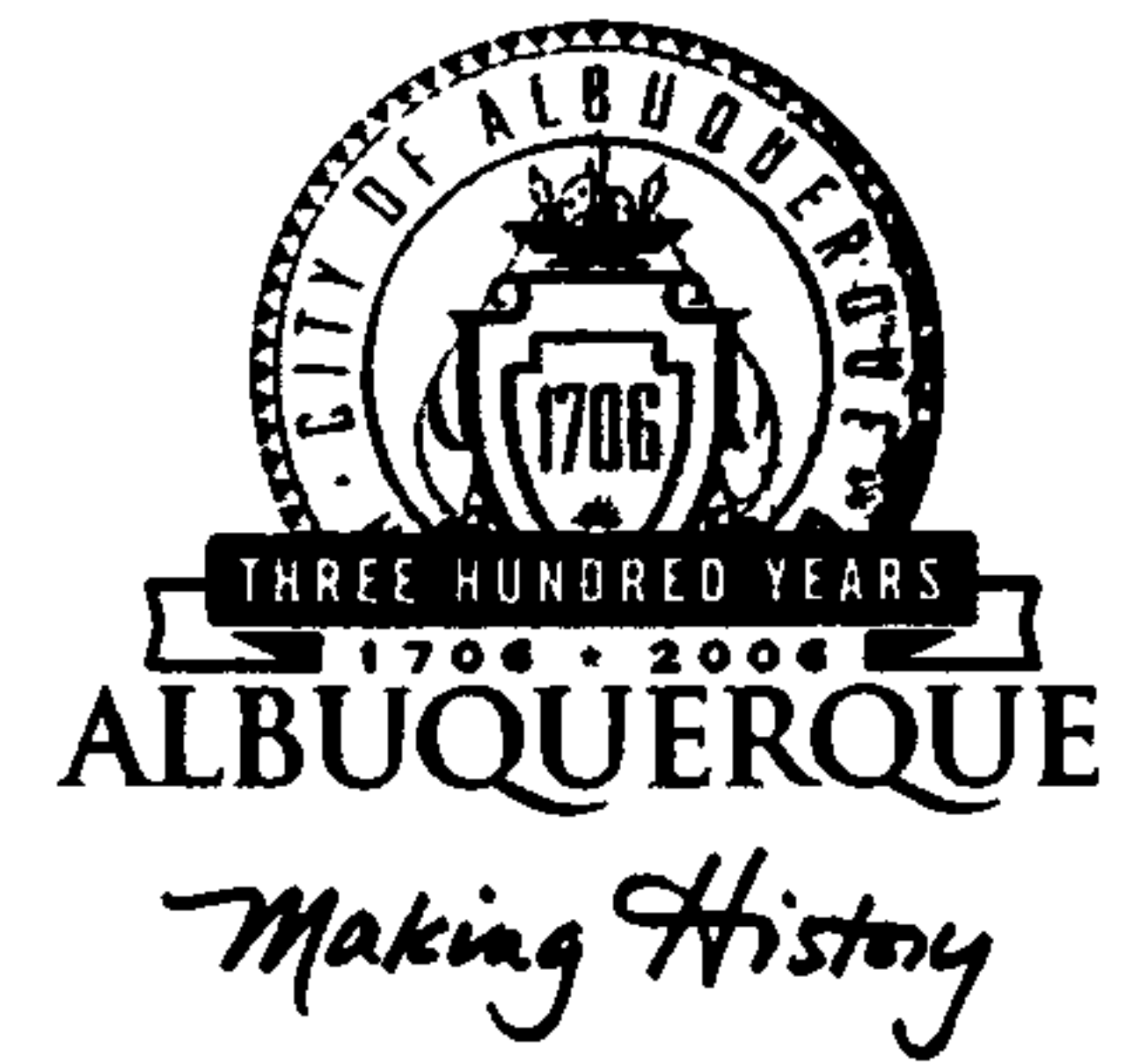
RUNOFF VOLUME = 2.11504 INCHES = 2.0173 ACRE-FEET
 PEAK DISCHARGE RATE = 8.06 CFS AT 1.933 HOURS BASIN AREA = .0179 SQ. MI.

*

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:59:45

CITY OF ALBUQUERQUE



June 10, 2005

J. Graeme Means, P.E.
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

**Re: Gateway West, Saul Bell Road NW, Site Development Plan
Engineer's Stamp dated 5-26-05 (K9-D23)**

Dear Mr. Means,

Based upon the information provided in your submittal received 5-27-05, the above referenced plan is approved for Site Development Plan for Building Permit action by the DRB.

P.O. Box 1293

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

Albuquerque

New Mexico 87103

C: file

www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Gateway West ZONE ATLAS/DRNG. FILE #: K-9/D23
 DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Tract A-2-C Clifford West Ind. Park, Unit 3 and Tracts 5-6, Block 1, Clifford West Ind. Park, Unit 1
 CITY ADDRESS: Saul Bell Rd NW

ENGINEERING FIRM: Jeff Mortensen & Assoc., Inc. CONTACT: J. Graeme Means
 ADDRESS: 6010-B Midway Park Blvd. NE PHONE: (505) 345-4250
 CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: I-40 Gateway West LLC CONTACT: Bob Russell
 ADDRESS: 8585 East Hartford Drive, Suite 500 PHONE: 480-505-4048
 CITY, STATE: Scottsdale, AZ ZIP CODE: 85255

ARCHITECT: Ken Hovey CONTACT: Ken
 ADDRESS: 3808 Simms Ave SE PHONE: 259-8458
 CITY, STATE: Albuquerque, NM ZIP CODE: 87108

SURVEYOR: Tony Harris (Topo) & Surveys Southwest (Platting) CONTACT: Owner
 ADDRESS: _____ PHONE: _____
 CITY, STATE: _____ ZIP CODE: _____

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

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)

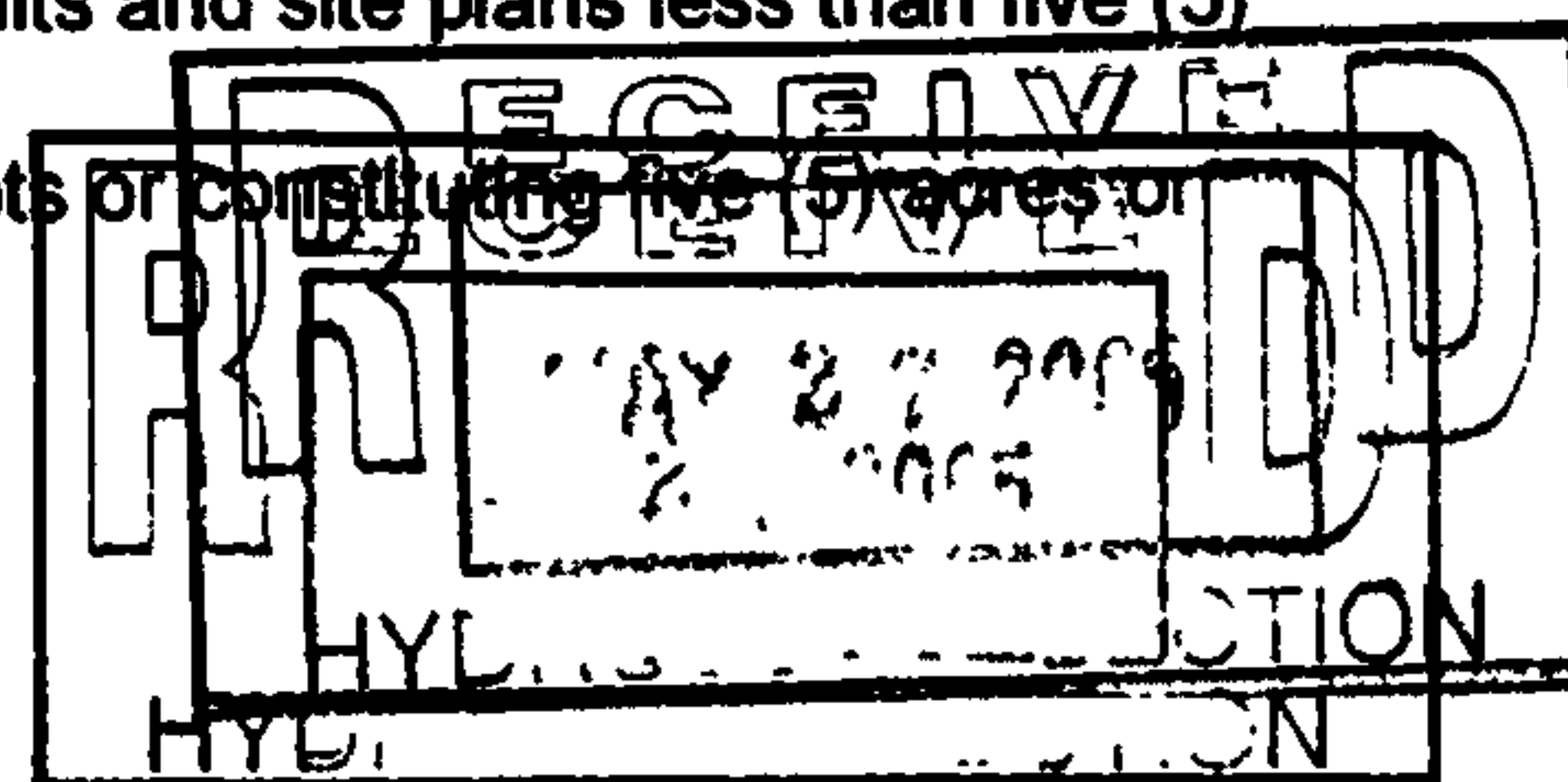
WAS A PRE-DESIGN CONFERENCE ATTENDED:

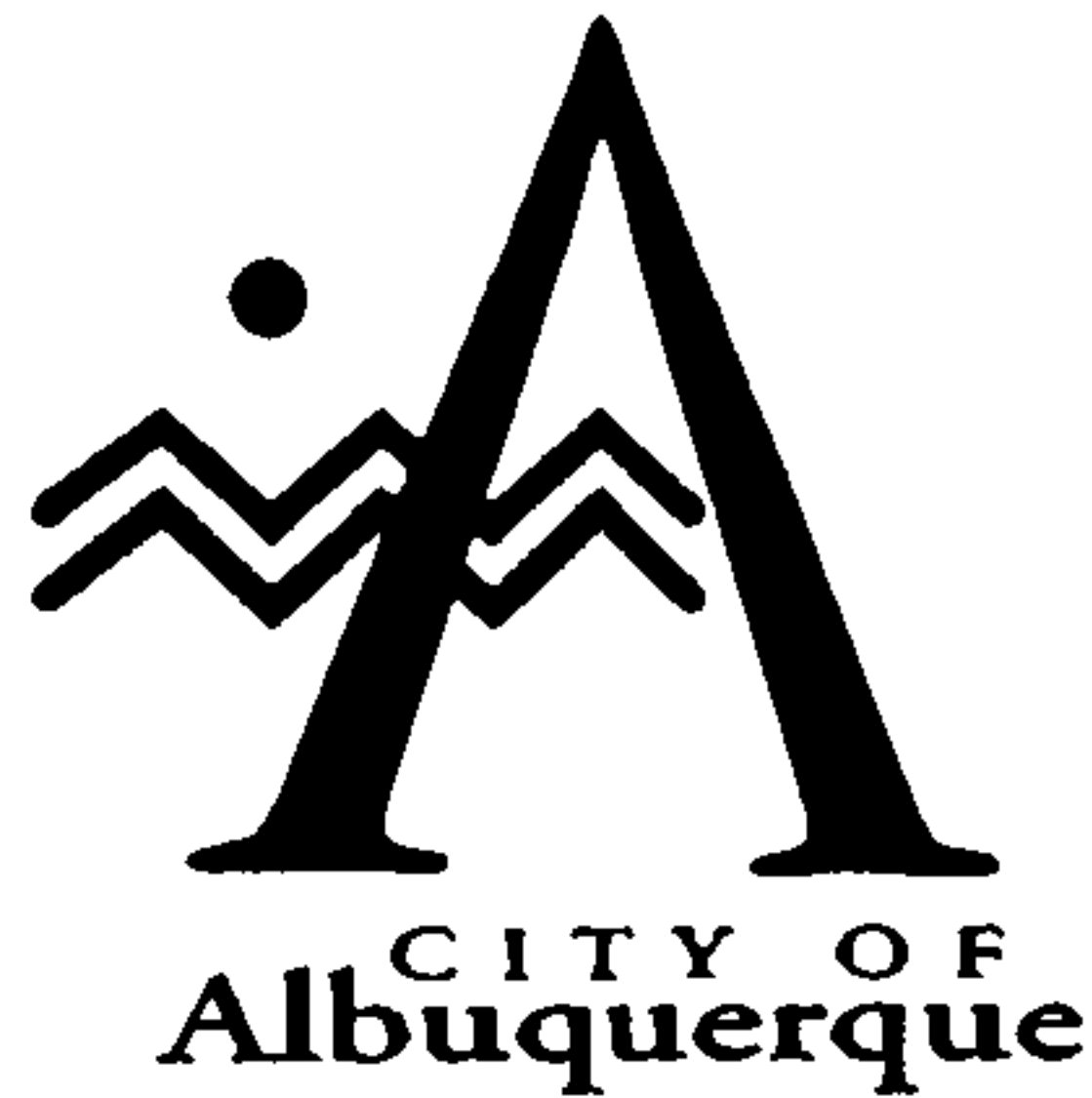
- ☐ YES
☒ NO
☐ COPY PROVIDED

DATE SUBMITTED: 05/27/05 BY: J. Graeme Means

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 upon the following:

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





Martin J. Chávez, Mayor
October 8, 1997

Diane Hoelzer
D. Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

K-9/023

RE: REVISED DRAINAGE PLAN FOR CLIFFORD WEST BUSINESS PARK ~~(#10-023)~~
REVISION DATED 9/12/97

Dear Ms. Hoelzer:

Based on the information provided on your September 15, 1997 resubmittal, the above referenced site is approved for Preliminary and Final Plat.

Also, please be advised that a site specific drainage plan for each lot will be required prior to Building Permit release.

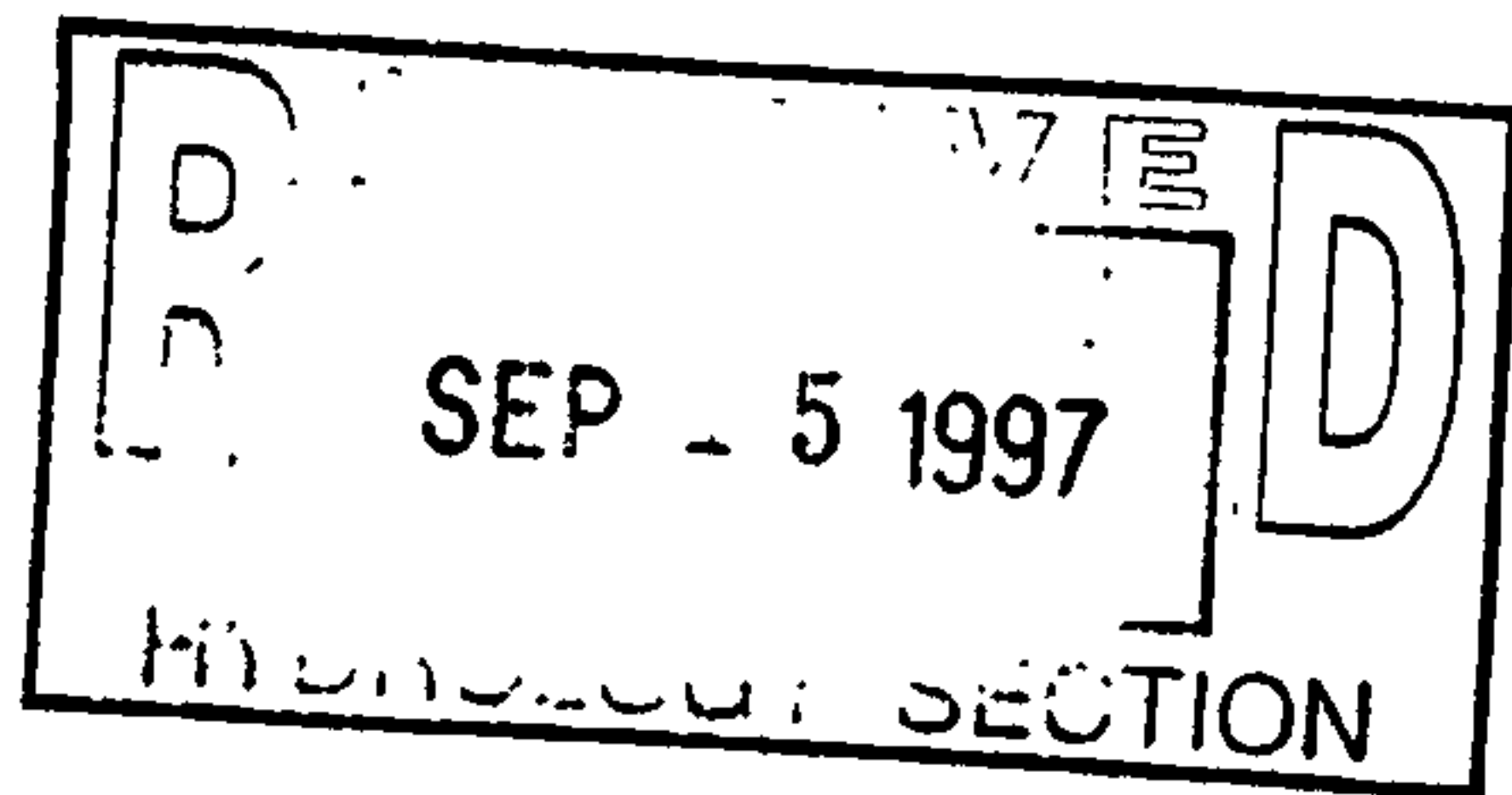
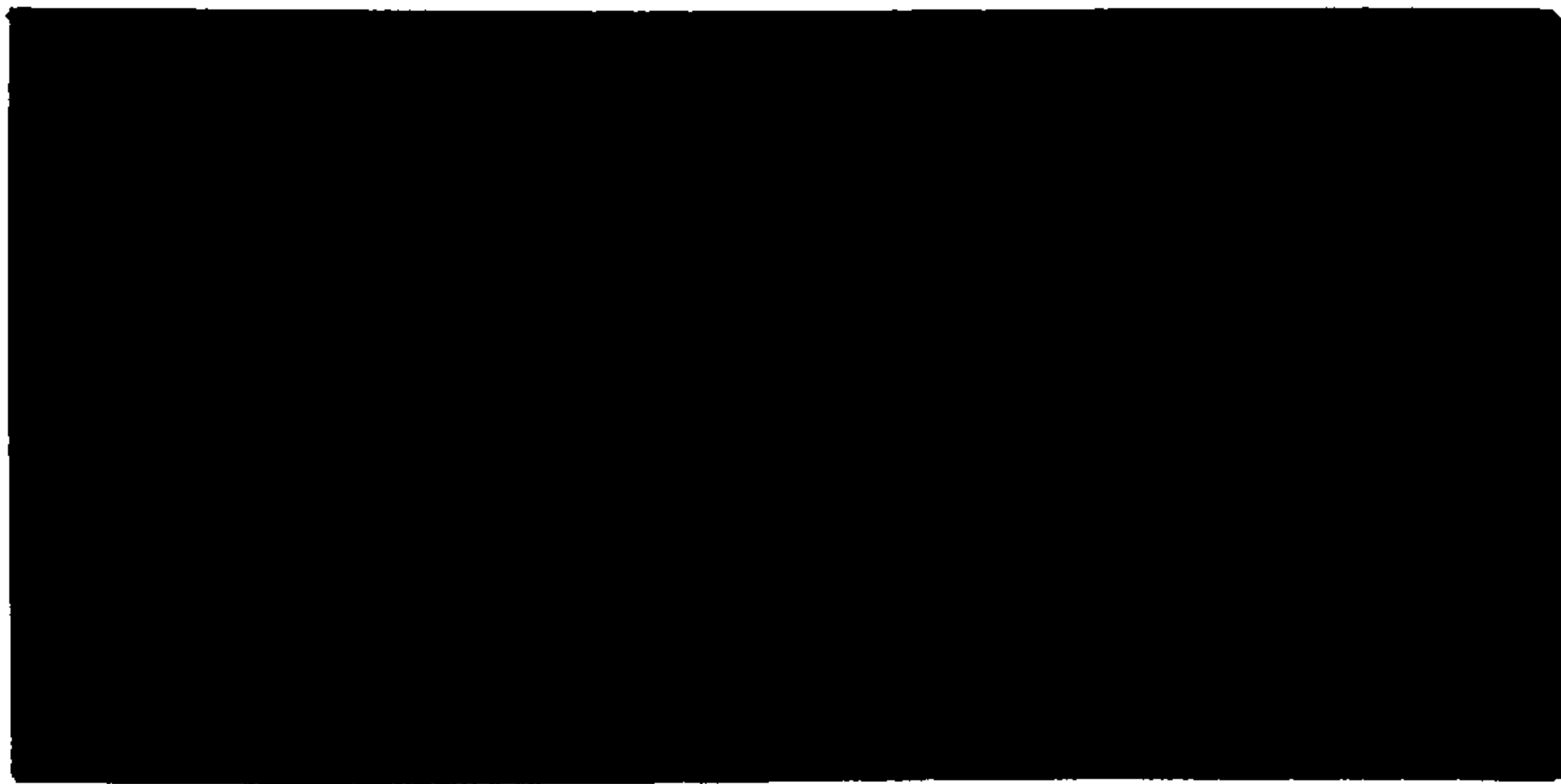
If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Associate Engineer





MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

dmg

D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 9-2-97
Prelim. Plat Approved 9/25/98
Prelim. Plat Expires 9/25/98

① REVISED 4.14.98
② REVISED 6/2/98

Figure 12
EXHIBIT "A"

To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Clifford West Business Park

Unit 1 & 2 ~~Master Plan~~ ~~Plat~~ ~~9/11/98~~

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
------	------------------	----------	------	----

UNIT 1

TRANSPORTATION				
40' FF	Pvmt.	Saul Bell Rd.	Unser Blvd.	Oliver Ross Rd.
6'	~~Sdwrk (both sides)~~ C & G (both sides)			
40' FF	Pvmt.	Oliver Ross Rd.	Bluewater Rd.	Unit 1 / ~~X~~ boundary
6'	~~Sdwrk (both sides)~~ C & G (Both sides)			
25'	Pvmt.	Bluewater Rd	Exist Pvmt.	W to Unit 1 / ~~X~~ boundary
6'	~~Sdwrk (north side)~~ C & G (n. side)		Exist. Pvmt	W to Unit 1 / ~~X~~ Bndy
6'	gmm Sdwrk north side Bluewater			2 ~~DLH~~ 4-14
10" (2WR)	Waterline	Saul Bell Rd.	Unser Blvd	Oliver Ross Rd.
10" (2WR)	Waterline	Oliver Ross Rd.	Bluewater Rd.	Saul Bell Rd. 2 ~~DLH~~ 4-14
10" (2WR)	Waterline	Bluewater Rd	Exist 10" WL	West to Unit ~~X~~ P.L. ①
SANITARY SEWER				
8"	Sanitary Sewer	Saul Bell Rd.	Loc D-12 3 ~~DLH~~ 4-14 ①	Oliver Ross Rd.
8"	Sanitary Sewer	Oliver Ross Rd.	Unit 1 / ~~X~~ boundary	Bluewater Rd. 2 ~~DLH~~ 4-14 ①
10"	Sanitary Sewer	Bluewater Rd.	Exist 10" SAS	W to 1 / ~~X~~ boundary



Judy D. Woodward

Born Co. AGRE

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D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 9-2-97
Prelim. Plat Approved 9/9/97
Prelim. Plat Expires 9/25/98

REVISED 4/14/98

Size	Type Improvement	Location	From	To
STORM DRAIN				
18"-36" SD	Storm Drain & Appurtenances	Bluewater Rd.	Unser Blvd.	Oliver Ross Rd.
18"SD	Storm Drain & Appurtenances	Oliver Ross Rd.	Bluewater Rd.	Unit 1 / boundary
18"SD	Storm Drain & Appurtenances	Saul Bell Rd.	Oliver Ross Rd.	Lot D-12

UNIT II

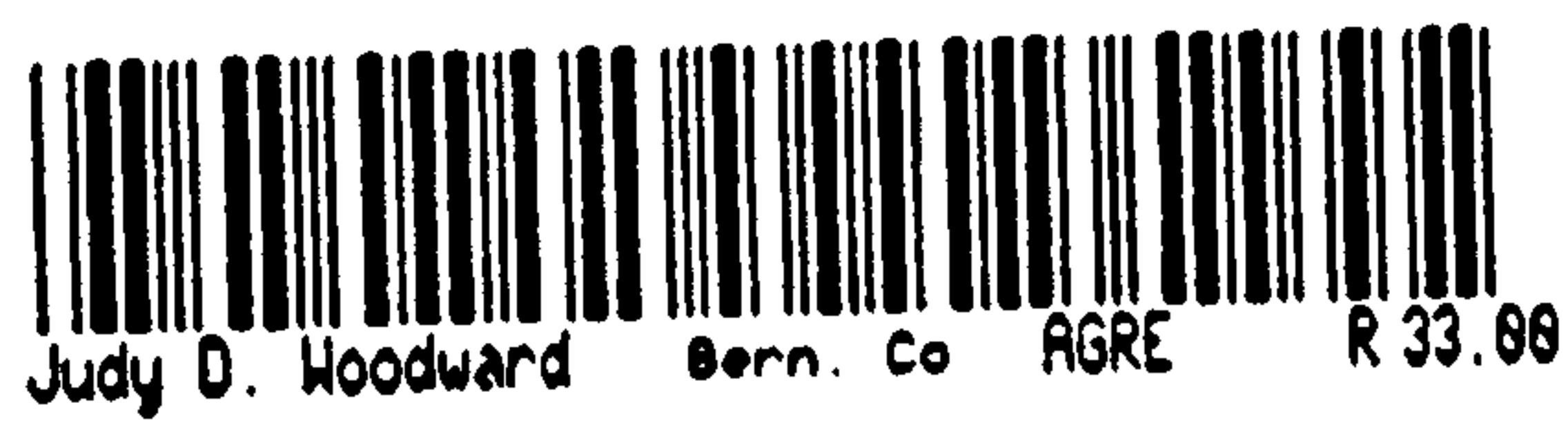
TRANSPORTATION (cont. sht 3)				
40' FF 6"	<i>9MM 1/2 Traffic Signal (#37K)</i> Pvmt. ~~Sdwt (both sides)~~ C & G <i>both sides 9MM</i>	Oliver Ross Rd.	Lot B-4	Los Volcanes Rd.
25' 6"	Pvmt. ~~Sdwt (south side)~~ C&G <i>both side 9MM</i>	Los Volcanes Rd.	Unser Blvd.	West to Unit 3 P.L.
25'	Pvmt. C&G	32' Private Access Easement	Saul Bell Rd.	Lot 3, Blk. 1
25'	Pvmt. C&G	32' Private Access Easement	Saul Bell Rd.	Lot 3, Blk. 2
WATER (cont. sht 3)				
10"(2W)	Waterline	Oliver Ross Rd.	Saul Bell Rd.	Los Volcanes Rd.
12"(2W)	Waterline	Los Volcanes	Unser Blvd.	West to Unit 3 P.L.
12"(2W)	Waterline	Unser Blvd.	Exist 12" Waterline	Los Volcanes Rd.
SANITARY SEWER (cont. sht 3)				
12"	Sanitary Sewer	Los Volcanes Rd.	Exist Unser Blvd.	West to Unit 3 P. L.
8"	Sanitary Sewer	Oliver Ross Rd.	Unit 1 / 2 boundary	Los Volcanes Rd.

8" *9MM* *SAS Extensions* *Lot 3 & 4, Blk 1* *From Unser in Public Easement*
2 of 4
Lots 2 & 3
Blk 2

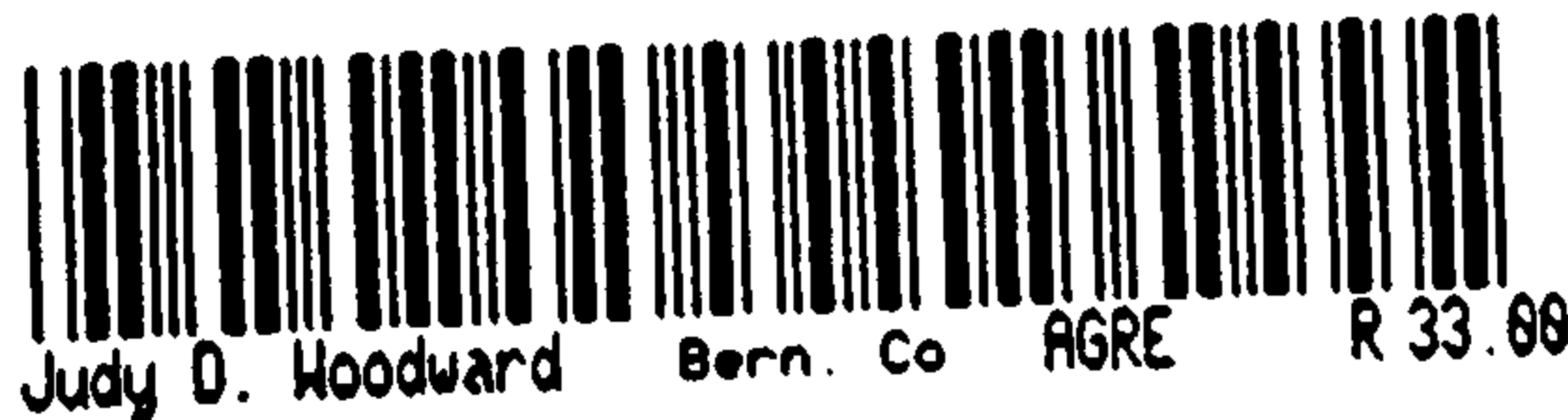
97-138
-a/b

D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 8-2-97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
STORM DRAIN				
18"SD	Storm Drain & Appurtenances	Oliver Ross Rd.	Lot B-1	Unit 1 / 2 boundary
TRANSPORTATION				
25' 6"	Pvmt. Sdwnk (South side) C & G <i>Both sides</i>	Los Volcanes Rd.	Unit 2 / 3 boundary	West Unit 3 P.L.
25' 6"	Pvmt. Sdwnk (North side) C & G	Bluewater Rd.	Unit 2 / 3 boundary	West Unit 3 P.L.
WATER				
12" (2W)	Waterline	Los Volcanes Rd.	Unit 2 / 3 boundary	West Unit 3 P.L.
20" (2W)	Waterline	20' Easement	Los Volcanes Rd.	Bluewater Rd.
20" (2W)	Waterline	Bluewater Rd.	20' Easement	West to Unit 3 P.L.
10" (2WR)	Waterline	Bluewater Rd.	Unit 1 / 3 boundary	West to 5140' Contour
SANITARY SEWER				
12"	Sanitary Sewer	Los Volcanes Rd.	Unit 2 / 3 boundary	West to Unit 3 P.L.
10"	Sanitary Sewer	Bluewater Rd.	Unit 1 / 3 boundary	West to Unit 3 P.L.
8" 4mm	Waterline	Lots ~~3 & 4~~ , Bk 2 From Unser in Public Easmts		



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D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 9-2-97
Prelim. Plat Approved 9-9-97
Prelim. Plat Expires 9-25-99
Δ DLH 4-14-98

Figure 12
EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Clifford West Business Park
UNIT II AND III

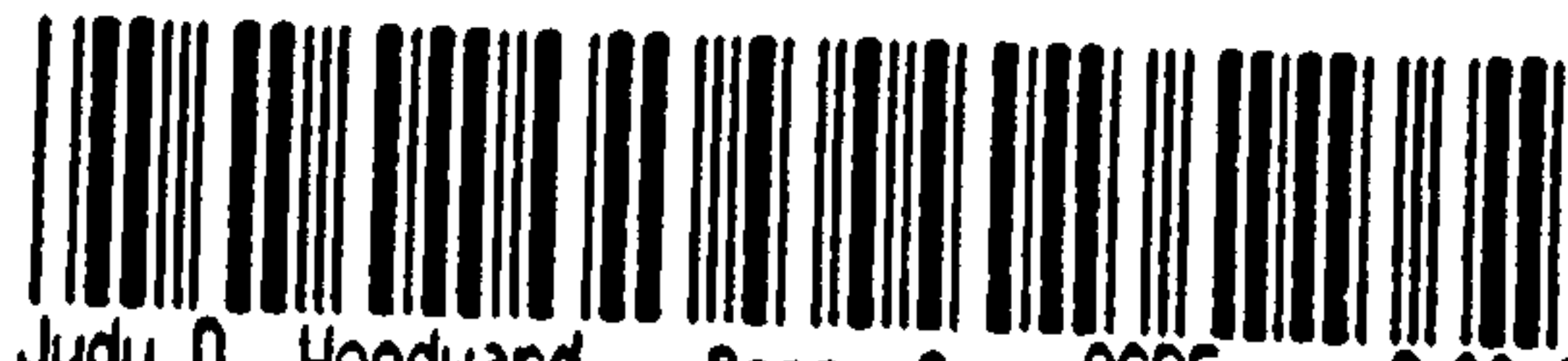
Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
UNIT II				
TRANSPORTATION				
25'	Pvmt. C&G (South side)	Los Volcanes Rd.	Unser Blvd.	West to Unit 2 P.L.
25' **	Pvmt.	Los Volcanes Rd.	Unit 2 / 3 boundary	West to Unit 2 P.L.
6' **	Sdwk (South side)			
**	C&G (South side)			
25' **	Pvmt.	Bluewater Rd.	Unit ~~X/X~~ ^{1 2 Δ} boundary	West to Unit 2 P.L.
6' **	Sdwk (North side)			
**	C & G (North Side)			
Δ 2/6 Traffic Signal 27,260)		Bluewater/Unser Blvd.		
12" (2W)	Waterline	Los Volcanes	Unser Blvd.	West to Unit 2 P.L.
20" (2W)	Waterline	20' Easement	Los Volcanes Rd.	Bluewater Rd.
12" (2W) **	Waterline	Los Volcanes Rd.	Unit 2 / 3 boundary	West to Exist. 12" WL Δ
8" 20" (2W) **	Waterline	Bluewater Rd.	20' Easement	E to 5140' Contour West to Unit 2 P.L.
10" (2WR) **	Waterline	Bluewater Rd.	Unit 1 / 2 boundary	West to 5140' Contour
SANITARY SEWER				
12"	Sanitary Sewer	Los Volcanes Rd.	Exist Unser Blvd.	West to Unit 2 P. L.
12" **	Sanitary Sewer	Los Volcanes Rd.	Unit 2 / 3 boundary	West to Unit 2 P.L.
10" **	Sanitary Sewer	Bluewater Rd.	Unit 1 / 2 boundary	West to Unit 2 P.L.

97-138

D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 9-2-97
Prelim. Plat Approved 9-9-97
Prelim. Plat Expires 9-25-98

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
STORM DRAIN				
18"SD	Storm Drain Inlet & Appurtenances	Los Volcanes Rd. (South side)	@ Unser Blvd.	
UNIT III				
TRANSPORTATION				
~~25' (E to E)~~	~~Pvmt.~~	32' Private Access Easement	Saul Bell Rd.	Lot 3, Blk. 1
~~25' (E to E)~~	~~Pvmt.~~	32' Private Access Easement	Saul Bell Rd.	Lot 3, Blk. 2
~~40' FF~~	~~Pvmt.~~	Oliver Ross Rd.	Lot 4, Blk 3	Los Volcanes Rd.
~~1/6 n(9740) Traffic Signal Bluewater/Unser Blvd.~~				
8" (2W)	Waterline	Oliver Ross Rd.	Saul Bell Rd.	Los Volcanes Rd.
8"	Waterline Extensions	Lot 2 & 3, Blk 2	From Unser Blvd. In Public Esmts.	
SANITARY SEWER				
8"	Sanitary Sewer	Oliver Ross Rd.	Unit 1 / 3 boundary	Lot 1, Blk 3
8"	Sanitary Extensions	Lot 3 & 4, Blk 1	From Unser Blvd. In Public Esmts.	
8"	Sanitary Extensions	Lot 3 & 4, Blk 2	From Unser Blvd. In Public Esmts.	
8"	Sanitary Extensions	Lot 2, Blk 1	From Unser Blvd. In Public Esmts.	
8"	Sanitary Extensions	Lot 1, Blk 2	From Unser Blvd. In Public Esmts.	
STORM DRAIN				
18"SD	Storm Drain & Appurtenances	Oliver Ross Rd.	Lot 1, Blk 3	Unit 1 / ~~3~~ boundary
18"SD	Storm Drain & Appurtenances	Lot 2/3, Blk 2	Extension from Unser Blvd. Inlet to P.L.	



Judy D Woodward

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D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 9-2-97
Prelim. Plat Approved 9-9-97
Prelim. Plat Expires 9-16-98

Size	Type Improvement	Location	From	To
18"SD	Storm Drain & Appurtenances	Lot 4, Blk 1	Extension from Unser Blvd. Inlet to P.L.	

**** Items to be deferred in Unit II.**

Storm Drain infrastructure to include manholes, inlets, riprap and outfall.

Water infrastructure to include valves, fittings, valve boxes, fire hydrants and service connections.

Sanitary Sewer infrastructure to include manholes and service connections.

Prepared By: Diane Hoelzer

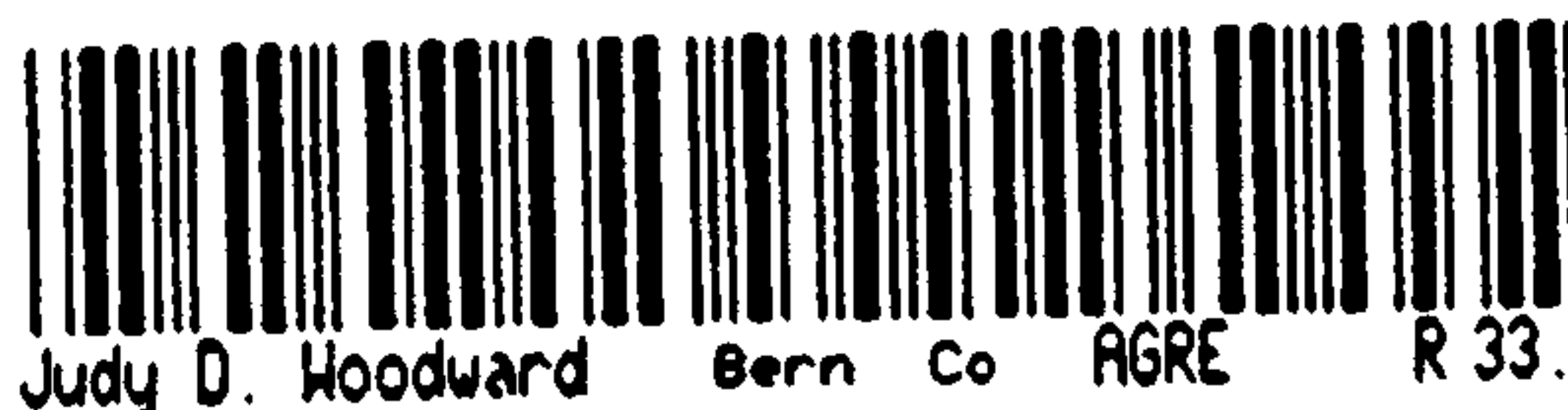
Print Name: Diane Hoelzer, PE

Firm: Mark Goodwin & Associates, PA

.....
Development Review Board Member Approvals

Transportation Development	Date	Utility Development	Date
Planning Section, CIP	Date	City Engineer/AMAFCA	Date
DRB Chairperson	Date		

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Judy D. Woodward

Bern Co

AGRE

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2013
6/7

D.R.B. Case No. 97-138
D.R.C. Project No. _____
Date Submitted 9/29/97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

SEE ABOVE

* Item to be deferred until warranted by traffic operations

Stormdrain to include manholes, inlets, riprap and outfall.

Water infrastructure to include valves, fittings, valve boxes, fire hydrants and service connections.

Sanitary sewer to include manholes and service connections.

Prepared By: Diane Hoelzer

Print Name: Diane Hoelzer, PE

Firm: Mark Goodwin & Associates, PA

△ REVISED PHASING (UNITS)
2 → 3 3 → 2.
INSERT REVISED SHEETS
4-6.

△ 6-2-98 REVISION

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Development Review Board Member Approvals

6-2-98
Mark Goodwin 4-14-98 9-09-97

Transportation Development

Date

Utility Development

City Engineer/AMAC/CA

Planning Section, CIP

DRB Chairperson

Roger A. Shree 4/14/98 9-9-97

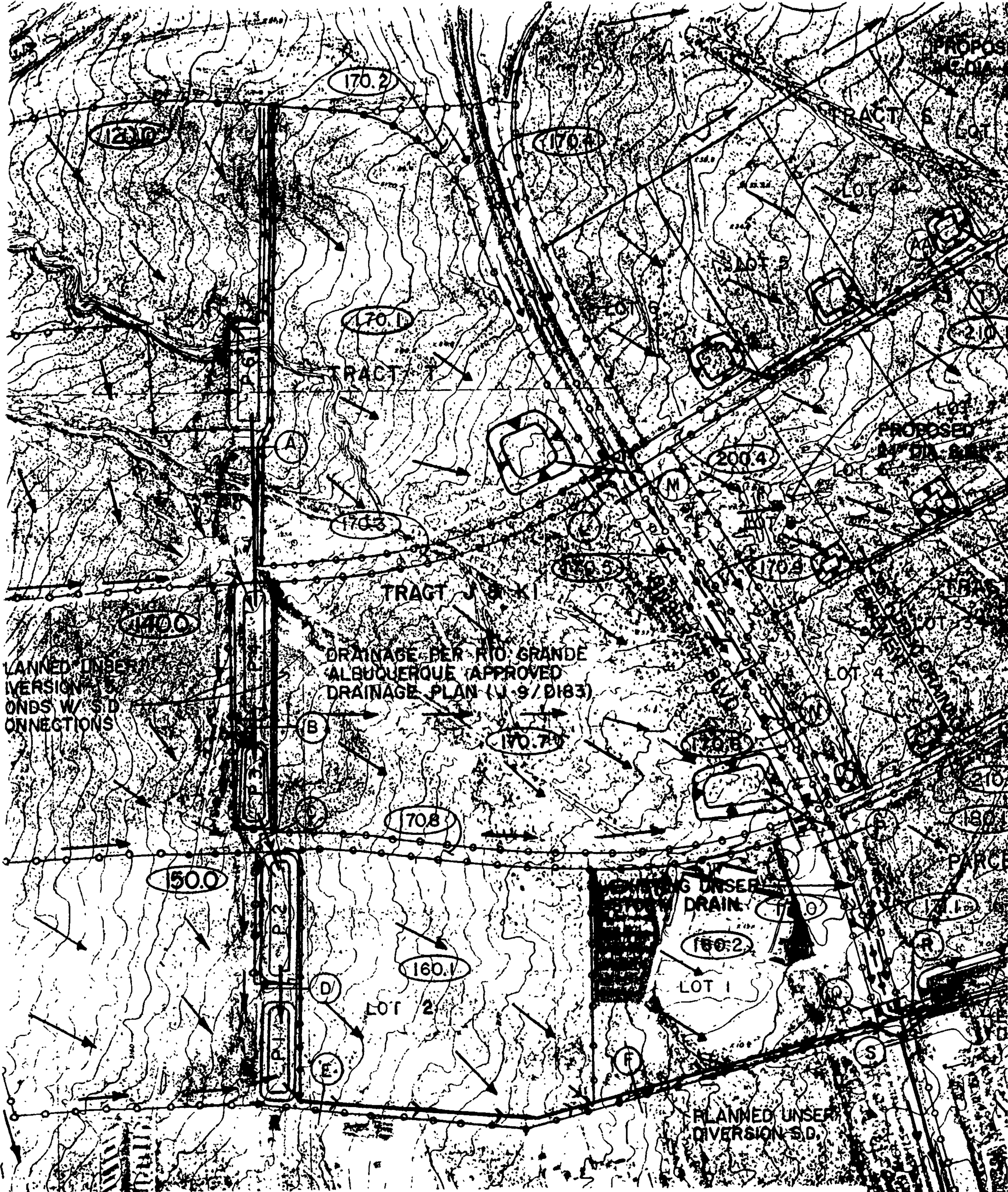
Frank J. Aguin 4/14/98 9-9-97

7/1/98 6/2/98



Judy D. Woodward Bern. Co. AGRE R 33.00

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WED
ASE

UNSER DIVERSION STORM DRAIN DATA SUMMARY

ANALYSIS	AHYMO	PIPE DIAMETER	PIPE SLOPE	FULL PIPE CAPACITY	FULL PIPE VELOCITY	1/4 FULL PIPE CAPACITY	1/4 FULL PIPE VELOCITY	Q ₁₀₀

File

~~RECEIVED~~ K9002
Brad/Hydrology

K9/D23

**PRIVATE FACILITY
DRAINAGE COVENANT**

This Drainage Covenant, between [state the name of the present real property owner exactly as shown on the real estate document conveying title to the present owner and state the legal status of the owner, for example, "single person" "husband and wife," "corporation of the State of _____," or "partnership":] I-40 Gateway West LLC, a New Mexico LLC ("Owner"), whose address is 8585 East Hartford Drive, Suite 500, Scottsdale, Arizona 85255, and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. The Owner is the owner of the following described real property located at [give legal description, and street address:] Tracts A-2-C-1 and A-2-C-2, Clifford West Industrial Park, Block 1, Unit 2, NW Corner of Saul Bell Rd NW and Unser Blvd NW (Bk 2005C, pg 194) in Bernalillo County, New Mexico (the "Property").

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain drainage facilities on the Property, and the parties wish to enter into this Covenant to establish the obligations and responsibilities of the parties.

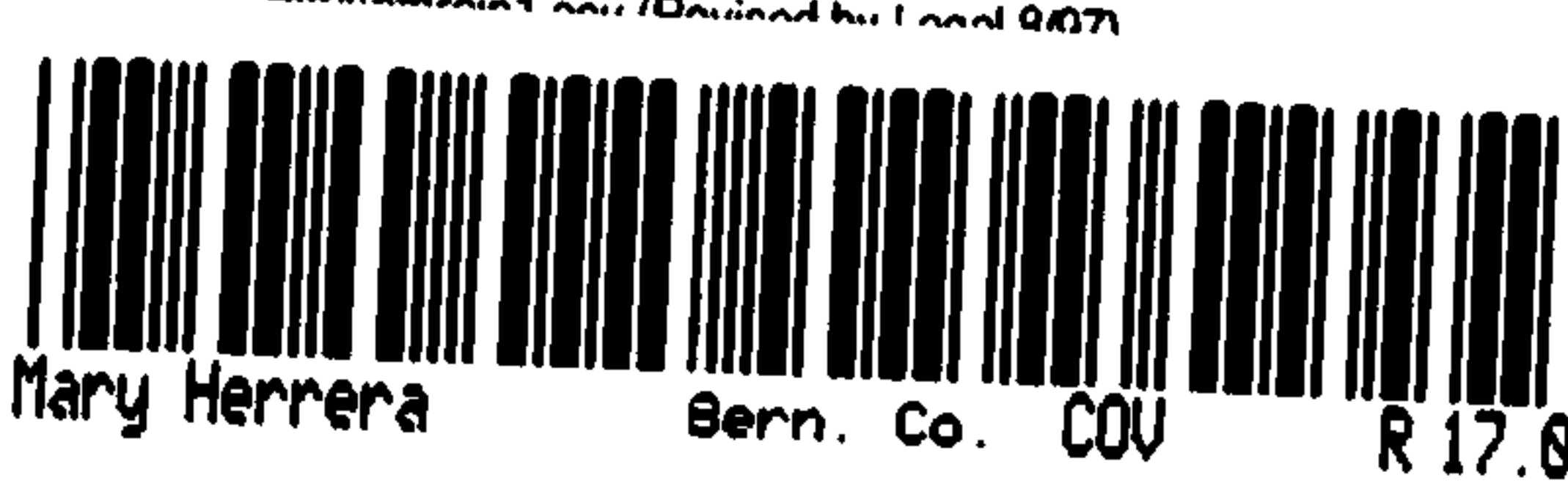
2. Description and Construction of Drainage Facility. The Owner shall construct the following "Drainage Facility" within the Property at the Owner's sole expense in accordance with the standards, plans and specifications approved by the City:
Private Detention Pond

The Drainage Facility is more particularly described in Exhibit A attached hereto and made a part hereof.

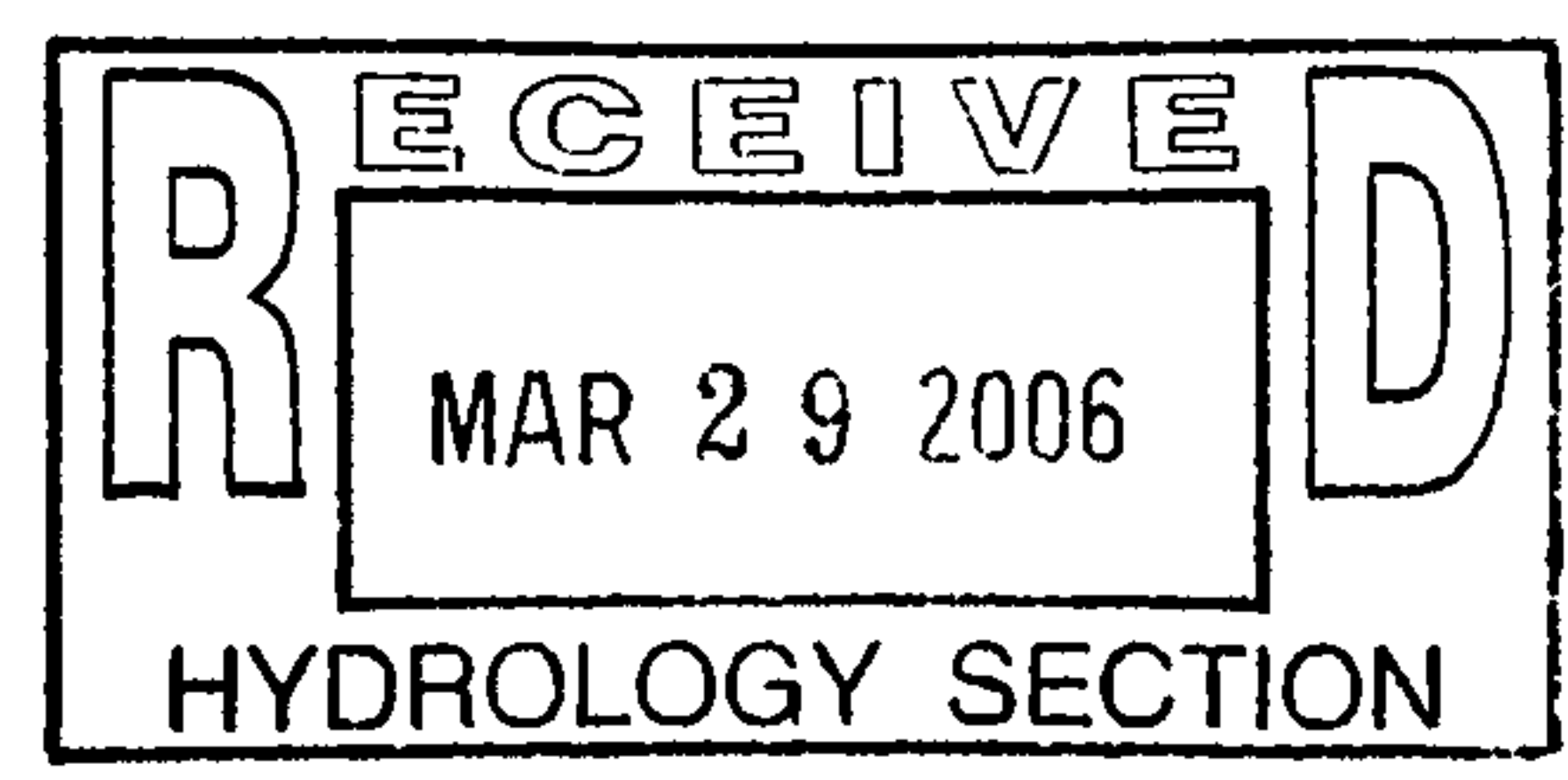
3. Maintenance of Drainage Facility. The Owner shall maintain the Drainage Facility at the Owner's sole cost in accordance with the approved Drainage Report and plans.

4. Benefit to Property. The Owner acknowledges and understands that the Drainage Facility required herein to be constructed on the Owner's property is for the private benefit and protection of the Owner's property and that failure to maintain such facility could result in damage or loss to the Property.

5. Inspection of Drainage Facility. The City shall have no duty or obligation whatsoever to perform any inspection, maintenance or repair of the Drainage Facility, it being the duty of the



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Page: 1 of 5
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Owner, its heirs, successor's and assigns to construct and maintain the facility in accordance with approved plans and specifications.

6. Liability of City. The Owner understands and agrees that the City shall not be liable to the Owner, its heirs, successors or assigns, or to any third parties for any damages resulting from the Owner's failure to construct, maintain or repair the Drainage Facility.

7. Indemnification. The Owner owns and controls the Drainage Facility and shall not permit the Drainage Facility to constitute a hazard to the health or safety of the general public. The Owner agrees to indemnify, defend and hold harmless the City, its officials, agents and employees, from any claims, actions, suits or other proceedings arising from or out of the negligent acts or omissions of the Owner, its agents, representatives, contractors or subcontractors or arising from the failure of the Owner, its agents, representatives, contractor or subcontractors to perform any act or duty required of the Owner herein; provided, however, to the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the respective indemnitee, or the agents or employees of the respective indemnitee; or (2) the giving of or the failure to give direction or instructions by the respective indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

8. Assessment. Nothing in this Covenant shall be construed to relieve the Owner, its heirs, assigns and successors from an assessment against the Owner's Property for improvements to the Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

9. Binding on Owner's Property. The covenants and obligations of the Owner set forth herein shall be binding on the Owner, its heirs, assigns and successors and on the Owner's Property and constitute covenants running with the Owner's Property until released by the City. This Covenant can only be released by the City's Chief Administrative Officer with the concurrence of the City Engineer.

10. Entire Covenant. This Covenant contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

11. Changes to Covenant. Changes to this Covenant are not binding unless made in writing, signed by both parties.

mpd4



Mary Herrera

Bern. Co. COU

R 17.00

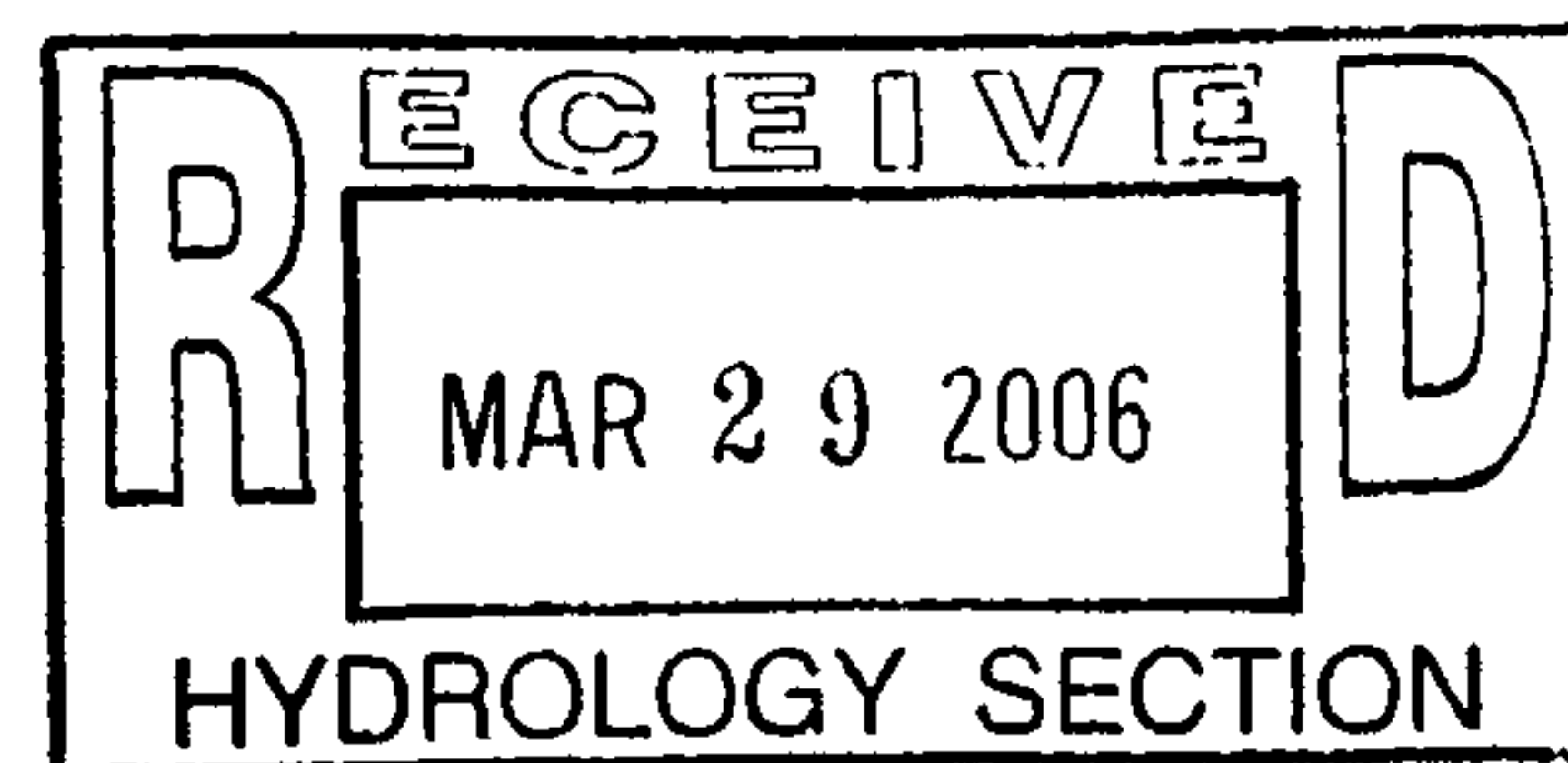
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12. Effective Date of Covenant. This Covenant shall be effective as of the date of signature of the Owner.

CITY OF ALBUQUERQUE:

OWNER:

ACCEPTED:

By:

James B. Lewis Bruce J. Perlman
Chief Administrative Officer

Dated: 4-10-06

By: Robert A. Russell

Title: Managing Member

I-40 Gateway West LLC

Dated: 3-20-06

APPROVED:

City Engineer

Dated: 4-10-06

CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)

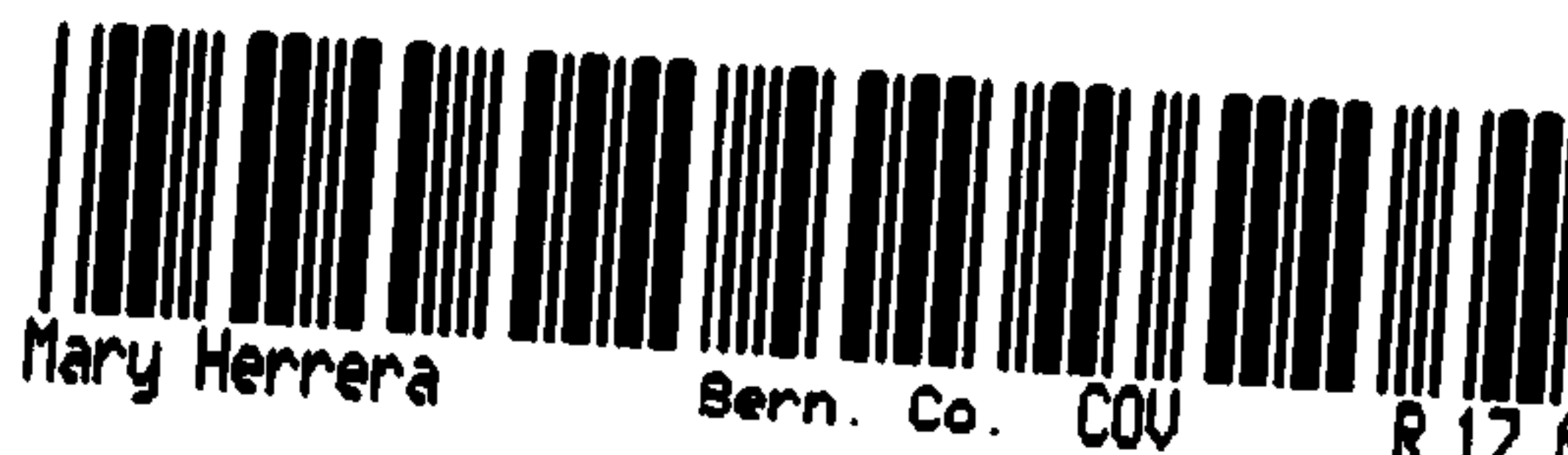
) ss

COUNTY OF BERNALILLO)

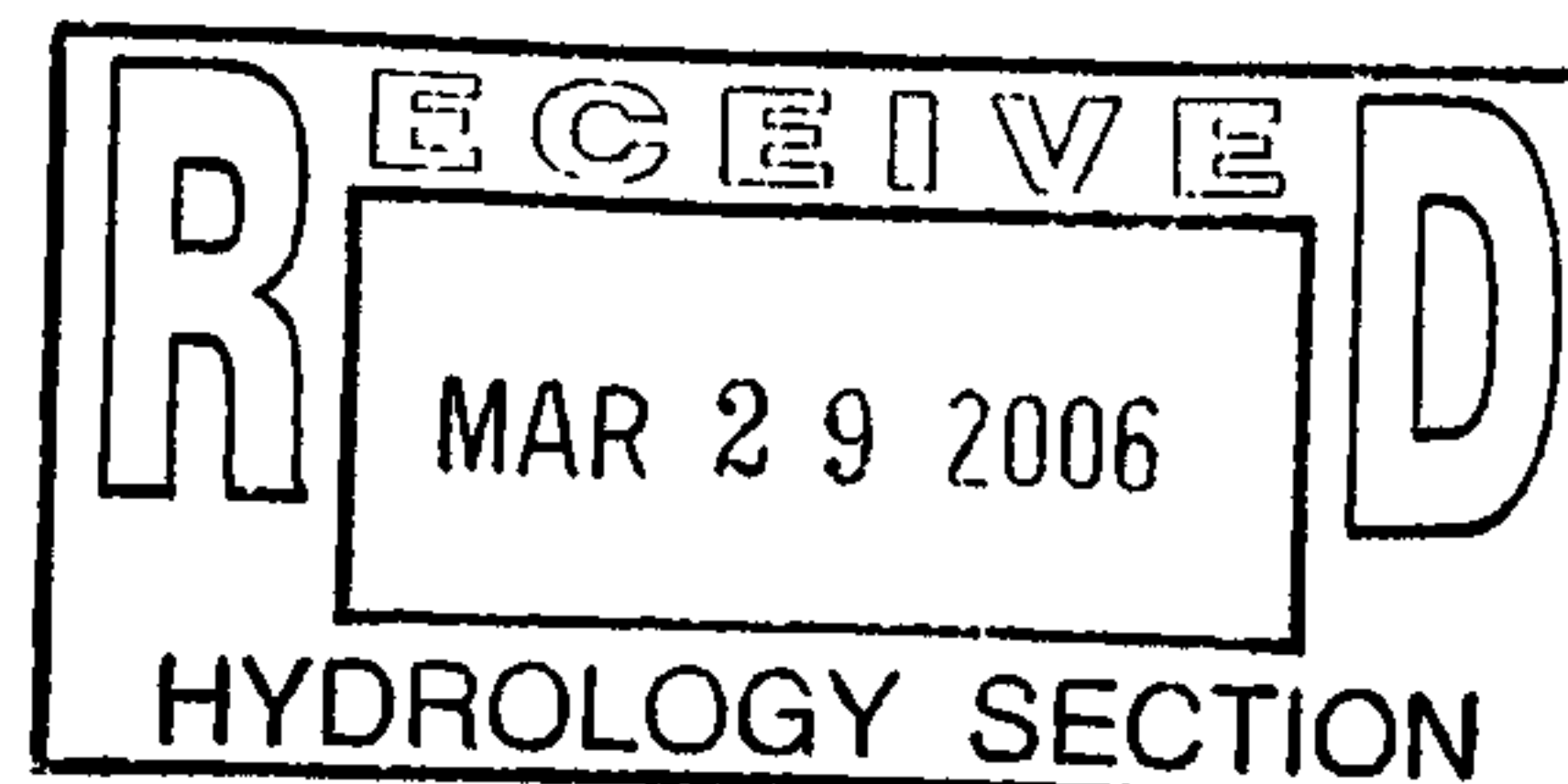
Bruce J. Perlman This instrument was acknowledged before me on April 10, 2006, by James B. Lewis, Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation, on behalf of the corporation. Richard Dourto for

Gloria A. Laavedra
Notary Public

11-25-2007
My Commission Expires:



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Page: 3 of 5
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OWNER'S ACKNOWLEDGMENT

STATE OF

)

) ss.

COUNTY OF

)

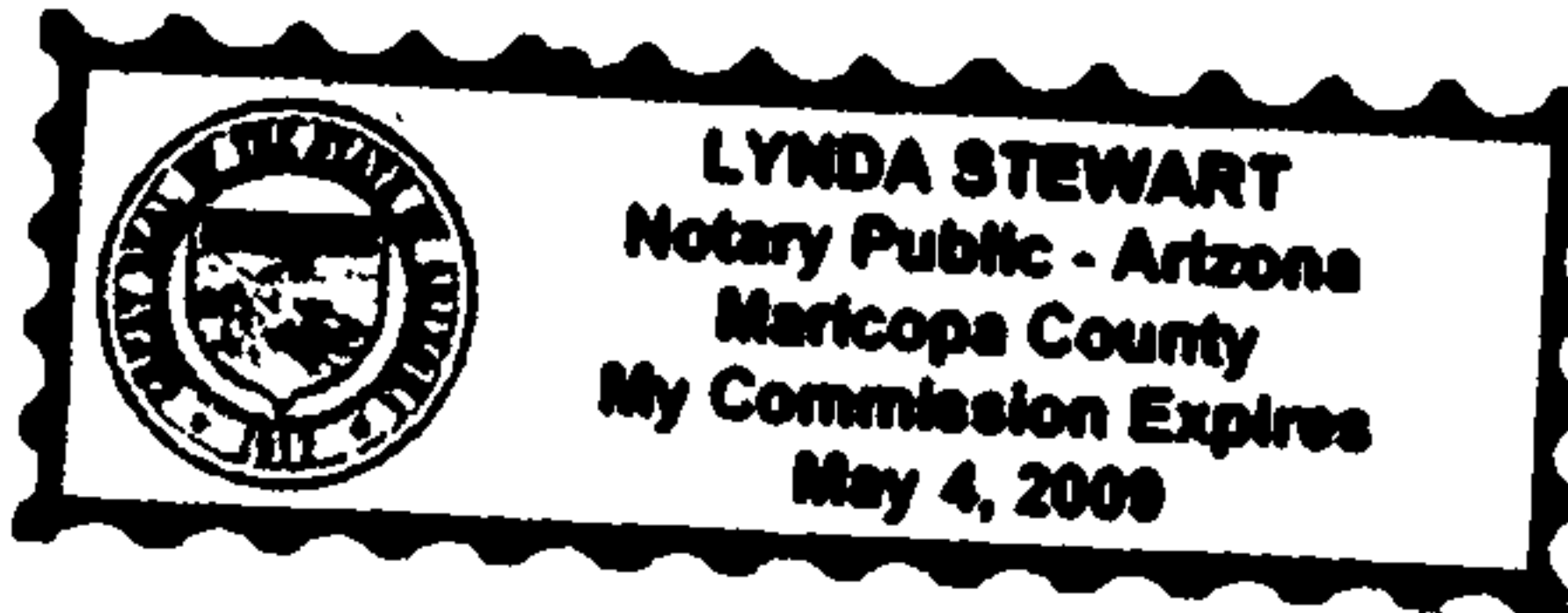
This instrument was acknowledged before me on march 20, 2006, by Robert A. Russell, Managing Member,, on behalf of I-40 Gateway West LLC.

Lynda Stewart

Notary Public

5/4/09

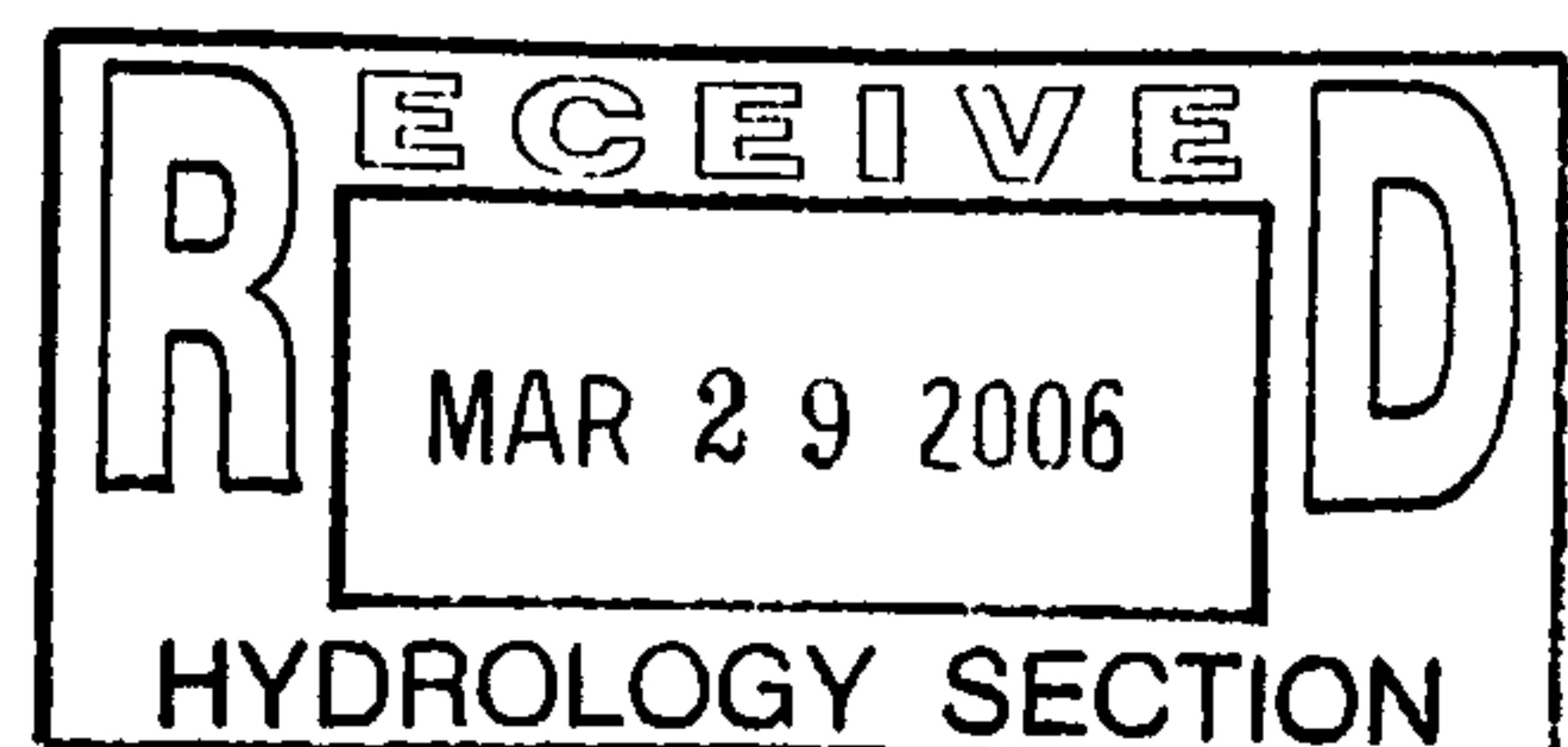
My Commission Expires:

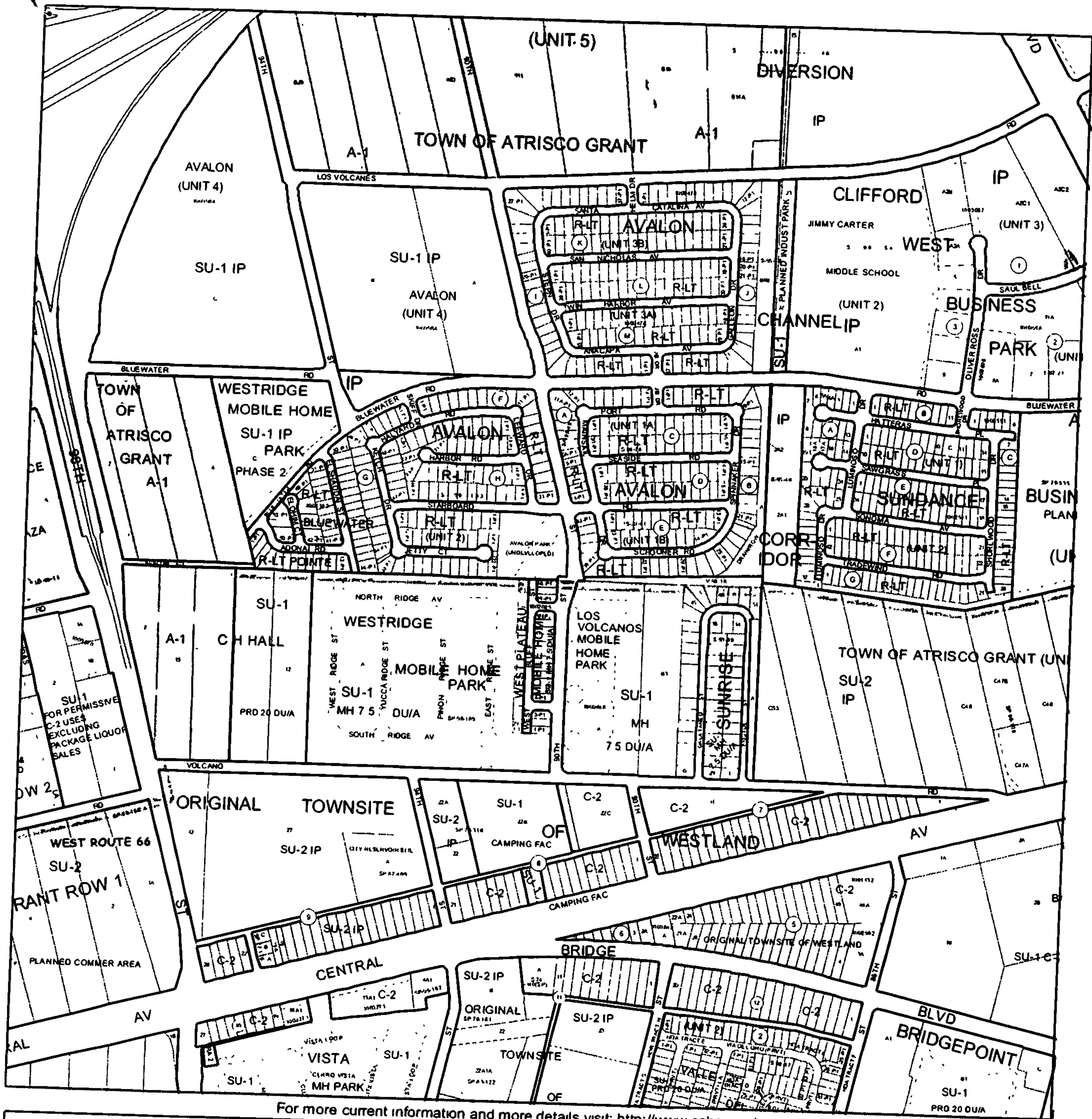


[EXHIBIT A ATTACHED]



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Page: 4 of 5
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For more current information and more details visit: <http://www.cabq.gov/gis>

Zone Atlas Page:

K-09-Z

Selected Symbols

- | | |
|----------------------|------------------------|
| SECTOR PLANS | Escarpment |
| Design Overlay Zones | 2 Mile Airport Zone |
| City Historic Zones | Airport Noise Contours |
| H-1 Buffer Zone | Wall Overlay Zone |
| Petroglyph Mon | |

Note: Grey Shading
Represents Area Outside
of the City Limits

0 750 1,500 Feet

AGIS
Albuquerque Geographic Information System

Map amended through: 3/14/2006

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

2005.035.1

PROJECT TITLE: Gateway West - Phase 1 ZONE ATLAS/DRNG. FILE #: K-9/D23
DRB #: 1003057 EPC #: _____ WORK ORDER #: Not Project Related

LEGAL DESCRIPTION: Tract A-2-C-1 Clifford West Ind. Park, Block 1, Unit 3
CITY ADDRESS: Saul Bell Rd NW & Oliver Ross Rd NW

ENGINEERING FIRM: Jeff Mortensen & Assoc., Inc. CONTACT: J. Graeme Means
ADDRESS: 6010-B Midway Park Blvd. NE PHONE: (505) 345-4250
CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: I-40 Gateway West LLC CONTACT: Bob Russell
ADDRESS: 8585 East Hartford Drive, Suite 500 PHONE: 480-505-4048
CITY, STATE: Scottsdale, AZ ZIP CODE: 85255

ARCHITECT: Ken Hovey CONTACT: Ken
ADDRESS: 2430 Midtown Place NE PHONE: 341-0218
CITY, STATE: Albuquerque, NM ZIP CODE: 87107

SURVEYOR: Tony Harris (Topo) & Surveys Southwest (Platting) CONTACT: Owner
ADDRESS: _____ PHONE: _____
CITY, STATE: _____ ZIP CODE: _____

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

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal***
**DRB approved site plan will be TCL*
☐ 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: _____

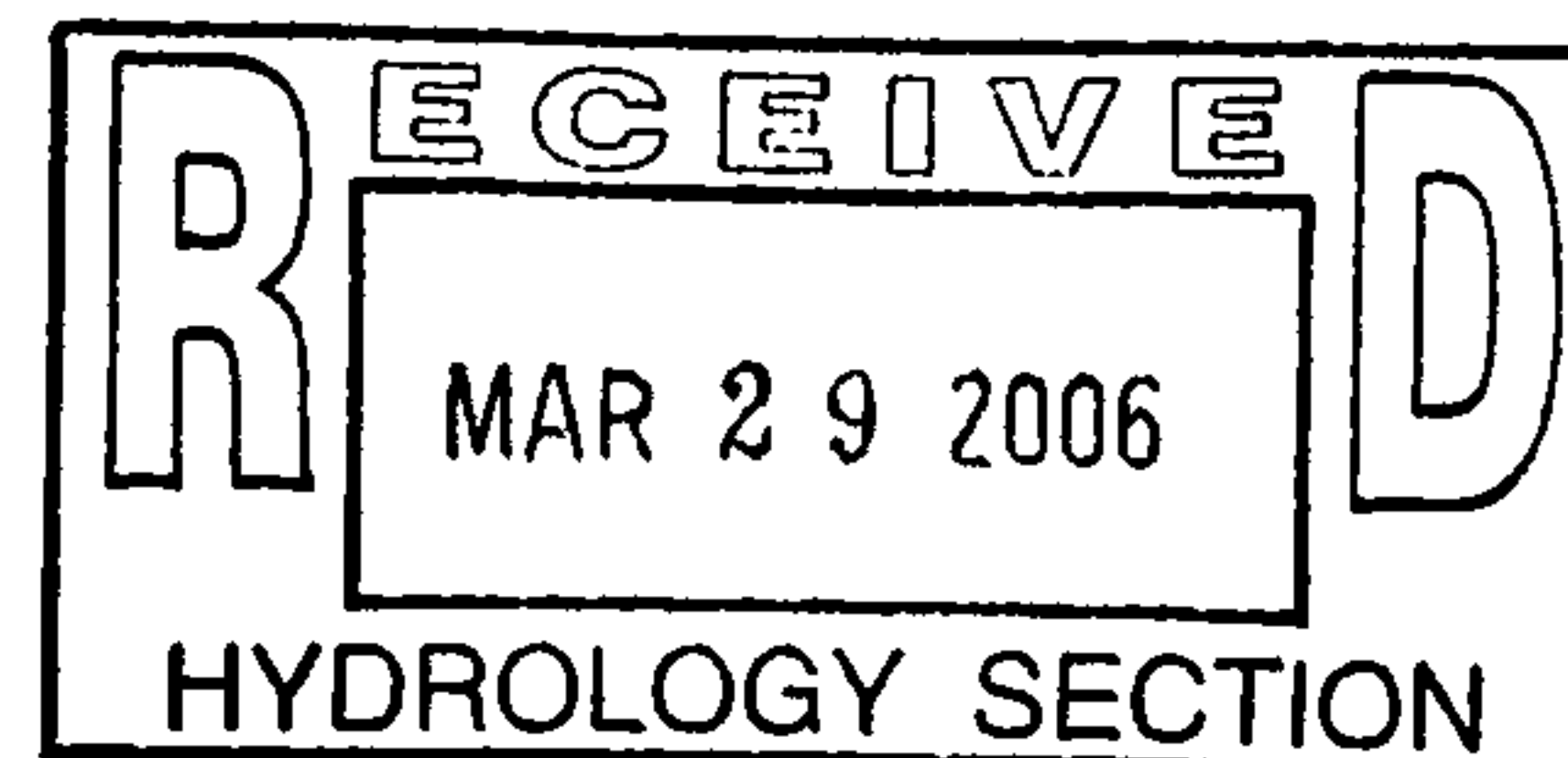
CHECK TYPE OF APPROVAL SOUGHT:

- ☐ 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) **Drainage Covenant**

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☐ NO
☐ COPY PROVIDED



DATE SUBMITTED: 03/29/06 BY: J. Graeme Means

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 upon the following:

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

DRAINAGE REPORT
for
CLIFFORD WEST BUSINESS PARK



REV. 3-11-98

SEPTEMBER 1997

DRAINAGE INFORMATION SHEET

K-9/D23

PROJECT TITLE: Clifford West Business Park ZONE ATLAS/DRNG, FILE #: ~~K-9/D23~~

DRB #: 97-138 EPC #: S-97-21 WORK ORDER #: _____

LEGAL DESCRIPTION: ATRISCO BUSINESS PARK, UNIT 2, TRACT K-1 and

CITY ADDRESS: UNSER DIVERSION CHANNEL CORRIDOR J-1, TOWN OF ATRISCO
GRANT

ENGINEERING FIRM: Mark Goodwin + Assoc. PA CONTACT: Diane Hoelzer

ADDRESS: P.O. Box 90606 ABQ 87199 PHONE: 828-2200

OWNER: Grayland Inc. CONTACT: Jack Clifford

ADDRESS: P.O. Box 35640 ABQ 87176 PHONE: 881-0900

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ DRAINAGE REPORT
- ☒ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☒ OTHER supplemental information

- ☐ SKETCH PLAT APPROVAL
- ☒ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D APPROVAL
- ☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATION OF OCCUPANCY APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ S.A.D. DRAINAGE REPORT
- ☐ DRAINAGE REQUIREMENTS
- ☐ OTHER _____ (Specify)

PRE-DESIGN MEETING:

- ☐ YES
- ☐ NO
- ☐ COPY PROVIDED

DATE SUBMITTED: _____

BY: Diane Hoelzer

TABLE OF CONTENTS

RESPONSE LETTER

- I. LOCATION AND DESCRIPTION**
- II. DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS**
- III. EXISTING DRAINAGE CONDITIONS**
- IV. DEVELOPED DRAINAGE CONDITIONS**
 - A. MASTER DRAINAGE PLAN**

TABLE 1: SUMMARY OF STREET AND INLET CAPACITIES

FIGURE 1: VICINITY MAP

FIGURE 2: FEMA MAP

**FIGURE 3: CLIFFORD WEST BUSINESS PARK DRAINAGE BASINS BOUNDARIES AND
ALLOWABLE DISCHARGE TABLE**

FIGURE 4: CLIFFORD WEST BUSINESS PARK STORM DRAIN SCHEMATIC

APPENDIX A HYDROLOGY

APPENDIX B STORM DRAIN CALCULATIONS

APPENDIX C HYDRAULICS

POCKET 1: ATRISCO BUSINESS PARK APPROVED MASTER DRAINAGE PLAN 10-22-93

POCKET 2: CLIFFORD WEST BUSINESS PARK GRADING AND DRAINAGE PLAN (2 SHEETS)

I. LOCATION AND DESCRIPTION

The proposed Clifford West Business Park , which was part of the larger Atrisco Business Park is comprised of approximately 52.2 acres and is located south of I-25, just west of Unser Blvd. between Los Volcanes Road and Bluewater Road. Proposed development includes the infrastructure to support the individual development of 29 commercial sites.

The topographic relief in the area is in an southeasterly direction at a slope of approximately 2.0 percent.

The FEMA map indicates that a portion of the site is within the 100-year floodplain. Presently AMAFCA is working on a LOMR for the Unser Diversion. The Unser Diversion infrastructure has been built.

II. DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The drainage management plan for this site is based entirely on the previously approved Atrisco Business Park Master Drainage Plan for fully developed conditions dated October 22, 1993. In accordance with that plan the allowable discharge from this site is 56.6 cfs and the 100-year peak discharge from this site is 217.1 cfs. These two values are the basis for all the drainage calculations in this report.

IV. EXISTING DRAINAGE CONDITIONS

Under existing drainage conditions, on-site runoff flows in a southeasterly direction. All of these flows are intercepted by either Unser Blvd. or Bluewater Road. There is an existing swale on this site just north of Bluewater Road that intercepts flows and conveys the runoff to the east toward Unser Blvd. After some ponding the flows spill over into Unser Blvd. at the intersection with Bluewater Road.

Off-site flows along the east and south property line continue in the southeasterly direction, away from the project site. Off-site flows north of the project site flow in a southeasterly direction through the site. All flows west of the site are intercepted by the Unser Diversion facility.

There is an existing storm drain in Unser Blvd. that includes stub-outs in Los Volcanes Road and Bluewater Road and four inlets in the west flowline of Unser Blvd. This system includes two inlets at the intersection of Los Volcanes Rd./Unser Blvd. and four inlets at the intersection of Bluewater Road/Unser Blvd.

V. PROPOSED DRAINAGE CONDITIONS

A. MASTER DRAINAGE PLAN

For this drainage plan the primary drainage requirement is that every individual commercial site will be required to retain a certain amount of their runoff on-site and all runoff from the site must discharge directly into the adjacent storm drain. The allowable discharge from each lot within the project site was calculated based on the approved master drainage plan for Atrisco Business Park and is summarized in a Table in Figure 3 and shown on the grading and drainage plan. Drainage calculations are in the Appendix A Hydrology.

The storm drain in Bluewater Road will be extended west to the Unit 1/3 boundary divide and in Oliver Ross Road and Saul Bell Road within the project site. Storm drain stub-outs will be provided to the property line for each of the 29 lots. Four 18" storm drain laterals will be extended from the existing inlets in Unser Blvd. to the property line to allow direct discharge from the seven properties adjacent to Unser Blvd. The storm drain in

Bluewater will include four stub-outs to the property line to service those lots that drain in a southerly direction.

Street flows in Los Volcanes Road will be intercepted by the existing inlets at the Unser Blvd. Intersection. Street flows in Bluewater Road will be intercepted by the existing inlets at the intersection of Unser Blvd. Street flows in Saul Bell Road will be intercepted by two new inlets located just west of the Unser Blvd. intersection.

Off-site flows originating from the west are intercepted by the Unser Diversion Facility. Off-site flows originating from the north will be intercepted by a temporary drainage swale located within the public right-of-way along the north side of Los Volcanes Road before discharging into the street at the intersection of Unser Blvd. and Los Volcanes Road. The profile for Los Volcanes road is being constructed lower than the surrounding area to help prevent the possibility of offsite flows originating from the north from entering the project site as it is developing.

The Atrisco Business Park Master Plan Fully Developed Conditions exhibit is included in the back pocket of this report to facilitate in the understanding of the big picture for development of the area. Another close up exhibit of the area and the drainage basin areas used in the master plan is included in Appendix A Hydrology.

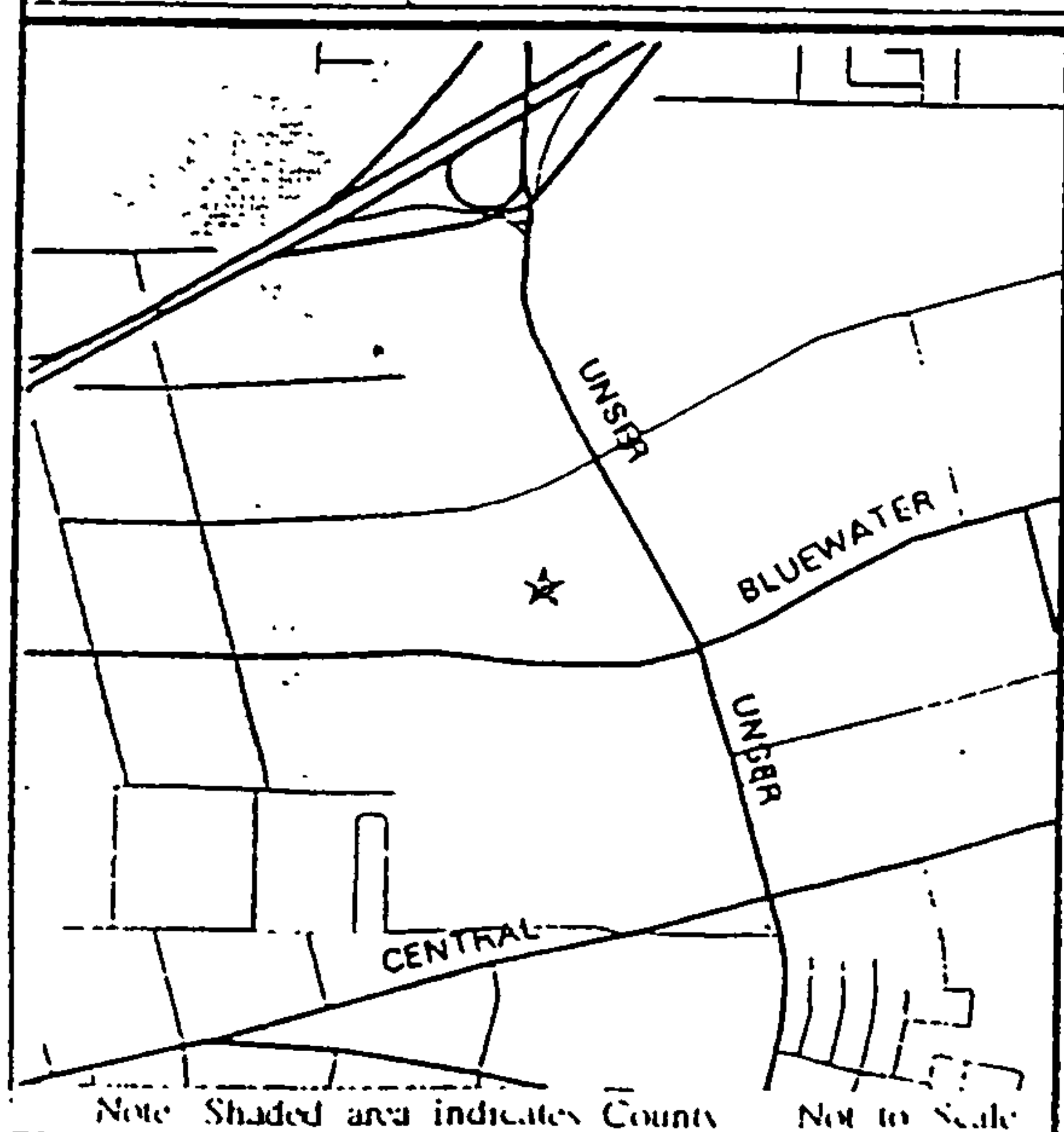
TABLE 1

SUMMARY OF STREET CAPACITY AND INLET CALCULATIONS

Clifford West Industrial Park

LOCATION	LOCATION	WIDTH ft.	SLOPE %	Q cfs	DEPTH ft	Q per INLET cfs	# of INLETS	REMAIN Q (cfs)	ADDITIONAL Q (cfs)
Oliver Ross Rd	@ Bluewater	40' FF	1.54	7.88	0.31	2.50	2	2.88	—
Saul Bell Rd	@ Unser	40' FF	0.60	4.24	0.29	1.65	2	0.94	—
Bluewater	@ Unser	40' FF	2.00	12.81	0.34	3.80	2	5.21	—
Bluewater	@ Unser	40' FF	0.005	5.21	0.32	1.90	2	1.41	—
Bluewater	@ Oliver Ross	40' FF	1.00	5.69	0.30	2.0	1	3.69	—

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LAND USE MAP

KEY to Land Use Abbreviations

AGRI Agricultural
 COMM Commercial -Retail, Service Wholesale
 DRNG Drainage
 EDUC Public or Private School
 GOLF Golf Course
 MED Medical Office or Facility
 MFG Manufacturing or Mining
 MH Mobile Home
 MULT Multi-Family or Group Home
 OFF Office
 ORG Social or Civic Organization
 PARK Park, Recreation or Open Space
 PRKG Parking
 PUBF Public Facility
 RELG Religious Facility
 SF Single Family
 TRAN Transportation Facility
 UTIL Utility
 VAC Vacant Land or Abandoned Bldgs
 WH Warehousing & Storage



Scale 1" = 449'

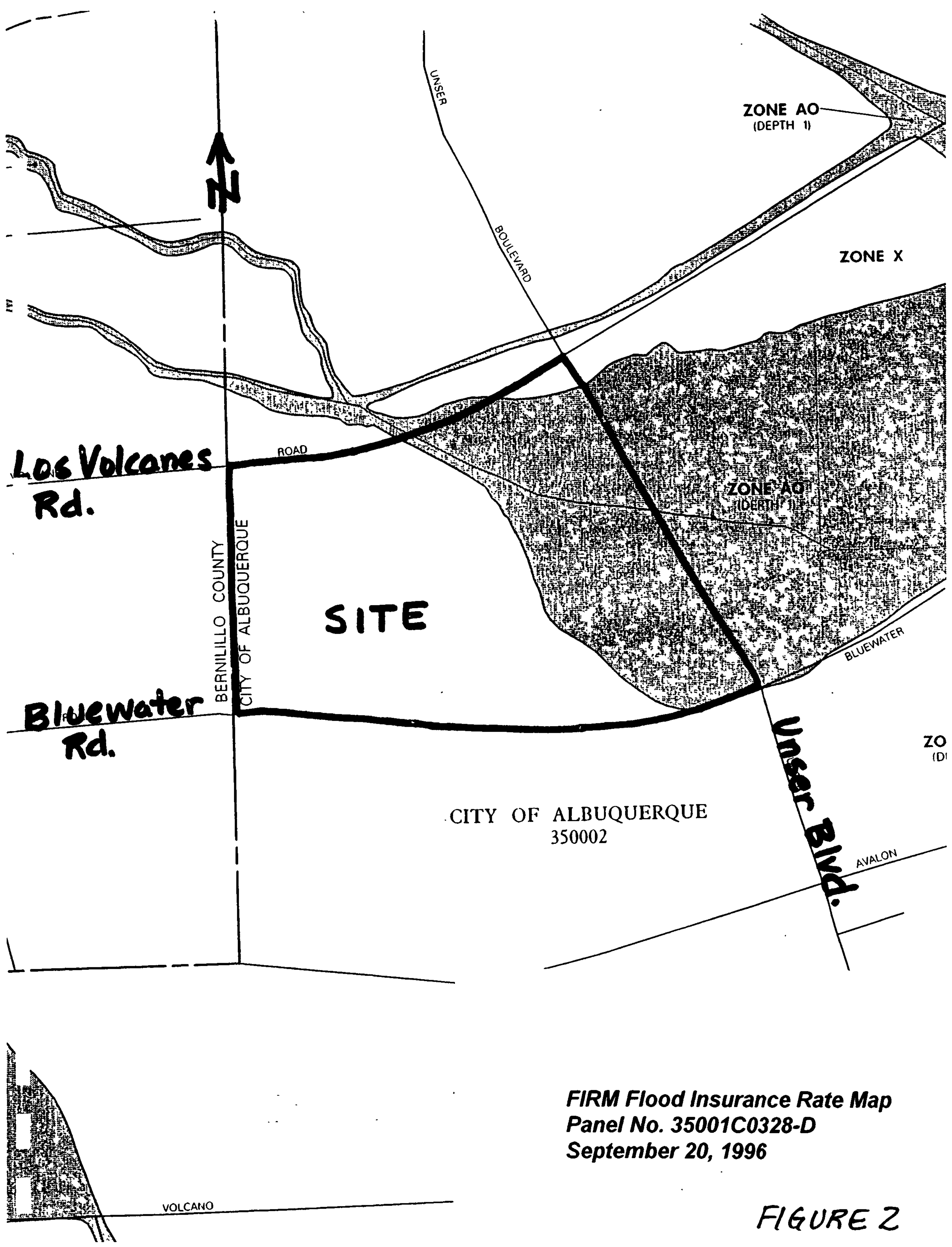
CASE PLANNER

HEARING DATE
1-16-97

MAP NO.
K-9/K-10

FILE NO.
Z-97-11

FIGURE 1



**FIRM Flood Insurance Rate Map
Panel No. 35001C0328-D
September 20, 1996**

FIGURE 2

APPENDIX A
HYDROLOGY

Type 'C' Sump Inlets Calculations For Saul Bell Road

Capacity is measured by the weir equation at the lip of the gutter assuming an allowable ponding elevation which is 0.67' (or top of curb elevation). The length of the grate facing the street is 2.95' with a corresponding ponding depth of 0.54' (at top of curb). The side width is 2.0' with a corresponding average ponding depth of 0.604'.

With these values and the using the weir equation, the design capacity for the two type 'C' grates is:

Front: $Q_{cap} = 3.0 \times 2.95' \times (.54')^{1.5} = 3.51 \text{ cfs}$

Sides: $Q_{cap} = 3.0 \times 2.0' \times (.604')^{1.5} \times (2 \text{ sides}) = 5.63 \text{ cfs}$

Design Q_{cap} (per inlet) = 9.14 cfs

Total Design Capacity (2 inlets) $Q(\text{design}) = 18.28 \text{ cfs}$

$Q(100 \text{ yr.}) = 4.24 \text{ cfs}$

The storm drain has the capacity to handle twice the 4.24 cfs flow (or 8.48 cfs) and thus an emergency overflow spillway is not necessary.



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT _____
SUBJECT Hydrology
BY DLH DATE 9-12-97
CHECKED _____ DATE _____
SHEET _____ OF _____

Summary of Approved Hydrology Criteria For

THE ATRISCO BUSINESS PARK MASTER DRAINAGE PLAN (K10/D23)

APPROVED 10-22-93

POCKET 1 FOR SCHEMATIC.

1. 100 YR. 24 HR. STORM

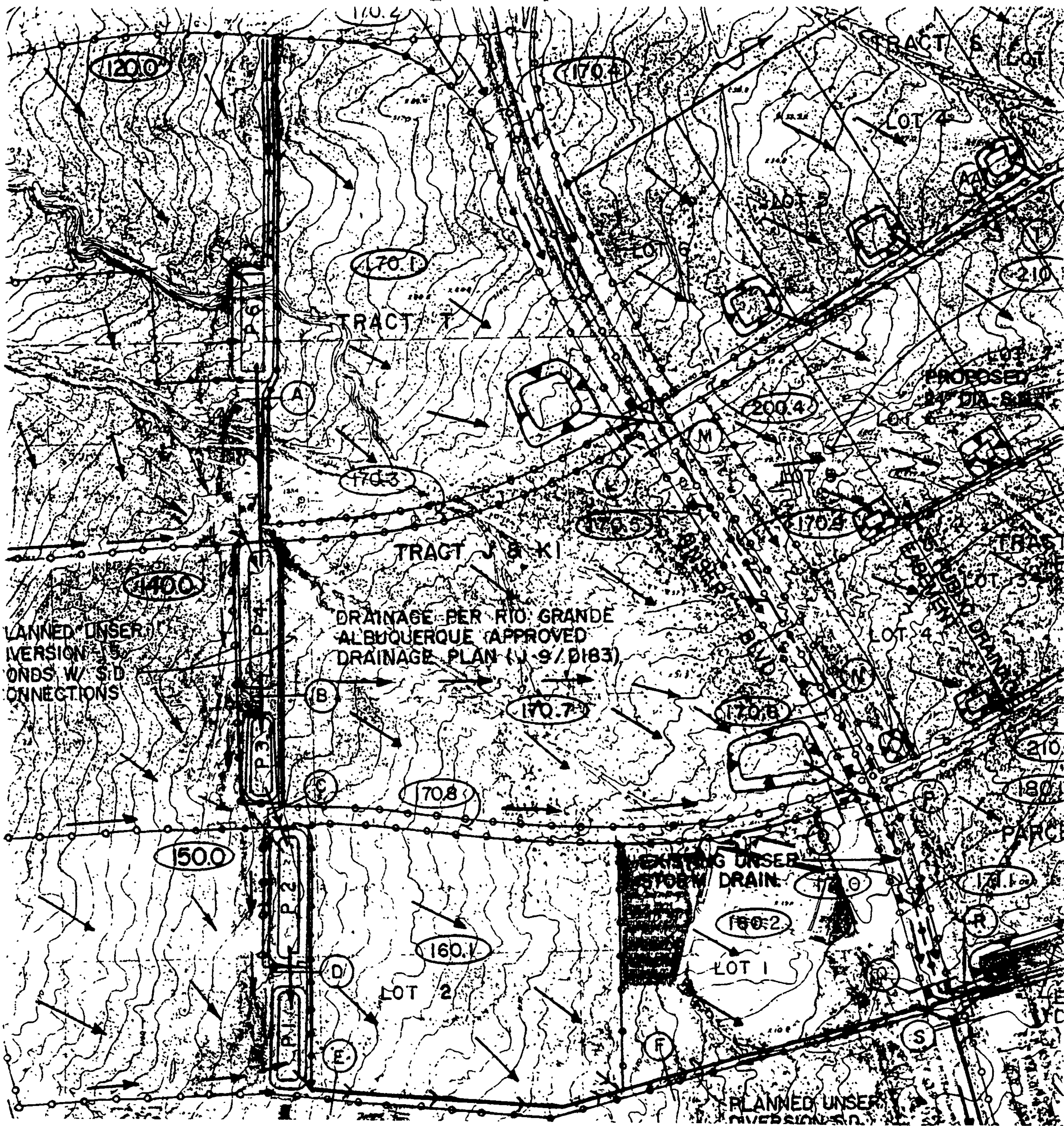
RAINFALL TYPE 2

$P_1 = 1.87$ $P_6 = 2.20"$ $P_{24} = 2.66"$

$DT = 0.05$

SUBBASIN 170.7 = 55 ACRES $\Rightarrow Q_{max} = 217.1$ CFS

2. FOR SAD 214 REPORT $Q_{max. allowable} = 56.6$ cfs



FROM ATRISCO BUSINESS PARK MASTER DRAINAGE PLAN
COA DRAINAGE REPORT FILE (K10-D23)
APPROVED 10-22-93

```

START                                TIME=0.0
***** CLIFFORD WEST BUSINESS PARK
***** 100-YEAR 6-HOUR STORM EVENT
***** FILE: CLIFFEX.DAT JULY 1997 BY:DLH
RAINFALL                            TYPE=1 RAIN QUARTER=0.0 IN
                                      RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                                      RAIN DAY=0.0 IN DT=0.0333 HR

*****
***** NORTH OFFSITE EXISTING CONDITIONS
*****
COMPUTE NM HYD                      ID=1 HYD NO=100.0 AREA=0.02532 SQ MI
                                      PER A=100 PER B=0 PER C=0 PER D=0
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                          ID=1 CODE=1
*****
***** LOS VOLCANES PAVED CONDITIONS
*****
COMPUTE NM HYD                      ID=1 HYD NO=100.0 AREA=0.002036 SQ MI
                                      PER A=0 PER B=10 PER C=0 PER D=90
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                          ID=1 CODE=1
*****
***** SAUL BELL RD PAVED CONDITIONS
*****
COMPUTE NM HYD                      ID=1 HYD NO=100.0 AREA=0.001572 SQ MI
                                      PER A=0 PER B=10 PER C=0 PER D=90
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                          ID=1 CODE=1
*****
***** OLIVER ROSS RD PAVED CONDITIONS
*****
COMPUTE NM HYD                      ID=1 HYD NO=100.0 AREA=0.002928 SQ MI
                                      PER A=0 PER B=10 PER C=0 PER D=90
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                          ID=1 CODE=1
*****
***** BLUEWATER PAVED CONDITIONS
*****
COMPUTE NM HYD                      ID=1 HYD NO=100.0 AREA=0.004764 SQ MI
                                      PER A=0 PER B=10 PER C=0 PER D=90
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                          ID=1 CODE=1
FINISH

```

RUN DATE (MON/DAY/YR)

USER NO. =

CFS	PAGE = 1	HYDROGRAPH	FROM ID	TO ID	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)
PER ACRE	COMMAND NOTATION	IDENTIFICATION	NO.	NO.					
START TIME= .00 RAINFALL TYPE= 1 RAIN6= 2.200 COMPUTE NM HYD 100.00 - 1 .02532 21.53 .606 .44912 1.532 1.328 PER IMP= .00 COMPUTE NM HYD 100.00 - 1 .00204 5.48 .200 1.83780 1.499 4.209 PER IMP= 90.00 COMPUTE NM HYD 100.00 - 1 .00157 4.24 .154 1.83780 1.499 4.213 PER IMP= 90.00 COMPUTE NM HYD 100.00 - 1 .00293 7.88 .287 1.83780 1.499 4.205 PER IMP= 90.00 COMPUTE NM HYD 100.00 - 1 .00476 12.81 .467 1.83780 1.499 4.202 PER IMP= 90.00 FINISH									

APPENDIX B
STORM DRAIN

9-3-97

If drainage off of each lot requires an 18" SD directly into the main line, there will need to be a manhole at each service storm drain intersection with the main storm drain.

Sherrill
Jung

For Clifford West Business Park
Grading & Drainage Plan

K-9/10

1
0

HYDRAULIC REPORT FOR

CLIFFORD WEST BUS. PARK

@ UNSER AND BLUEWATER

100 YR 6 HR STORM

DMG & ASSOCIATES

MARCH 1998

BY: DLH

1
0

Run date: 03-10-1998
File: CLIFF.ST3

Return Period = 100 Yrs
Rainfall file: Your_County

LINE 1 / Q = 58.0 / HT = 36 / WID = 36 / N = .013 / L = 99 / JLC = .05

EXMH 1 - EXMH 2 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	12.00	36.00	6.41	8.21	13.05	0.00	5.73	7.07
UPSTRM	12.75	36.00	7.86	8.21	13.79	0.00	5.6	7.07

Drainage area (ac) = 0	Slope of invert (%) = 1.465
Runoff coefficient = 0	Slope energy grade line (%) = 0.756
Time of conc (min) = 13	Critical depth (in) = 29.12
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 58	Confluence angle (deg) = 0
Default Q (cfs) = 58	Natural ground elev (ft) = 16.47
Line capac. (cfs) = 80.7	Line storage (cuft) = 700

LINE 2 / Q = 46.6 / HT = 36 / WID = 36 / N = .013 / L = 299.75 / JLC = .05

EXMH 2 - MH 14 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	12.80	36.00	7.86	6.59	13.48	0.00	5.6	7.07
UPSTRM	14.16	35.67	11.19	6.60	14.84	6.86	6.01	7.06

Drainage area (ac) = 0	Slope of invert (%) = 1.111
Runoff coefficient = 0	Slope energy grade line (%) = 0.455
Time of conc (min) = 11	Critical depth (in) = 26.10
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 46.5	Confluence angle (deg) = 0
Default Q (cfs) = 46.6	Natural ground elev (ft) = 20.2
Line capac. (cfs) = 70.3	Line storage (cuft) = 2117

LINE 3 / Q = 46.6 / HT = 30 / WID = 30 / N = .013 / L = 244.07 / JLC = .05

MH 14 - MH 13 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	14.20	30.00	11.24	9.50	15.60	0.00	6.46	4.91
UPSTRM	17.35	30.00	13.70	9.49	18.75	0.00	6.75	4.91

Drainage area (ac) = 0	Slope of invert (%) = 1.008
Runoff coefficient = 0	Slope energy grade line (%) = 1.291
Time of conc (min) = 10	Critical depth (in) = 27.45
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 46.5	Confluence angle (deg) = 0
Default Q (cfs) = 46.6	Natural ground elev (ft) = 22.96
Line capac. (cfs) = 41.2	Line storage (cuft) = 1198

LINE 4 / Q = 42.4 / HT = 30 / WID = 30 / N = .013 / L = 356.84 / JLC = .05

MH 13 - MH 12 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	17.42	30.00	13.75	8.64	18.58	0.00	6.7	4.91
UPSTRM	21.24	30.00	17.35	8.64	22.40	0.00	7.72	4.91

Drainage area (ac)	= 0	Slope of invert (%)	= 1.009
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.070
Time of conc (min)	= 8	Critical depth (in)	= 26.55
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 42.4	Confluence angle (deg)	= 0
Default Q (cfs)	= 42.42	Natural ground elev (ft)	= 27.58
Line capac. (cfs)	= 41.2	Line storage (cuft)	= 1751

LINE 5 / Q = 40.1 / HT = 30 / WID = 30 / N = .013 / L = 288.73 / JLC = .1

MH 12 - MH 11 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	21.30	30.00	17.40	8.16	22.33	0.00	7.68	4.91
UPSTRM	24.05	30.00	20.31	8.16	25.09	0.00	7.46	4.91

Drainage area (ac) =	0	Slope of invert (%) =	1.008
Runoff coefficient =	0	Slope energy grade line (%) =	0.954
Time of conc (min) =	6	Critical depth (in) =	25.38
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	40	Confluence angle (deg) =	0
Default Q (cfs) =	40.06	Natural ground elev (ft) =	30.27
Line capac. (cfs) =	41.2	Line storage (cuft) =	1417

LINE 6 / Q = 20.7 / HT = 24 / WID = 24 / N = .013 / L = 241 / JLC = .05

MH 11-END BLUE / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.15	24.00	20.81	6.59	24.83	0.00	7.46	3.14
UPSTRM	27.66	19.35	26.00	7.63	28.56	18.97	5.4	2.71

Drainage area (ac) = 0	Slope of invert (%) = 2.154
Runoff coefficient = 0	Slope energy grade line (%) = 1.548
Time of conc (min) = 0	Critical depth (in) = 19.33
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 20.7	Confluence angle (deg) = 0
Default Q (cfs) = 20.7	Natural ground elev (ft) = 33.4
Line capac. (cfs) = 33.2	Line storage (cuft) = 706

LINE 7 / Q = 19.4 / HT = 24 / WID = 24 / N = .013 / L = 26.45 / JLC = .05

MH 11 - MH 10 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.15	24.00	20.81	6.18	24.75	0.00	7.46	3.14
UPSTRM	24.35	24.00	20.94	6.18	24.94	0.00	7.18	3.14

Drainage area (ac) = 0	Slope of invert (%) = 0.491
Runoff coefficient = 0	Slope energy grade line (%) = 0.736
Time of conc (min) = 6	Critical depth (in) = 18.71
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 19.3	Confluence angle (deg) = -90
Default Q (cfs) = 19.4	Natural ground elev (ft) = 30.13
Line capac. (cfs) = 15.9	Line storage (cuft) = 83

LINE 8 / Q = 12.0 / HT = 24 / WID = 24 / N = .013 / L = 187.14 / JLC = .05

MH 10 - MH 9 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.38	24.00	20.99	3.82	24.61	0.00	7.13	3.14
UPSTRM	24.91	24.00	21.97	3.82	25.13	0.00	8.71	3.14

Drainage area (ac)	= 0	Slope of invert (%)	= 0.524
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.282
Time of conc (min)	= 5	Critical depth (in)	= 14.72
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= 12	Confluence angle (deg)	= 0
Default Q (cfs)	= 12	Natural ground elev (ft)	= 32.69
Line capac. (cfs)	= 16.4	Line storage (cuft)	= 588

LINE 9 / Q = 11.6 / HT = 24 / WID = 24 / N = .013 / L = 135 / JLC = .05

MH 9 - MH 8 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	24.92	24.00	22.02	3.68	25.13	0.00	8.66	3.14
UPSTRM	25.27	24.00	22.69	3.68	25.48	0.00	10.15	3.14

Drainage area (ac) = 0	Slope of invert (%) = 0.496
Runoff coefficient = 0	Slope energy grade line (%) = 0.262
Time of conc (min) = 5	Critical depth (in) = 14.45
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 11.5	Confluence angle (deg) = 0
Default Q (cfs) = 11.57	Natural ground elev (ft) = 34.85
Line capac. (cfs) = 15.9	Line storage (cuft) = 424

LINE 10 / Q = 11.1 / HT = 24 / WID = 24 / N = .013 / L = 94.2 / JLC = .05

MH 8 - MH 7 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.28	24.00	22.74	3.53	25.48	0.00	10.1	3.14
UPSTRM	25.51	24.00	23.21	3.53	25.70	0.00	11.13	3.14

Drainage area (ac) = 0	Slope of invert (%) = 0.499
Runoff coefficient = 0	Slope energy grade line (%) = 0.240
Time of conc (min) = 4	Critical depth (in) = 14.15
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 11	Confluence angle (deg) = 0
Default Q (cfs) = 11.09	Natural ground elev (ft) = 36.35
Line capac. (cfs) = 16.0	Line storage (cuft) = 296

LINE 11 / Q = 10.0 / HT = 24 / WID = 24 / N = .013 / L = 161.9 / JLC = .1

MH 7 - MH 5 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.52	24.00	23.26	3.18	25.68	0.00	11.08	3.14
UPSTRM	25.80	20.73	24.07	3.47	25.98	16.47	12.84	2.88

Drainage area (ac) = 0	Slope of invert (%) = 0.500
Runoff coefficient = 0	Slope energy grade line (%) = 0.191
Time of conc (min) = 3	Critical depth (in) = 13.44
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 10	Confluence angle (deg) = 0
Default Q (cfs) = 10	Natural ground elev (ft) = 38.92
Line capac. (cfs) = 16.0	Line storage (cuft) = 488

LINE 12 / Q = 4.0 / HT = 18 / WID = 18 / N = .013 / L = 157.3 / JLC = .05

MH 5 - MH 4 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.82	14.35	24.62	2.59	25.92	14.01	12.79	1.54
UPSTRM	29.93	9.17	29.17	4.41	30.24	18.00	10.74	0.91

Drainage area (ac) = 0	Slope of invert (%) = 2.893
Runoff coefficient = 0	Slope energy grade line (%) = 2.744
Time of conc (min) = 2	Critical depth (in) = 9.15
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 3.9	Confluence angle (deg) = 0
Default Q (cfs) = 3.99	Natural ground elev (ft) = 41.42
Line capac. (cfs) = 17.9	Line storage (cuft) = 192

LINE 13 / Q = 3.6 / HT = 18 / WID = 18 / N = .013 / L = 138.81 / JLC = .05

MH 4 - MH 3 / DNLN = 12

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	29.95	8.75	29.22	4.14	30.22	18.00	10.69	0.86
UPSTRM	33.96	8.68	33.24	4.22	34.24	17.99	8.87	0.84

Drainage area (ac) = 0	Slope of invert (%) = 2.896
Runoff coefficient = 0	Slope energy grade line (%) = 2.899
Time of conc (min) = 1	Critical depth (in) = 8.64
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 3.5	Confluence angle (deg) = 0
Default Q (cfs) = 3.56	Natural ground elev (ft) = 43.62
Line capac. (cfs) = 17.9	Line storage (cuft) = 118

LINE 14 / Q = 2.3 / HT = 18 / WID = 18 / N = .013 / L = 128.4 / JLC = .05

MH 3 - MH 2 / DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	33.98	8.24	33.29	2.84	34.10	17.95	8.82	0.80
UPSTRM	37.58	6.94	37.00	3.63	37.78	17.52	7.29	0.63

Drainage area (ac) = 0	Slope of invert (%) = 2.889
Runoff coefficient = 0	Slope energy grade line (%) = 2.867
Time of conc (min) = 1	Critical depth (in) = 6.91
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 2.2	Confluence angle (deg) = 0
Default Q (cfs) = 2.28	Natural ground elev (ft) = 45.8
Line capac. (cfs) = 17.9	Line storage (cuft) = 92

LINE 15 / Q = 1.1 / HT = 18 / WID = 18 / N = .013 / L = 131.4 / JLC = .05

MH 2 - MH 1 / DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	37.59	6.46	37.05	1.96	37.65	17.34	7.25	0.59
UPSTRM	41.27	4.92	40.85	2.94	41.40	16.04	6.38	0.39

Drainage area (ac) = 0	Slope of invert (%) = 2.892
Runoff coefficient = 0	Slope energy grade line (%) = 2.856
Time of conc (min) = 0	Critical depth (in) = 4.91
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 1.1	Confluence angle (deg) = 0
Default Q (cfs) = 1.15	Natural ground elev (ft) = 48.73
Line capac. (cfs) = 17.9	Line storage (cuft) = 64

LINE 16 / Q = 5.6 / HT = 18 / WID = 18 / N = .013 / L = 214.9 / JLC = .05

MH 5 - MH 6 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	25.82	14.35	24.62	3.62	26.02	14.01	12.79	1.54
UPSTRM	26.61	10.91	25.70	4.98	26.99	17.59	10.93	1.12

Drainage area (ac) = 0	Slope of invert (%) = 0.503
Runoff coefficient = 0	Slope energy grade line (%) = 0.454
Time of conc (min) = 1	Critical depth (in) = 10.82
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 5.5	Confluence angle (deg) = -90
Default Q (cfs) = 5.58	Natural ground elev. (ft) = 38.13
Line capac. (cfs) = 7.4	Line storage (cuft) = 286

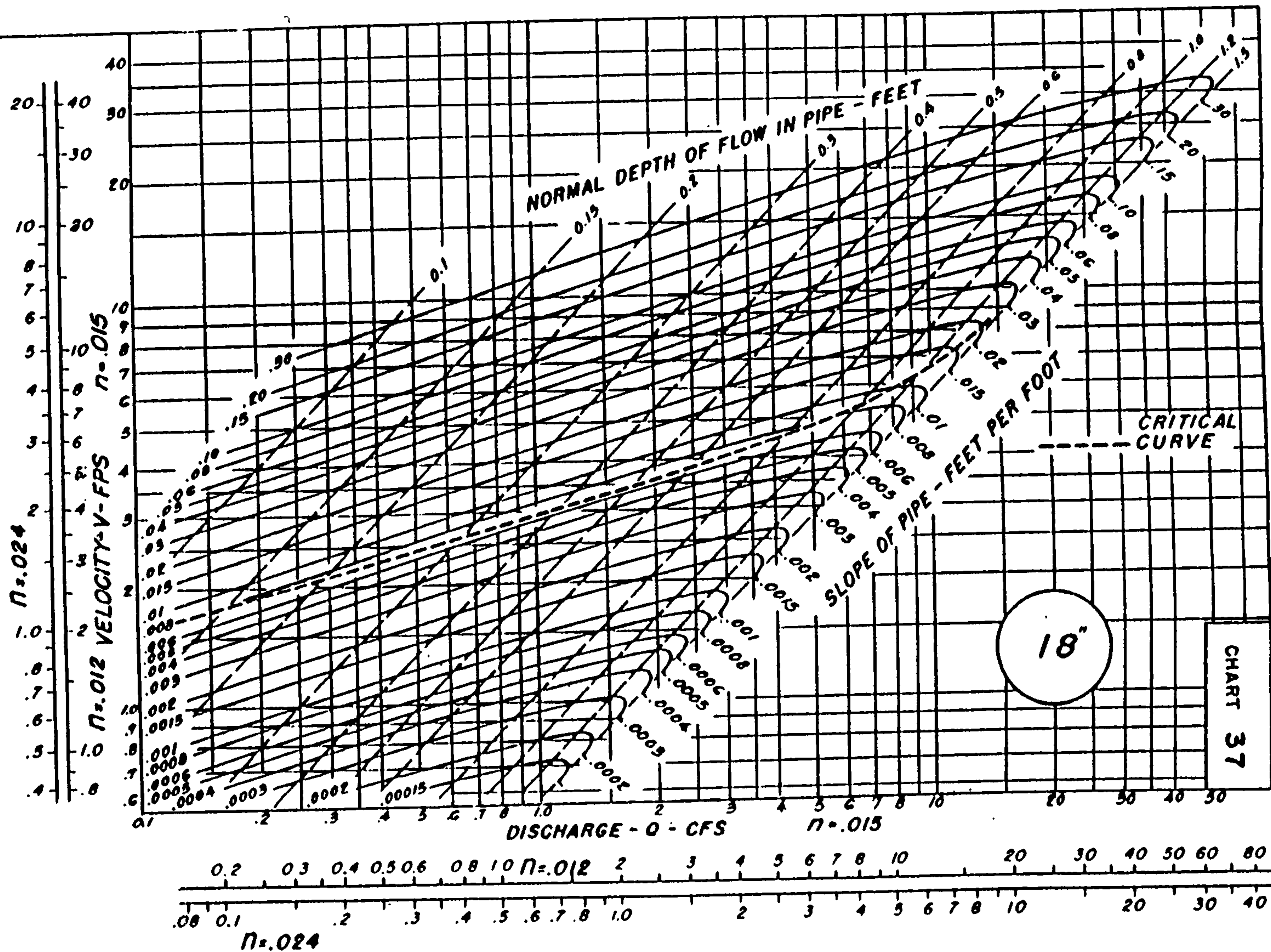
LINE 17 / Q = 4.2 / HT = 18 / WID = 18 / N = .013 / L = 197 / JLC = .05

MH 6 - MH 15 / DNLN = 16

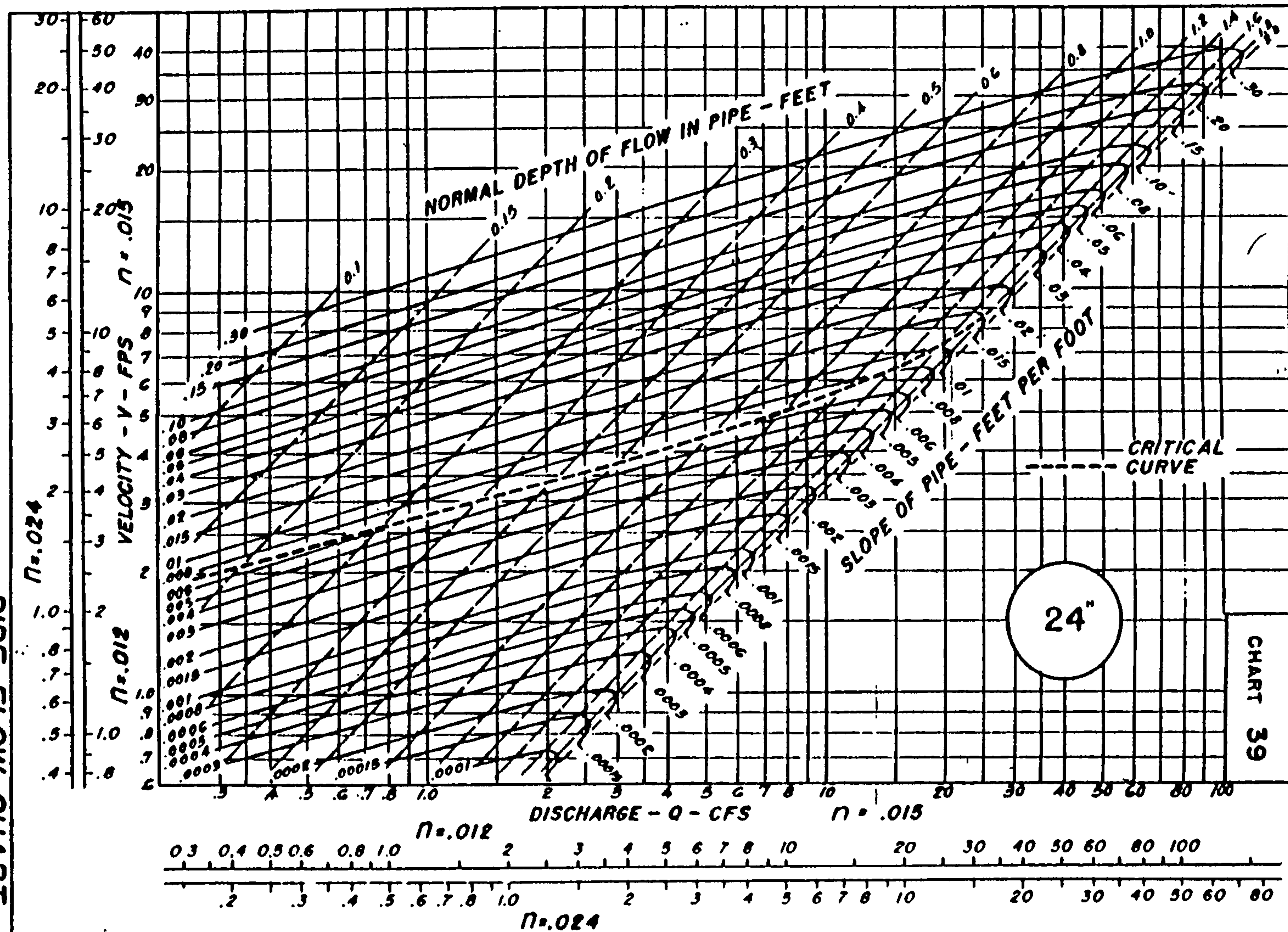
	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.63	10.54	25.75	3.91	26.87	17.71	10.88	1.08
UPSTRM	27.68	9.44	26.88	4.52	28.00	17.98	5	0.94

Drainage area (ac) = 0	Slope of invert (%) = 0.574
Runoff coefficient = 0	Slope energy grade line (%) = 0.567
Time of conc (min) = 0	Critical depth (in) = 9.43
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 4.2	Confluence angle (deg) = 0
Default Q (cfs) = 4.24	Natural ground elev (ft) = 33.38
Line capac. (cfs) = 8.0	Line storage (cuft) = 199

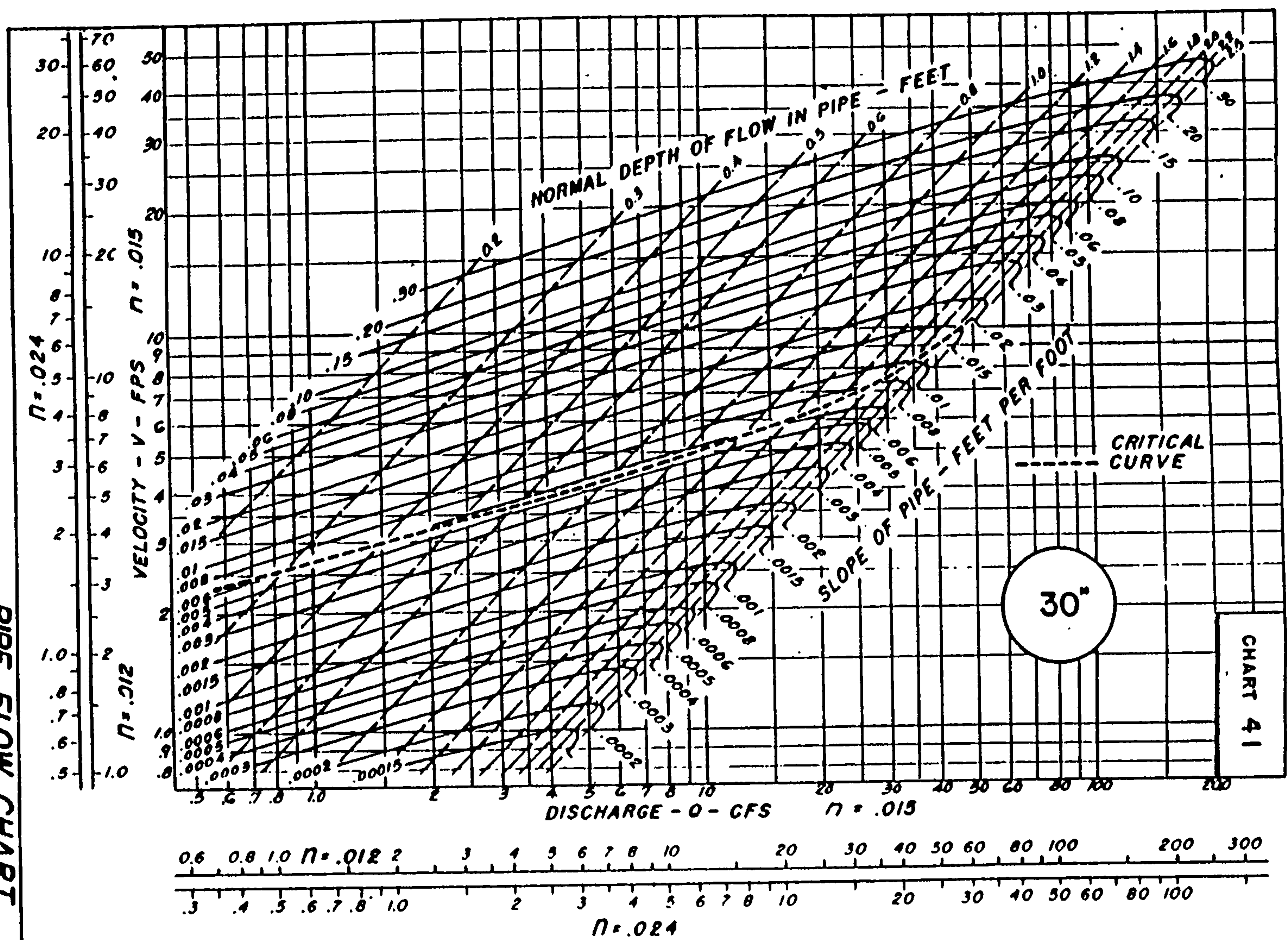
PIPE FLOW CHART
18-INCH DIAMETER



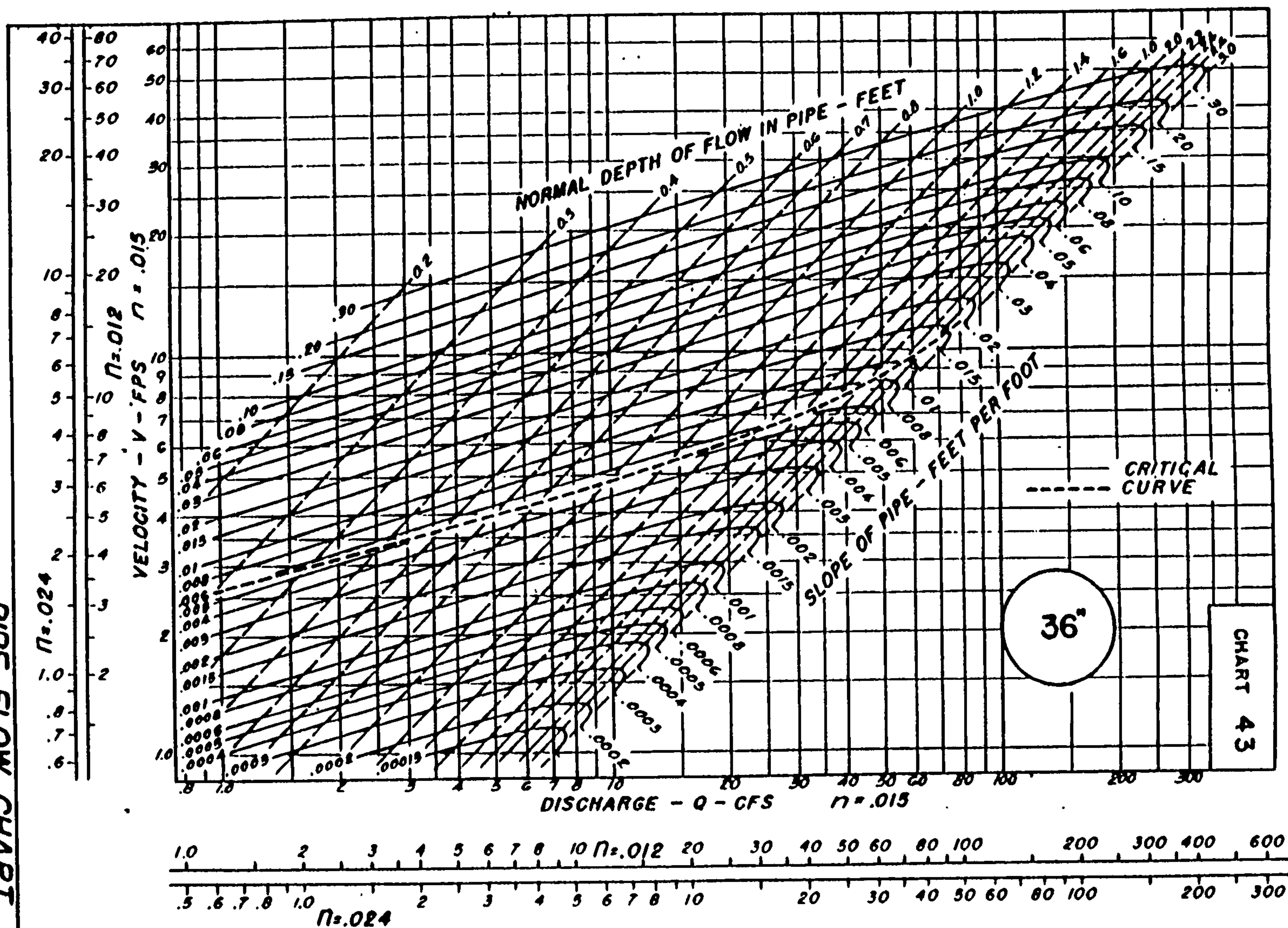
PIPE FLOW CHART
24-INCH DIAMETER



PIPE FLOW CHART
30-INCH DIAMETER



PIPE FLOW CHART
36-INCH DIAMETER



APPENDIX C
HYDRAULICS

1*****

* WATER SURFACE PROFILES

*

* U.S. ARMY CORPS OF ENGINEERS

*
* VERSION OF SEPTEMBER 1988
* THE HYDROLOGIC ENGINEERING CENTER *
* ERROR: 01,02
* 609 SECOND STREET, SUITE D *
* UPDATED: 4 APRIL 1989
* DAVIS, CALIFORNIA 95616-4687 *
* RUN DATE 9/11/97 TIME 20:52:46
* (916) 756-1104, (916) 551-1748 *

	X	X	XXXXXXXX	XXXXX	XXXXX
	X	X	X	X	X
X					
	X	X	X	X	
X					
	XXXXXXXX	XXXX	X	XXXXX	XXXXX
	X	X	X	X	X
	X	X	X	X	X
	X	X	XXXXXXXX	XXXXX	

XXXXXXXX

END OF BANNER

1

9/11/97 20:52:46

PAGE 1

Los Volcanes Ditch

THIS RUN EXECUTED 9/11/97 20:52:46

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

T1 CLIFFORD WEST BUSINESS PARK
T2 V-DITCH ON LOS VOLCANES ROAD
T3 100-YEAR / 6-HOUR DESIGN STORM

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q
WSEL	FQ							
	0	2	0	0	.01	0	0	0
	0							

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

43	1	2	26	4	68	3
----	---	---	----	---	----	---

NC	.025	.025	.025	.1	.3
----	------	------	------	----	----

QT	1	21.53
----	---	-------

X1 1 4 0 10.0 0 0 0
0 0 0
GR 1.0 0 0 3.0 0 7.0 1.0
10.0
1

9/11/97 20:52:46
PAGE 2

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK
ELEV									
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
LEFT/RIGHT									
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	
SSTA									
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	
ENDST									

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.81	.81	.00	.00	1.08	.26	.00	.00
1.00	22.	0.	22.	0.	0.	5.	0.	0.
1.00	.00	.00	4.11	.00	.000	.025	.000	.00
.56	.010039	0.	0.	0.	0	0	6	.00
8.88								

9.44

0

1

9/11/97 20:52:46
PAGE 3

THIS RUN EXECUTED 9/11/97 20:52:46

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR / 6-HOUR DE

SUMMARY PRINTOUT

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9/11/97 20:52:46
PAGE 4

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* VERSION OF SEPTEMBER 1988
* ERROR: 01,02
* UPDATED: 4 APRIL 1989
* RUN DATE 3/ 9/98 TIME 17:13:18
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*****
* U.S. ARMY CORPS OF ENGINEERS
* THE HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104, (916) 551-1748
*****

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      X      X X      X      X      X      X
      X      X X      X      X      X
XXXXXXX XXXX X      XXXXX XXXXX
      X      X X      X      X
      X      X X      X      X
      X      X XXXXXXXX XXXXX      XXXXXXXX

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3/ 9/98 17:13:18

PAGE

STREET CAPACITY CALCULATIONS

THIS RUN EXECUTED 3/ 9/98 17:13:18

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HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

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ERROR CORR - 01,02
MODIFICATION -

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T1 OLIVER ROSS ROAD CAPACITY CALCULATIONS
T2 40' FF W/ 8" STD CURB SUB-CRITICAL FLOW
T3 FILE:40FFCLIF.DAT (100-YR 6-HR STORM)

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J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	1	.0154	0	0	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	43	1	2	26	4	68	3
NC	.017	.017	.017	.1	.3		
QT	5	7.88	4.24	12.81	5.21	5.69	
X1	1	9	0	60	0	0	0
GR	1.0	0	.67	9.9	0	10	.125
GR	.125	48	0	50	.67	50.1	1.0

3/ 9/98 17:13:18

PAGE 2

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.00	.31	.31	.33	.00	.40	.10	.00	.00	1.00
8.	0.	8.	0.	0.	3.	0.	0.	0.	1.00
.00	.00	2.50	.00	.000	.017	.000	.000	.00	9.95
.015296	0.	0.	0.	0	23	7	.00	27.90	50.05

0

1

3/ 9/98 17:13:18

PAGE 3

T1 SAUL BELL ROAD

T2 100YR 6HR

T3 40FF STD

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	.006					
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2	0	-1	0	0	0	0	0	0	0

1

3/ 9/98 17:13:18

PAGE 4

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= .100 CEHV= .300

*SECNO 1.000

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3265 DIVIDED FLOW

1.00	.29	.29	.00	.00	.33	.03	.00	.00	1.00
4.	0.	4.	0.	0.	3.	0.	0.	0.	1.00
.00	.00	1.50	.00	.000	.017	.000	.000	.00	9.96
.005931	0.	0.	0.	0	0	7	.00	26.29	50.04

0
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3/ 9/98 17:13:18

PAGE 5

T1 BLUEWATER
T2 100YR 6HR
T3 40FF STD

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	0	4	0	1	.020					
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
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1

3/ 9/98 17:13:18

PAGE 6

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
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TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.00	.34	.34	.39	.00	.49	.15	.00	.00	1.00
13.	0.	13.	0.	0.	4.	0.	0.	0.	1.00
.00	.00	3.10	.00	.000	.017	.000	.000	.00	9.95
.019969	0.	0.	0.	0	16	7	.00	32.13	50.05

0
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3/ 9/98 17:13:18

PAGE 7

T1 BLUEWATER
T2 100YR 6HR
T3 40FF STD

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1
3/ 9/98 17:13:18

PAGE 8

SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= .100 CEHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

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.00	.00	1.48	.00	.000	.017	.000	.000	.00	9.95
.004981	0.	0.	0.	0	0	7	.00	29.60	50.05

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1
3/ 9/98 17:13:18

PAGE 9

T1 BLUEWATER
T2 100YR 6HR
T3 40FF STD

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	6	0	1	.010					
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	5	0	-1	0	0	0	0	0	0	0

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3/ 9/98 17:13:18

PAGE 10

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 5

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

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.00	.00	1.96	.00	.000	.017	.000	.000	.00	9.96
.009899	0.	0.	0.	0	14	7	.00	26.70	50.04

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PAGE 11

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 HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FILE:40FFCLIF.DAT (1

SUMMARY PRINTOUT

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12.810	.34	.39	3.10	32.13	1.71	.49

5.210	.32	.00	1.48	29.60	.88	.35
5.690	.30	.30	1.96	26.70	1.28	.36

1

3/ 9/98 17:13:18

PAGE 12

SUMMARY OF ERRORS AND SPECIAL NOTES

1*****

* WATER SURFACE PROFILES *
U.S. ARMY CORPS OF ENGINEERS *
* VERSION OF SEPTEMBER 1988 *
THE HYDROLOGIC ENGINEERING CENTER *
* ERROR: 01,02 *
609 SECOND STREET, SUITE D *
* UPDATED: 4 APRIL 1989 *
DAVIS, CALIFORNIA 95616-4687 *
* RUN DATE 9/12/97 TIME 11:48:41 *
(916) 756-1104, (916) 551-1748 *

X X XXXXXXX XXXXX XXXXX
X X X X X X X
X X X X X X
XXXXXXXX XXXX X XXXXX XXXXX
X X X X X X
X X X X X X
X X XXXXXXX XXXXX XXXXXXX

END OF BANNER
1
9/12/97 11:48:41
PAGE 1

TEMPORARY SWALE
THIS RUN
LOS VOLCANES RD.

EXECUTED 9/12/97 11:48:41

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -

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T2	V-DITCH ON LOS VOLCANES ROAD									
T3	100-YEAR / 6-HOUR DESIGN STORM									
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J3	VARIABLE CODES FOR SUMMARY PRINTOUT									
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NC	.025	.025	.025	.1	.3					
QT	1	21.53								
X1	1	4	0	12.0	0	0	0	0	0	
0	0	0								
GR	1.0	0	0	3.0	0	9.0	1.0	12.0		

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9/12/97 11:48:41
PAGE 2

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

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.00	.00	3.62	.00	.000	.025	.000	.000	.00	.82
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9/12/97 11:48:41
PAGE 3

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EXECUTED 9/12/97 11:48:41

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR / 6-HOUR DE

SUMMARY PRINTOUT

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21.530	.73	.00	3.62	10.36	.84	.93

1

9/12/97 11:48:41
PAGE 4

SUMMARY OF ERRORS AND SPECIAL NOTES



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Cl. Ford West B. Park
SUBJECT Hydrology
BY DLH DATE 9-12-97
CHECKED _____ DATE _____
SHEET _____ OF _____

Allowable Discharge Calculations

$$Q_{\text{allowable}} = 56.6 \text{ cfs}$$

$$\text{Total Area Unit 1, 2, 3} = 52.1054 \text{ acres}$$

$$\frac{56.6 \text{ cfs}}{52.1054} = 1.08625 \text{ cfs/acre}$$

$$\text{Unit 1 + 2} \quad 33.1363 \text{ acres} (1.08625 \text{ cfs/ac}) = 36.00 \text{ cfs}$$

$$\text{Tract A} \quad 18.9694 \text{ acres} (1.08625 \text{ cfs/ac}) = 20.60 \text{ cfs}$$

Summation of Discharge Allowed From All lots
in Unit 1 + 2 =

$$\begin{array}{r} 36.00 \text{ cfs} \\ - 7.88 \text{ cfs Oliver Ross Rd} \\ - 4.24 \text{ cfs Saul Bell Rd.} \\ \hline \end{array}$$

$\Sigma Q_{\text{allowable all Lots Unit 1+2}} \rightarrow 23.88 \text{ cfs}$
 $\Sigma \text{Lot Areas} = 30.2563 \text{ ac.}$

$$Q_{\text{allowable (lots)}} = \frac{23.88 \text{ cfs}}{30.2563 \text{ ac}} = \boxed{0.789257 \text{ cfs/ac}}$$

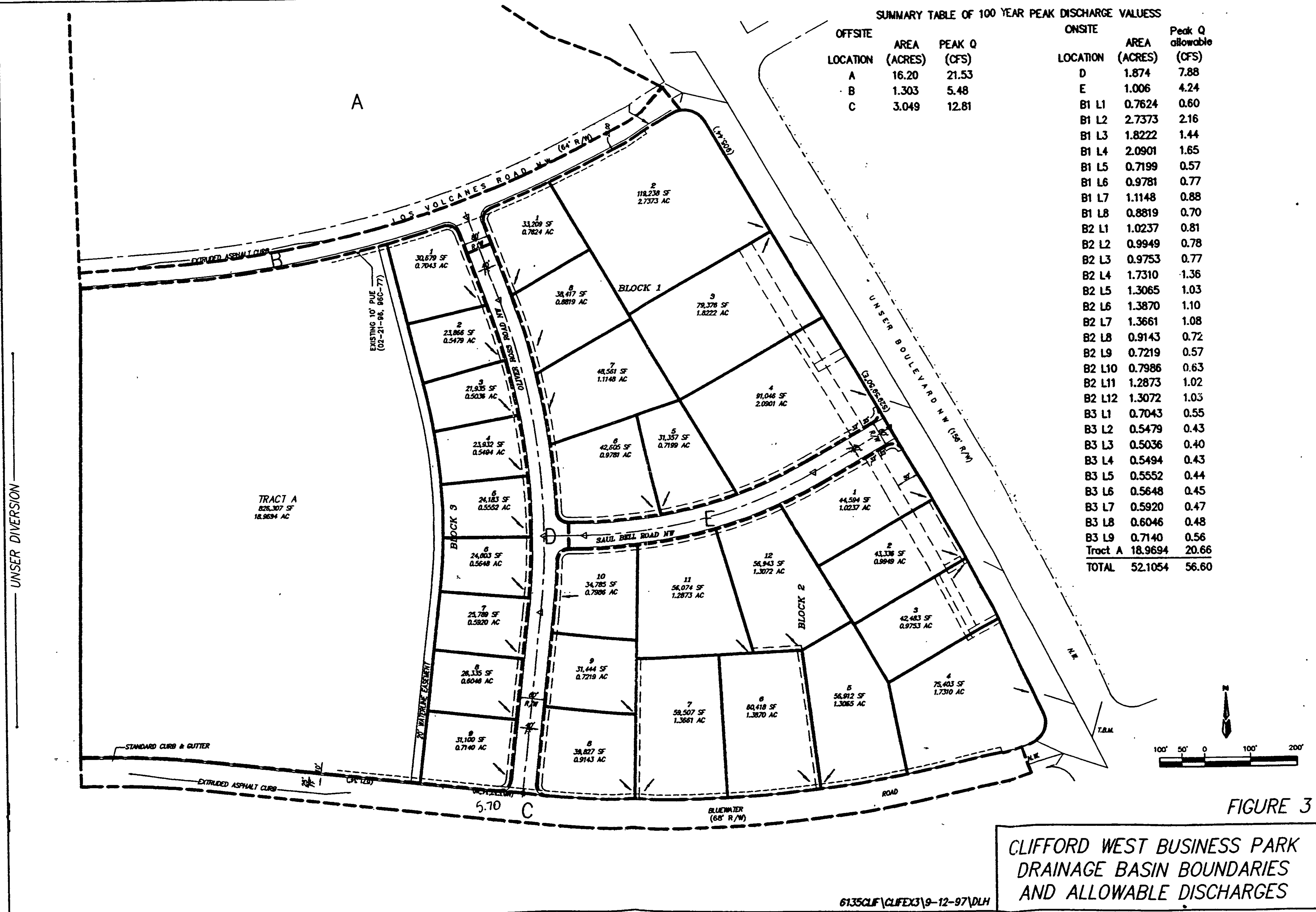
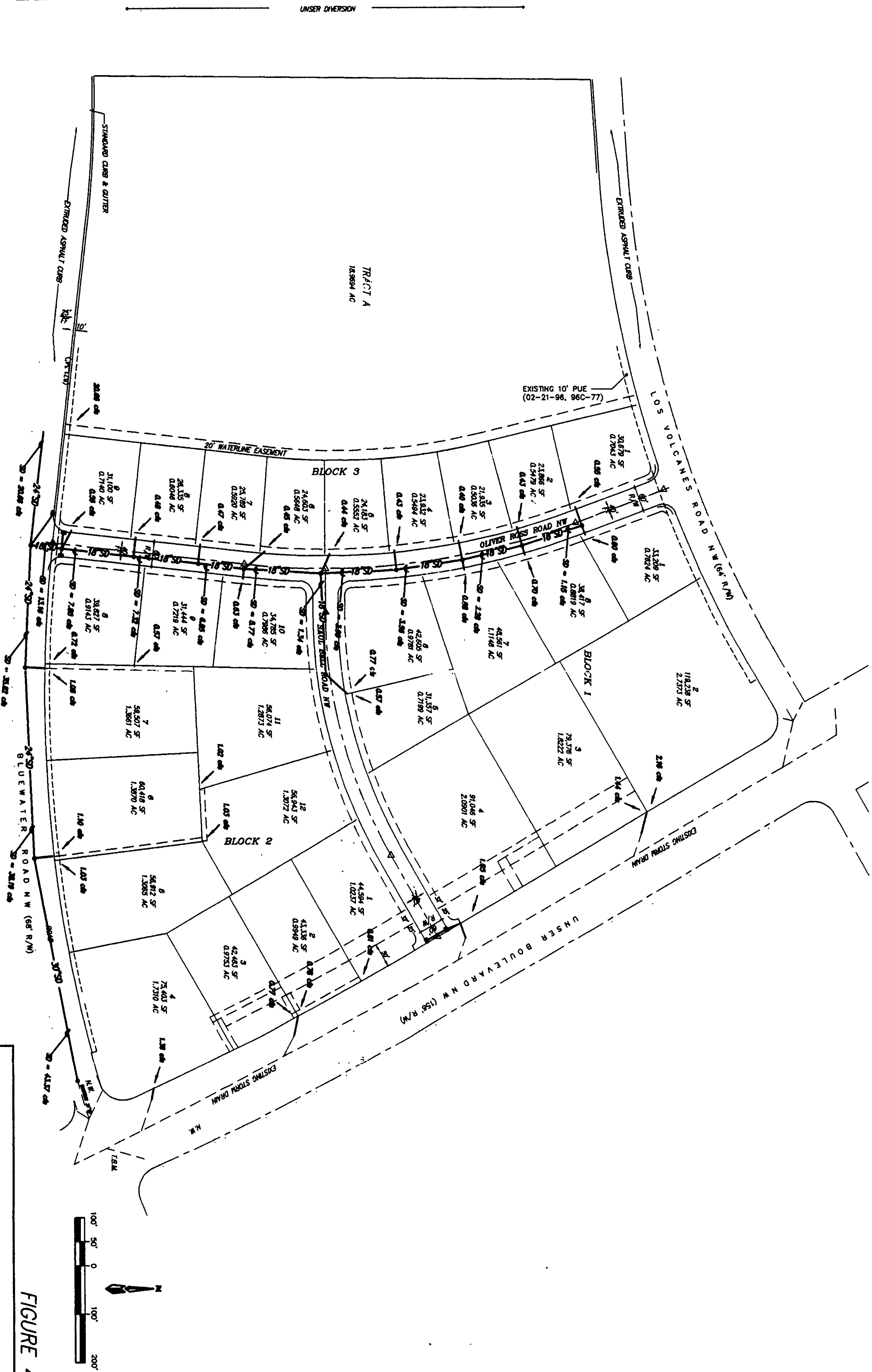


FIGURE 3

CLIFFORD WEST BUSINESS PARK
DRAINAGE BASIN BOUNDARIES
AND ALLOWABLE DISCHARGES



CLIFFORD WEST BUSINESS PARK
STORM DRAIN SCHEMATIC

FIGURE 4

DRAINAGE REPORT
for
CLIFFORD WEST BUSINESS PARK



SEPTEMBER 1997

TABLE OF CONTENTS

RESPONSE LETTER

- I. LOCATION AND DESCRIPTION**
- II. DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS**
- III. EXISTING DRAINAGE CONDITIONS**
- IV. DEVELOPED DRAINAGE CONDITIONS**
 - A. MASTER DRAINAGE PLAN**

TABLE 1: SUMMARY OF STREET AND INLET CAPACITIES

FIGURE 1: VICINITY MAP

FIGURE 2: FEMA MAP

FIGURE 3: CLIFFORD WEST BUSINESS PARK DRAINAGE BASINS BOUNDARIES AND ALLOWABLE DISCHARGE TABLE

FIGURE 4: CLIFFORD WEST BUSINESS PARK STORM DRAIN SCHEMATIC

APPENDIX A HYDROLOGY

APPENDIX B STORM DRAIN CALCULATIONS

APPENDIX C HYDRAULICS

POCKET 1: ATRISCO BUSINESS PARK APPROVED MASTER DRAINAGE PLAN 10-22-93

POCKET 2: CLIFFORD WEST BUSINESS PARK GRADING AND DRAINAGE PLAN (2 SHEETS)



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

September 12, 1997

Mr. Bernie Montoya
City of Albuquerque
One Stop - Hydrology Dept.
P.O. Box 1293
Albuquerque, NM 87199

K-9/D23

Re: **Clifford West Business Park Grading and Drainage Plan** ~~(K-9/D23)~~
Engineer's stamp 9-12-97

Dear Mr. Montoya:

This letter is in response to your concerns addressed in your letter dated September 2, 1997.

- ✓ 1. The stub-outs for each lot will extend from a manhole in the main storm drain to the property line. As each lot develops a detention pond and a restrictive outfall structure will be constructed on site. I met with Glenn Jurgensen and have included his written concurrence with this drainage plan.
- ✓ 2. The proposed drainage easement has been extended into lot 9 as reflected on the revised G&D plan.
3. All easements have been identified on the revised grading and drainage plan.
4. There are no proposed inlets on Unser Blvd. There are existing inlets in Unser Blvd. This drainage plan is to tap into the existing inlets and extend an 18" SD to the property line and discharge directly into the main storm drain in Unser Blvd. $\nearrow 12"$
5. The 20' public drainage easements have been changed to 10' private drainage easements.
6. Top of curb data has been added to the revised grading and drainage plan.
7. All contours on the grading and drainage plan are existing contours. A grading permit is not being sought with this submittal. Grading permits will be sought when individual grading and drainage plans are submitted for each lot.
8. I spoke with Richard Dourte and he has no problem with the temporary drainage swale within the right of way. I revised the offsite drainage basin area that contributes runoff to Los Volcanes Road and have provided more detail on the G & D Plan for the temporary swale and temporary spillway into Los Volcanes.
9. I have included a copy of the revised infrastructure list with this submittal.



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

10. *I have added a note on the grading and drainage plan that addresses the use of temporary erosion and sediment control berms and temporary diversion swales.*

If you have any questions, please call me.

Sincerely,

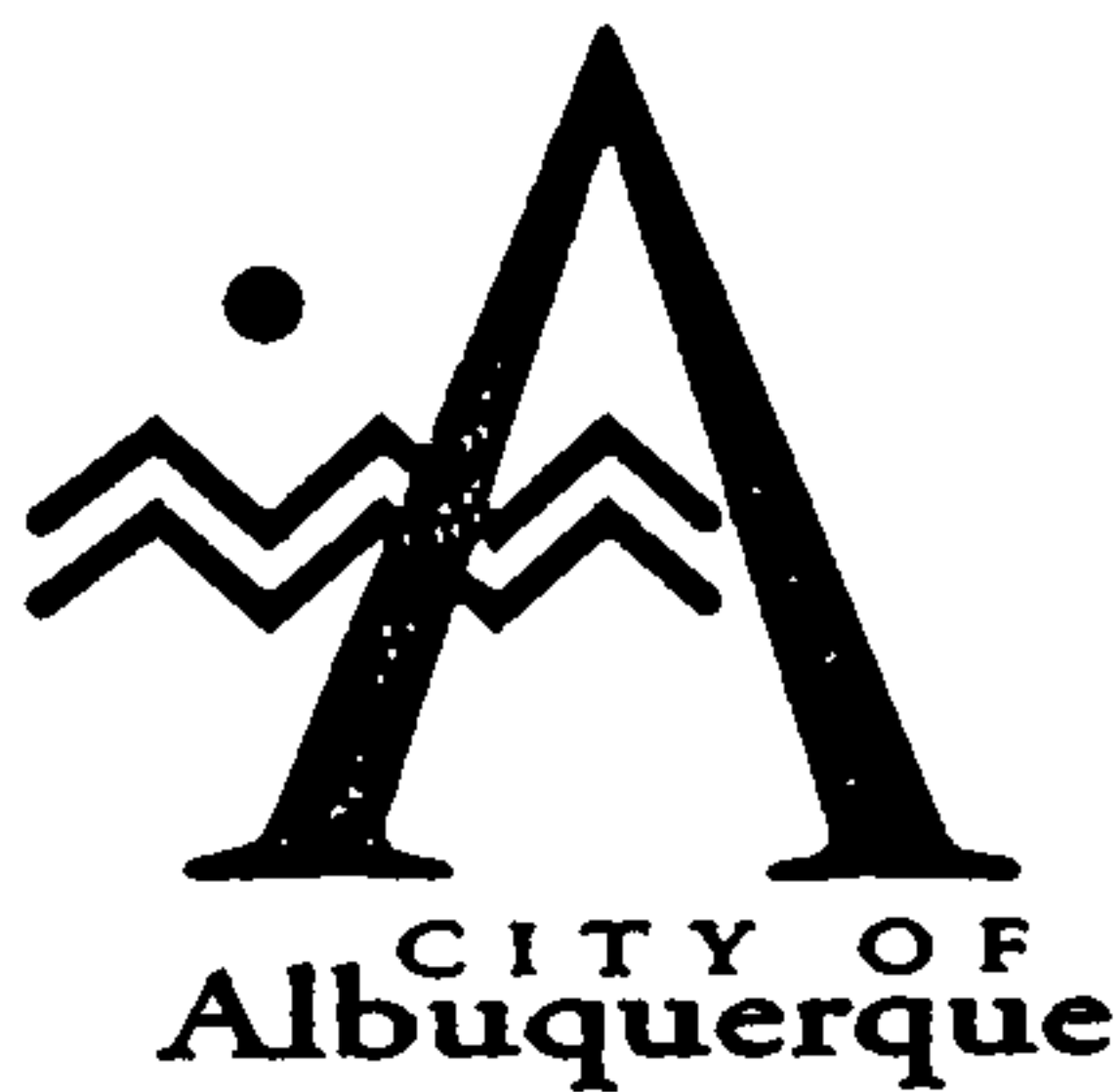
MARK GOODWIN AND ASSOCIATES, P.A.

Diane Hoelzer, P.E.

DLH:sb

Attachment

b:\clifford\drainage.ltr



Martin J. Chávez, Mayor

September 2, 1997

Diane Hoelzer
D. Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

K-9/D23

RE: DRAINAGE PLAN FOR CLIFFORD WEST BUSINESS PARK (~~2401~~) ENGINEER'S
STAMP DATED 7/30/97

Dear Ms. Hoelzer:

Based on the information provided on your July 30, 1997 submittal, listed are some concerns that will need to be addressed prior to Preliminary Plat and Grading approval:

1. Where do you propose to install the stub-outs from each lot? Glenn Jurgensen from Arroyo Maintenance will need to review your concept.
2. You will need to extend the proposed drainage easement further into lot 9.
3. Please identify all the easements shown on the plan drawing.
4. Proposed inlets on Unser must be "A"s.
5. Proposed drainage easements must be private.
6. Top of curb and flowline elevations on all the streets.
7. Please label the existing contours and the proposed if you are also seeking a Grading Permit.
8. What type of erosion and sediment control do you propose within the proposed 12" inch deep detention ditch on the south side of Los Volcanes Rd.. You will need Traffic concurrence.
9. Copy of the new infrastructure list.

Good for You, Albuquerque!



If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

A handwritten signature in cursive script, reading "Bernie J. Montoya".

Bernie J. Montoya CE
Associate Engineer

I. LOCATION AND DESCRIPTION

The proposed Clifford West Business Park, which was part of the larger Atrisco Business Park, is comprised of approximately 52.2 acres and is located south of I-25, just west of Unser Blvd. between Los Volcanes Road and Bluewater Road. Proposed development includes the infrastructure to support the individual development of 29 commercial sites.

The topographic relief in the area is in an southeasterly direction at a slope of approximately 2.0 percent.

The FEMA map indicates that a portion of the site is within the 100-year floodplain. Presently AMAFCA is working on a LOMR for the Unser Diversion. The Unser Diversion infrastructure has been built.

II. DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The drainage management plan for this site is based entirely on the previously approved Atrisco Business Park Master Drainage Plan for fully developed conditions dated October 22, 1993. In accordance with that plan the allowable discharge from this site is 56.6 cfs and the 100-year peak discharge from this site is 217.1 cfs. These two values are the basis for all the drainage calculations in this report.

IV. EXISTING DRAINAGE CONDITIONS

Under existing drainage conditions, on-site runoff flows in a southeasterly direction. All of these flows are intercepted by either Unser Blvd. or Bluewater Road. There is an existing swale on this site just north of Bluewater Road that intercepts flows and conveys the runoff to the east toward Unser Blvd. After some ponding the flows spill over into Unser Blvd. at the intersection with Bluewater Road.

Off-site flows along the east and south property line continue in the southeasterly direction, away from the project site. Off-site flows north of the project site flow in a southeasterly direction through the site. All flows west of the site are intercepted by the Unser Diversion facility.

There is an existing storm drain in Unser Blvd. that includes stub-outs in Los Volcanes Road and Bluewater Road and four inlets in the west flowline of Unser Blvd. This system includes two inlets at the intersection of Los Volcanes Rd./Unser Blvd. and four inlets at the intersection of Bluewater Road/Unser Blvd.

V. PROPOSED DRAINAGE CONDITIONS

A. MASTER DRAINAGE PLAN

For this drainage plan the primary drainage requirement is that every individual commercial site will be required to retain a certain amount of their runoff on-site and all runoff from the site must discharge directly into the adjacent storm drain. The allowable discharge from each lot within the project site was calculated based on the approved master drainage plan for Atrisco Business Park and is summarized in a Table in Figure 3 and shown on the grading and drainage plan. Drainage calculations are in the Appendix A Hydrology.

The storm drain in Bluewater Road will be extended west to the Unit 1/3 boundary divide and in Oliver Ross Road and Saul Bell Road within the project site. Storm drain stub-outs will be provided to the property line for each of the 29 lots. Four 18" storm drain laterals will be extended from the existing inlets in Unser Blvd. to the property line to allow direct discharge from the seven properties adjacent to Unser Blvd. The storm drain in

Bluewater will include four stub-outs to the property line to service those lots that drain in a southerly direction.

Street flows in Los Volcanes Road will be intercepted by the existing inlets at the Unser Blvd. Intersection. Street flows in Bluewater Road will be intercepted by the existing inlets at the intersection of Unser Blvd. Street flows in Saul Bell Road will be intercepted by two new inlets located just west of the Unser Blvd. intersection.

Off-site flows originating from the west are intercepted by the Unser Diversion Facility. Off-site flows originating from the north will be intercepted by a temporary drainage swale located within the public right-of-way along the north side of Los Volcanes Road before discharging into the street at the intersection of Unser Blvd. and Los Volcanes Road. The profile for Los Volcanes road is being constructed lower than the surrounding area to help prevent the possibility of offsite flows originating from the north from entering the project site as it is developing.

The Atrisco Business Park Master Plan Fully Developed Conditions exhibit is included in the back pocket of this report to facilitate in the understanding of the big picture for development of the area. Another close up exhibit of the area and the drainage basin areas used in the master plan is included in Appendix A Hydrology.

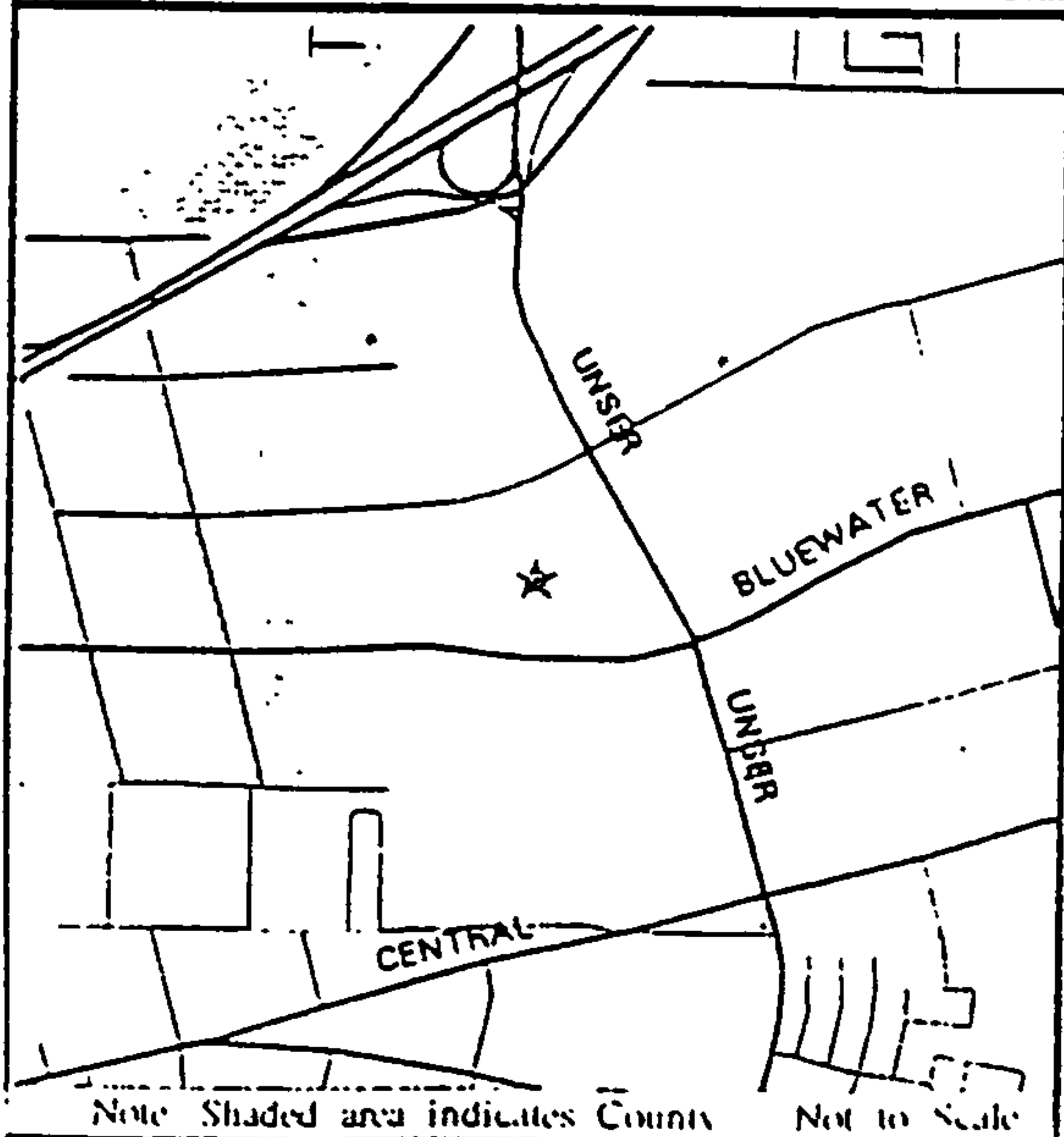
TABLE 1

SUMMARY OF STREET CAPACITY AND INLET CALCULATIONS

Clifford West Industrial Park

LOCATION	LOCATION	WIDTH ft.	SLOPE %	Q cfs	DEPTH ft	Q per INLET cfs	# of INLETS	REMAIN Q (cfs)	ADDITIONAL Q (cfs)
Oliver Ross Rd	@ Bluewater	40' FF	1.54	7.88	0.31	2.50	2	2.88	—
Saul Bell Rd	@ Unser	40' FF	0.60	4.24	0.29	1.65	2	0.94	—
Bluewater	@ Unser	40' FF	2.00	12.81	0.34	3.80	2	5.21	—
Bluewater	@ Unser	40' FF	0.005	5.21	0.32	1.90	2	1.41	—

f:\clifford.wst\condition.tbl



LAND USE MAP

KEY to Land Use Abbreviations

AGRI Agricultural
 COMM Commercial -Retail, Service Wholesale
 DRNG Drainage
 EDUC Public or Private School
 GOLF Golf Course
 MED Medical Office or Facility
 MFG Manufacturing or Mining
 MH Mobile Home
 MULT Multi-Family or Group Home
 OFF Office
 ORG Social or Civic Organization
 PARK Park, Recreation or Open Space
 PRKG Parking
 PUBF Public Facility
 RELG Religious Facility
 SF Single Family
 TRAN Transportation Facility
 UTIL Utility
 VAC Vacant Land or Abandoned Bldgs
 WH Warehousing & Storage



Scale 1" = 249'

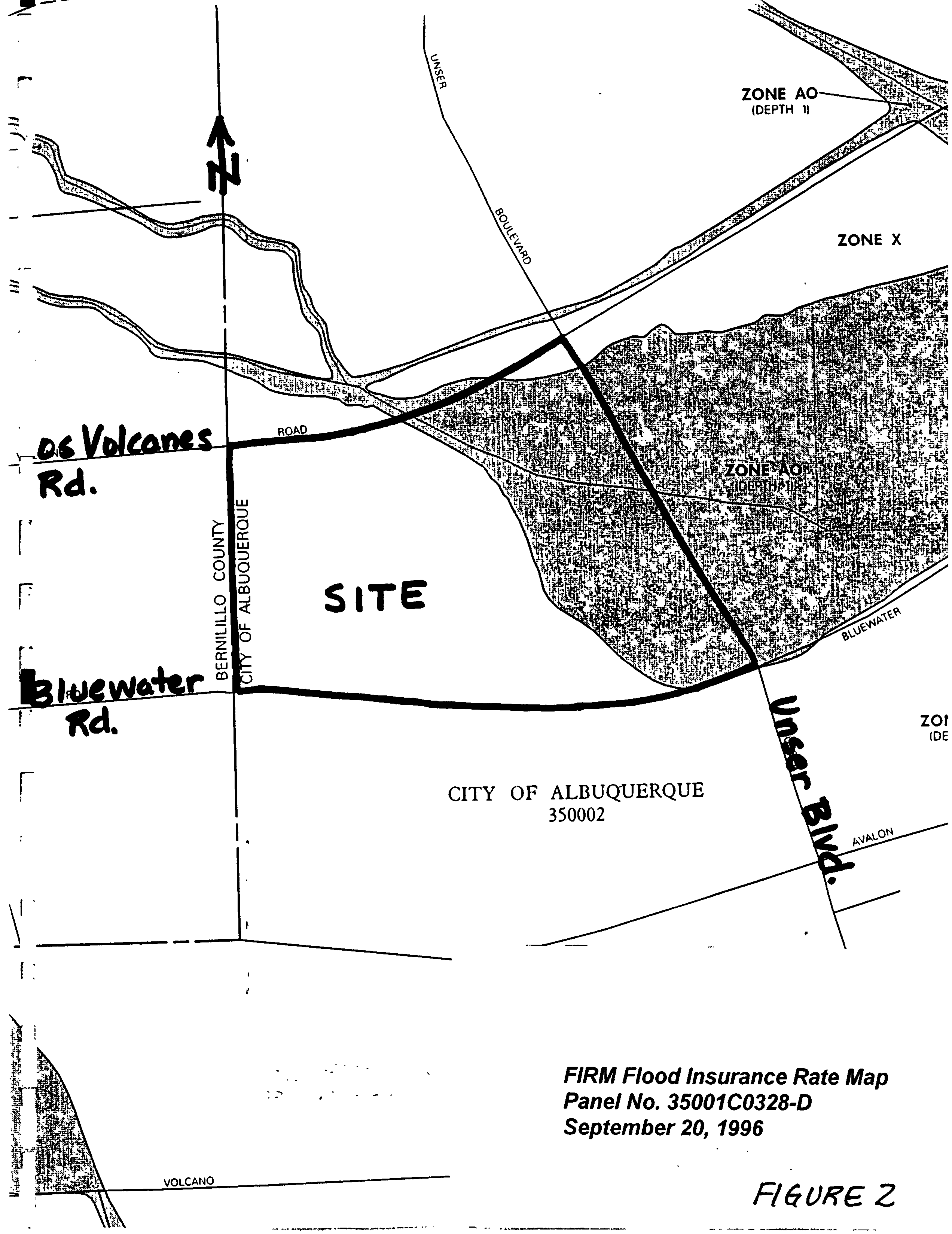
CASE PLANNER

HEARING DATE
1-16-97

MAP NO.
K-9/K-10

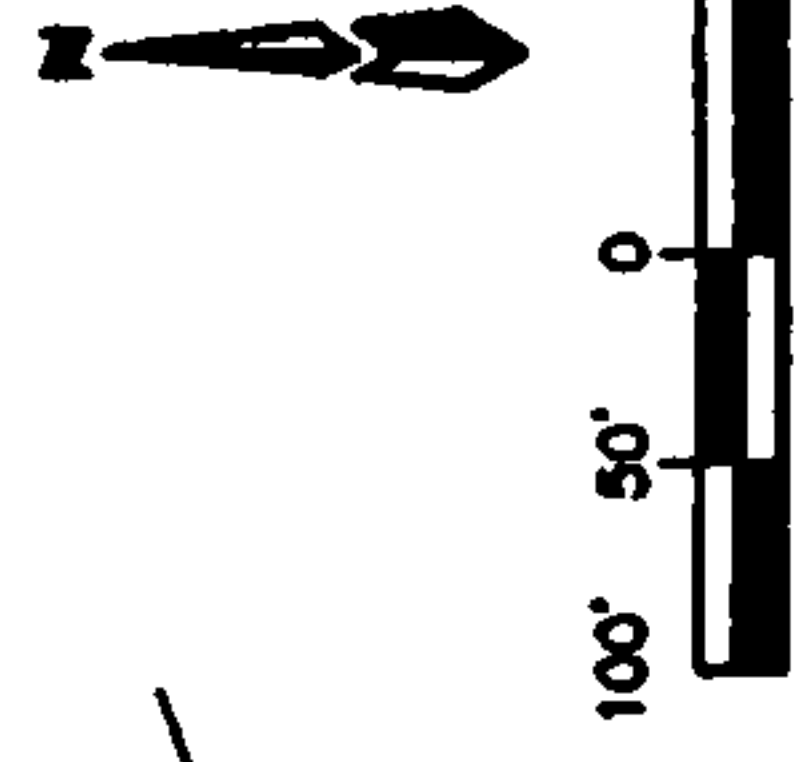
FILE NO.
Z-97-11

FIGURE 1



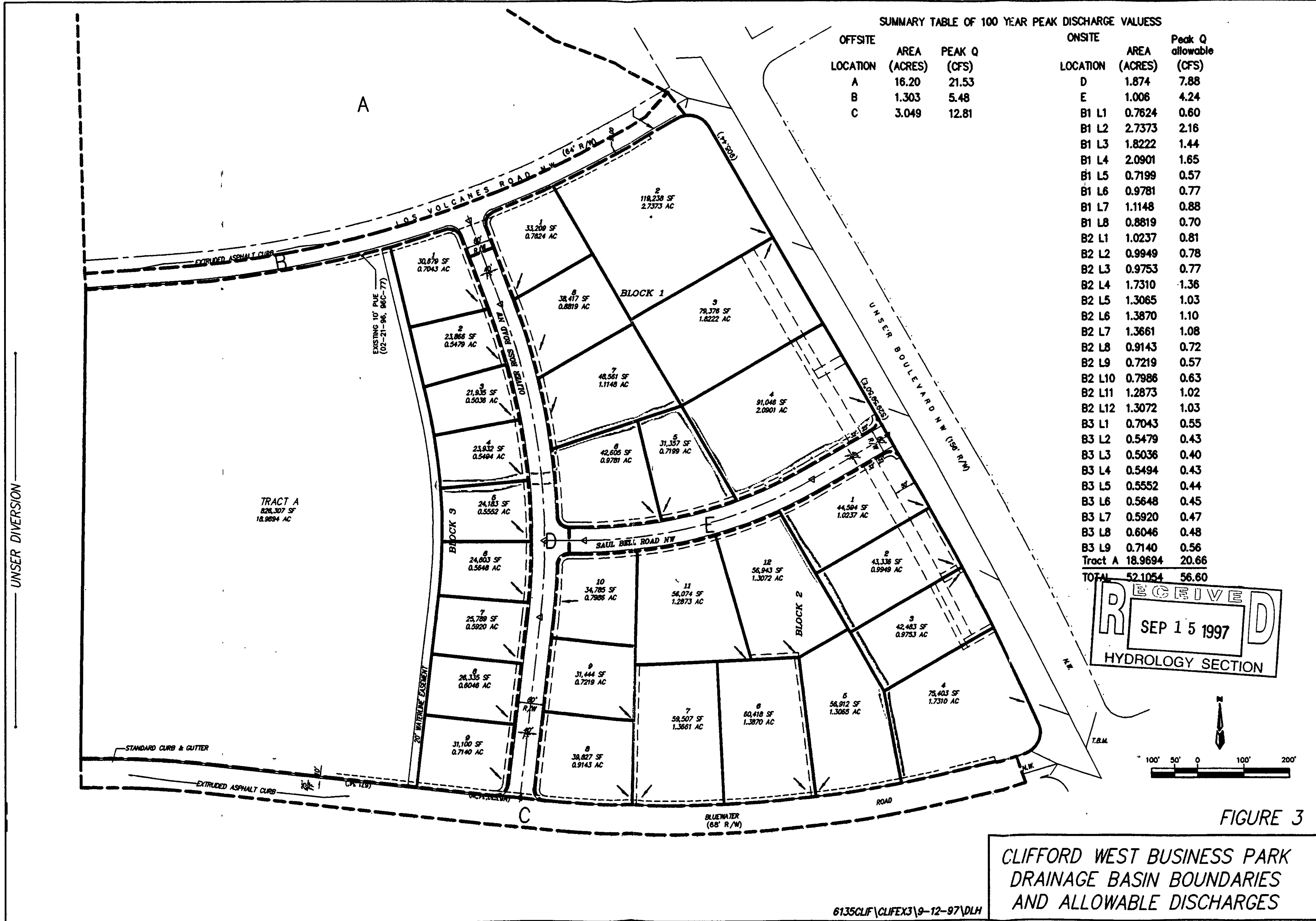
FIRM Flood Insurance Rate Map
Panel No. 35001C0328-D
September 20, 1996

FIGURE 2



CLIFFORD WEST BUSINESS PARK
STORM DRAIN SCHEMATIC

6135CLF\CLIFEX4\9-12-97\DLH



APPENDIX A
HYDROLOGY



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Wifford West B.
SUBJECT Hydrology
BY DLH DATE 9-12-97
CHECKED _____ DATE _____
SHEET _____ OF _____

Summary of Approved Hydrology Criteria For

THE ATRISCO BUSINESS PARK MASTER DRAINAGE PLAN (K10/D23)

APPROVED 10-22-93

POCKET 1 FOR SCHEMATIC..

1. 100 YR -24 HR. STORM

RAINFALL TYPE 2

$P_1 = 1.87$ $P_6 = 2.20$ $P_{24} = 2.66$

$DT = 0.05$

SUBBASIN 170.7 = 55 ACRES $\Rightarrow Q_{max} = 217.1$ CFS

2. FOR SAD 214 REPORT $Q_{max. allowable} = 56.6$ cfs



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Clifford West B. Park
SUBJECT Hydrology
BY DLT DATE 9-12-97
CHECKED _____ DATE _____
SHEET _____ OF _____

Allowable Discharge Calculations

$$Q_{\text{allowable}} = 56.6 \text{ cfs}$$

$$\text{Total Area Unit 1, 2, 3} = 52.1054 \text{ acres}$$

$$\frac{56.6 \text{ cfs}}{52.1054} = 1.08625 \text{ cfs/acre}$$

$$\text{Unit 1 + 2} \quad 33.1363 \text{ acres} (1.08625 \text{ cfs/ac}) = 36.00 \text{ cfs}$$

$$\text{Tract A} \quad 18.9694 \text{ acres} (1.08625 \text{ cfs/ac}) = 20.60 \text{ cfs}$$

Summation of Discharge Allowed From All lots
in Unit 1 + 2 =

$$36.00 \text{ cfs}$$

$$- 7.88 \text{ cfs Oliver Ross Rd.}$$

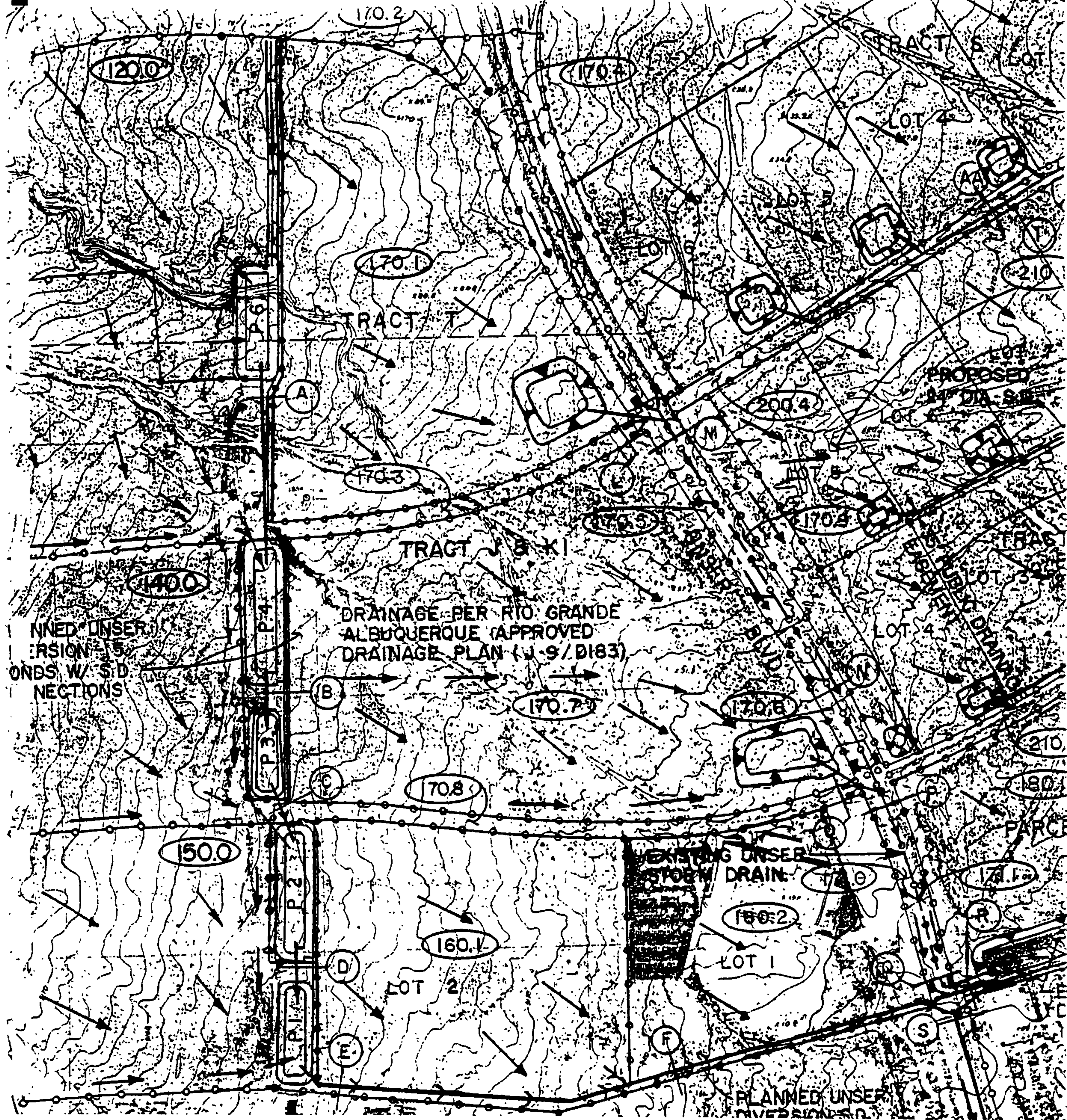
$$- 4.24 \text{ cfs Saul Bell Rd.}$$

$$\Sigma Q_{\text{allowable all Lots}} \rightarrow 23.88 \text{ cfs}$$

Unit 1+2

$$\Sigma \text{Lot Areas} = 30.2563 \text{ ac.}$$

$$Q_{\text{allowable (lots)}} = \frac{23.88 \text{ cfs}}{30.2563 \text{ ac}} = \boxed{0.789257 \text{ cfs/ac}}$$



FROM ATRISCO BUSINESS PARK MASTER DRAINAGE PLAN
COA DRAINAGE REPORT FILE (K10-D23)
APPROVED 10-22-93

```

START                                TIME=0.0
***** CLIFFORD WEST BUSINESS PARK
***** 100-YEAR 6-HOUR STORM EVENT
***** FILE: CLIFFEX.DAT JULY 1997 BY:DLH
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
          RAIN ONE=1.90 IN RAIN SIX=2.20 IN
          RAIN DAY=0.0 IN DT=0.0333 HR

*****
***** NORTH OFFSITE EXISTING CONDITIONS
*****
COMPUTE NM HYD ID=1 HYD NO=100.0 AREA=0.02532 SQ MI
              PER A=100 PER B=0 PER C=0 PER D=0
              TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1
*****
***** LOS VOLCANES PAVED CONDITIONS
*****
COMPUTE NM HYD ID=1 HYD NO=100.0 AREA=0.002036 SQ MI
              PER A=0 PER B=10 PER C=0 PER D=90
              TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1
*****
***** SAUL BELL RD PAVED CONDITIONS
*****
COMPUTE NM HYD ID=1 HYD NO=100.0 AREA=0.001572 SQ MI
              PER A=0 PER B=10 PER C=0 PER D=90
              TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1
*****
***** OLIVER ROSS RD PAVED CONDITIONS
*****
COMPUTE NM HYD ID=1 HYD NO=100.0 AREA=0.002928 SQ MI
              PER A=0 PER B=10 PER C=0 PER D=90
              TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1
*****
***** BLUEWATER PAVED CONDITIONS
*****
COMPUTE NM HYD ID=1 HYD NO=100.0 AREA=0.004764 SQ MI
              PER A=0 PER B=10 PER C=0 PER D=90
              TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1
FINISH

```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 =09/11/1997
 INPUT FILE = CLIFFEX.DAT
 M_GOODWN.I01

RUN DATE (MON/DAY/YR)

USER NO.=

CFS	PAGE = 1	HYDROGRAPH	FROM ID	TO ID	AREA	PEAK DISCHARGE	RUNOFF VOLUME	TIME TO PEAK
PER	COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES) (HOURS)
ACRE	NOTATION							
START								
TIME= .00								
RAINFALL TYPE= 1								
RAIN6= 2.200								
1.328	PER IMP= .00	COMPUTE NM HYD	100.00	-	1	.02532	21.53	.606 .44912 1.532
4.209	PER IMP= 90.00	COMPUTE NM HYD	100.00	-	1	.00204	5.48	.200 1.83780 1.499
4.213	PER IMP= 90.00	COMPUTE NM HYD	100.00	-	1	.00157	4.24	.154 1.83780 1.499
4.205	PER IMP= 90.00	COMPUTE NM HYD	100.00	-	1	.00293	7.88	.287 1.83780 1.499
4.202	PER IMP= 90.00	COMPUTE NM HYD	100.00	-	1	.00476	12.81	.467 1.83780 1.499
FINISH								

APPENDIX B
STORM DRAIN

9-3-97

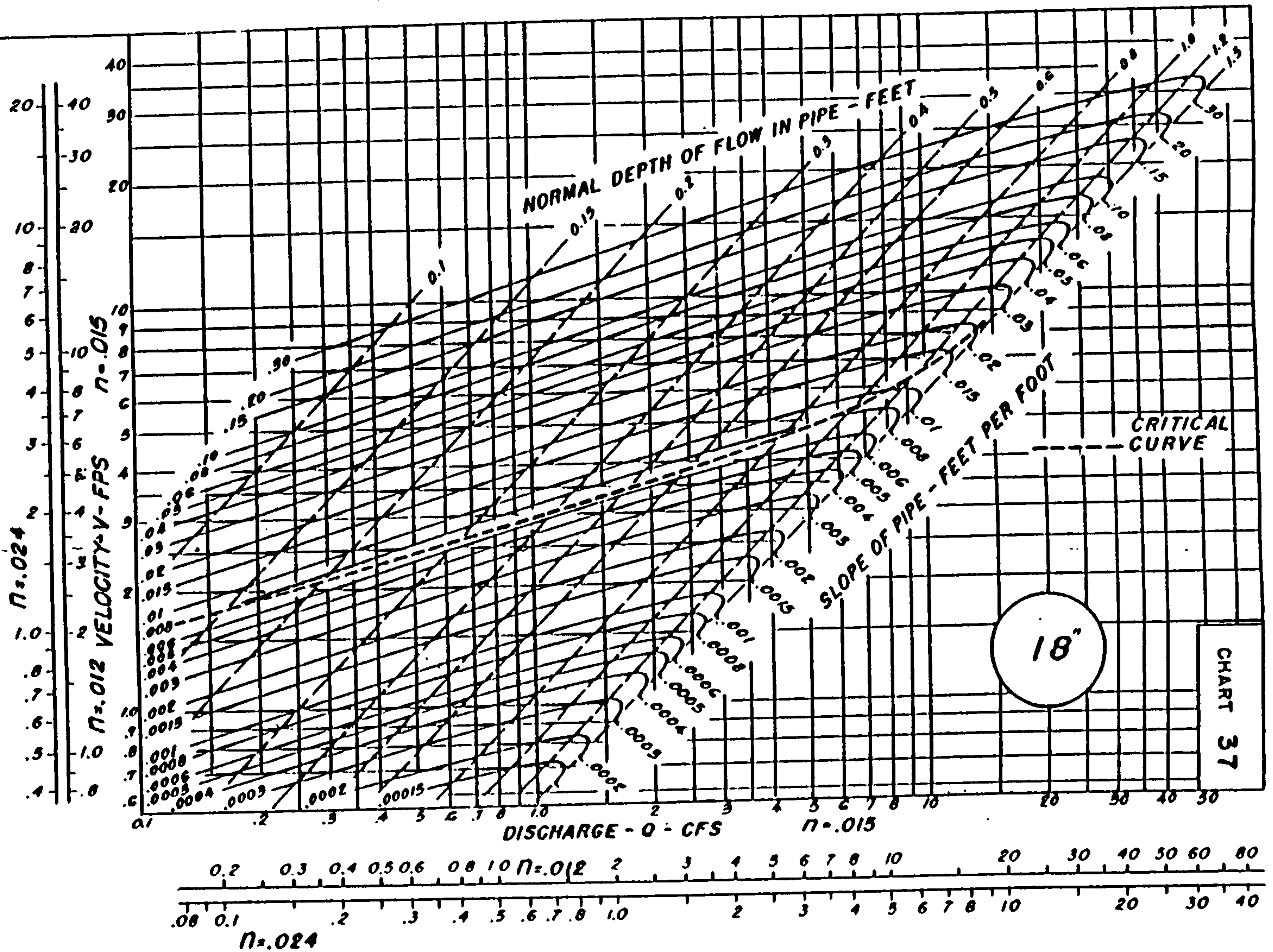
If drainage off of each lot requires an 18" SD directly into the main line, there will need to be a manhole at each service storm drain intersection with the main storm drain.

Sherrill
Jung

For Clifford West Business Park
Grading & Drainage Plan

K-9/10

PIPE FLOW CHART
18-INCH DIAMETER



PIPE FLOW CHART
24-INCH DIAMETER

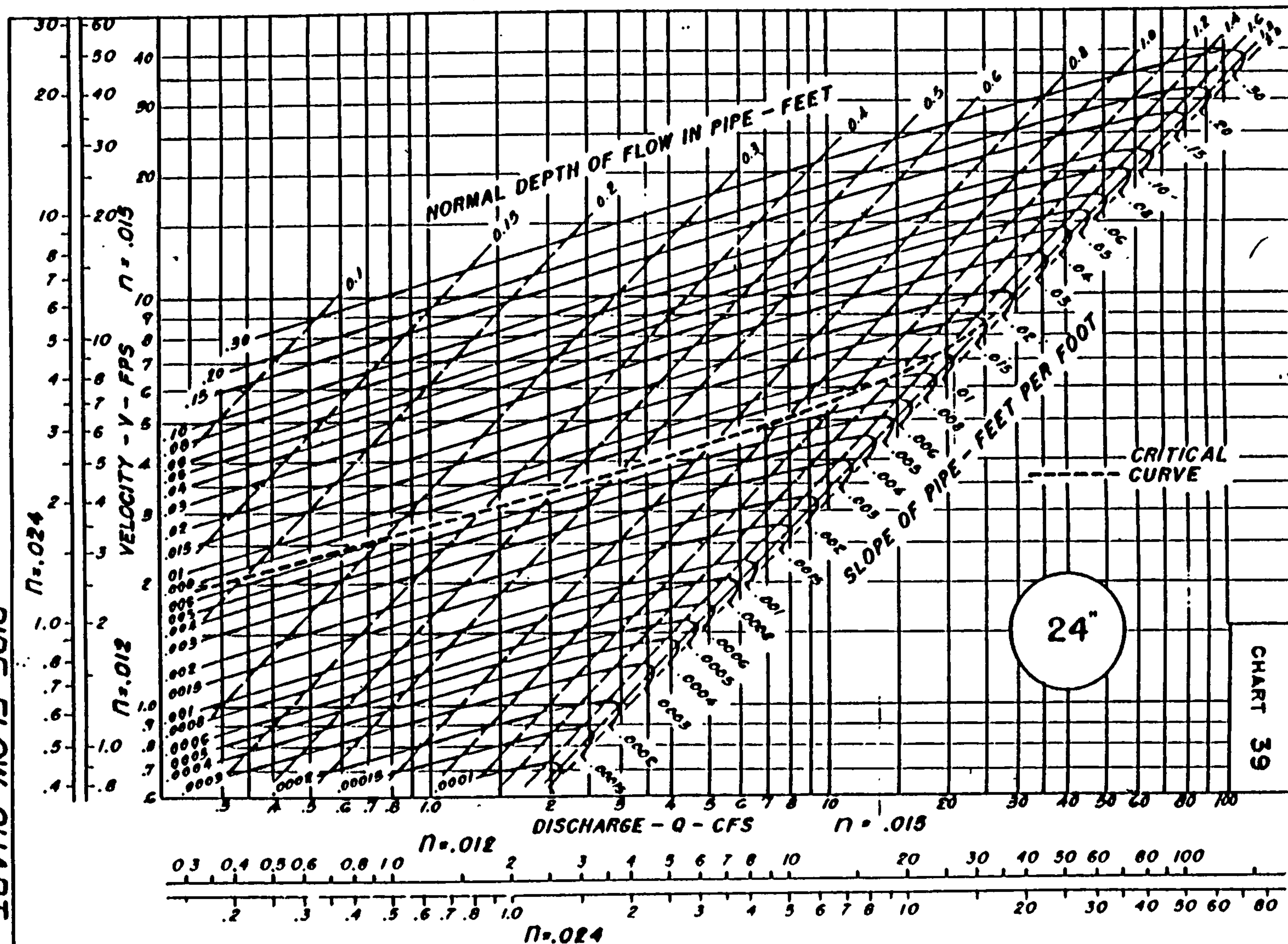


CHART 39

PIPE FLOW CHART
30-INCH DIAMETER

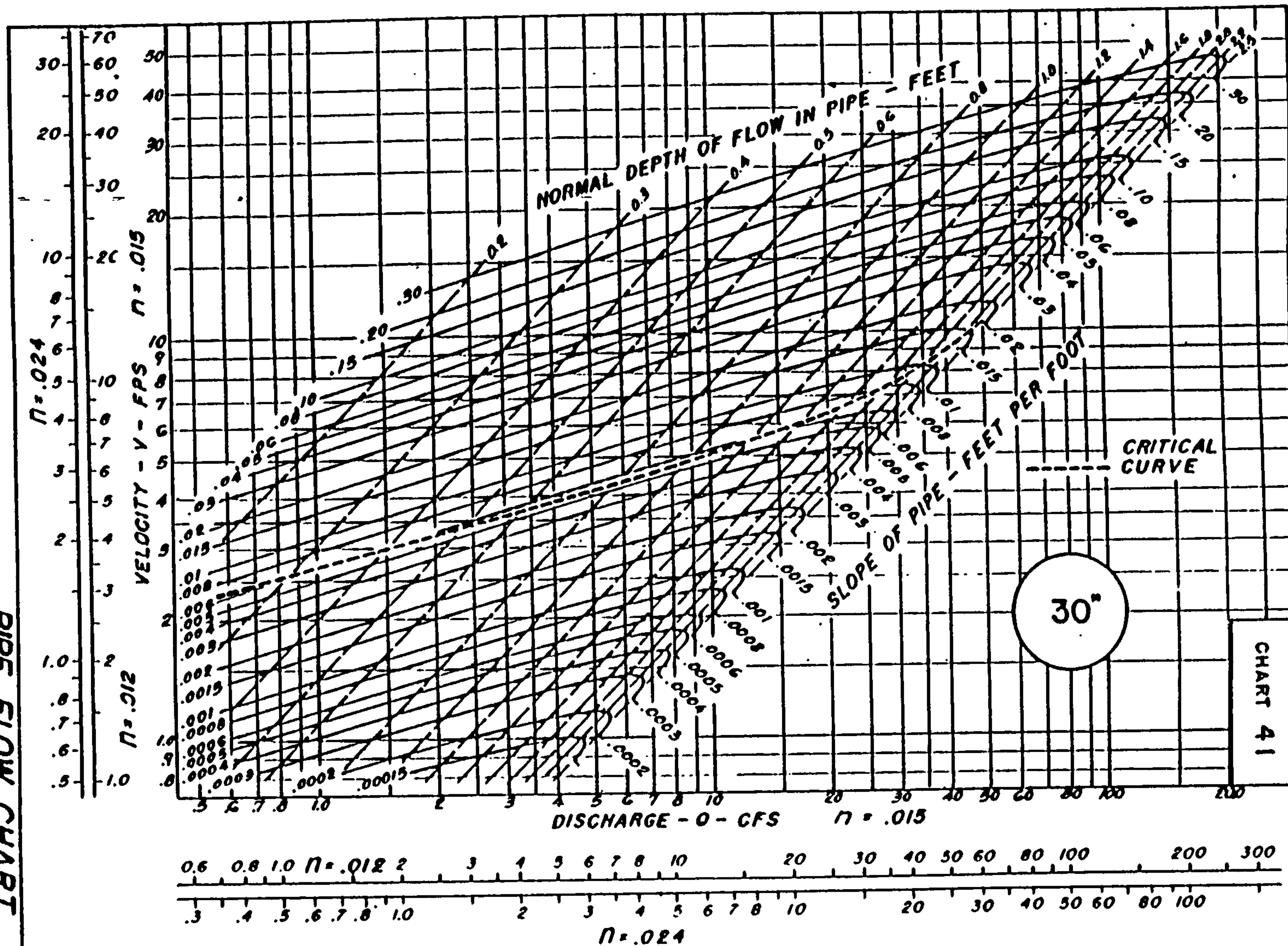


CHART 43

APPENDIX C
HYDRAULICS

1*****

* WATER SURFACE PROFILES

* U.S. ARMY CORPS OF ENGINEERS

* VERSION OF SEPTEMBER 1988

* THE HYDROLOGIC ENGINEERING CENTER *

* ERROR: 01,02

* 609 SECOND STREET, SUITE D

* UPDATED: 4 APRIL 1989

* DAVIS, CALIFORNIA 95616-4687

* RUN DATE 9/11/97 TIME 20:52:46

* (916) 756-1104, (916) 551-1748

	X	X	XXXXXXXX	XXXXX		XXXXX
	X	X	X	X	X	X
X						
	X	X	X	X		
X						
	XXXXXXXX	XXXX	X		XXXXX	XXXXX
	X	X	X	X		X
	X	X	X	X	X	X
	X	X	XXXXXXXX	XXXXX		

XXXXXXXX

END OF BANNER

1

9/11/97

20:52:46

PAGE 1

Los Volcanes Ditch

THIS RUN EXECUTED 9/11/97 20:52:46

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

T1 CLIFFORD WEST BUSINESS PARK
T2 V-DITCH ON LOS VOLCANES ROAD
T3 100-YEAR / 6-HOUR DESIGN STORM

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q
WSEL	FQ							
	0	2	0	0	.01	0	0	0
	0							

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

43	1	2	26	4	68	3
----	---	---	----	---	----	---

NC	.025	.025	.025	.1	.3
----	------	------	------	----	----

QT	1	21.53
----	---	-------

X1 1 4 0 10.0 0 0 0
0 0 0
GR 1.0 0 0 3.0 0 7.0 1.0
10.0
1

9/11/97 20:52:46

PAGE 2

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK
ELEV									
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	
LEFT/RIGHT									
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	
SSTA									
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	
ENDST									

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.81	.81	.00	.00	1.08	.26	.00	.00
1.00	22.	0.	22.	0.	0.	5.	0.	0.
1.00	.00	.00	4.11	.00	.000	.025	.000	.00
.56	.010039	0.	0.	0.	0	0	6	.00
8.88								

9.44

0

1

9/11/97 20:52:46

PAGE 3

THIS RUN EXECUTED 9/11/97 20:52:46

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR / 6-HOUR DE

SUMMARY PRINTOUT

Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
21.530	.81	.00	4.11	8.88	.94	1.08

1

9/11/97 20:52:46

PAGE 4

```

X      X  XXXXXXXX  XXXXX      XXXXX
X      X  X        X      X      X      X
X      X  X        X          X      X
XXXXXXXX XXXX      X          XXXXX  XXXXX
X      X  X        X          X      X
X      X  X        X      X      X      X
X      X  XXXXXXXX  XXXXX      XXXXXXXX

```

END OF BANNER

1
9/12/97 8:32: 8
PAGE 1

THIS RUN

EXECUTED 9/12/97 8:32: 8

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

Street Capacities

ERROR CORR - 01,02
MODIFICATION -

T1 OLIVER ROSS ROAD CAPACITY CALCULATIONS
T2 40'FF W/ 8" STD CURB SUB-CRITICAL FLOW
T3 FILE:40FFCLIF.DAT (100-YR 6-HR STORM)

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
0	0	2	0	1	.0154	0	0	0	0	

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	43	1	2	26	4	68	3		
NC	.017	.017	.017	.1	.3				
QT	4	7.88	4.24	12.81	5.21				
X1	1	9	0	60	0	0	0	0	
GR	1.0	0	.67	9.9	0	10	.125	12	
GR	.125	48	0	50	.67	50.1	1.0	60	

9/12/97 8:32: 8
PAGE 2

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.00	.31	.31	.33	.00	.40	.10	.00	.00	1.00
------	-----	-----	-----	-----	-----	-----	-----	-----	------

8.	0.	8.	0.	0.	3.	0.	0.	0.	1.00
.00	.00	2.50	.00	.000	.017	.000	.000	.00	9.95
.015296	0.	0.	0.	0	23	7	.00	27.90	50.05

0
1
9/12/97 8:32: 8
PAGE 3

T1 SAUL BELL ROAD
T2 100YR 6HR
T3 40FF STD

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	.006					

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM
ITRACE									
	2	0	-1	0	0	0	0	0	0

0
1

9/12/97 8:32: 8
PAGE 4

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CCHV= .100 CEHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.00	.29	.29	.00	.00	.33	.03	.00	.00	1.00
4.	0.	4.	0.	0.	3.	0.	0.	0.	1.00
.00	.00	1.50	.00	.000	.017	.000	.000	.00	9.96
.005931	0.	0.	0.	0	0	7	.00	26.29	50.04

0
1
9/12/97 8:32: 8
PAGE 5

T1 BLUEWATER
T2 100YR 6HR
T3 40FF STD

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	4	0	1	.020					

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM
ITRACE									
	3	0	-1	0	0	0	0	0	0

1
9/12/97 8:32: 8
PAGE 6

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 3

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.00	.34	.34	.39	.00	.49	.15	.00	.00	1.00
13.	0.	13.	0.	0.	4.	0.	0.	0.	1.00
.00	.00	3.10	.00	.000	.017	.000	.000	.00	9.95
.019969	0.	0.	0.	0	16	7	.00	32.13	50.05

0

1

9/12/97 8:32: 8
PAGE 7

T1 BLUEWATER
T2 100YR 6HR
T3 40FF STD

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	5	0	0	.005					

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM
ITRACE									
	4	0	-1	0	0	0	0	0	0

0

1

9/12/97 8:32: 8
PAGE 8

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 4

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.00	.32	.32	.00	.00	.35	.03	.00	.00	1.00
5.	0.	5.	0.	0.	4.	0.	0.	0.	1.00
.00	.00	1.48	.00	.000	.017	.000	.000	.00	9.95
.004981	0.	0.	0.	0	0	7	.00	29.60	50.05

0

1

9/12/97 8:32: 8
PAGE 9

THIS RUN

EXECUTED 9/12/97 8:32: 8

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FILE:40FFCLIF.DAT (1

SUMMARY PRINTOUT

Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
7.880	.31	.33	2.50	27.90	1.57	.40
4.240	.29	.00	1.50	26.29	1.00	.33
12.810	.34	.39	3.10	32.13	1.71	.49
5.210	.32	.00	1.48	29.60	.88	.35

1
9/12/97 8:32: 8
PAGE 10

SUMMARY OF ERRORS AND SPECIAL NOTES

```

1*****
*****
* WATER SURFACE PROFILES
U.S. ARMY CORPS OF ENGINEERS
* VERSION OF SEPTEMBER 1988
THE HYDROLOGIC ENGINEERING CENTER
* ERROR: 01,02
609 SECOND STREET, SUITE D
* UPDATED: 4 APRIL 1989
DAVIS, CALIFORNIA 95616-4687
* RUN DATE 9/12/97 TIME 11:48:41
(916) 756-1104, (916) 551-1748
*****
*****

```

```

X X XXXXXXX XXXXX XXXXX
X X X X X X
X X X X X
XXXXXXX XXXX X XXXXX XXXXX
X X X X X
X X X X X
X X XXXXXXX XXXXX XXXXXXX

```

END OF BANNER

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1
9/12/97 11:48:41
PAGE 1

```

TEMPORARY SWALE

THIS RUN

EXECUTED 9/12/97 11:48:41

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*****
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

```

LOS VOLCANES RD.

ERROR CORR - 01,02
MODIFICATION -

```

T1 CLIFFORD WEST BUSINESS PARK
T2 V-DITCH ON LOS VOLCANES ROAD
T3 100-YEAR / 6-HOUR DESIGN STORM

```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
0	0	2	0	0	.008	0	0	0	0	

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

43	1	2	26	4	68	3
----	---	---	----	---	----	---

NC	.025	.025	.025	.1	.3
----	------	------	------	----	----

QT	1	21.53
----	---	-------

X1	1	4	0	12.0	0	0	0	0
----	---	---	---	------	---	---	---	---

GR	1.0	0	0	3.0	0	9.0	1.0	12.0
----	-----	---	---	-----	---	-----	-----	------

```

1
9/12/97 11:48:41
PAGE 2

```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.73	.73	.00	.00	.93	.20	.00	.00	1.00
22.	0.	22.	0.	0.	6.	0.	0.	0.	1.00
.00	.00	3.62	.00	.000	.025	.000	.000	.00	.82
.008012	0.	0.	0.	0	0	6	.00	10.36	11.18

0

1

9/12/97 11:48:41
PAGE 3

THIS RUN

EXECUTED 9/12/97 11:48:41

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR / 6-HOUR DE

SUMMARY PRINTOUT

Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
21.530	.73	.00	3.62	10.36	.84	.93

1

9/12/97 11:48:41
PAGE 4

SUMMARY OF ERRORS AND SPECIAL NOTES

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.73	.73	.00	.00	.93	.20	.00	.00	1.00
22.	0.	22.	0.	0.	6.	0.	0.	0.	1.00
.00	.00	3.62	.00	.000	.025	.000	.000	.00	.82
.008012	0.	0.	0.	0	0	6	.00	10.36	11.18

0

1

9/12/97 11:48:41
PAGE 3

THIS RUN

EXECUTED 9/12/97 11:48:41

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02

MODIFICATION -

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR / 6-HOUR DE

SUMMARY PRINTOUT

Q	CWSEL	CRIWS	VCH	TOPWID	FRCH	EG
21.530	.73	.00	3.62	10.36	.84	.93

1

9/12/97 11:48:41
PAGE 4

SUMMARY OF ERRORS AND SPECIAL NOTES